

Ipswich City Council

Ipswich Industrial Land and Employment Needs Analysis

11 July 2021

Executive Summary

Purpose of the Project

The *Ipswich Industrial Land and Employment Needs Analysis* (the project) involves the preparation of an industrial land and employment needs analysis for the City of Ipswich to inform the preparation of the new Ipswich Planning Scheme. The project is to enable thorough strategic planning of existing and future industrial land and employment within the Ipswich Local Government Area (LGA) to cater for projected industrial land demand.

Background

The *South East Queensland Regional Plan 2017* (ShapingSEQ) identifies a Regional Activity Centres network that assists and promotes the current and future economic and social needs of the community and business and that drive productivity, collaboration and economic growth. Within the Ipswich LGA, the following Regional Activity Centres are identified; 'Principal Centres' of Ipswich City Centre and Springfield Town Centre; and 'Major Centres' of Goodna Centre and Ripley Valley Town Centre. Outside the 'Capital City Centre' of Brisbane, Principal Regional Activity Centres are key focal points for employment and services, including industrial development. These centres also provide a basis to which investment in supporting infrastructure is to be directed.

The Ipswich LGA is also identified as accommodating a significant proportion of the South West Industrial Corridor Regional Economic Clusters (REC) which have a key focus on facilitating employment growth by enabling medium and high impact industrial activities. According to the ShapingSEQ, the performance of these economic clusters will need long-term, committed measures to prioritise investment that attracts businesses and skilled workers to the region.

As well as traditional industrial estates within the urban fabric and on the urban fringe, the Ipswich LGA benefits from several major employment locations. These locations include the existing areas of Amberley, Swanbank / New Chum and Ebenezer, and future areas of Economic Development Queensland's (EDQ) Willowbank Industrial Park, all generally well buffered and protected areas. These industrial estates, coupled with the knowledge and technology precincts associated with the Ipswich City REC and Springfield REC, underpins the city's success to date in attracting a diverse range of employment offerings. As a result, while total employment numbers are not high, sectors not seen as much in other LGAs in SEQ locate in Ipswich e.g., mining, resource recovery, manufacturing.

Study Area

The Study Area for the project includes land within the Ipswich LGA including the following planning scheme land use zones:

- Local Business and Industry
- Local Business and Industry Buffer
- Regional Business and Industry (Low Impact)
- Regional Business and Industry (Medium Impact)
- Regional Business and Industry Buffer
- Industry Investigation.

Strategic Land Assessment

Method

Areas for development of target industries within each industrial area in Ipswich have been identified with a detailed site suitability assessment model based on a multi-criteria assessment (MCA) method. Developable area has been determined using a two-sieved approach including a GIS based constraints assessment which was then refined further with non-spatial criteria.

- **Sieve 1**
The first sieve is based on several physical and environmental characteristics of the Study Area and high-level consideration of the ability to provide access for any development in each potential development area.
- **Sieve 2**
The second sieve criteria are less concerned with the proximity and/or physical typology of the attributes identified and more with the ability to develop and cost effectively service the precincts identified as having greatest suitability (least constrained) from Sieve 1. Using the Sieve 2 criteria, these precincts will be refined to define 'preferred development areas' and will be used as a basis for infrastructure assumptions.
- A high-level land use survey (visual analysis of recent aerial imagery) was also undertaken to review and confirm vacancy and significant underutilised land parcels. This layer was added to the assessment to determine a more accurate representation of land readily available for development.

Key findings

The results of the sieve assessment confirms that the industrial areas of highest suitability for industrial development in the short term (within 0-10 years) are those infill or expansion opportunities associated with existing industrial estates. In total this amounts to approximately **362ha** comprising the following:

- Local Business and Industry: 89ha
- Low impact: 140ha
- Medium impact: 132ha.

Several locations show moderate suitability for development due to lack of servicing or undermining constraints that require further assessment to be accurately defined and managed. A further 290ha of zoned Regional Industry Investigation owned by EDQ at Willowbank, within the Ebenezer Regional Industrial Area is known to be free from mining constraints, although enabling infrastructure is currently thought to be several years away. Should this 290ha be required for the proposed intermodal hub as part of the Inland Rail project it will not be available to meet the forecast industry demands. An additional 2,388.6 ha of RBII land within the Ebenezer Regional Industrial Area may be suitable subject to further assessment of mining constraints. Suitable areas should then be incorporated into future servicing strategies.

Comparison of findings with ShapingSEQ and GMP assessments

The Growth Monitoring Program Land Supply and Development Modelling Report (2019) (GMP) annually monitors land supply and development activities for both residential and non-residential land uses in SEQ, including industry. According to the GMP there were approximately 4,165ha of planned industrial land in Ipswich, inclusive of 3,639.4ha in the RBII and RBI Buffer zones, mostly in Ebenezer. This was intended to occur on land zoned for medium and low impact industry, and in an industry investigation area of approximately 2,945ha.

Comparatively, the assessment results as part of this project reduces the amount of available developable industrial land to an estimated 362ha zone LBI, RBI (low and medium impact) and a further 290ha zoned RBII comprising the proposed Willowbank Industrial Estate. A further 2,388.6ha of land zone RBII in the wider Ebenezer Regional Industrial Area is potentially suitable although much of this area is affected by past mining activities and requires further detailed suitability assessment.

Industrial Property Market Overview

The market assessment considers the volume, value and median sale price for vacant and improved property (i.e., industrial zoned land with a building on it) located on industrial zoned land. Take-up rates have also been considered to inform the industrial land demand projections for the Ipswich City.

The industrial property market in Ipswich is improving with the highest take up recorded in 2018-19. It is likely that a drop in sales in 2019-20 was a result of the covid pandemic. Take up is concentrated in locations where servicing and infrastructure is readily available. Industrial sales activity was largely within the Carole Park, Bundamba, and Swanbank/New Chum industrial precincts.

Macro and Micro Trends Influencing the Future of Industry

A review of macro and micro economic trends indicated that there are a variety of international factors which will have implications for the future of industrial activity in Ipswich City. Globalisation and changes in trade policy will result in an increased volume of imports and exports requiring distribution throughout Australia. The transport, warehousing and postal services industry is anticipated to be a high-value industry and a significant source of employment in Ipswich and SEQ more broadly.

Additionally, the COVID-19 pandemic has proven the interdependence between Australia and the country's primary trading partners such as China and India. Due to the restrictions in place across the world to manage the pandemic many goods typically imported by Australia's trading partners were in short supply, leaving businesses and consumers without products. This pressure on imports is anticipated to lead to a resurgence in domestic manufacturing, particularly in necessary goods.

Additionally, Queensland's richness in natural resources also provide opportunities for the sustainable energies industry to support future industrial activity in Ipswich City and broader SEQ.

Emerging megatrends in industrial activity include lower labour to capital ratios, changes in demographics, knowledge intensity and workplace flexibility. However, a common theme among these industry trends is that each of these trends is dependent on technological advancement. Technology is required to reduced human capital requirements, increase workplace flexibility, upskill significant proportions of the workforce or increase knowledge intensity in industrial activities. Therefore, the professional, scientific, and technical services industries will be a driving factor in the future as the emerging megatrends continue to permeate Australian industry. Finally, it is expected that the existing high value industry within Ipswich City will continue to contribute to the regions value and employment into the future. Based on the emerging megatrends, the following industries are expected to be significant driving factors to both the SEQ and Ipswich City economies in the future:

- Transport, postal and warehousing
- Manufacturing
- Sustainable energy
- Education and training
- Professional, scientific and technology services
- Public administration and safety
- Construction
- Health care and social assistance.

Industrial Land Demand

Three industrial land demand scenarios were modelled:

- **Scenario One** utilises QGSO employment projections at the one-digit industry sector for Ipswich City rebased to two-digit ANZSIC industry sector and allocated to SA2s based on our understanding employment distribution throughout the city.
- **Scenario Two** includes two employment projections (conservative and optimistic) at the two-digit ANZSIC sector level by considering both historic and projected population growth in contrast to historic and projected employment growth in Ipswich City. This reduces the divergence between population and employment growth assumed by QGSO projections under Scenario One. Conservatively, employment growth of 3.5% per annum between 2016 and 2041 was adopted, whereas optimistic outlook adopted employment growth of 4.0% per annum over the projection period.
- **Scenario Three** employment projections consider a reallocation of future industrial employment from Brisbane LGA to surrounding LGAs including Ipswich City. This scenario was undertaken as the QGSO employment projections for SEQ do not consider land supply constraints for the Brisbane LGA. As such, employment projections for Brisbane LGA are deemed too high and hence a reallocation of employment to other SEQ LGA's is needed.

The demand assessment outlines that future demand to 2041 is likely to be approximately:

- **Low impact industry:** Additional 73.4 hectares to 161.8 hectares over and above current demand and
- **Medium and high impact industry:** Additional 178.8 hectares to 481.1 hectares over and above current demand.

The Sieve 2 assessment identified that there is approximately 362 hectares of zoned land which has highest suitability to accommodate industrial development in Ipswich in the short term, comprising:

- **Low impact industry:** 229 hectares and
- **Medium and high impact industry:** 132 hectares.

This land is mostly contained within infill or expansion opportunities with existing industrial estates in Riverview, Wulkuraka, Karrabin, Bundamba, Yamanto, Redbank and Redbank Plains.

This analysis highlights whilst there is sufficient remaining low impact industry zoned land to meet projected demand in Ipswich City Council to 2041 under all scenarios, there is significant need to improve servicing to other zoned industrial areas to accommodate future demand for medium and high impact industry activity in Ipswich.

The timing for which additional supply will need to be brought to market under each scenario is as follows:

- Scenario One: 2039
- Scenario Two (Conservative): 2034
- Scenario Two (Optimistic): 2032
- Scenario Three: 2030.

New Chum and Swanbank have been identified as moderately suitable to accommodate future demand, although further geotechnical assessment is required to determine the most suitable areas for future development. The take-up assessment has assumed whilst there is some take-up with Swanbank to 2041, the market preference is assumed to shift to Willowbank, as the industrial areas of highest suitability begin to exhaust. The current 290 hectares that is relatively unconstrained at Willowbank would be available for medium and high impact industry if not selected for the proposed intermodal hub. Should the intermodal hub ultimately proceed, additional opportunities would need to be investigated within the broader Ebenezer MEIA.

Stakeholder Consultation

As part of the investigation of industrial land needs in Ipswich, CDM Smith undertook a survey of several industry stakeholders representing agents, developers, industry peak bodies, existing users and state government in order to identify or understand impediments to take-up of industrial land within Ipswich. Major findings include:

- There is a strong regional (i.e., SEQ) development imperative to see ongoing industrial development within Ipswich.
- The competitive advantage of Ipswich was largely attributable to price, availability of alternative lot sizes and configurations and to those industrial land users with a high reliance on interstate road freight.
- A lack of serviced industrial land was cited as a key, but general issue by agents and peak bodies. Those with projects yet to be developed cited a lack of trunk infrastructure or certainty in relation to funding of infrastructure being a key and site-specific concern.
- Given the likely regional role and function of Ipswich in terms of industrial land supply, there is potentially a State interest in addressing infrastructure gaps.
- Delivery of an intermodal terminal at Ebenezer would catalyse accelerated industrial land take-up within Ipswich and would likely attract increased interest from major industrial property trusts, which are currently focusing investment interest within the SWIC and ATC.
- New estates with direct access to one of the major freight corridors would be highly desirable, citing the Willowbank Industrial Area as a key example of a potential new estate directly accessible via the Cunningham Highway. However, agents also noted some concerns relating to whether Willowbank Industrial Area would be seen as directly accessible to the Warrego Highway in the absence of the Ipswich Western Bypass being delivered.
- Perceptions relating to void and undermining constraints and risks are a major challenge to overcome.
- There is a general recognition of the locational attributes of Ipswich to fulfill a regional role and function in terms of industrial land use, however uncertainty relating to infrastructure and servicing is identified as a major impediment to take-up.

Recommendation of Priority Industries

An opportunities and constraints analysis based on the key requirements of the priority industry activities has been undertaken. From this assessment, priority industries and areas best suited to locate these activities are summarised below:

- **Transport and logistics**, including large scale distribution centres. Best suited to locations with large lots and access to major freight routes e.g., Ebenezer, Willowbank.
- **Circular economy enterprises** (potential re-use of mining voids and renewable energy production). Best suited to locations with synergistic opportunities and waste streams including landfill, renewable energy production, large areas for buffering to sensitive uses and connection to trunk infrastructure and services such as Ebenezer and Willowbank and Swanbank / New Chum.
- **Knowledge based industries** (including business parks). Best suited to locations with access to skilled workforce, trunk infrastructure and services, synergies with other knowledge-based industries, education and training, professional, scientific and technology services, health care and social assistance e.g., Citiswich, Goodna, the southern end of Swanbank near the emerging Ripley Town Centre, Ripley Valley Special Opportunity Area and north of Warwick Road at Yamanto.
- **Defence and allied defence industries**. Including advance manufacturing Best located in proximity to the existing defence site and operations at Amberley.

Critical Infrastructure Requirements and Implementation

Infrastructure Required to Service Land Demand

Most of the short term supply (potentially developable within 5-10 years) of industrial land is already service or in areas covered by Councils Priority Infrastructure Area (PIA) and Urban Utilities (UU) Future Connection Areas. The exceptions include land in the New Chum and Swanbank areas. Potentially suitable land in these latter locations is generally fragmented due to the underlying mining constraints. Priority should be given to extending the PIA to include those developable areas adjoining existing or proposed development or adjacent to the existing road network identified in the Concept Master Plans for each area.

The LGIP proposes some transport network upgrades in the vicinity of several existing industrial areas that will potentially improve the accessibility and connectivity of these areas. These areas include Yamanto, Flinders View and Swanbank. The timing of these works needs to be reviewed in the light of the projected uptake of industrial land in these areas to determine the need to bring forward the timing of these works.

The industrial land demand forecasts also indicate that additional industrial land in the Ebenezer Regional Industrial Area (ERIA) will need to be brought online potentially by 2030. While considerable infrastructure planning has been carried out by Economic Development Queensland (EDQ) for parts of the ERIA, the area will need to be included in Council's PIA for UU to incorporate it in future connection areas and assume responsibility for operation and maintenance. Further, Council will need to review the current timing of programmed transport works in the area within the current LGIP.

Catalytic Infrastructure

Key catalytic infrastructure that would improve the market perception of industrial land opportunities in Ipswich includes water, sewerage and roadworks (including and interchange upgrade with the Cunningham Highway) for the first stage of the Willowbank industrial area within the ERIA.

Other catalytic infrastructure would include:

- Additional internal roadworks in Swanbank and potentially New Chum to address “first mile and last mile” concerns in relation to development in these areas.
- The proposed Western Bypass to improve connectivity between the Cunningham and Warrego Highways and the overall regional connectivity of the ERIA. This connection may also provide improved access to the northern parts of the ERIA which may be required if EDQ lands are consumed by the proposed intermodal facility as part of the Inland Rail corridor.
- The intermodal hub associated with the Inland Rail which will act to focus future infrastructure planning and provide some reassurance to the market that ERIA will progress and become a strategic location within the overall SEQ freight network.
- Potential future federal funding may also be provided in addition to State finding of infrastructure associated with the Willowbank industrial area within the ERIA. The critical enabler that may catalyse federal government funding to activate the area will be the delivery of the Calvert to Kagaru section of Inland Rail and the potential Willowbank (Ebenezer) intermodal terminal. The delivery of intermodal terminals are considered by Inland Rail/the Federal Government to be important to fully realising the benefits of Inland Rail and maximising productivity in Australia's freight network.

Use of Mining Voids

In the context that Ipswich's mining voids represent a resource, there are environment, social and economic benefits associated with seeing the 'life' of these resources extended by diverting waste away from landfill to circular economy projects where landfill is only required for residual waste.

There is ample evidence that significant waste reduction and diversion is achievable, with other states outperforming Queensland in terms of waste diversion. The technology exists, however logistics associated with collection, sorting and security of supply can be challenging. Environmental impacts can be managed through traditional processes of impact assessment and management plans. The transition away from dedicated landfills to ‘waste to resources’ or ‘waste to energy’ projects have a strong potential to deliver an employment dividend to Ipswich both in terms of the number and quality of employment opportunities. Furthermore, it is consistent with *Queensland’s Waste Management and Resource Recovery Strategy*.

Implementation Mechanisms and Key Policy Considerations

The key recommendations for implementation mechanisms and policy considerations are as follows:

Local Government Infrastructure Plan Considerations

- Review the LGIP to align timing of future transport network projects with the forecast uptake of industrial land throughout the city.
- Extend the PIA to targeted development areas within Swanbank and New Chum, industrial land in Walloon and the ERIA.

Infrastructure Demand Projections

- As part of this project the demand for industrial land has been distributed across the suitable supply of industrial land across the City. Council should review the forecast employment characteristics and anticipated distribution and align the existing infrastructure demand models accordingly, particularly Council’s transport model.

Future Coordination with State Infrastructure Agencies

- It is strongly recommended that Council work with UU, TMR and EDQ to continue to plan for the key infrastructure required to meet the forecast employment demand and distribution as presented in this assessment, particularly in the Ebenezer Regional Industrial Area (ERIA).

Planning Policy Recommendations

- Rezone land currently identified as industry investigation generally in accordance with the draft Local Area Framework (LAF). There are some anomalies between the suitability of land identified in Wulkuraka and Darrabin as part of this assessment and recommendations for its use in the draft LAF which warrant further consideration. For example, some areas identified as being suitable for development have been proposed as Environmental Management.
- Generally, the retention of the existing industry buffer areas are supported by this assessment. However there appears to be some land north of Berrys Road in Yamanto and west of the Churchill abattoir that may be suitable to some low impact land extensive industry if not required as part of the abattoir’s operation.
- Business parks are a form of integrated employment area that offer tenants added benefits such as synergies with related activities, linkages to education or training facilities or just a high quality environment which better protects tenants investment. They come in many forms but typically are low impact in nature and home to a range of industrial and commercial activities. They can provide a range of employment activities close to residential or commercial areas and will play a role in providing for forecast employment growth in Ipswich, particularly for knowledge based industries. Several areas have already been identified for business parks in the draft LAF including Swanbank, Yamanto and Bundamba. In addition, suitable locations should be identified in the ERIA for this type of integrated employment area.
- A further review of planning scheme provisions is required to identify any impediments to industry attraction and to ensure appropriate measures are incorporated to facilitate the development of priority industries.

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Section 1 Introduction

1.1 Purpose of the Project

The *Ipswich Industrial Land and Employment Needs Analysis* (the project) involves the preparation of an industrial land and employment needs analysis for the City of Ipswich to inform the preparation of the new Ipswich Planning Scheme. The project is to enable thorough strategic planning of existing and future industrial land and employment within the Ipswich LGA to cater for projected industrial land demand.

The purpose of this study is to:

- Provide a technical analysis of industrial land and employment needs for the City of Ipswich to underpin the development of the new Ipswich Planning Scheme including:
 1. the historical, current and realistic projected market trends in the use and consumption of developed, redeveloped and expansion (greenfield) industrial and employment areas in the City of Ipswich
 2. the existing and projected (to 2041) trends in:
 - self-contained industrial employment in the Ipswich LGA
 - inflows and outflows of industrial employment from/to adjacent LGAs (at an SA2 statistical level) throughout the Ipswich LGA
 - utilisation rates of land (particularly identification of trends in under-utilisation to inform the needs assessment)
 - a needs assessment as per state interest – i.e., identify whether the new planning scheme designations provide a sufficient supply of suitable land to cater for a 15-year growth horizon, acknowledging Ipswich’s role as a provider of industrial land and employment to adjacent LGAs in the region.
- Establish the nature and potential magnitude of likely future employment opportunities in the city generated from local, regional and global influences
- Determine the characteristics and any significant special requirements of these opportunities, such as in terms of location needs, supply chain connectivity, transport and infrastructure etc.
- Align these opportunities with the supply of industrial and employment land existing or designated across the city
- Interrogate constraints information to confirm the *actual* amount, suitability and availability of industrial and employment land
- Identify any shortfalls in terms of the amount, distribution and suitability of land for the different categories of employment demand
- If required, identify alternative strategies to meet any shortfalls in supply to meet forecasted demand, including options for unlocking existing designated land or the identification of alternative suitable areas appropriately located with respect to future population centres
- Based on the characteristics of expected future industrial and business activities, provide recommendations on the need for, and nature of, regulatory provisions to be considered for adoption in the new Ipswich Planning Scheme.

In summary, the project is to provide a technical analysis that will underpin the development of the industrial and employment strategies for the new Ipswich Planning Scheme. The analysis is to include current trends and the provision of recommendations which can be used to guide the drafting of the new Ipswich Planning Scheme.

1.2 Background

The *South East Queensland Regional Plan 2017* (ShapingSEQ) identifies a Regional Activity Centres network that assists and promotes the current and future economic and social needs of the community and business and that drive productivity, collaboration and economic growth. Within the Ipswich LGA, the following Regional Activity Centres are identified; Principal Centres of Ipswich City Centre and Springfield Town Centre; and Major Centres of Goodna Centre and Ripley Valley Town Centre. Outside the Capital City Centre of Brisbane, principal Regional Activity Centres are key focal points for employment and services, including industrial development. These centres also provide a basis to which investment in supporting infrastructure is to be directed.

Existing zoned major industrial estates within SEQ are defined as Major Enterprise and Industrial Areas (MEIAs) under ShapingSEQ. There are 41 MEIAs identified in SEQ, with 30 of the MEIAs contained within Regional Economic Clusters (RECs). RECs contain a concentration of significant economic activity and support significant levels of employment.

The Ipswich LGA is identified as accommodating a significant proportion of the South West Industrial Corridor REC with a key focus on facilitating employment growth by enabling medium and potentially high impact industrial activities. The performance of these economic clusters will need long-term, committed measures to prioritise investment that attracts businesses and skilled workers to the region.

As well as traditional industrial estates within the urban fabric and on the urban fringe, the region benefits from several major employment locations. These locations include the existing areas of Amberley, Swanbank / New Chum and Ebenezer, and future areas of EDQ's Willowbank Industrial Park all generally well buffered and protected areas. In the case of Swanbank /New Chum and Ebenezer, this is a product of past coal mining activities where the area offers special opportunities for future employment. These locations provide opportunities for a wider range of employment generating activities than in many other SEQ LGAs. These industrial estates, coupled with the knowledge and technology precincts associated with the Ipswich City and Springfield RECs, underpins the city's success to date in attracting a diverse range of employment offerings. While total employment numbers are not high, sectors not seen as much in other LGAs in SEQ may locate in Ipswich e.g., mining, resource recovery, and manufacturing.

These attributes together with:

- the city's strategic location at the gateway between SEQ and the extensive rural hinterlands to the west
- the forecast population growth to be accommodated in the city's greenfield expansion areas
- location on Queensland's most significant road freight corridor
- the relative shortage and relative cost of land for population supporting and regional industrial development in adjacent metropolitan LGAs
- location on major regional infrastructure network corridors (including other transport, water, electricity, and gas) suggest Ipswich is well positioned to attract and accommodate significant employment growth.

There is significant opportunity for Ipswich to benefit from the ongoing expansion of the South West Industrial Corridor, which will be further reinforced by the delivery of Inland Rail and possibly an Intermodal Terminal at Ebenezer, as well as broader initiatives in the SEQ Trade and Enterprise Spine.

Traditionally there has also been opportunity associated with the rehabilitation and reuse of mining voids, although the community's social licence for continuance of this activity in the current form is increasingly under question. The increasing demand for more sustainable waste solutions, including measures to attract those activities that can contribute to a circular economy to reduce waste streams, may bring new opportunities for these areas. Using waste streams from existing food processing and agricultural activities in the region provides further potential opportunities for biofuels and bioenergy production, potentially in existing well buffer locations with access to regional infrastructure networks. The majority of future industrial land banks are located on the fringes of urban growth areas (e.g., Ebenezer and Swanbank), with only Redbank and Bundamba (Citiswitch) representing major stocks of serviced vacant land within the confines of the urban core of Ipswich.

RAAF Base Amberley and the Military Vehicle Centre of Excellence at Redbank Peninsular provide a range of employment opportunities for defence personnel and private employees including highly specialised manufacturing, aviation and aerospace, and logistics. These sites have been well insulated from incompatible development through past land use planning initiatives by Council and provide opportunity for additional growth. The Department of Defence own land south of RAAF Base Amberley and would be a key stakeholder in any future use of this land.

The Swanbank New Chum Enterprise area is well serviced by regional infrastructure although the dispersed nature of areas suitable for development due to mining constraints complicates the provision of internal infrastructure. Parts of this area is suited to land extensive and resource recovery industries although the proximity of the Ripley Town Centre will influence the nature of employment activities in the south of this area. Major landfill operations exist in the central and northern (New Chum) areas although as noted above, the social licence for the ongoing growth of this activity appears to be under some question. Council's latest policy position in relation to the use of these disturbed areas is to seek alternative remediation options and promote circular economy initiatives to reduce the need for landfill.

1.3 Methodology

Given the number of studies that have previously been undertaken to determine the suitability of the Study Area for industrial development, our approach builds upon this work and addresses information gap, including a review of current market trends and an economic needs assessment. This has been undertaken with the collation and analysis of relevant material considering recent changes in land use and infrastructure initiatives, augmented with limited and targeted field investigations. Additionally, engagement with key peak body and property stakeholders, Council and State Agencies, both individually and collectively, has confirmed the identification of new issues affecting the development suitability of the industrial areas. This report establishes a comprehensive understanding of the constraints to development of existing industrial areas and the opportunities to deliver ongoing industrial employment growth in the region. The project is comprised of several key components including:

- **Phase 1 Inception**
- **Phase 2 Background Information Review**
 - Review of Local, Regional and National Industrial Land Reports and planning legislation
- **Phase 3 Strategic Assessment**
 - Land Use Needs Analysis of Designated Industry and Industry Investigation Areas including the development and application of a two sieved multi-criteria analysis (MCA). The output of the MCA identifies constraints to development including infrastructure required to 'unlock' land extents along with the identification of unconstrained land, available for shorter term development.
 - Industrial Land Market, Demand and Need
 - Identification of Future Industry Areas to Cater for Local and Regional Demand
 - Alignment with Shaping Queensland and State Government Land Monitoring Reports
 - Identify Critical Infrastructure Requirements
 - Land Consumption Impacts
 - Existing and Projected Self-Containment of Industrial employment
 - Employment Generation Assumptions
 - Ipswich's Competitive Advantages and Disadvantages-Highest and Best Use
 - Opportunities and Constraints Analysis and Recommendations-Priority Industries
 - Mining Voids, Landfill and Circular Economy
 - Trip Generation Rates
 - Identify Implementation Mechanisms and Key policy Considerations.
- **Phase 4 Project Finalisation**
 - Recommendations for input into the draft planning scheme and LGIP regarding industrial land use planning, development prioritisation, infrastructure provision and supply and demand assumptions.

1.4 Study Area

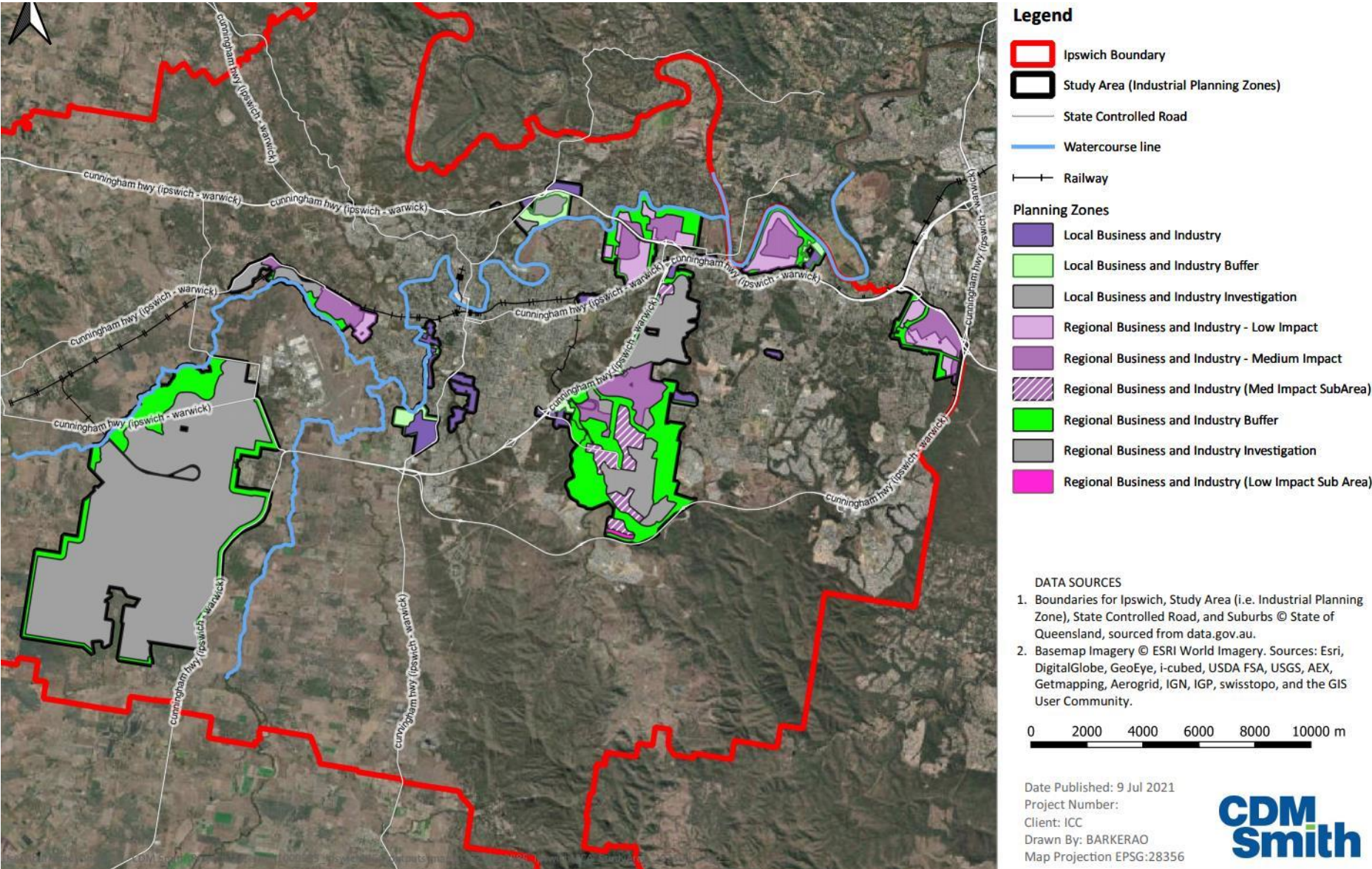
Ipswich is centrally located within the SEQ region approximately 40kms west of Brisbane and east of the rural and agricultural areas of the Brisbane, Lockyer and Fassifern Valleys. Ipswich comprises an area of 1090 square km and has a population of approximately 230,000¹ people. The Study Area includes existing and future industrial zoned land within the Ipswich LGA, including in the following suburb/localities:

- Amberley
- Bundamba
- Camira
- Carole Park
- Churchill
- Dinmore
- Ebbw Vale
- Ebenezer
- Flinders View
- Gailes
- Goodna
- Ipswich
- Jeebropilly
- Karalee
- Karrabin
- Mount Forbes
- Mutdapilly
- New Chum
- North Tivoli
- Raceview
- Redbank
- Redbank Plains
- Riverview
- Swanbank
- Thagoona
- Tivoli
- Walloon
- West Ipswich
- White Rock
- Willowbank
- Wulkuraka
- Yamanto.

These suburbs have land zoned for industry, buffer areas, or for potential future industry in the planning scheme. It should be noted that some suburbs may have very little zoned industrial land, or industrial uses, while other suburbs located within MEIAs or RECs have significant industrial development. The Study Area and land zoned in the planning scheme for industry or potential future industry (including buffer areas) is shown in Figure 1-1.

¹ based on IPM as at 31 December 2020

Figure 1-1 Study Area



Section 2 Background Assessment and Gap Analysis

2.1 Legislative Review

ShapingSEQ and relevant State Planning Policies (SPP) together with the current and draft Ipswich planning scheme as it applies to industry land are considered in this review. This section provides comment on the planning context relevant to development feasibility of industrial and employment generating development in Ipswich. A review of the existing statutory planning matters identifies elements that:

- Impact the development potential of each locality
- Potentially require additional site investigations or stakeholder/ state agency engagement.

Further insights into the Ipswich industry sector and future employment opportunities are detailed at length in Section 5 Macro Economic Trends.

2.1.1 State

2.1.1.1 The Planning Act 2016

The Queensland planning system is framed by the *Planning Act 2016* (Planning Act) and the subordinate *Planning Regulation 2017* (Planning Regulation). The legislation establishes the framework of planning instruments that support the planning system. Together these instruments guide local governments in creating their local planning instruments and the assessment process.

Council's current drafting of a new planning scheme is to align with guidelines prescribed by the Planning Act. Section 16 of the Planning Act establishes mandatory requirements for the content of planning schemes. They must include:

- desired strategic outcomes for the local government area to which the planning scheme applies
- measures to facilitate the achievement of the strategic outcomes
- mechanisms for coordinating and integrating the matters dealt with in the planning scheme, including state and regional matters.

This section also provides for particular requirements for the content of local planning instruments (the regulated requirements) to be prescribed by the Regulation. These are limited to zone names and purpose statements, zone colours, and use and administrative definitions. This aims to enable an appropriate level of consistency across the state, in particular for planning schemes.

2.1.1.2 Minister's Guidelines and Rules 2017

The Minister's Guidelines and Rules (MGR) is a statutory instrument for plan-making in Queensland, made by the Minister under the Planning Act. It is one of the instruments that sets out the processes and procedural requirements of the planning system under the Act. In this document, 'plan-making' is taken to include all processes in chapter 2 of the Act, excluding those for state planning instruments. The MGR also includes the Minister's guidelines for working out the cost of infrastructure for an offset or refund, and criteria for deciding conversion applications.

The MGR complements the Planning Act and cannot prescribe matters that are in the primary legislation. This means that, for some aspects of plan-making, both the Act and the MGR need to be consulted to gain a full picture of the process and to ensure legislative requirements are met. The Act enables a planning scheme to be amended to improve the way it functions, bring it into line with changed policies or circumstances in the local government area or to make it consistent with new or amended state policy. Amendments to a planning scheme may either follow the tailored process under Section 18 of the Act, or the rules in the MGR as prescribed in Section 20 of the Act.

Chapter 5 of the MGR guides the process of reviewing, making or amending a local government infrastructure plan (LGIP). Chapter 6 guides the costing of infrastructure for offset or refund within the LGIP and will be considered in the infrastructure assessment of this project.

2.1.1.3 State Planning Policy 2017

Under the Planning Act, each local government planning scheme needs to set out integrated state, regional and local planning and development assessment policies for an entire local government area. The SPP supports this by setting down the state interests that apply to plan making, and that should be given effect through each local government planning scheme. The SPP outlines 17 state interests, arranged under five broad themes. The following assessment addressed the SPPs relevant to industrial development in Ipswich. Due to the broad spatial nature of the Study Area, several of the interests may be relevant.

▪ State Interest – Matters of Environmental Significance

This area of interest ensures that matters of environmental significance are valued and protected, and the health and resilience of biodiversity is maintained or enhanced to support ecological integrity. The following Matters of State Environmental Significance (MSES) affects the Study Area, particularly around Ebenezer and Willowbank. Again, due to the broad spatial nature of the Study Area, several of the MSESs may be relevant:

- MSES – Wildlife Habitat – there are pockets that affect the Study Area.
- MSES - Regulated vegetation (category B) – there are small pockets that affect the Study Area.
- MSES - Regulated vegetation (category C) – there are extensive pockets that affect the Study Area.
- MSES - Regulated vegetation (essential habitat) – there are numerous pockets that affect the Study Area.
- MSES - Regulated vegetation (wetland) – there are small pockets that affect the Study Area.
- MSES - Regulated vegetation (intersecting a watercourse) – there are several areas of regulated vegetation (intersecting a watercourse) that are spread throughout the Study Area.

The SPP employs a ‘maintain and enhance’ approach to managing MSES values. The SPP advises that development should not proceed in areas mapped as MSES until a site investigation establishes what values are present on site. Where values are confirmed as present on site, the SPP requires that development maintains or enhances these values through minimising potential impacts on these values. Where development does occur, and offsets are required for MSES, they will be administrated by the state and they must be in accordance with the *Environmental Offsets Act 2014*.

▪ State Interest – Water Quality

Development in areas not connected to municipal sewerage systems has the potential to discharge wastewater to waterways if not appropriately managed. This area of interest ensures the environmental values and quality of Queensland waters are protected and enhanced. The SPP’s ensures that development:

- with the potential to harm water quality is triggered for assessment against relevant water quality codes.
- is located in areas without environmental constraints such as high-risk soils, high groundwater tables, groundwater dependent ecosystems, natural drainage lines and steep slopes.
- responds sympathetically to topography, rather than significantly modifies the landscape, will generally deliver better water quality outcomes.
- maintains natural drainage lines to convey stormwater also delivers water quality benefits.
- Any development must be carried out in a manner that protects water ways within the Study Area.

- **State Interest – Safety and Resilience to Hazards (Emissions and Hazardous Activities)**

This area of interest ensures that community health and safety, sensitive land uses, and the natural environment are protected from potential adverse impacts of emissions and hazardous activities, while ensuring the long-term viability of industrial development, and sport and recreation activities.

A High-Pressure Gas Pipeline identified as affecting several industrial areas within the Study Area. Any development must locate industrial land uses in areas that avoid, mitigate and manage the adverse impacts of emissions on sensitive land uses. This can include but is not limited to management plans, buffer zones and design requirements.

- **State Interest – Safety and Resilience to Hazards (Natural Hazards, Risk and Resilience: Bushfire, Flood, Landslide)**

This area of interest ensures the risks associated with natural hazards are avoided or mitigated to protect people and property and enhance the community's resilience to natural hazards. Development should employ adequate risk management plans and mitigation measures to avoid loss of function and access during and after a natural hazard event. The development must also directly, indirectly and cumulatively avoid an increase in the severity of the natural hazard and the potential for damage on the site or to other properties.

- **Flood**

The Study Area is affected by the Flood hazard area – Local Government flood mapping area. If identified as being contained within a Local Government flood mapping area, the SPP requirements for flood are triggered by the flood mapping contained in that Local Government's planning scheme.

- **Bushfire**

The Study Area is also partially affected by all levels of bushfire hazard. The SPP requirements for bushfire are triggered by mapping contained within that Local Government's planning scheme.

- **Landslide**

Consideration needs to be given to the assessment of landslide hazards that are derived both above and below a development. Development in affected areas must not occur unless the development cannot feasibly be located elsewhere. Development should be located and designed to avoid or mitigate the risk to people, property and infrastructure to an acceptable or tolerable level. The SPP requirements for landslide are triggered by mapping contained within that Local Government's planning scheme.

- **State Interest – State Transport Infrastructure**

This area of interest ensures that planning enables the safe and efficient movement of people and goods across Queensland and encourages land use patterns that support sustainable transport. The following major transport infrastructure is identified over the Study Area:

- Several **State Controlled Roads** and major freight routes including but not limited to the Ipswich Motorway, Warrego Highway, Centenary Highway and Cunningham Highway.
- **Future State Controlled Roads** including Category C – Protected Planning (planning approved and protected but not included in current DTMR funding and delivery programs) roads; Western Ipswich Bypass, Moggill Pocket Arterial Road/Moggill–Warrego Highway Connection and the Goodna Bypass.
- The Main Line (Ipswich to Rosewood) **Railway Corridor**
- The **Future Railway Corridors** including a passenger rail line extension between Ipswich and Springfield, via Ripley, and the Inland Rail project corridor; an Australian Rail Track Corporation (ARTC) proposed 1,700 km freight rail line between Melbourne and Brisbane via Ipswich.

These existing corridors should be protected from development that may adversely affect the safety and efficiency of the infrastructure, corridors, and networks.

- **State Interest – Energy and Water Supply**

- This area of interest ensures the planning of timely, safe, affordable and reliable operation of electricity and water supply occurs.
- A strong and resilient network of electricity and water supply underpins the standard of living and economic development in Queensland.
- The reliability and operational integrity of major electricity infrastructure must be maintained.
- A Seqwater pipeline is identified as intersecting parts of the Study Area. It is expected this pipeline be protected.

2.1.1.4 South East Queensland Koala Conservation Strategy 2020–2025

On 7 February 2020, the Queensland Government released new regulatory koala habitat maps for SEQ. The maps support the implementation of the *South East Queensland Koala Conservation Strategy 2020–2025* and amended koala conservation protections within the planning framework. The new map replaces previous habitat maps and identifies koala priority areas that provide the best habitat for sustaining koala populations in the long term. The map aims to focus efforts for habitat protection, restoration and threat mitigation towards large, connected areas with the highest likelihood of achieving the best conservation outcomes for koalas.

Koala Habitat mapping affects much of the Ipswich LGA. The Koala Priority Area is mapped south of the Centenary Highway from Forestdale to Spring Mountain, Willowbank and Mt Forbes. Areas of Core koala habitat and Locally refined koala habitat are also scattered across the region. Koala priority areas are large, connected areas that focus habitat protection, habitat restoration and threat mitigation to areas that have the highest likelihood of safeguarding koala populations in SEQ. Clearing of core and locally refined koala habitat areas within koala priority areas is prohibited, subject to certain exemptions.

Mapping of SPP constraints have been incorporated into and considered in the strategic land assessment as part of this project to identify developable areas for future industrial use (refer to Section 3 of this report).

2.1.2 Regional

2.1.2.1 South East Queensland Regional Plan 2017 (ShapingSEQ)

ShapingSEQ is the Queensland Government’s plan to guide the future of the South East Queensland region, prepared in collaboration with the region’s 12 local governments. ShapingSEQ sets a framework for growth by defining and encouraging growth within the Urban Footprint.

ShapingSEQ divides the region into four sub-regions. Each sub-region shares similar characteristics, such as economic and infrastructure interdependencies, geography and settlement patterns, housing markets, community expectation and levels of self-containment. Ipswich is identified as within the Western sub-region, comprising Ipswich, Lockyer Valley, Scenic Rim, Somerset and Toowoomba. The Western sub-region supports industrial development with:

- a strong focus on expansion areas, primarily around the sub-region’s major urban and rural centres, particularly in Ipswich.
- an emerging national and global-oriented economy leveraging major investments in airport, logistics and freight infrastructure.
- significant major industry and enterprise areas and Australian Defence Force infrastructure
- an integrated transport network that accelerates access within the sub-region and provides strong social and economic connections with the Metro subregion, including critical freight connections with the Port of Brisbane.

ShapingSEQ also identifies a Regional Activity Centres network that assists and promotes the current and future economic and social needs of the community and business and that drive productivity, collaboration and economic growth. Within the Ipswich LGA, the following Regional Activity Centres are identified; Principal Centres of Ipswich City

Centre and Springfield Town Centre; and Major Centres of Goodna Centre and Ripley Valley Town Centre. Outside the Capital City Centre of Brisbane, principal Regional Activity Centres are key focal points for employment and services, including industrial development. These centres also provide a basis to which investment in supporting infrastructure is to be directed.

Industrial Development

Existing zoned major industrial estates within SEQ are defined as Major Enterprise and Industrial Areas (MEIAs) under ShapingSEQ. ShapingSEQ defines an MEIA as follows:

Major enterprise and industrial areas accommodate medium-and high-impact industries and other employment uses associated with, or with access to, state transport infrastructure. These areas are major drivers of economic growth. They are either significant in size or have the potential to expand to provide for industry and business activity clusters of regional and state significance.

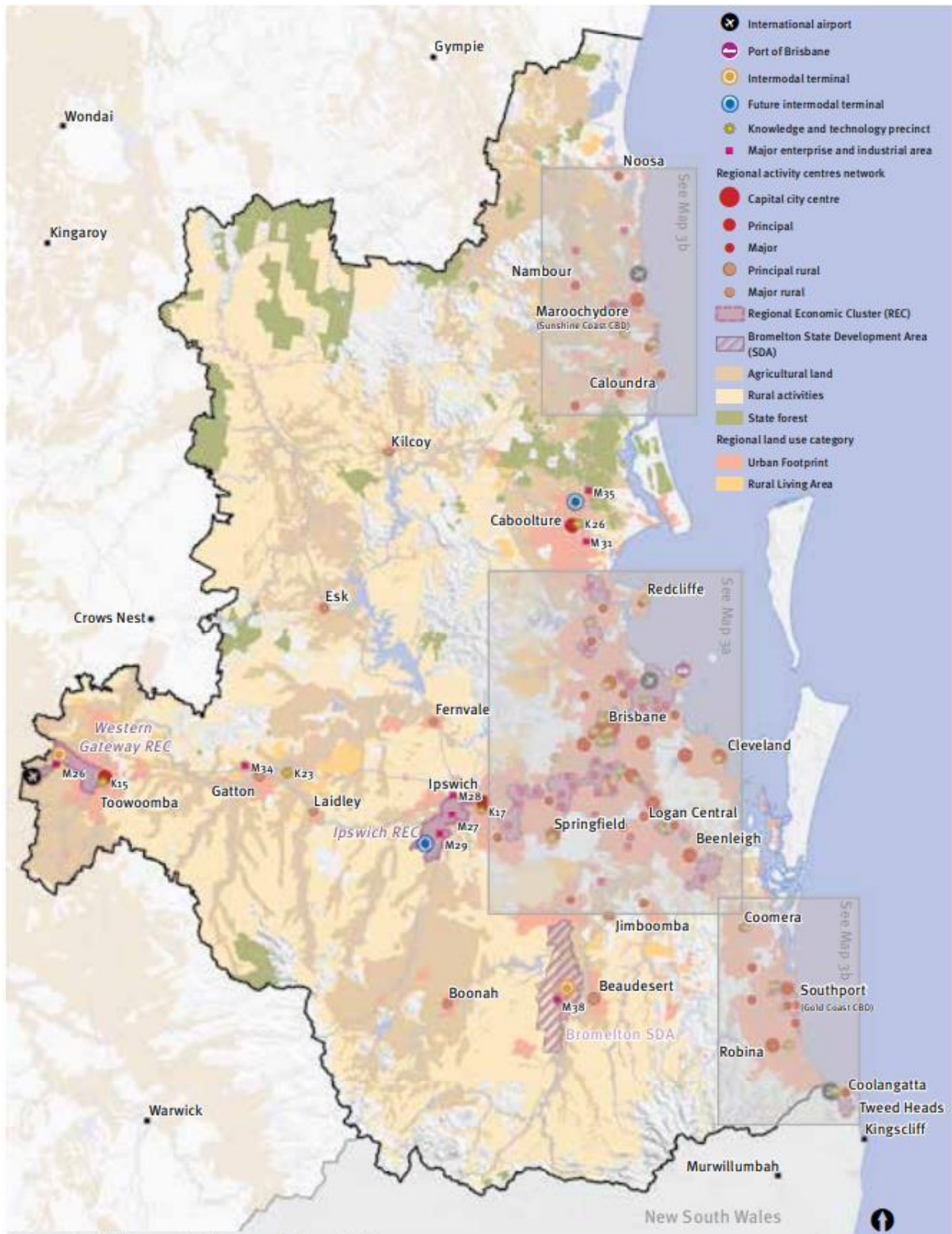
There are 41 MEIAs identified in SEQ, with 30 of the MEIAs contained within Regional Economic Clusters (RECs). RECs contain a concentration of significant economic activity and support significant levels of employment. They are areas that demonstrate synergies across important economic and employment areas as they contain a concentration of significant economic activity.

In Ipswich, the greatest concentration of economic activities are within RECs and as a result, are well positioned to attract future economic opportunities. According to ShapingSEQ, the performance of these economic clusters will need long-term, committed measures to prioritise investment that attracts businesses and skilled workers. Closer proximity to major economic enabling infrastructure, such as key freight routes and ports, is a significant driver of growth of these clusters. The RECs that contain MEIAs in Ipswich are the Ipswich REC, South West Industrial Corridor REC and Springfield REC (refer to Figure 2-1). The MEIAs contained within them are as follows:

- South West Industrial Corridor REC:
 - Bundamba/ Riverview -MEIA (M11)
 - Carole Park - MEIA (M12)
 - New Chum - MEIA (M15)
 - Redbank - MEIA (M16)
 - Swanbank - MEIA (M20)
- Ipswich REC:
 - Amberley - MEIA (M27)
 - Wulkaraka/ Karrabin- MEIA (M28)
 - Ebenezer - MEIA (M29).
- Springfield REC:
 - Springfield Town Centre (Principal Regional Activity Centre) and hospital and tertiary facilities.

During the ShapingSEQ horizon (to the year 2041) the Ipswich Local Government Area is projected to grow rapidly. As a result, ShapingSEQ also identifies Potential Future Growth Areas in Lanefield / Grandchester (and Glamorganvale in the adjoining Somerset Regional Council) to the north of Marburg. These areas are intended to be protected for the expansion of urban and industrial development.

Figure 2-1 SEQ Regional Plan Regional Economic Clusters and MEIAs



2.1.3 Local

2.1.3.1 Economic and Workforce Development Plan 2018-19

The Economic and Workforce Development Plan 2018-19 (EWDP) details Council's priorities and commitments to promote Ipswich as a key location for industrial Development. It should be noted that the EWDP was developed prior to the election of the new Council (and COVID-19) in 2020, and as a result, may not be an accurate reflection of current Council policy and priorities. The following objectives benefit and support industrial development:

- Ipswich aims to be recognised as a national hub for these key industries with superior capabilities, infrastructure, value and supply chain by:
 - Deliver a suite of industry capability reports auditing the industry eco-system to identify size, scale, capabilities and priorities.
 - Deliver key industry committees providing leadership, collaboration and coordination of effort.
 - Deliver targeted interstate and international campaigns to attract new businesses to the city.
 - Provide strong representation of key industries to government, trade and investment agencies, bilateral chambers and industry allies.
 - Provide assistance and advocacy for key industries including trends, opportunities and matters of planning and land use.
 - Support key industry forums creating national awareness and engagement.
 - Support the establishment of key industry centres of excellence.
- Council is committed to the ongoing positioning of the region as an intermodal transport hub that benefits the community and economy by the continued delivery of efficient freight and passenger services via an integrated regional transport system. The EWDP highlights ShapingSEQ's priority regional infrastructure projects in Ipswich including:
 - supporting the Southern Freight Rail Corridor (part of the Melbourne to Brisbane Inland Rail project), connecting the western rail line near Rosewood to the interstate railway near Bromelton, which will improve the freight network's efficiency and relieve pressure on the passenger rail network between Rosewood/Ipswich and the Metro sub-region.
 - supporting the Western Ipswich Bypass, which will improve freight network efficiency and relieve pressure on Ipswich City roads.

The table below identifies key target industries that at the time of plan preparation were considered priorities for the region.

Table 2-1 Economic and Workforce Priorities (2018/19)

Key Industry	Detail
Defence	Ipswich is home to Australia's largest military air base and a strong supply chain of sector relevant contractors, manufacturers and service providers. Defence is the second largest export industry for Ipswich, valued at over \$1.36 billion in exports 2016/17.
Advanced Manufacturing	Ipswich has one of Queensland's most sustained Manufacturing industries, yielding more than \$4.4 billion in exports and 10,000 jobs in 2016/17. Traditional manufacturing capabilities are being transitioned as technology and processes evolve towards more advanced manufacturing methods.
Biofutures and Resource Recovery	In 2018/19 Ipswich is considered to be positioned to become a Biofutures and Resource Recovery hub owing to its ideal central location within the South East Queensland region, access to transport corridors and available industrial land. The advantage Ipswich's existing energy infrastructure provides in enabling new investment in these emerging industries delivers more easily and readily activated opportunities.

Key Industry	Detail
Transport and Logistics	<p>Ipswich is recognised as a major warehousing logistics hub for product distribution across Australia and internationally due to its location and easy access to the western food bowl, the Port of Brisbane and Brisbane Airport.</p> <p>In 2016/17 the Transport and Logistics industry tracked steady growth yielding 3,500 jobs and over \$807 million in exports making it Ipswich's third largest export industry.</p>
Food and Agribusiness	<p>Ipswich is a major food production and distribution centre for meat, poultry, fine foods, beverages. Food and Agribusiness Value Added and Export Value show these sectors have recorded steady growth over the past five years.</p> <p>In 2015/16 the combined Food and Agribusiness industry in Ipswich employed 4,500 people and yielded over \$1.1 billion in exports, up \$200 million over the past five years. Factors of location and accessibility set Ipswich in a competitive position.</p>

2.1.3.2 Ipswich Planning Scheme 2006

The Ipswich City Planning Scheme 2006 (planning scheme) (including all amendments to the 2004 Ipswich Planning Scheme) was adopted on 14 December 2005 and took effect (i.e., commencement date) on 23 January 2006. The planning scheme divides the Ipswich Local Government Area into 8 localities which are further divided into Zones, Sub Areas and Precincts. Overlays (including maps and guidelines) are then applied, identifying characteristics of the land that identify areas that require protection or areas that constrain development.

Zoning

Industrial zoning within the planning scheme is defined under the following categories:

- **Regional Business and Industry Zone**

- The uses and works within this zone support the Business and Industry Strategy contained in the Strategic Framework.
- The uses and works within the Regional Business and Industry Investigation Zone provide regionally significant business enterprise and employment opportunities as a means to ensure that there is a high level of employment self-containment across the City and for adjoining local governments, particularly within the WESROC area.
- Some of the land within the Regional Business and Industry Zone is affected by development constraints, including flooding and mining activity.
- Within this zone, a mix of compatible business and industry activities is to be established, including significant manufacturing and some 'difficult to locate' activities.
- The zone is divided into five sub-areas with locational specific requirements including:
 - Sub Area RB1 – Wulkuraka/Karrabin
 - Low Impact Business and Industry (RB1L) and Medium Impact Business and Industry (RB1M)
 - This Sub Area is located in close proximity to potential and existing air, road and rail transport, and provides a particular opportunity for the development of transport orientated activities such as warehousing.
 - Sub Area RB2 – Bundamba/Riverview
 - Low Impact Business and Industry (RB2L) and Medium Impact Business and Industry (RB2M)
 - This Sub Area is located in close proximity to major road and rail transport infrastructure providing an opportunity for the development of transport orientated activities such as warehousing, distribution and wholesaling.
 - Sub Area RB3 – Redbank Peninsula

- Low Impact Business and Industry (RB3L) and Medium Impact Business and Industry (RB3M)
- As the area is located in close proximity to major road and rail transport infrastructure it is envisaged that Redbank will become the focus for a mixed business and industry area (MIBA) and possibly adopt a focus towards a freight transfer facility, providing an opportunity for the establishment of transport orientated activities such as warehousing, distribution and wholesaling.
- Sub Area RB4 – Carole Park
 - Low Impact Business and Industry (RB4L) and Medium Impact Business and Industry (RB4M)
 - This Sub Area is located in close proximity to major road infrastructure (the Ipswich and Logan Motorways) which provides an opportunity for the development of transport orientated activities such as warehousing, distribution and wholesaling.
- Sub Area RB5 – Swanbank/New Chum
 - Low Impact Business and Industry (RB5L) and Medium Impact Business and Industry (RB5M)
 - This Sub Area is located in close proximity to major road infrastructure (the Centenary Highway, Cunningham Highway, Warrego Highway and Ipswich Motorway) which provides an opportunity for the development of road transport reliant activities.
 - The Sub Area also provides significant opportunities for appropriate ‘difficult to locate’ industries including uses that require land extensive areas and/or high energy uses. However, waste recycling or treatment activities are discouraged unless it has no negative impact on surrounding sensitive uses.
- **Local Business and Industry Zone:**
 - The uses and works within this zone support the Business and Industry Strategy contained in the Strategic Framework.
 - The zone intends a mix of compatible business and industry activities, is established, including commercial, service and trade activities, and appropriate low impact manufacturing activities, that support and are within close proximity to Major or Neighbourhood Centres.
 - The zone is divided into several sub-areas with locational specific requirements including:
 - Sub Area LB1 - West Ipswich
 - Sub Area LB2 – Brisbane Street, Hooper Street, Keogh Street and Pound Street, West Ipswich
 - Sub Area LB3 – Karalee
 - Sub Area LB4 – Mt Crosby Road, Tivoli
 - Sub Area LB5 – Blacksoil
 - Sub Area LB6 – Yamanto
 - Sub Area LB7 – Lobb Street, Churchill
 - Sub Area LB8 – Briggs Road, Ipswich, Raceview and Flinders View
 - Sub Area LB9 – South Station Road, Swanbank Road, Fischer Road, Flinders View
 - Sub Area LB10 – Bundamba
 - Sub Area LB11 – Brisbane Road, Ebbw Vale
 - Sub Area LB12 – Monigold Place and ACIRL Street, Dinmore
 - Sub Area LB13 – Hansells Parade, Riverview
 - Sub Area LB14 – Brisbane Terrace, Goodna
 - Sub Area LB15 – Eagle Street, Redbank Plains

- Sub Area LB16 – Redbank Plains Road, Redbank Plains
- The following are consistent industrial/business uses in this zone: business use, general industry, major utility, service trades use, special industry².
- **Local Business and Industry Investigation Zone:**
 - The uses and works within the Local Business and Industry Investigation Zone provide local business and employment opportunities subject to resolution of applicable constraints such as mining, flooding, and availability of services.
 - Much of the land within the zone is affected by development constraints, including flooding, mining activity and cultural features.
 - The zone is divided into several sub-areas with locational specific requirements including:
 - Sub Area LBIA1 – Holdsworth Road, Tivoli
 - Sub Area LBIA2 – North Tivoli
 - Sub Area LBIA3 – Seidels Road Precinct, Walloon.
 - The following are consistent industrial/business uses, *if of a type and scale appropriate in the Local Business and Industry Investigation Zone*: business use, extractive industry, general industry, major utility, minor utility, service trades use, special industry³
- **Local Business and Industry Buffer Zone:**
 - The zone is primarily intended to serve as a buffer to separate business and industry uses from other sensitive uses, particularly residential areas.
 - New uses and works may be provided where they are able to demonstrate that they will have minimal to low impact and are generally land extensive or low yield activities having minimal building requirements.
 - The following are consistent industrial/business uses, *if of a type and scale appropriate in the Local Business and Industry Buffer Zone*: business use, extractive industry, general industry, major utility, service trades use, special industry⁴.
- **Special Uses Zone:**
 - The Special Uses Zone caters primarily for specified uses and works which include—
 - land used, owned or operated by Federal, State or Local Government for purposes such as municipal services, public utilities, schools, transport networks and community services
 - uses and works which by virtue of the location, intensity, combination of uses, operations and/or site characteristics are best managed in a use-specific designation
 - private community services and facilities including religious, educational and health activities.
 - The zone is divided into 80 sub-areas with locational specific approved uses. The sub areas and industrial uses potentially relevant to this project include:
 - SU15 Local Government Purposes
 - SU16 State Government Purposes
 - SU50 Defence Purposes.

² Refer to Part 4—Urban Areas, Div 11—Local Business and Industry Zone of the Ipswich Planning Scheme 2006

³ Refer to Part 4—Urban Areas, Div 12—Local Business and Industry Investigation Zone of the Ipswich Planning Scheme 2006

⁴ Refer to Part 4—Urban Areas, Div 13—Local Business and Industry Buffer Zone of the Ipswich Planning Scheme 2006

Overlays

The planning scheme outlines overlays which are a secondary organisational layer to zones. Overlays are based on special attributes of land that need to be protected, or that may constrain development. The planning scheme defines 2 overlays, and 14 constraints overlays including:

- Character Places Overlay
- Development Constraints Overlays:
 - OV1 Bushfire Risk Areas
 - OV2 Key Resource Areas, Buffers and Haul Routes
 - OV3 Mining Influence Areas
 - OV4 Difficult Topography
 - OV5 Flooding and Urban Catchment Flow Paths
 - OV6 Buffers to Highways and Regional Transport Corridors
 - OV7A Defence Regulations and Obstruction Clearance Surfaces
 - OV7B Operational Airspace, Wildlife Attraction and Lighting Issues
 - OV7C 2006 Australian Noise Exposure Forecast (ANEF) Contours
 - OV7D Explosive Storage Safeguard, Public Safety Areas and Purga Rifle Range
 - OV7E Unexploded Ordinance (UXO) Areas
 - OV8 Motorsports Buffers
 - OV9 Wastewater Treatment Buffers
 - OV11 High Pressure Pipelines
 - OV13 High Voltage Electricity Transmission Lines
 - OV14 Rail Corridor Noise Impact Management.

The Development Constraints overlays have been considered in the strategic land assessment as part of this project. Further detail is provided in Section 3 of this report.

Temporary Local Planning Instrument (TLPI)

Temporary Local Planning Instruments (TLPI) were prepared in response to recent development proposals for waste industries in the Ipswich region. To adequately regulate this unique range of 'waste activities uses', several TLPIs were drafted for the Swanbank / New Chum Waste Activity Area and the Ebenezer / Willowbank / Jeebropilly Waste Activity Area. These TLPIs:

- provide an interim policy response in respect to landfill and waste industry uses
- balance economic interests against social and environmental interests at significant risk of being impacted by the current and expected waste activity proposals
- further regulate applications for new or expanded waste activities to protect existing, approved and planned residential and other sensitive receiving uses from adverse impacts including odour, dust, noise, air quality, and amenity.

TLPI No. 1 / 2020 Swanbank / New Chum Waste Activity Area

- The purpose of the TLPI is to regulate applications for new or expanded waste activities within the Swanbank / New Chum industrial area (located within the Ipswich local government area) to ensure this regionally significant economic area is appropriately regulated to protect existing, approved or planned residential and other sensitive receiving uses, from adverse impacts associated with waste activities.

TLPI No. 2 / 2020 Ebenezer / Willowbank / Jeebropilly Waste Activity Area

- The purpose of the TLPI is to regulate applications for new or expanded waste activities within the Ebenezer / Willowbank / Jeebropilly industrial area (located within the Ipswich local government area) to ensure this regionally significant economic area is appropriately regulated to protect existing, approved or planned residential and other sensitive receiving uses (including major events and motorsports uses), from adverse impacts associated with waste activities

The intent and development considerations of the TLPs will be considered when drafting the new Ipswich Planning Scheme and have been considered in the strategic land assessment as part of this project. Council's latest policy position in relation to the use of these disturbed areas is to seek alternative remediation options and promote circular economy initiatives to reduce the need for landfill.

2.1.3.3 New Ipswich Planning Scheme

The preparation of a new Ipswich planning scheme is currently underway in response to rapid regional growth and the introduction of new planning legislation, SPP and ShapingSEQ.

Consultation on a Statement of Proposals including the draft Strategic Framework document and maps was undertaken in 2019 and the proposed policy direction contained in this framework has been assessed below.

The Statement of Proposals is an early step in the process of preparing the new planning scheme. The proposed preferred planning scheme strategies and approaches, alternative options for some areas and sites and background information were set out in the Statement of Proposals. The following section details the information pertinent to future industrial planning as outlined in the Statement of Proposals.

Draft Strategic Framework 2019

The draft strategic framework provided draft policy direction for consultation purposes to inform the preparation of the new Ipswich planning scheme with the vision supporting the development of business and industry into the future.

The framework actively promotes Ipswich as a location open to growth in industrial development and employment in appropriate locations. The aspirations in the Vision Statement that directly relate to industrial land use planning are set through setting a proposed development framework that:

- *Sustainably manages the growth and development of the city by allocating a distribution of land uses and densities across the city with sufficient capacity to accommodate the forecast population and employment growth and to accommodate the required supporting services and facilities, with a particular focus on:*
 - *a network of mixed-use centres that are key employment locations, places where the community come together and within which goods (shops), supporting services and cultural and entertainment facilities are provided.*
 - *supporting the development of a diverse and resilient economy and the creation of local jobs within the centres, designated business, and industry lands and in rural areas.*
 - *identifies the key strategic infrastructure and facilities that are required to support the further growth and development of the city.*

The Strategic Framework Map 2 Centres and Employment Land (refer to Figure 2-3) identifies land as Low, Medium and High Impact Industry, based on the proposed designations in the Local Area Framework mapping. RECs are also identified as the preferred location for employment generating activities to ensure the efficient implementation of infrastructure and facilities. Industrial uses in the region are focused within the Ipswich REC and the South West Industrial Corridor REC (refer to Figure 2-1).

It should be noted that whilst the ShapingSEQ identifies Potential Future Growth Areas in Lanefield / Grandchester to the north of Marburg. According to the draft strategic framework, these growth areas are not needed to accommodate the dwelling supply benchmarks or employment planning baselines included in the ShapingSEQ and therefore will not be required to be released to accommodate growth within the planning horizon of the new planning scheme. However, the potential of the areas for future urban growth is to be protected.

It should be noted that expansion areas may be considered as future industrial land supply in the shorter term and should be investigated further if future industrial demand outweighs the existing suitable and developable land supply in Ipswich resulting from the potential development of the EDQ Willowbank industrial area as an intermodal facility.

Business and industry areas and specialist activity nodes

Local business and industry areas are to provide a mix of compatible business and industry uses including commercial, service and trades and appropriate low impact manufacturing that support, and are within proximity to, Major or Local Centres. Regional business and industry areas are to accommodate high, medium, and low impact industries of a generally larger scale (both in terms of building size and land requirements). Reflecting their accessibility to the strategic freight network, the areas are to accommodate large scale transport and logistics uses, and where on a railway line, may accommodate an intermodal freight terminal. Regional business and industry areas (major enterprise and business areas) reflect state defined MEIAs and include:

- Carole Park
- Redbank
- Bundamba / Dinmore / Riverview
- Swanbank / New Chum
- Wulkuraka / Karrabin
- Ebenezer / Willowbank.

Specialist activity nodes comprise larger sites and areas that have an intensity and form that reflects the use and activities of the site and area and offer specific major economic development opportunities including:

- RAAF Base Amberley and adjacent properties
 - primarily developed for defence purposes relating to the operation of the Amberley Airbase and for other compatible or allied commercial, business and industrial activities, particularly relating to aeronautical engineering, research and development including joint defence and civilian activities.
 - compatible supporting and allied uses may be established adjacent to the Airbase where minimise impact to base operations and suitably serviced with infrastructure including major transport access, water and sewerage.
- Willowbank motorsports and events precinct
 - located within the Ebenezer Regional Business and Industry Area and in which allied motorsports and specialist engineering uses may be established.
- Willowbank Industrial Park at Ebenezer – Stage 1
 - awaiting trunk infrastructure activation (has an approved DA including water, wastewater, power connection, access/transport plan).
 - The specialist activity nodes do not specifically contain industrial uses.

Figure 2-2 shows the location and extent of the business and industry areas and specialist activity nodes.

Planning for Waste

Waste processing and resource recovery is a growing industry in Ipswich. According to the draft strategic framework, waste is to be managed within a 'circular economy' model and waste management hierarchy. The proposed policy aims to maximise the associated economic benefits of managing waste as a resource including through the establishment of specialised industrial and business uses. The occurrence of former open cut mining voids located within the LGA has resulted in the establishment of waste activities including landfills and compost manufacturing, particularly in the regional business and industry areas of Swanbank / New Chum and Ebenezer / Willowbank (refer to Figure 2-4). Council's latest policy position in relation to the use of these disturbed areas is to seek alternative remediation options and promote circular economy initiatives to reduce the need for landfill.

Local Area Frameworks

The draft strategic framework divides the LGA into thirty local area strategic planning units based on geographically identifiable communities of interest (areas with identifiable boundaries and within which there are broad land use and planning commonalities) to which individual Local Area Frameworks (LAF) were prepared. The following LAFs and summary of considerations are relevant to future planning of industrial development (refer to Table 2-2).

Figure 2-2 Local Area Framework Map



Table 2-2 Local Area Framework Summary - Industrial Development Considerations

Local Area Framework	Description	Key Development Constraints	Industrial / Employment Growth Management	Key Infrastructure
Area 2 Carole Park	Suburb of Carole Park and includes the Carole Park and Synergy Park Industrial Estates. Provides a diversity of industrial and allied employment opportunities.	<ul style="list-style-type: none"> • Include flooding of Sandy Creek and Bullock Head Creek • Bushfire risk area • High pressure gas pipeline • High voltage electricity transmission lines. 	<ul style="list-style-type: none"> • A transition from lower impact business and industry uses on the edge to medium impact activities towards the centre, with environmental management areas on the periphery to mitigate residential amenity and environmental impacts which may affect adjacent sensitive land uses. • There is a significant opportunity for the infill of vacant industrial lots and redevelopment of older and underutilised sites to makes efficient use of, consolidate and allow for expansion of industrial activities without compromising the amenity of nearby residential areas. 	<ul style="list-style-type: none"> • Logan Motorway and Centenary Highway • A mix of three arterial and sub-arterial road networks.
Area 6 Redbank and Collingwood Park	Suburbs of Redbank and Collingwood Park	<ul style="list-style-type: none"> • Mining constraints, including past surface and underground mining • High voltage electricity transmission lines • High pressure pipelines including gas pipelines and the former high-pressure oil pipeline • Bushfire • Flooding • Major transport infrastructure corridors. 	<ul style="list-style-type: none"> • The Area comprises a mixture of uses with the northern part of the Area between the Ipswich Motorway and Brisbane River providing the Redbank regionally significant major enterprise and industrial area. • The Redbank MEIA includes the former Queensland Rail workshops, DB Schenker logistics, Northline, TNT Express, Rheinmetall Defence and Australia Post and Coles distribution facilities • The area provides for defence industries and major fabrication, transport and logistics functions which are intended to transition from lower impact uses on the edge to medium impact activities towards the centre, with environmental management areas on the periphery to provide appropriate separation and buffering to the Brisbane River and nearby sensitive land uses. • Future development in the Redbank regional business and industry area includes medium impact industry areas that provide for a mix of industry uses, located in the centre of the area generally between Monash Road and Weedman Street; and low impact industry areas that provide a mix of industry and service trade uses, located towards to the edge of the area which provide a transition from the medium impact activities in the centre. 	<ul style="list-style-type: none"> • The Ipswich to Brisbane railway line, with a station and park and ride facility at Redbank • Ipswich Motorway • Future (long term) Goodna Bypass corridor north of the Ipswich Motorway though the Redbank regional business and industry area.
Area 7 Swanbank, New Chum, New Chum,	Suburbs of Swanbank, New Chum and part of Redbank Plains	<ul style="list-style-type: none"> • Mining constraints, including past surface and underground mining and past and existing quarrying operations 	<ul style="list-style-type: none"> • Intended to develop primarily as a regionally significant employment area, providing for a mix of low to medium impact industry uses, land-extensive activities, recreational and environmental management uses. 	<ul style="list-style-type: none"> • The extension to the future Ipswich to Springfield railway line, Centenary and Cunningham Highways, an arterial and sub-arterial road network.

Local Area Framework	Description	Key Development Constraints	Industrial / Employment Growth Management	Key Infrastructure
<p>Redbank Plains (part)</p>		<ul style="list-style-type: none"> • Contamination from past mining (including underground and spoil fires), past and current, industrial uses (including extractive industries), and land fill sites • Major transport infrastructure corridors • High voltage electricity transmission lines • High pressure pipelines • Difficult topography • Flooding • Heritage site. 	<ul style="list-style-type: none"> • Significantly altered from its natural landform as a result of past mining and extractive industry uses and contains a mix of established industrial activities, including a range of extraction, waste, resource recovery and energy generation uses. • The operational integrity of the Swanbank power station, including the adjacent water storage lagoon, is to be protected from the encroachment of sensitive development. • Degraded and contaminated sites (including former mining sites and overburden stockpiles) are rehabilitated. • Provides for a mix of medium and low impact industrial development as well as industry investigation areas including some difficult to locate recreation uses and adventure sports and a business park area at the southern end of Swanbank adjacent to the Ripley major centre, providing a mix of business, service trades and low impact industry uses. • Waste is to be managed within a ‘circular economy’ model and waste management hierarchy with waste activities generally limited to: <ul style="list-style-type: none"> – The filling and rehabilitation of mining voids within the identified Waste Activity Areas – The filling and rehabilitation of mining voids involving only clean earthen material within the identified Waste Activity Buffer Areas – Landfills and enclosed compost manufacturing development within the identified Waste Activity Areas as shown on the Strategic Framework Map 4 - Waste Activity and Buffer Areas map that are developed in a manner that: <ul style="list-style-type: none"> – Establishes and maintains native vegetation buffers to improve amenity or environmental impacts particularly where situated close to residential areas or riparian corridors – Retains and maintains significant existing vegetation, particularly remnant native vegetation and areas of environmental significance 	

Section 2 Background Assessment and Gap Analysis

Local Area Framework	Description	Key Development Constraints	Industrial / Employment Growth Management	Key Infrastructure
			<ul style="list-style-type: none"> – Does not adversely affect surface or ground water quality, including through storm water runoff or the dewatering of former mines, and where possible, improves the quality of nearby surface and ground water – Does not adversely affect stormwater management and where possible, improves the management of the catchment. – Waste to energy facilities that are co-located where practicable with existing or planned power generation stations, have access to the electricity grid, and provide the opportunity for combined heat and power generation to be utilised by high energy users such as industrial activities – Unenclosed compost manufacturing is avoided in the Area. 	
Area 8 Riverview	Suburb of Riverview including the Riverview regionally significant MEIA	<ul style="list-style-type: none"> • Mining constraints, including past surface and underground mining, flooding • Major transport corridors • High voltage electricity transmission lines • High pressure pipelines • Difficult topography • Potential contamination from past mining and industrial activities. 	<ul style="list-style-type: none"> • The northern part of the area between the future Goodna Bypass corridor and Brisbane River provides for the Riverview regionally significant major enterprise and industrial area. • The areas where significant development will occur are in the Riverview regional business and industry area: <ul style="list-style-type: none"> – Medium impact industry areas that provide for a mix of industry uses, located in the centre of the area to the north of the Warrego Highway – Low impact industry areas that provide a mix of industry and service trade uses, located to the north of the future Goodna Bypass corridor which provide a transition from the medium impact activities – Business park areas (northern portion of the Citiswitch Business Park) that provide for a mix of compatible business, service trades and low impact industry uses that provide high quality, attractive street facades, particularly where viewed from the Warrego Highway and nearby residential areas. 	<ul style="list-style-type: none"> • Ipswich to Brisbane railway line, with a station at Riverview, Cunningham and Warrego Highways which merge into the Ipswich Motorway, Moggill ferry, arterial and sub-arterial road network.
Area 9 Bundamba, Blackstone,	Suburbs of Bundamba, Blackstone, Ebbw Vale and Dinmore	<ul style="list-style-type: none"> • Significant areas are impacted by mining constraints, including past surface and underground mining • Flooding 	<ul style="list-style-type: none"> • Significant development will occur in the Bundamba regional business and industry area, also known as the Citiswitch Business Park which will include medium impact industry and business park uses. 	<ul style="list-style-type: none"> • Ipswich to Brisbane railway line, with stations at Bundamba, Ebbw Vale and Dinmore, Cunningham and Warrego Highways, future (long term)

Section 2 Background Assessment and Gap Analysis

Local Area Framework	Description	Key Development Constraints	Industrial / Employment Growth Management	Key Infrastructure
Ebbw Vale and Dinmore	including the Bundamba regionally significant MEIA between the Warrego Highway and the Ipswich to Brisbane railway line	<ul style="list-style-type: none"> • Bushfire • High voltage electricity transmission lines • Difficult topography • Bundamba wastewater treatment plant. 		Goodna Bypass corridor, arterial and sub-arterial road network.
Area 11 North Ipswich, Tivoli, North Tivoli and Moores Pocket	Suburbs of North Ipswich, Tivoli, North Tivoli and Moores Pocket	<ul style="list-style-type: none"> • Flooding • Mining constraints comprising of past underground and open cut mining • High voltage electricity transmission lines • Past mining and industrial land use activities associated with the former woollen mills and the workshops rail museum may have resulted in a risk of contamination. 	<ul style="list-style-type: none"> • Local business and Industry Investigation Areas located along Mount Crosby Road and Warrego Highway, North Tivoli that may provide for a mix of low impact, land extensive industry uses that have minimal building requirements. 	<ul style="list-style-type: none"> • Warrego Highway, future new all transit modes Bremer River crossing, arterial and sub-arterial road network.
Area 15 Raceview, Flinders View, Ipswich (part)	Suburbs of Raceview and Flinders View, and part of the suburb of Ipswich (south of Salisbury Road)	<ul style="list-style-type: none"> • Operational air space (height restrictions) associated with RAAF Base Amberley • Major transport infrastructure corridors, • High pressure pipelines, • High voltage electricity transmission lines, • Mining constraints, • Flooding. 	<ul style="list-style-type: none"> • There are several small local business and industry areas zoned for low impact industry. 	<ul style="list-style-type: none"> • Cunningham Highway, an arterial and sub-arterial road network.
Area 16 Churchill	Area comprising the majority of Churchill	<ul style="list-style-type: none"> • Flooding • Difficult topography • Major transport infrastructure corridors • Operational air space (height restrictions) associated with RAAF Base Amberley. 	<ul style="list-style-type: none"> • There are opportunities for development and infill of the existing local business and industry area along Lobb Street. 	<ul style="list-style-type: none"> • The extension for the future Ipswich to Springfield railway line from the Ipswich City Centre to Springfield Central station • A bus corridor from the Ipswich City Centre to Yamanto via Warwick Road • Warwick Road arterial road network and Lobb Street sub-arterial road network.
Area 17 Yamanto, Churchill (part)	Suburb of Yamanto and part of Churchill (in the north-east area)	<ul style="list-style-type: none"> • Flooding • Operational air space (height restrictions) associated with RAAF Base Amberley. • Major transport infrastructure corridors 	<ul style="list-style-type: none"> • The business park area fronting the northern side of Warwick Road which will include a mix of compatible business, service trades and low impact industry uses. • Local business and industry area located along Berry, Belar and Hall Street, Yamanto 	<ul style="list-style-type: none"> • the extension for the future Ipswich to Springfield railway line from the Ipswich City Centre to Springfield Central station

Section 2 Background Assessment and Gap Analysis

Local Area Framework	Description	Key Development Constraints	Industrial / Employment Growth Management	Key Infrastructure
		<ul style="list-style-type: none"> Former high-pressure oil pipeline High voltage electricity transmission lines Past and current industrial, intensive animal husbandry (abattoirs and holding yards) Rural activities such as cattle dips may have resulted in a risk of land contamination. 	<ul style="list-style-type: none"> Special opportunity area (SA87) includes low impact industry uses such as service trades uses. 	<ul style="list-style-type: none"> Warwick Road arterial road network and Lobb Street, Ash Street and Pisasale Drive sub-arterial road networks a bus corridor from the Ipswich City Centre to Yamanto via Warwick Road.
Area 18 Ripley Valley	Suburbs of Ripley, South Ripley, Deebing Heights and White Rock, and parts of Spring Mountain, Flinders View, Raceview and Goolman	<ul style="list-style-type: none"> Operational air space (height restrictions) and ANEF (aircraft noise) associated with RAAF Base Amberley. 	<ul style="list-style-type: none"> The majority of the Area (4,680 hectares) is currently included within a Priority Development Area <i>note: land within the Priority Development Area will not form part of the Ipswich planning scheme, however this area has been included within the strategic framework in order to clearly demonstrate the linkages with the surrounding local government area.</i> A local business and industry area located near the intersection of Fischer Road and Swanbank Road, Raceview Special opportunity area (SA90) exists within the Area for a mix of non-residential activities that do not detrimentally impact on existing uses which includes low impact industry uses such as service trades uses. 	<ul style="list-style-type: none"> The extension for the future Ipswich to Springfield railway line from the Ipswich City Centre to Springfield Central station Cunningham and Centenary Highways A mix of nine arterial and sub-arterial road networks.
Area 20 Amberley	Suburb of Amberley	<ul style="list-style-type: none"> Operational air space (height restrictions) associated with RAAF Base Amberley, with the entire Area being impacted by the operations of the base Major transport infrastructure corridors The secondary buffer area of the Ipswich Motorsport Precinct A potential wastewater treatment plant located outside of the Area on the southern side of the Cunningham Highway which includes an 800 m buffer that extends into the south-western part of the Area A former high-pressure oil pipeline Flooding. 	<ul style="list-style-type: none"> RAAF Base Amberley adjacent to the Ebenezer Regional Industrial Area, which together form part of the Ipswich Regional Economic Cluster Adjacent land to the RAAF Base Amberley, is well located as a potential industry investigation area to support aviation manufacturing and services. 	<ul style="list-style-type: none"> Upgrade to Cunningham Highway to improve capacity proposed Western Ipswich Bypass link between the Warrego Highway at Haigslea and the Cunningham Highway at Willowbank an arterial and sub-arterial road network which includes Ipswich Rosewood Road and Ipswich Rosewood Road to Walloon.

Section 2 Background Assessment and Gap Analysis

Local Area Framework	Description	Key Development Constraints	Industrial / Employment Growth Management	Key Infrastructure
Area 21 One Mile, Leichhardt and Wulkuraka (part)	Suburbs of One Mile and Leichhardt, and part of Wulkuraka and Karrabin	<ul style="list-style-type: none"> • Operational air space (height restrictions) associated with RAAF Base Amberley • Major Transport Infrastructure Corridors • High Voltage Electricity Transmission Lines • Bushfire Risk Areas • Flooding. 	<ul style="list-style-type: none"> • The Area comprises a mixture of light and medium impact industry areas. Significant development opportunities occur in in the low impact industry area along Chalk Street and Toongarra Road south of the Wulkuraka railway station and the medium impact industry area south of Wulkuraka railway station and Karrabin Rosewood Road. There is opportunity for an industry investigation area along Karrabin Rosewood Road at the north of the Area. 	<ul style="list-style-type: none"> • Ipswich to Rosewood railway line, with stations at Karrabin and Wulkuraka • A mix of four arterial and sub-arterial road networks.
Area 22 Karrabin (part), Blacksoil (part)	Suburb of Karrabin and parts of Blacksoil and Wulkuraka	<ul style="list-style-type: none"> • Operational air space (height restrictions) associated with RAAF Base Amberley • Major transport infrastructure corridors • High voltage electricity transmission lines • Bushfire risk areas • Flooding. 	<ul style="list-style-type: none"> • Industrial areas are located to the south of the area including: <ul style="list-style-type: none"> – Bradkens Foundry, located between Karrabin Rosewood Road and the Ipswich to Rosewood railway line in the south of the Area, producing heavy machinery components for use in the rail and mining industries – An industry investigation designation south of the Ipswich to Rosewood railway line providing for future opportunities for extension of the industrial areas to the east in Wulkuraka. 	<ul style="list-style-type: none"> • Ipswich to Rosewood railway line, with Karrabin Station located along Karrabin Rosewood Road • Warrego Highway, and a mix three arterial and sub-arterial road networks.
Area 27 Ebenezer, Willowbank, Jeebropilly, Mount Forbes, Mutdapilly	Suburbs of Ebenezer, Willowbank, Jeebropilly, Mount Forbes and Mutdapilly	<ul style="list-style-type: none"> • Mining constraints, including past and current surface and underground mining and associated mining voids • Operational air space (height restrictions) • Wildlife attraction, extraneous lighting restrictions • ANEF (aircraft noise) • Contamination from past and current mining • Major transport infrastructure corridors • The primary and secondary buffer areas of the Willowbank (Ebenezer) motorsports and events precinct • Bushfire risk area • Decommissioned high-pressure oil pipeline • High voltage electricity transmission lines • Flooding. 	<ul style="list-style-type: none"> • Uses include the Willowbank (Ebenezer) motorsports and events precinct and the emerging regionally significant major enterprise and industrial area at Ebenezer which will form part of the Ipswich Regional Economic Cluster (REC) and includes the existing Ti-Tree Bioenergy Facility and Powerlink site. • The emerging Ebenezer Regional Industrial area comprises a substantial proportion of the broad hectare and serviced industrial land needed in Ipswich and South East Queensland that transitions from lower impact industry uses on the edge and near sensitive uses, to medium impact industry uses towards the centre. • Four Ebenezer Regional Industrial Area Planning Units separate the preferred pattern of land uses into manageable master planning areas with each Planning Unit containing different characteristics and development constraints. • Protection of the operational efficiency of RAAF Base Amberley 	<ul style="list-style-type: none"> • Upgrade to the highway network to service the area including upgrade to the Cunningham Highway, provision of two interchange points along the Cunningham Highway to facilitate access to the emerging Ebenezer Regional Industrial Area and Willowbank (Ebenezer) motorsports and events precinct • Proposed Western Ipswich Bypass link • Future proposed Cunningham Highway upgrade will result in the removal of direct access to and from the highway at Champions Way and will instead rely on an underpass • Upgrading of the majority of arterial, sub-arterial and connecting streets within and entering the area • Protection of the proposed Southern Freight Rail / Inland Rail corridor alignment and identified future intermodal freight terminal

Section 2 Background Assessment and Gap Analysis

Local Area Framework	Description	Key Development Constraints	Industrial / Employment Growth Management	Key Infrastructure
			<ul style="list-style-type: none"> The protection of the operational integrity of the Willowbank (Ebenezer) motorsports and events precinct. The Minister for Economic Development Queensland (EDQ) owns approximately 548ha of land adjacent to the Cunningham Highway, west of Ipswich CBD within the Western Corridor Precinct that includes Willowbank. Approval was granted in 2017 for 100ha to establish Willowbank Industrial Park Stage One including 18 lots plus two balance lots varying in size from 8000m² to 20ha. It is forecasted that Willowbank Stage One will deliver over 2500 Full Time Equivalents (FTE) jobs by 2035. 	<ul style="list-style-type: none"> Provision of a crucial north-south arterial road providing a link between Coopers Road and Ipswich to Rosewood Road Investigation of opportunities to capitalise on the existing rail spur line. Infrastructure included in the Willowbank Industrial Park Stage 1 approval: <ul style="list-style-type: none"> – At grade intersection on the Highway in the short term with a grade separated intersection in the long term north of Goebels Road. TMR plan major interchange and connection between the two highways. – Water servicing planning including approval for a water reservoir, pump station, 375ml pipe/ pipe enhancement to/from the airport. – Wastewater planning including on- site treatment and disposal (pump out first 150EPs, package treatment plant to 1500EPs, oxidisation ditch 3000EPs) to 138ha of irrigated woodland. – Timing of infrastructure pending the outcome of business case for intermodal hub however EDQ advise no infrastructure prior to 2023-24.

Figure 2-2 Local Area Framework Map

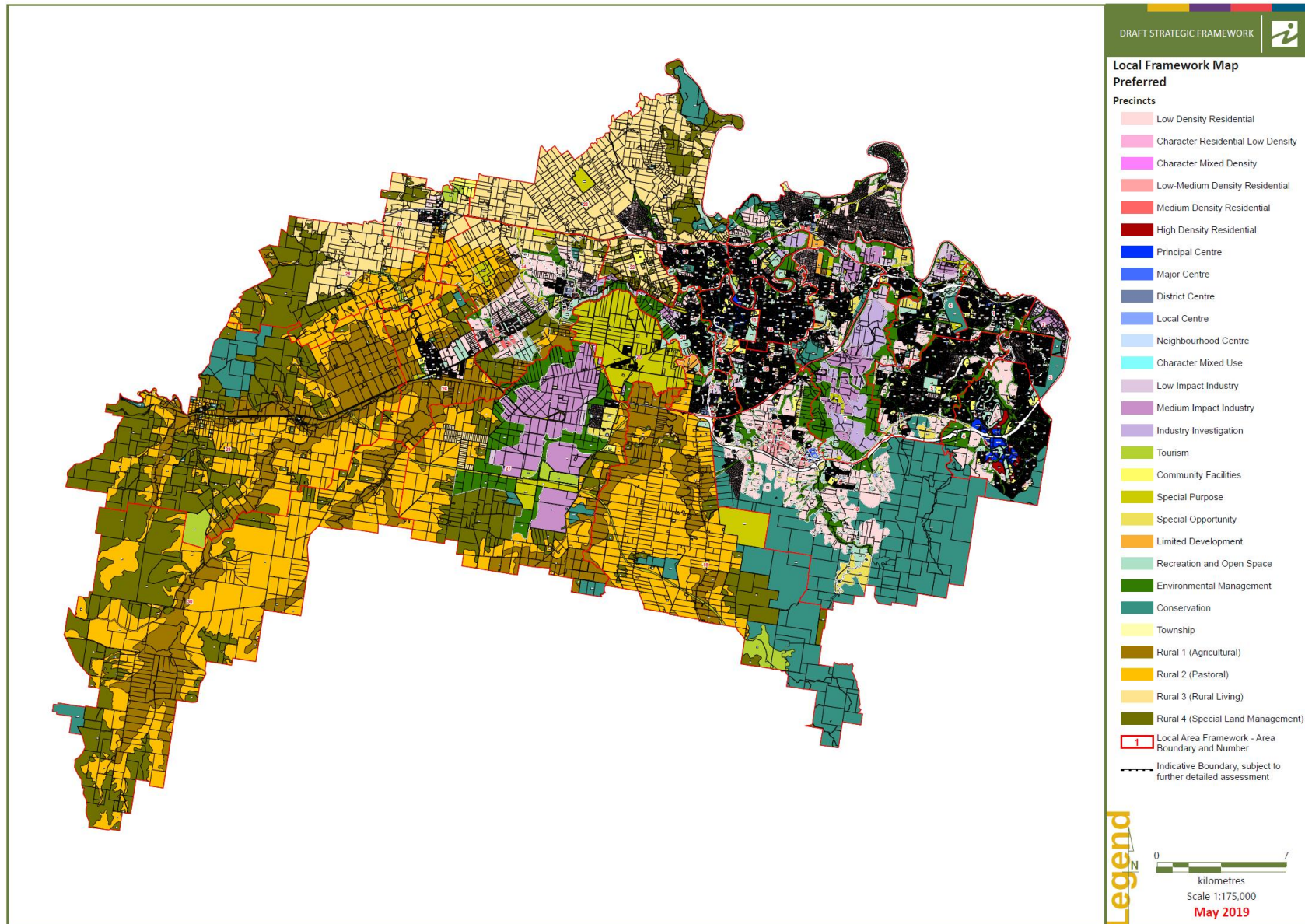
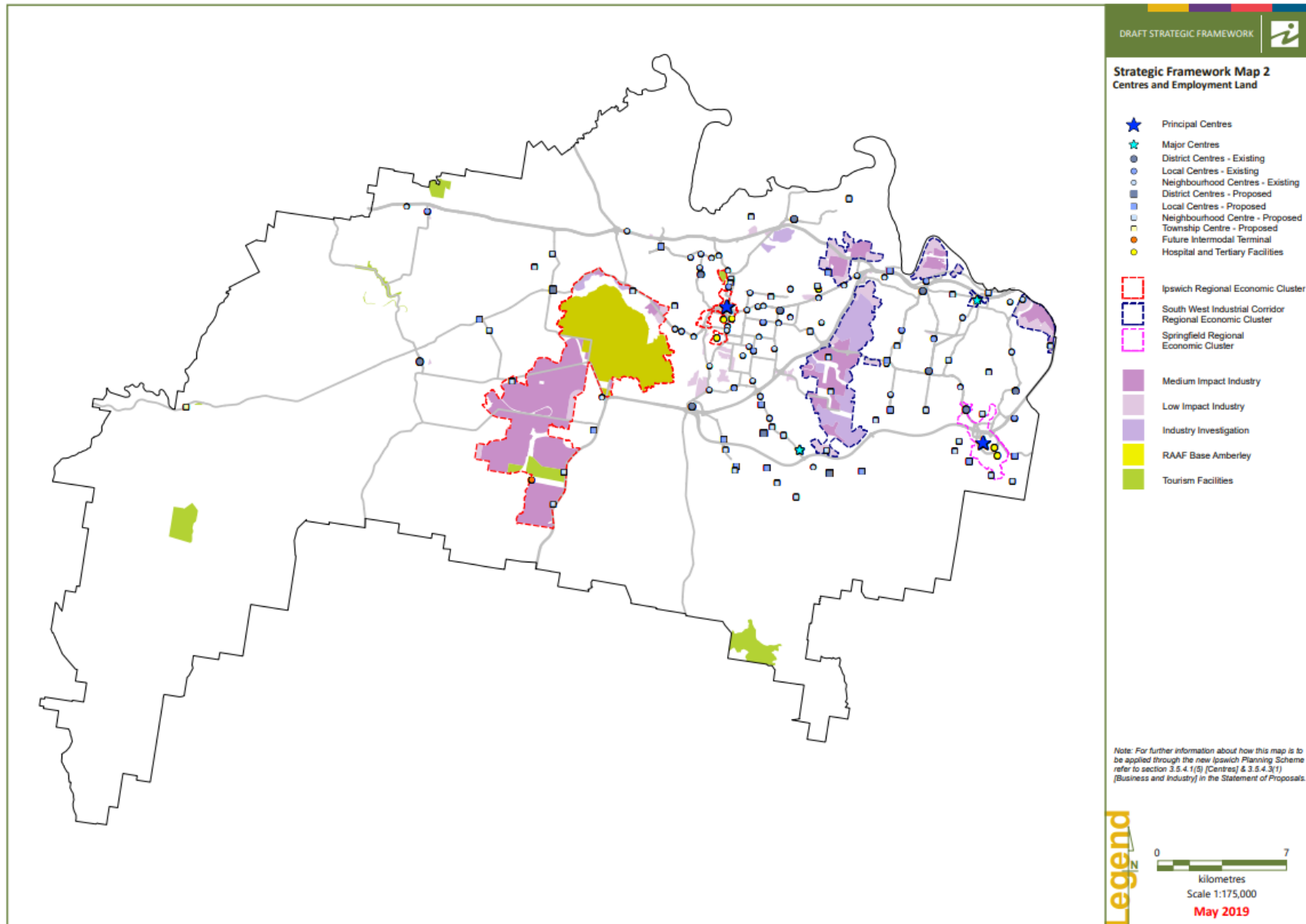
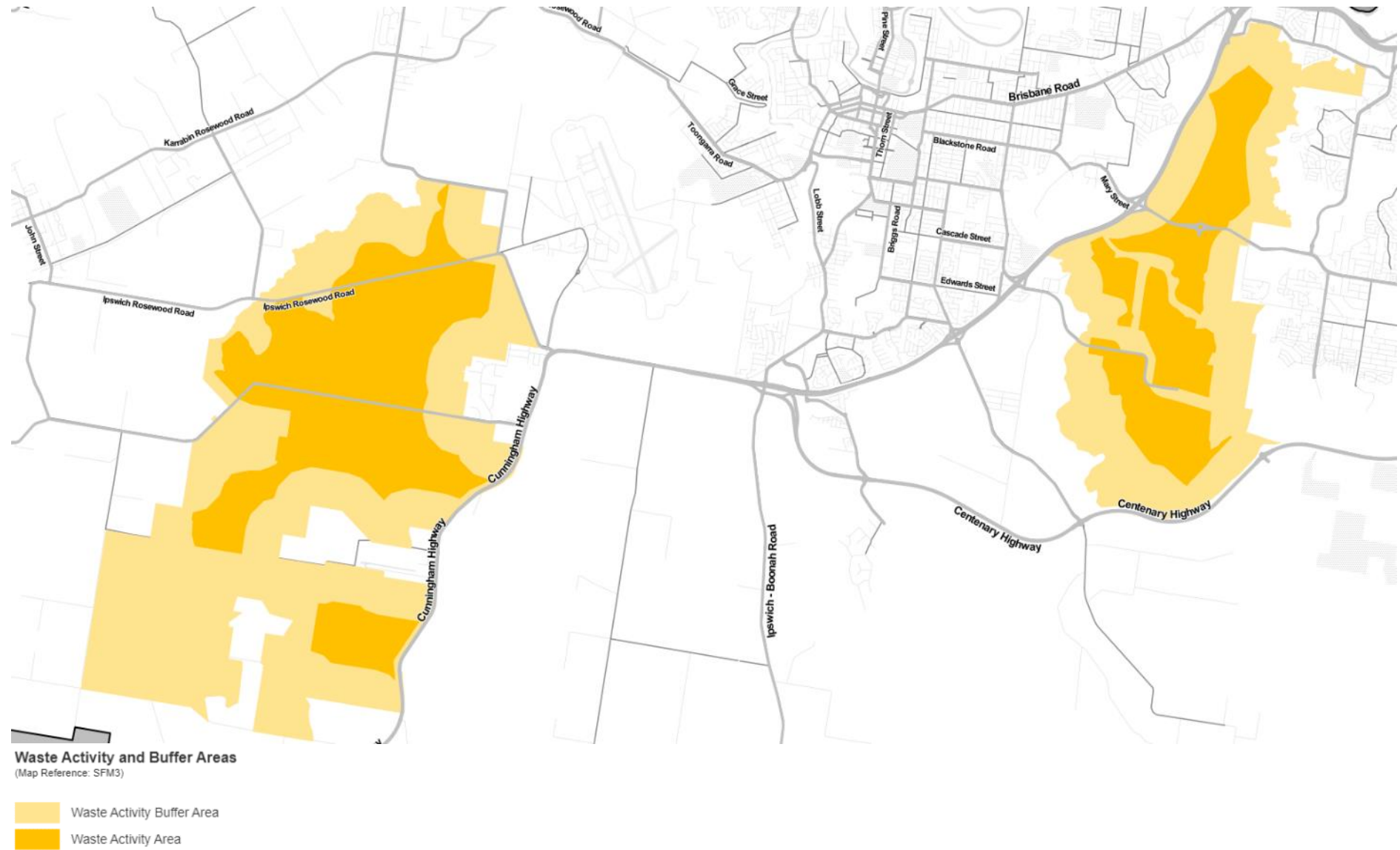


Figure 2-3 Draft Strategic Framework Map 2 Centres and Employment Land



Source: Draft Ipswich Planning Scheme 2009

Figure 2-4 Waste Activity Areas



Source: Draft Ipswich Planning Scheme 2009

2.2 Literature Review

The following section details the results of a literature review of various recent and publicly available studies that relate either directly or indirectly to Ipswich City and its role, function, and contribution to the regional, state and national industrial markets. The outcome of this review provides a summary of Ipswich's current industrial supply, demand and future planning; more specifically:

- Ipswich City's role and function in industrial markets.
- Estimates of remaining supply and consumption rates.
- Estimates of employment generation and demand, having regard to how estimates have been generated.
- Conclusions or recommendations relating to serviced and unserved industrial land needs within Ipswich City including consideration of need for serviced and unserved land.

2.2.1 iGO Freight Action Plan (PSA Consulting and CDM Smith 2020)

The City of Ipswich developed the City of Ipswich Transport Plan, branded as 'iGO' in 2016. It serves the purpose of being Ipswich City Council's masterplan for the City's transport future. The iGO strategy outlines Council's aspirations to advance the city's transport network to accommodate a growing population (PSA Consulting, 2020).

The report draws upon a variety of key references which highlights Ipswich's role and function in industrial markets including:

- There is an estimated 300-year supply of industrial land within Ipswich City Council (according to an Urbis study).
- The Planning Scheme identifies approximately 8,000 hectares of zoned industrial land located across the LGA of which approximately 3,000 hectares has been developed. Much of the remaining 5,000 hectares is considered as unsuitable for development, being located in areas that were previously mined for coal, and subject to both settlement and ground water pollution.
- Ebenezer and Willowbank have been identified as 'future industrial land' areas and will help support ongoing economic growth in Ipswich City Council. In particular, Ebenezer has been identified as a 'greenfield industrial area', and a site for the location of large-scale manufacturing facilities, distribution centres and warehousing.
- The report indicates that EDQ is in the process of facilitating staged development of 350 hectares of industrial land across the Ebenezer Regional Industrial Area and the Willowbank Industrial Park. This site is also recognised to be the location of the proposed multi-modal terminal site for Inland Rail. However, regardless of whether the proposed intermodal terminal at Ebenezer eventuates, the report states the large industrial allotments identified for Ebenezer will continue to remain attractive to logistic, warehousing and distribution centre operators.

2.2.2 Australian Rail Track Corporation (ARTC) Inland Rail

Inland Rail comprises a 1,700-kilometre freight rail line which will connect Melbourne and Brisbane via regional Victoria, New South Wales and Queensland. Inland Rail will assist in addressing Australia's increasing freight demand, as well as stimulate new opportunities for businesses, industries and regional communities (Inland Rail, 2020). Of particular importance to the project, is that two sections of the proposed rail line will run directly through Ipswich Local Government Area (LGA) including:

- Helidon-to-Calvert
- Calvert-to-Kagaru

Specifically, the Calvert-Kagaru stretch, a 53 kilometre stretch of rail line which runs through Ipswich LGA, will provide access to significant freight distribution centres at Bromelton and Acacia Ridge. In addition to the current terminal located at Acacia Ridge, the Australian Rail Track Corporation (ARTC) has developed a Business Case for Inland Rail (2015) which considers the potential for an intermodal terminal located within the Ebenezer Major Enterprise and

Industrial Area (MEIA). Intermodal terminals provide an area for the consolidation, storage and transfer of freight between rail and road, and can assist in providing broader connection to regional networks and supply chains, as well as support the development of complementary infrastructure. No final decision has been made on the outcome of an intermodal terminal at Ebenezer as the SEQ Intermodal Business Case is currently underway in a joint venture between the state and federal governments. However, if developed, there is potential for the intermodal terminal to attract significant investment for industrial activity.

2.2.3 Willowbank Intermodal Social and Economic Impacts and Benefits Study (CDM Smith 2020)

Willowbank Intermodal Social and Economic Impacts and Benefits Study prepared by CDM Smith (2020) examined the social and economic benefits and impacts relating to the proposed construction of the Willowbank Intermodal Terminal, located within the Ebenezer Major Enterprise and Industrial Area (MEIA). The economic impacts of the proposed Willowbank Intermodal Terminal were considered in terms of a 'status quo/do nothing' scenario and looked at impacts on industrial land demand. Table E4 of the Executive Summary details the following economic impacts on industrial land demand:

- *Intermodal terminal is anticipated to increase demand for industrial land within the Ebenezer MEIA by an additional 20.7 hectares to 44.3 hectares in 2036, increasing to 42 hectares to 90 hectares by 2046 relative to the status quo/do nothing scenario.*

Specifically, the report refers to the impact on industrial land demand in terms of 'freight forwarders' and 'proximate businesses'. The report identified transport support services and storage as 'freight forwarder' industries likely to be stimulated by adjacency to the intermodal rail terminal, while for 'proximate businesses', twelve industrial land sectors were identified which would be likely to utilise industrial land, namely:

- Wholesale trade
- Transport support services and storage
- Road transport
- Telecommunications services
- Heavy and civil engineering construction
- Construction services
- Structural metal product manufacturing
- Non-residential building construction
- Rail transport
- Paper stationary and other converted paper product manufacturing
- Human pharmaceutical and medicinal product manufacturing
- Motor vehicles and parts, other transport equipment manufacturing

The report concluded the following economic impacts on industrial land for 'freight forwarders' and 'proximate businesses':

- **Freight forwarders:** With the proposed Willowbank Intermodal Terminal, the freight forwarders would locate adjacent to the facility to maintain efficient operation of the terminal. The report provided capacity estimates of 350,000 TEUs, 500,000 TEUs and 750,000 TEUs. Industrial land demand by freight forwarders is anticipated to be 14 to 30 hectares at build out (assumed to be 2036), with this land not demanded under the status quo (do nothing) scenario.
- **Proximate businesses:** it is expected the presence of the Willowbank Intermodal Terminal would entice businesses to the Ebenezer MEIA, which may have otherwise chosen to relocate to other parts of South East

Queensland. The estimates revealed that the industrial land demand generated by proximate businesses was in the order of 6.7 to 14.3 hectares by 2036, increasing to 28 to 60 hectares by 2046, with this land not demanded under the status quote (do nothing) scenario.

2.2.4 Ipswich Central to Springfield Central Public Transport Corridor (I2S) (PWC)

The Ipswich Central to Springfield Central Public Transport Corridor is a designated but undeveloped public transport corridor between Ipswich City Centre and Springfield Town Centre via Ripley and Redbank Plains.

Using population projection data (medium series) provided by Queensland Treasury (2018), it is estimated by 2026, the corridor between Ipswich Central and Springfield Central will become home to a population of 163,000 people, which will require an additional 56,000 new jobs. The Ipswich Central to Springfield Central Public Transport Corridor proposes to directly service this population and provide a regional link, allowing residents to have greater access to jobs and services across the wider Ipswich LGA. Ripley Valley is recognised to be the primary source of anticipated urban residential growth along this corridor.

2.2.5 Queensland Government Land Supply and Development Monitoring Report Technical Notes

The technical notes offer information on the data collected, compiled and reported for the release of the South East Queensland (SEQ) Regional Plan (ShapingSEQ) Growth Monitoring Program's (GMP) Land Supply and Development Monitoring (LSDM) Report (Queensland Government, 2019).

Key findings from a review of this document include the following:

- The GMP annually monitors land supply and development activities for both residential and non-residential land uses in SEQ, including industry.

Planned industrial land supply/take-up

- The estimated take-up of developed industrial land between 2011 and 2018 in Ipswich was about 1056 hectares, and this occurred on land zoned for low and medium impact industry and industry investigation.
- As at 2018, there were approximately 4165 hectares of planned industrial land in Ipswich and this was intended to occur on land zoned for medium and low impact industry, and in an industry investigation area of approximately 2945 hectares.

Planned industrial employment supply

- As whole, both the capacity and realistic availability of planned industrial and employment supply of land in Ipswich meets the minimum of 15 years of supply required by ShapingSEQ.
- However, the report recognises factors such as the feasibility of development and lower than assumed employment densities would play a role in reducing the availability of land for industrial development and employment.
- In particular, the capacity of planned industrial employment supply in Ipswich equates to about 171,200 employees, though the realistic availability of this supply is about 67,450 employees.
- Most of the capacity of this supply is recognised to be at Ebenezer and Swanbank.
- These figures are significantly greater than the 2041 industrial employment planning baseline, of about 8,700 employees.
- It is noted that the realisation of this intended industrial employment supply would be supported by the development of the Melbourne to Brisbane Inland Rail and the long-term opportunities for a transport and logistics hubs.
- Specifically, the report highlighted how a potential link to support freight movement between the Logan Motorway and Ebenezer could help to support the realisation of the planned industrial employment supply.

- It is, however, important to recognise that Council is currently preparing a new planning scheme which may alter planned industrial supply in Ipswich. The LSDM will be informed by the new planning scheme and impacts of changes to planned industrial employment supply included in future reporting.

2.2.6 Waste Management and Resource Recovery Strategy

There is growing community support for better waste management in Queensland and the Waste Management and Resource Strategy (Waste Strategy), which has been developed in partnership with industry and local governments, presents a significant shift in the way waste is managed in Queensland (Queensland Government, 2020).

The strategy recommends a transition towards a ‘circular economy’ where products and materials are able to remain circulating within the economy for their highest values, and as long as possible, via reuse, recycling, manufacturing, delivering products and services, and sharing. In doing so, waste is able to be identified as a potential resource which is able to provide opportunities for both the economy and the environment.

Key findings from a review of this strategy include the following:

- Between 2017-18, Queensland produced nearly 11 million tonnes of waste, with this increase surpassing population growth by 19 per cent.
- Of this amount of waste generated, 4.9 million tonnes, or around 45 per cent of waste was recycled.
- Regardless, this figure for recycling was identified to be well below the national average of resource recovery across all of the Australian jurisdictions, and well below those states which recorded the highest recycling rates.
- Over the last 10 years there has been an increase in the amount of waste going to landfill in Queensland, while the recycling rate has remained steady.
- Due to an absence of both policy certainty and strategic direction, this has precluded investment in the recycling and resource industry in Queensland.
- As landfill capacity is reduced there will be increasing pressure of on the resource recovery sector to ensure there are sites available for the separation and processing of materials, as well as for disposal.
- There are a range of funds which are being implemented by the Queensland Government which could support the development of future waste disposal and industry sites including:
 - The establishment of a \$100 million three-year Resource Recovery Industry Development Program and
 - The announcement of a \$5 million Waste to Biofutures Fund.

While the strategy was written at a higher strategic level and no reference was made particular to Ipswich City Council, the region is recognised as having a potentially significant role in the development of circular economy initiatives for resource recovery industries in South East Queensland (SEQ) and broader QLD as a whole. The strategy provides an opportunity for Local Governments to work with Queensland Government to review and plan infrastructure to deliver optimal waste recycling and recovery.

Accordingly, the Waste Management and Resource Recovery Strategy has the potential to significantly influence Ipswich City, particularly for industrial land demand. The potential impacts can be characterised in terms of job creation and diversifying the Ipswich City economy, providing these opportunities are in alignment with Councils Waste and Circular Economy policy position. The proposed Swanbank Clean Energy and Resource Recovery Precinct and New Chum Landfill Site demonstrate the potential impact of this policy initiative on Ipswich City.

2.2.8 SEQ Growth Monitoring Best Practice Research Phase 2 - Land Supply Types and Developability Rules - Review of Local Variations Final Report (RPS 2019) / SEQ Growth Monitoring Best Practice Research Phase 2 – Industrial Land Supply Developable Area Final Report (RPS 2019)

Purpose of the Reports

These reports were prepared to progress the Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) and Queensland Government Statistician's Office (QGSO) Land Supply and Development Monitoring component of the South East Queensland (SEQ) Growth Monitoring Program (GMP).

The purpose of *Land Supply Types and Developability Rules - Review of Local Variations Final Report* (RPS Report 2018) is to identify best practice methods to determine developable Land Supply, including the use of standardised land supply types and developability rules for both residential and industrial uses. The land supply types and developability rules will inform the ongoing development of land supply databases and determination of developable areas across SEQ.

The *Industrial Land Supply Developable Area Final Report* (RPS Report 2018) was to provide a first principles review to determine the relevant zones and precincts to include in the SEQ industrial land supply study Planning Intent GIS layer. The report reviews:

- 12 SEQ Council Planning Schemes
- all Priority Development Areas (PDAs), including any structure plans, context plans or approvals
- State Development Areas (SDAs)
- Brisbane Port, and all SEQ Airports, including master and structure plans
- Preliminary Development Approvals overriding the Scheme, where provided.
- Conversion of all relevant masterplans and structure plans into a GIS layer to input into the Planning Intent Layer. To be include in the 'Planning Intent Layer' it was determined that the particular zone, precinct or the like is required to have a predominant industrial land use focus or overall industrial purpose.

Planning Intent Layer

The Planning Intent Layer for Ipswich includes the following land use zones:

- **Urban Areas**
 - Local Business and Industry Zone
 - Sub Area LB3 – Karalee
 - Sub Area LB4 – Mt Crosby Road, Tivoli
 - Sub Area LB6 – Yamanto Road, Swanbank Road, Fischer Road, Flinders View
 - Sub Area LB10 – Bundamba Road, Ebbw Vale
 - Sub Area LB12 – Monigold Place and ACIRL Street, Dinmore Parade, Riverview Terrace, Goodna Redbank Plains
 - Sub Area LB16 – Redbank Plains Road, Redbank Plains
 - Amberley RAAF was not included as the site is for Federal defence purposes
 - Local Business and Industry Investigation Zone
 - Local Business and Industry Buffer Zone
- **Regionally Significant Business Enterprise and Industry Areas**
 - Regional Business and Industry Zone.

- **Exclusions:**
 - Sub Area LB1 - West Ipswich
 - Sub Area LB2 – Brisbane Street, Hooper Street, Keogh Street and Pound Street, West Ipswich
 - Sub Area LB7 – Lobb Street, Churchill
 - Sub Area LB8 – Briggs Road, Ipswich, Raceview and Flinders View
 - Sub Area LB5 – Blacksoil – any development in this subarea is intended for business, service and trade uses.
These Sub Areas are intended for business/commercial/mixed uses, not predominately industrial in nature. Protection of nearby residential amenity is a priority as such industrial development is not considered to be the intended use.
 - Special Opportunity Zone SA4, SA5, SA18, SA25, SA29
Many of these precincts are not specifically intended to be developed for industrial development, and those that do also include residential uses which have precluded this land from being included in the planning intent layer.
 - Business Park Zone
This zone is located adjacent to a zoned industrial area (Swanbank). The zone is best described as a Mixed Industry and Business Area (MIBA).
 - Rosewood Area
All zones reviewed and none are considered to support predominantly industrial uses.
 - Amberley Air Base and Aviation Zone
Generally, does not support predominantly industrial uses with the exception of some land on the eastern side of Southern Amberley Road which has a preliminary approval for industrial development.

Land Supply Assessment

Following adoption of the Planning Intent layer, the next key step required to determine the Industrial Land Supply for SEQ was to estimate the extent to which identified physical constraints reduced the development potential of land zoned or designated for industrial development.

For the industrial land supply analysis, SEQ Councils were engaged to provide confirmation of the industrial zonings and precincts and structure or master plans overriding the scheme, relevant to the measurement and determination of an industrial land developable layer as well as the extent of land readily available to each Council. The key outcomes of the consultation with Councils and recommendations provided in the RPS Report are listed below.

- The key areas raised by Councils regarding constraints to industrial development relate to Landslide vs Slope, Waterway/Wetlands, Coastal Management, Bushfire, and treatment of various ecological constraints.
- Recommendations to endorse common layer names and accuracy in constraints mapping to ensure consistent interpretation between Councils and avoid extensive local variations.
- Further interrogation suggested of the developability rules for improved accuracy to align with recommendations of improved mapping.

The Developability Rules consider a range of physical constraints likely to reduce developable land supply, with these allowances tailored to various land supply types. Further interrogation of the rules, to increase the ultimate accuracy of the process was undertaken and proposed amendments are discussed below, relating to industrial development:

- Waterways and Wetlands to be reallocated as a hard constraint
- Major and Minor Redevelopment have been proposed to be reduced by 25% to 50% and 75% respectively, in recognition of existing land use rights and greater propensity to fill and / or provide a built form solution

- Combine slope > 25% / high landslide risk as a hard constraint
- Regarding bushfire, retention of vegetation and slope / landslide as better indications of land to be excluded from land supply
- Regarding environment, soft constraint for environment be split into two categories: Environment: High Value, Environment: Low-Medium Value. The High Value category decreases the developability of each land supply type by 25% to that of the Low-Medium Value category
- Accuracy hierarchy to include a new category - detailed, more accurate mapping, to clarify that Councils can adopt the best available information.

Suggested Constraint Analysis Methodology

The RPS reports outline the constraints methodology for the industrial land supply project, as well as specific assumptions or rules used when analysing each hard or soft constraint layer. DSDMIP provided hundreds of the GIS mapping layers that were then categorized as either a hard or soft constraint. Accordingly, the report provides recommendations on how each mapping layer should be reviewed and applied in a land supply calculation (refer to table below).

Table 2-3 Suggested Constraint Analysis Methodology, RPS Report 2018

Hard Constraint		Soft Constraint	
RPS Report recommendations	Corresponding Layers in the Ipswich Planning Scheme 2006	RPS Report recommendations	Corresponding Layers in the Ipswich Planning Scheme 2006
Flood (Q 100)	Adopted Flood Regulation Line 1 in 20 Development Line	Overland flow	Development Constraints Overlay – Urban Catchment Flow Paths
Slope >25% / Landslide	Difficult Topography Overlay - Slope > 25%	Slope 15-25%	Difficult Topography Overlay
Infrastructure, layers with a buffer of up to 20m	High Voltage Electricity Transmission Lines High Pressure Pipelines	Extractive Resource Separation/buffers	
Extractive resources		Infrastructure buffers	
Built Form – Heritage	Character Places Overlay	Environment: High Value (Performance Outcome not permitting clearing)	NA
Environment: <ul style="list-style-type: none"> ▪ Endangered Regional Ecosystems ▪ Category A Regulated Vegetation ▪ Marine Parks, Fish Habitat A+B ▪ High Value Bushland PKADA, High Value KADA habitat ▪ Protected Areas and Threatened species (Nature Conservation Act 1992) ▪ High conversation value wetlands (EP Act 1994) and Legally secured offset areas 	Same - State data	Environment: Low-Medium Value	NA
Waterways/wetland (excluding buffers)	NA	Coastal hazard: Erosion Prone	NA
Location Specific / Enterprise amenity / safety buffers (Includes Council specific overlays and	Explosive Storage Safeguard, Public Safety	Coastal hazard: High Storm Tide	NA

Hard Constraint		Soft Constraint	
RPS Report recommendations	Corresponding Layers in the Ipswich Planning Scheme 2006	RPS Report recommendations	Corresponding Layers in the Ipswich Planning Scheme 2006
mapping for example agricultural land, scenic amenity and explosive safety areas)	Areas and Purga Rifle Range		
Planning Exclusions not intended for development (Community Facilities, Environmental Management and Conservation, Limited Development, Open Space, Rural, Sport and Recreation)	-	-	-

To determine developable land, the methodology for constraints mapping in the RPS reports has used the algorithm multiplier method. The method considers each constraint in addition to others where numerous overlaps in a particular area. There are many situations where multiple soft constraints impact the same portions of land. For example, vegetated areas on steep slopes or coastal hazard areas. Typically, the presence of multiple constraints will reduce the likelihood of development.

From this report, the suggested constraints analysis methodology will be considered in the preparation of MCA criteria to determine developability of zoned industrial land in Ipswich. This will attempt to align this assessment and resulting planning recommendations with the wider region.

Constraint Mapping

The following table shows the summarized results of the RPS reports GIS mapping assessment along with the resulting land areas calculated for take-up, vacant land and developable land.

Table 2-4 Constraints Mapping Results (RPS Report 2018)

Mapping element	Detail of method	Resulting Area (Ha) calculated for Ipswich LGA
Industrial Land Take-Up (Planning Intent Layer)	<ul style="list-style-type: none"> RPS undertook a review of industrial land developed from 2011 through to 31 June 2018 via a review of State supplied aerial imagery. A planning intent layer was created using GIS data supplied by DSDMIP. This planning intent layer involved review of planning instruments to define industrial land inclusion. This planning intent layer was compared against the 2018 LSDM Report's planning/industrial intent layer. Where planning intent layers matched between the 2018 LSDM Report and RPS report: 2018 photography was compared to the 2018 LSDM Report developable land dataset to identify industrial land take up since 2017. Where additional areas were identified in RPS' industrial intent layer, RPS performed a take-up analysis on these additional areas from 2011 to 2018. Any areas identified were then added to the overall take-up numbers. 	<p>46 ha (2011-17 take-up LSDM Report)</p> <p>38.6 ha (2017-18 take-up RPS Report)</p>
Identification of vacant industrial land parcels	<ul style="list-style-type: none"> For areas that matched between RPS and the 2018 LSDM Report Planning intent layers, RPS relied on the parcels identified as vacant in 2017 by the 2018 LSDM Report. For areas within both planning intent layers, RPS reviewed land considered to be vacant as at 2018. 	<p>1,829.2 ha (2017 LSDM Report)</p> <p>7,534.8* ha (2018 RPS Report)</p> <p><i>*Value includes 6,329.3 Ha in Regional Business and</i></p>

Mapping element	Detail of method	Resulting Area (Ha) calculated for Ipswich LGA
	<ul style="list-style-type: none"> For areas identified by RPS' planning intent layer, but not the 2018 LSDM Report planning intent layer, a further review was undertaken to determine land vacancy at 2018. Where a site included a non-industrial use – for example a dwelling or rural activity it is taken to be vacant for the purpose of the industrial land supply. Where a site was currently utilised for a low intensity industrial purpose, such as storage, it was taken to be developed. Due to the subjectivity of GIS analysis on determining vacant/partially/underdeveloped land, a further attribution was made commenting on potential issues. 	<i>Industry Investigation zoning or Regional Business and Industry Investigation buffer</i>
Planned (Developable) Industrial Land	<ul style="list-style-type: none"> Constraints layers were prepared based on the hard and soft constraints analysis. Hard constraints were applied that removed portions of the vacant land. Soft constraints were then applied. After constraints were applied, a developable land layer was created. Recently subdivided lots were then identified through comparison of the cadastre layers issued by DSDMIP. 	4,163.2* ha Developable Land after Hard and Soft Constraints applied <i>*Value Includes 3,630.4 Ha in Regional Business and Industry Investigation zoning or Regional Business and Industry Investigation buffer</i>

The outcome of the first sieve assessment of this report including the total vacant land area, developable land area and land take up will be compared against the results of the RPS Report. This will assist with confirming accuracy and alignment with the future industrial planning intent of SEQ. However, it should be noted that the RPS Report GIS process is limited by accuracy and quality of data provided, missing data, and vacant land review subjectivity. The RPS Report concluded that the analysis identified a need for increased consistency between agencies and a need for a more refined methodology to identify and manage constraints. In line with this, this Industrial Land and Employment Needs Analysis Report aims to refine the constraints assessment methodology to provide a more accurate and locational specific analysis of industrial land in Ipswich.

2.2.7 Energy from Waste Policy Queensland

This non-statutory policy was developed to help support implementation of *Queensland's Waste Management and Resource Recovery Strategy* (the waste strategy), by providing a strategic outline of the matters related to energy-from-waste (EfW) activities in Queensland (State of Queensland, 2020). EfW refers to the process of recovery of energy from residual waste materials. This energy is able to retrieve as solid, liquid or gaseous fuels, or as heat.

Key findings from a review of this strategy include the following:

- The strategy expresses Queensland's commitment for a zero-waste society, whereby waste is avoided, reused and recycled as much as possible, in trying to achieve a transition to a circular economy.
- In support of this vision, the Queensland Government has identified 2050 waste-strategy targets which aim to reduce household waste by 25 per cent; recycle 75 per cent of all waste; and divert 90 per cent of all waste from going into landfill.
- In doing so, this policy will assist the state in transitioning towards a circular economy.
- Based on the identified waste-strategy targets, by 2050 it is estimated up to 15 per cent of municipal solid waste (MSW), commercial and industrial (C&I) waste, and construction and demolition (C&D) waste may be unsuitable for reuse or recycling, and thus may be better suited for EfW.
- The report identifies how it is just one policy of several strategic actions which will help to support the Queensland Government's Waste Strategy. Other key actions which are of particular focus of this industry project, and seek to grow capability in the resource industry recovery sector include:

- *The Queensland Resource Recovery Industries 10-year Roadmap and Action Plan* sets out a framework to accelerate the transition to a circular economy and help to support the development of Queensland’s resource recovery industries.
- The \$100 million *Resource Recovery Industry Development Program*, which provides grant funding to local governments, established businesses and not-for-profit organisations to improve existing operations or bring new facilities at all stages of the supply chain to Queensland.
- As part of supporting Queensland’s path to achieving a zero net emissions future, the government has expressed a commitment to generate 50 per cent of Queensland’s energy from renewable sources by 2030, and this could also include, energy derived from wood waste, agricultural waste, food and food processing waste, biomass-based components of municipal waste, landfill gas, sewage gas, and biomass-based components of sewage.
- There are requirements EfW facilities are expected to be managed in accordance with the Waste Incineration Best Available Techniques Reference Documents (BREFs) and Waste Treatment BREF that will help to support industry proponents when trying to predict the likely conditions imposed by an EA applications, and thus, will be able to tailor the content of the EA applications.
- The report, however, remains at a high-level and no specific reference is made towards Ipswich City Council and its potential to support more sustainable energy from waste industries.

2.2.8 Advance Queensland initiative

The Advance Queensland Initiative is a Queensland Government program that aims to build Queensland’s innovation economy in the aim of economic growth and job creation. The initiative includes \$755 million investment to support programs and activities that will drive innovation across the state. The Advance Queensland Initiative priorities include:

- **Build on Queensland’s Strength:** create jobs through innovation in Queensland’s traditional strengths such as agriculture, manufacturing, resources and tourism, and encourage new industries based the state’s assets, like biofutures
- **Back Queensland’s Regions to Compete Globally:** State Government to work with regions to grow their unique competitive advantage to build industries and create jobs
- **Scaling up Local Solutions for New Markets:** State Government to work with regions to scale up entrepreneurs, startups, small-to-medium enterprises (SMEs) and businesses by helping them commercialise ideas, linking them to investors and making global connections and
- **Investment in Science and Technology:** Utilising science and technology to commercialise research and solve the challenges facing Queensland and the world including climate change, protecting the Great Barrier Reef, and energy and water sustainability.

Ipswich City has been significantly supported by the Advance Queensland Initiative, with over 160 grant recipients located in Ipswich City. Through the Advanced Queensland Initiative, several industries have either relocated or plan to locate to Ipswich City, including Rheinmetall Defence Australia.

2.3 Business Park Description and Definitions

2.3.1 Description of Business Parks

Business parks were traditionally concentrations of commercial office and compatible light industry businesses in campus like settings. They are in effect one example of integrated employment areas (IEAs), with other examples including office parks, technology parks, health precincts and the like. The defining feature of these IEAs were typically high levels of built form and public realm management (to create a park like or campus setting) and a location in highly visible and prestigious locations.

A more descriptive definition of IEAs offered by the former Department of Industry and Regional Development (DBIRD) is: “*areas suitable for a wide range of industrial, warehouse, transport storage and office uses together with commercial, retail and recreational uses providing such uses are able to demonstrate compatibility with objectives and performance criteria related to off-site impacts, site and building design and amenity, applicable to the area*”.

IEAs can equally include mixed use industrial areas, which often provide more affordable land, attractive to a wide range of non-industrial or large-scale activities, such as retail showrooms and indoor sport complexes. Increasingly, largely due to the introduction of more performance-based planning controls which control activities by the nature of likely impacts rather than the type of use, many modern business and industry areas display characteristics, of and could be regarded as, IEAs. BCC and Logan City use the term mixed industry and business areas (MIBAs) which were essentially the same as IEAs, with notable examples emerging in the late 1990s including Metroplex on Gateway in Brisbane and the Crestmead MIBA in Logan.

The Metroplex on Gateway development is a UDIA award winning example of a MIBA covering 62 hectares and comprises 40 lots ranging in area from 3000m² to 3 hectares. It was conceived as a MIBA and provides several precincts catering for a variety of uses including:

- industrial and warehousing
- service trade and light industries
- business and corporate offices
- convenience retail and showrooms
- riverfront hotel/conference centre
- public open space, walkways.

Marketable features of the development, apart from its innovative and attractive layout include:

- high levels of accessibility (15 minutes from Brisbane CBD, the Airport, and the Brisbane Port)
- strategically located on a ‘cornerstone’ site of Brisbane’s Gateway Port Precinct
- high quality buildings and landscaping achieved through an Architectural and Landscaping Code
- high levels of management through an established management company (Metroplex Management Pty Ltd)
- considered a prestigious location due to its high visibility, relationship with Brisbane Port and the high level of “*investment protection*” delivered through architectural and landscape codes administered by management.

A more traditional example of a business park comprising commercial office accommodation is the Brisbane Technology Park. Originally a Queensland Government initiative to foster the growth of and collaboration between companies in knowledge-based industries, this location is now home to over 200 companies employing in excess of 10,000 people.

Spread over 33 hectares and located at the junction of South East Queensland’s three major motorways, Brisbane Technology Park offers a range of commercial, serviced, shared and co-working office space for lease to suit all business types. A variety of meeting venues and amenities are located on site (Brisbane Technology Park promotional brochure, 2020).

Perhaps the most established business park in Australia is the Norwest Business Park in Sydney. This has been touted as the first ‘true’ Business Park in Australia and was modelled in the mid-eighties on the best examples of business and office parks in the United States. Norwest Business Park comprises a total of 377 ha with 221 ha dedicated for business use and 122 ha for residential purposes. A key focus for the Park is the amenity provided for occupants and residents with over 30 hectares set aside for lakes, waterways and parklands.

Norwest is currently home to many high-profile multinational corporations including IBM GSA, Schneider, Woolworths, B Braun, ResMed, Capital Finance and over 400 companies and businesses with over 20,000 employees. Norwest also provides four retail centres: Norwest Marketown, Totally Home, Bella Village Retail and Circa Retail. Park

occupants enjoy a workplace environment with easy access to all services and facilities ensuring all employee needs are satisfied. Such services include banks, child-care centres and professional services, and numerous restaurants to cater for every taste.

Businesses are also well served by Norwest Crowne Plaza hotel and Adina serviced apartments, while medical needs can be readily accessed through the Norwest Private Hospital and the new Solent Circuit Hospital for Specialist Surgery, as well as through numerous medical specialists and centres (Norwest Associated Limited Brochure, 2020). Not all business parks are of the scale of Norwest. At the other end of the scale are developments such as the Arundel Business Park which is 60-unit strata titled industrial development in gated, secured compound, catering for a range of industries and businesses that prefer established secured premises. (Arundel Business Park Promotional Brochure, Reece Developments, 2020).

Other business parks cater for a particular industry sector by virtue of their strategic location. For example, the new Wellcamp Business Park adjacent the Wellcamp Toowoomba West Airport focuses on the aviation and transport sectors in its role as the export gateway from the Darling Downs and Surat Basin. Specifically, the promotional material indicates the following industries are being targeted:

- Aviation training and support industries
- Aviation logistics
- Transport logistics
- Warehousing and distribution
- Corporate offices
- Manufacturing
- Commodity processing
- Factory outlets.

As an aside, the formerly proposed Aeronautical and Defence Service Centre – Amberley (ADSCA), a proposed highly managed and secured location for industries and businesses to service the adjacent RAAF base would have had the same characteristics and been referred to as a business park.

Also, in the Ipswich City context, the 350 ha Citiswich Business Park is characterised by a high-quality built form and strong levels of connectivity to the metropolitan and interstate road. Another feature of Citiswich is the linkages it fosters to education and training facilities at the nearby Bremer Institute of TAFE.

The Goodna Technology Park on the Redbank peninsula provides office accommodation in a single building in a campus like riverside setting. This is an interesting if not unusual interpretation of the term technology park, possibly adopted for marketing purposes.

Some jurisdictions see business parks as a more acceptable alternative to traditional industrial estates as they typically require a higher level of management to achieve a higher quality environment for employees and the wider community. Equally, they cater for a wider range of employment than found in older industrial estates, reflecting the changing nature of industry, further discussed in Section 5. The Redlands Business Park for example is a mix of light and service industry businesses in a fully master planned estate with high levels of built form and public realm design requirements.

2.3.2 Definition of Business Parks

Business parks traditionally focussed on providing a high-quality locational setting for commercial activities rather than industrial activities. However, the concept of business parks has evolved and increasingly they have become specialised mixed industry business estates targeting specific industry sectors or types or having specific design and management requirements. They typically provide a higher level of amenity and facilities for occupants than traditional industrial estates and are therefore more suited to near residential or prestige locations.

As noted above, business parks are a form of IEA and increasingly the mix of uses is determined by the locational attributes of the estate or compatibility with requirements related to off-site impacts, site and building design and amenity, applicable to the estate.

Many industrial estates adopt the term business park as a marketing brand, promoting the higher levels of management and urban design of the estate than found in traditional low or medium impact industrial areas. The Redlands Business Park is such an example, in which a range of medium, light and service trade businesses and industries are located in a high amenity, fully master planned estate. The term is also used when some additional benefits to tenants applies such as access to education and training facilities.

The key characteristics of a business park would include the following:

- High levels of integrated master planning
- High quality-built form and public realm
- Mix of compatible, and often synergistic, employment generating land uses
- High levels of investment protection delivered through detailed design requirements and estate management (including security)
- Located in high visibility, prestige locations, often adjacent to residential area
- Incorporation of facilities, commercial and professional services for employees, often creating a level of self sufficiency
- Often, they provide strong linkages to education and training facilities, and in some instances proximity to such facilities can be a catalyst for the development
- Commercial accommodation facilities for interstate corporate visitors and often associated conference facilities
- A unifying theme such as a targeted business and industry mix and /or adherence to high levels of built form and management requirements.

2.4 Implications of Background Assessment

Legislative Review

Industrial development in Ipswich is supported by, and consistent with the State and local planning framework. The key findings from the review include:

- There are several matters of State interest that will need to be considered in the location, design and management of any industrial development within Ipswich including State Interest – Matters of Environmental Significance, State Interest – Safety and Resilience to Hazards (Emissions and Hazardous Activities), Safety and Resilience to Hazards (Natural Hazards, Risk and Resilience: Bushfire, Flood, Landslide), State Interest – State Transport Infrastructure. Koala Habitat mapping is also significant. This mapping and SPP constraints have been incorporated into and considered in the strategic land assessment as part of this project to identify developable areas for future industrial use (refer to Section 3 of this report).
- Within ShapingSEQ, Ipswich is identified as a Principal regional activity centre at the western extent of the Urban Corridor reaching from the Brisbane Capital City Centre. Ipswich is identified as within the Western sub-region, comprising Ipswich, Lockyer Valley, Scenic Rim, Somerset and Toowoomba. The Western sub-region supports industrial development with a strong focus on expansion areas, leveraging major investments in airport, logistics and freight infrastructure and integrated transport network that accelerates access within the sub-region.
- During the ShapingSEQ horizon (to the year 2041) the Ipswich Local Government Area is projected to grow rapidly. As a result, ShapingSEQ also identifies Potential Future Growth Areas in Lanefield / Grandchester (and Glamorganvale in the adjoining Somerset Regional Council) to the north of Marburg. These areas are intended to be protected for the expansion of urban and industrial development.

- The Economic and Workforce Development Plan 2018-19 details Council’s priorities and commitments to promote Ipswich as a key location for industrial development including: to be recognised as a national hub for these key industries with superior capabilities, infrastructure, value and supply chain, commitment to the ongoing positioning of the region as an intermodal transport hub that benefits the community and economy by the continued delivery of efficient freight and passenger services via an integrated regional transport system.
- Key industries for Ipswich include: Defence, Advanced Manufacturing, Biofutures and Resource Recovery, Transport and Logistics, Food and Agribusiness. These key industries, together with other industry sectors identified in the economic assessment are further considered in the supply and demand assessment and recommendations made in relation to alignment of these activities with the various industrial precincts throughout Ipswich City.
- There are two TLPs that apply to development proposals for waste industries in the Ipswich region. To adequately regulate this unique range of ‘waste activities uses’, several TLPs were drafted for the Swanbank / New Chum Waste Activity Area and the Ebenezer / Willowbank / Jeebropilly Waste Activity Area. The intent and development considerations of the TLPs will be considered in the strategic land assessment as part of this project.
- The draft strategic framework actively promotes Ipswich as a location open to growth in industrial development and employment.
- According to the draft strategic framework, Potential Future Growth Areas in Lanefield / Grandchester to the north of Marburg defined by ShapingSEQ are not needed to accommodate the dwelling supply benchmarks or employment planning baselines included in the ShapingSEQ and therefore will not be required to be released to accommodate growth within the planning horizon of this planning scheme. However, the potential of the areas for future urban growth is to be protected.
- Ipswich is an affordable and highly accessible area well suited to the location of regional industrial land uses requiring large sites with convenient access to the regional road network, rail, other major industrial developments and future major infrastructure projects.
- Ipswich is strategically located and well connected to play a wider regional role in the provision of employment to SEQ, Western sub-region, surrounding LGAs and Brisbane Capital City Centre.

Literature Review

The key findings from the review of the above literature include the following:

- The role of industrial development as a key driver of economic growth underpinning future population distribution in SEQ generally and within Ipswich specifically. Ipswich has traditionally played a major role in providing for industrial employment in SEQ and while the nature of industrial demand is constantly evolving, the city’s strategic location and access to vital road and rail networks will continue to underpin its regional significance.
- While previous assessments such as the GMP have indicated an abundance of land zoned or designated for industry in Ipswich, much of the supply includes mine disturbance areas or other constraints, including lack of services, that suggest suitability for development is highly variable. There is clearly the need to identify those industrial areas within the City that are physically suitable, can justifiably be serviced, which best align with future industry needs and can contribute to achieving sustainable communities.
- Ipswich City has traditionally been the focus for much of the major regional industry in SEQ, underpinned by its high levels of metropolitan and interstate freight transport connectivity. Initiatives such as the Ebenezer intermodal facility will reinforce this role. While the role of manufacturing in the City and nationally has declined, the ability to disperse imported products and supply chain goods will remain an important consideration for industry location. The Ebenezer intermodal facility coupled with the planned upgrades to the road and rail networks through the City will enable Ipswich to play increasing role in this sector. Regardless of whether the

proposed intermodal terminal at Ebenezer eventuates, the report states the large industrial allotments identified for Ebenezer will continue to remain attractive to logistic, warehousing and distribution centre operators.

- Future increase in manufacturing activity (post COVID19) is likely to lead to an increase in the production of locally produced high tech goods necessary for self-sufficiency (refer Section 5) and shift towards use of domestic supply chains will also benefit from Ipswich’s ability to cater for manufacturing and distribution within a single precinct through access to the SEQ freight network.
- The potential role of the freight and warehousing industry sectors in the City and dependency on future infrastructure initiatives such as the Inland Rail and connecting regional road transport links. Just the proposed Ebenezer intermodal facility will generate demand for an additional 42ha of industry land, 28ha of which comprises land for proximate business that would otherwise choose to establish elsewhere in SEQ.
- There is potential for increasing self - sufficiency within the City though the development of employment in well serviced precincts and connecting with transport infrastructure such as the Ipswich Central to Springfield Central Public Transport Corridor that provides for both internal and regional connectivity.
- The potential opportunities for Ipswich City to build on current initiatives working towards a sustainable biotechnology and bioproducts sector is supported by current government initiatives in the resource recovery and energy from waste sectors. The State government targets to divert 90% of waste from landfill by 2050 and shorter-term target to generate 50% of energy from renewables by 2030 provide enormous opportunities for Ipswich which is home to some of SEQs major resource recovery industries. Further expansion of this sector will need to align with Councils Waste and Circular Economy Transformation Policy Directive.
- Other State Initiatives such as Advance Queensland provides Ipswich with opportunity for investment support programs to drive innovation across City. Over 160 grant recipients in Ipswich City have benefitted from this initiative and major industries such as Rheinmetall Defence have established with support of this program. The supply of development ready, strategically located industrial land is critical to the local success of these initiatives.

Business Park Review

- Business parks appear to be increasingly augmenting traditional low to medium impact industrials areas in many jurisdictions. They are a response to the changing characteristics of industry, innovative synergies between education, training, research and development and manufacturing and to an extent the heightened community expectation in relation to the management of potential impacts.
- Business parks can take many forms, focusing on specific industry sectors, unique location or land use synergies or catering for a diversity of compatible uses that require a high amenity, well managed and secure environment. They can also provide occupants with a high level of investment protection than traditional industrial areas, and from this perspective alone can have potentially strong marketing pull.
- There are numerous examples in SEQ and Ipswich. There are also potential opportunities related to existing industry sectors in the City, particular defence and resource recovery. Establishment of a precinct that adopts, and actively promotes among tenants, circular economy principles would appear to be an opportunity that aligns with several of the City’s established industry sectors and current Council initiatives.
- The key characteristics of, or requirements for, a business park would include the following:
 - High levels of integrated master planning
 - High quality-built form and public realm
 - High levels of investment protection delivered through detailed design requirements and estate management (including security)
 - Mix of compatible, and often synergistic, employment generating land uses
 - Located in high visibility, prestige locations, often adjacent to residential areas

- Incorporation of facilities, commercial and professional services for employees, often creating a level of self sufficiency
- Often formal linkages to education and training facilities, and in some instances proximity to such facilities can be a catalyst for the development
- Commercial accommodation facilities for interstate corporate visitors and often associated conference facilities.
- Within Ipswich there are at least two existing examples of development that have adopted the term business or technology park, the Citiswich Business Park at Bundamba and the Goodna Technology Park at Goodna, which essentially comprises one mixed tenanted building. Business parks with a higher industrial or manufacturing focus, such as Citiswich, are generally appropriate in the low and medium industry zones. As indicated in the literature review, the mix of uses and unifying theme of business parks can be quite diverse and those with a greater focus on commercial, technological, educational or training activities could be located in low impact industry areas (or local business and industry zones) or transitional areas in typically higher visibility and amenity locations.
- The draft Local Area Framework nominates several areas for establishment or expansion of business parks including Citiswich, the southern end of Swanbank near the emerging Ripley Town Centre and north of Warwick Road at Yamanto. The latter two sites would be best suited to low impact business and industry activities being located adjacent to existing or future residential and commercial land uses. Other opportunities for business park precincts in the Ebenezer Regional Employment Area should also be identified to cater for future knowledge based industries, innovation oriented activities supporting commercial uses.
- It is also noted that the Ripley Valley Special Opportunity Area (SA90) may also be suitable for a mix of business and industrial uses delivered in the format of a business park, although this area falls within a PDA and not covered by the planning scheme.

Section 3 Strategic Land Assessment

3.1 Strategic Overview of Ipswich Industry and Industry Investigation Areas

Under ShapingSEQ existing industrial areas in SEQ are defined as Major Enterprise and Industrial Areas (MEIAs), essentially major industry and employment areas located on or with access to vital state transport infrastructure. These MEIAs are contained within Regional Economic Clusters (RECs), which in Ipswich City include:

- The South West Corridor REC, which includes the industrial areas within established eastern suburbs along the Ipswich Motorway freight corridor together with the Swanbank New Chum industrial area and the Ripley Valley
- Ipswich REC, which includes the Ipswich City Centre and the more established industrial areas around Wulkuraka, Karrabin, Yamanto and Amberley together with the emerging regional industrial area of Ebenezer and Willowbank
- Springfield REC, which includes the Springfield Town Centre and associated education, health and technology precincts.

The Strategic Framework of the draft planning scheme has consolidated the suburbs across Ipswich into Local Areas, areas with broad land use and planning commonalities. Table 2.2 in the previous section details the planning areas and suburbs with industrial areas, together with many of the attributes, characteristics and strategic intentions of each of the industrial areas which aligns with the broader strategic directions in ShapingSEQ. Notable from this table is the following:

- There is significant diversity in the scale and role of industrial areas across MEIAs within the city
- A number of the suburban industrial areas (notably Carole Park, Redbank, Collingwood Park for example) provide mainly infill opportunities for low – medium impact industry
- Other, newer industrial areas offer significant areas for growth and development for a wider range of industry in key locations within access to important freight links, including North Ipswich, Bundamba, Tivoli, Wulkuraka, Leichhardt and Karrabin
- Significant longer-term growth for local and regional industry is provided for in strategic locations that both provide access to major road and rail freight corridors and support future population growth, such as Swanbank, New Chum, Ebenezer and Willowbank.

The characteristics and strategic intentions for each of the industrial areas described in Table 2-2 will be further considered as part of the assessment of industrial land suitability and in the alignment with identified future economic opportunities.

3.2 Development of the GIS Site Suitability Model

3.2.1 GIS Assessment Methodology

Areas for development of target industries within each industrial area have been identified with a detailed site suitability assessment model based on a multi-criteria assessment (MCA) method. Developable area has been determined using a GIS based constraints assessment and refined further with non-spatial criteria.

The ability to consider multiple issues or constraints across the LGA requires analysis built upon spatial analytics. The MCA methodology used for this project allows for a transparent assessment that allows for more interactivity with the findings and decision-making. The land use analysis and data visualisation has been prepared as a holistic workflow,

whereby the data sources are imported, processed, visualised and exported as communication deliverables using a scripted workflow. This means that multiple scenarios are assessed simultaneously, while also simplifying the ability to change assumptions or data sources. The specific method used to achieve this includes:

1. Defined constraint themes and specific data sources representing the constraint (e.g. proximity to waterways is a constraint that is represented by a buffer around the State waterways polyline dataset)
2. Scripting to import and transform the source data into a centralised data set (e.g. into a single datum/projection, using the same measurement units, and the same terminology)
3. Intersection of the source data with the planning zone and suburb boundary to identify areas where the constraints do/don't occur
4. Export of the results using a combination of traditional GIS maps and also as an interactive dashboard that allows live query of results to ask questions such as: "where is the industrial land that might have a problem with slope?".

This approach provides both efficiencies in its ability to re-assess constraints when data/assumptions change, while also providing greater value in the ability to interact with the results.

3.2.2 Vacant Land Audit Methodology

The first step in determining infill and redevelopment opportunities within the LGA is to identify vacant land and partially vacant land with capacity for development. To do this, several measures were incorporated into the site suitability model prior to constraints criteria assessment. These measures included:

- Identification and omission of lots with current Material Change of Use (MCU) including use expansion development applications and approvals⁵ from assessment
- Identification and omission of lots with existing development of a lot including significant built structures from assessment
- Identification and inclusion of parts of lots where existing development does not occur
- Identification and omission of major roads
- Identification and omission of significant water bodies, including flooded mining voids.

The identification of undeveloped areas within industrial lots can traditionally be a time-consuming manual process. However, the improved accessibility to modern machine learning models and publicly available multi-spectral satellite imagery provided the ability to automatically identify landcover across large areas with drastically improved efficiency.

The process we have undertaken included the use of a supervised classification method that trains a machine learning (ranger) model to identify different land cover types according to the values recorded in the satellite imagery. In summary, our approach entailed:

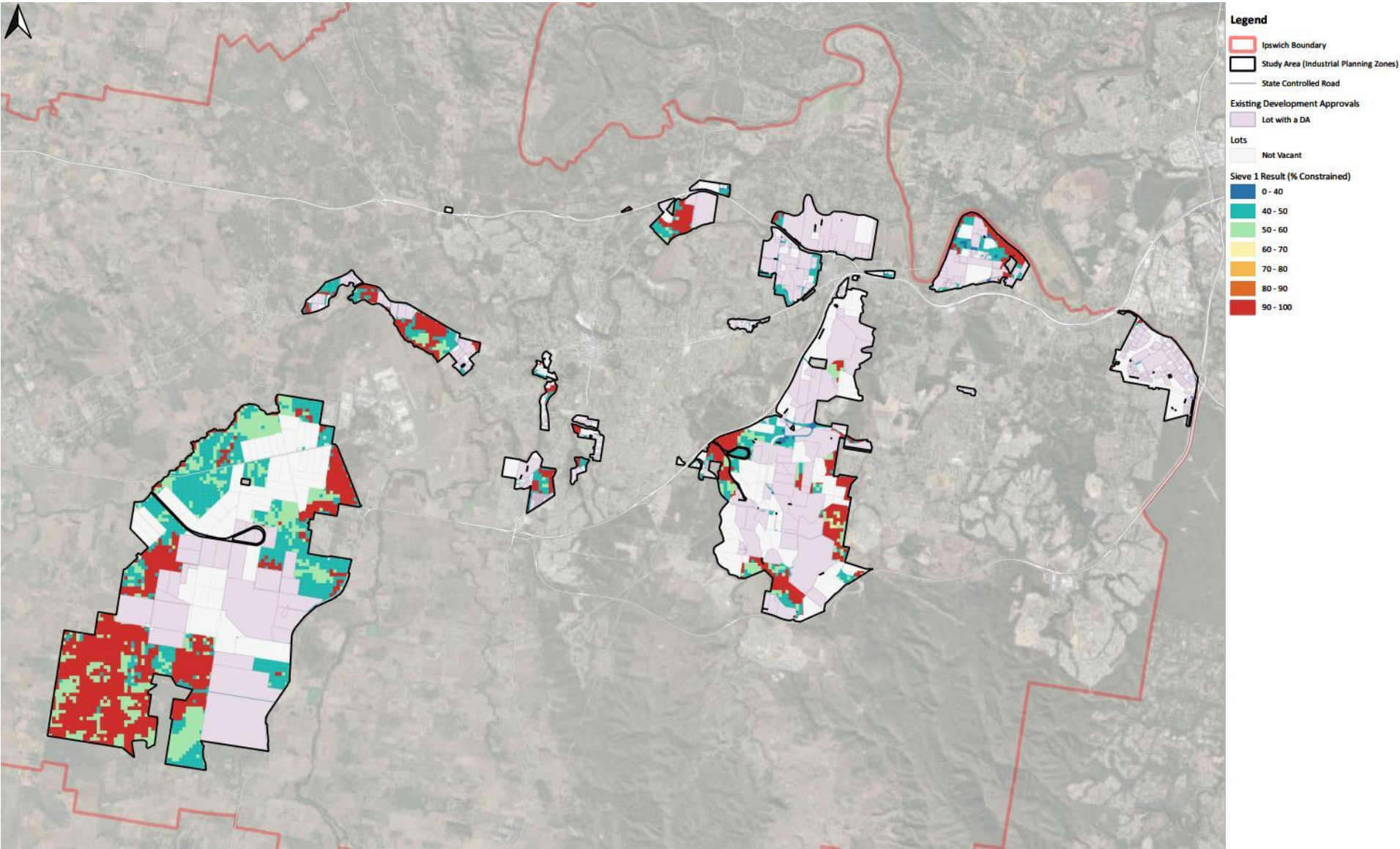
- Selecting and download a cloudless image from copernicus (<https://scihub.copernicus.eu>). A Sentinel-2B INS-NOBS satellite image was selected from 1 September 2020 due to its quality and low cloud cover (data uri: S2B MSIL2A 20200901T000249 N0214 R030 T56JMQ 20200901T020118.SAFE)
- Visually inspecting the image to determine the number of classes to be used for developing a classification matrix for land cover.
- Recording a variety of points across various "representative" areas within the image. We initially identified each of the point as one of the following classes:
 - water, road, building, creek, crop, vegetation, developed.

⁵ Development application / approvals (Lot/RP data) provided by Council for applications up to December 2020

- We then trained the model using the point dataset.
- The model was then run across the whole Study Area to determine whether the preliminary classes need to be refined. On inspection we added further classes to improve the classification by using the following classes:
 - water, vacant, road, building, creek, crop, vegetation, developed - small, river, developed - large, bare ground.
- After improving the training dataset, the model was re-run to generate a more suitable classification layer.
- The final model results generated multiple land classes, but on inspection it was determined the “vacant land” was predominantly represented by areas that had been nominated as either: crop, vacant, or vegetation.

A high-level land use survey (visual analysis of recent aerial imagery) was undertaken to review/confirm vacancy and significant underutilised land parcels (refer to Figure 3-1). Further detail of the quality of vacant and developable land identified including a comparison to the RPS report vacant land area estimates has been detailed in Section 3.4.

Figure 3-1 Vacant Land Audit



3.3 Application of the GIS Site Suitability Model

3.3.1 Sieve 1 Methodology

A review of both environmental and infrastructure constraints pertaining to future development was carried out. From this review criteria were adopted and used in a two-staged assessment of development suitability within each potential development area. The two-staged sieve was used to discard clearly unsuitable areas quickly and identify the most suitable development areas for a more detailed assessment using additional criteria.

The first sieve is based on several physical and environmental characteristics of the Study Area and high-level consideration of the ability to provide access for any development in each potential development area. These characteristics were developed into criteria for use in a GIS Site Suitability Model enabling the initial identification of those areas which may have greater suitability for industrial development. **Appendix A Table A1.1** lists the criteria used in this initial sieve. The criteria consider the amount of intervention likely to be required to 'unlock' the Study Area to enable development. This may involve the construction of new access roads, road upgrades, access to the highway (on/off ramps), connection to infrastructure or infrastructure upgrades and environmental approvals /permits /offsets.

The analytic component of the Sieve 1 analysis included a scripted method that can be summarised as:

5. Define the Study Area, target Lots and suburbs
6. Prepare an Issues Register that includes details for data sources and constraint relationships
7. Process each of the Constraint issues to generate a Constraint layer scored as Minimally constrained = 1, Moderately constrained = 2, or Highly Constrained = 3.
8. Assign weights to the constraints and sum together to generate a result layer
9. Assign the constraints and results to each lot/suburb within the Study Area.

Details of the analytical component of the Sieve 1 GIS methodology are provided in **Appendix A**.

3.3.2 Sieve 1 Results

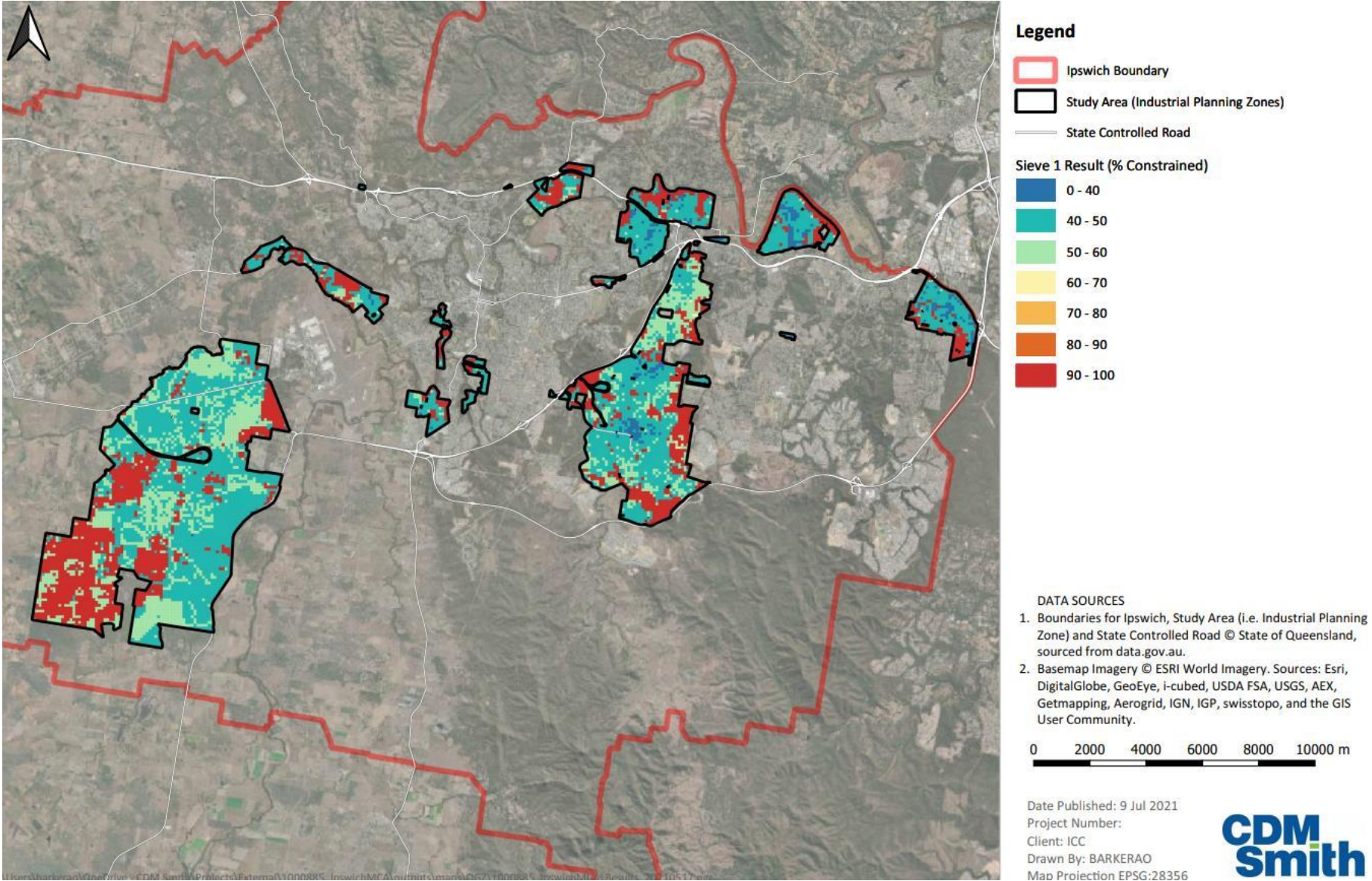
Figure 3-2 shows the outcomes of the Sieve 1 assessment. As explained in Section 3.2.1.2 above, Table 3-1 represents the modelling results adopted for the purpose of identifying developable areas for more detailed evaluation. Maps showing the individual industrial investigation areas and criteria area are included in **Appendix A**. Table 3-1 below provides a summary of the model outputs for each industrial investigation area and the area in each considered potentially developable, subject to more detailed assessments. For the purposes of this assessment, potentially developable areas within the industrial investigation areas have been assumed as land mapped as unconstrained and constrained, with those areas identified as highly constrained excluded.

Table 3-1 Sieve 1 Results

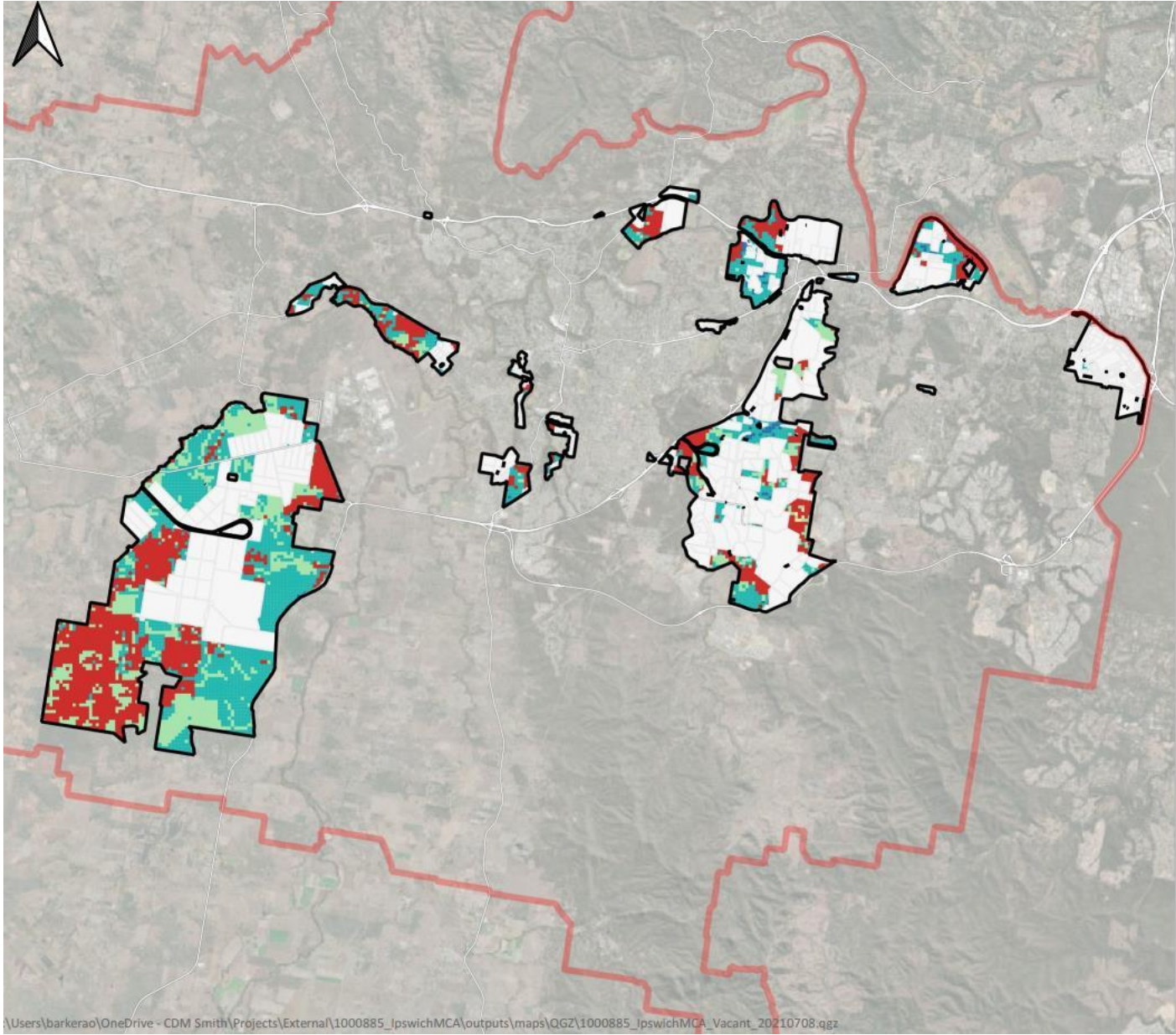
Suburb	Planning Zone / unconstrained (potentially developable) area										Total Vacant and Unconstrained Lots (ha)
	Local Business and Industry	Local Business and Industry Buffer	Local Business and Industry Investigation	Regional Business and Industry - Low Impact	Regional Business and Industry - Medium Impact	Regional Business and Industry Buffer	Regional Business and Industry Investigation	Regional Business and Industry (Med Impact Sub Area)	Regional Business and Industry (Low Impact Sub Area)		
WILLOWBANK	0	0	0	0	0	82.26	642.8	0	0	725.1	
JEEBROPILLY	0	0	0	0	0	283.92	313.23	0	0	597.2	
SWANBANK	0	0	0	0	132.03	136.46	20.23	94.28	14.8	397.8	
EBENEZER	0	0	0	0	0	37.23	276.16	0	0	313.4	
MUTDAPILLY	0	0	0	0	0	15.1	251.42	0	0	266.5	
MOUNT FORBES	0	0	0	0	0	20.08	231.16	0	0	251.2	
AMBERLEY	0	0	0	0	0	25.56	101.87	0	0	127.4	
BUNDAMBA	0.88	0	0	65.09	24.09	34.53	0	0	0	124.6	
KARRABIN	0	0	2.99	0	22.23	21.65	36.41	0	0	83.3	
NEW CHUM	0	0	0	0	0	0	70.33	0.93	0	71.3	
RIVERVIEW	3.6	0	0	12.57	15.65	31.49	0	0	0	63.3	
REDBANK	0	0	0	13.73	36.04	10.22	0	0	0	60.0	
YAMANTO	45.32	1.06	0	0	0	0	0	0	0	46.4	
WULKURAKA	0	0	0	3.44	26.78	9.7	0	0	0	39.9	
FLINDERS VIEW	17.01	0	0	0	0	20.65	0	0	0	37.7	
WALLOON	0	0	29.81	0	0	0	0	0	0	29.8	
REDBANK PLAINS	17.95	2.8	0	0	0	0.04	0	0	0	20.8	
TIVOLI	0	3.74	15.12	0	0	0	0	0	0	18.9	
KARALEE	9.34	0	0	0	0	0	0	0	0	9.3	
GOODNA	7.56	1.18	0	0	0	0	0	0	0	8.7	
RACEVIEW	7.65	0	0	0	0	0	0	0	0	7.7	
CAROLE PARK	0	0	0	5.67	0	0.68	0	0	0	6.4	
CHURCHILL	3.11	1.26	0	0	0	0	0	0	0	4.4	
WEST IPSWICH	3.28	0.64	0	0	0	0	0	0	0	3.9	
EBBW VALE	1.43	0	0	0.01	0	0.08	0	0	0	1.5	
NORTH TIVOLI	0	0.37	0.37	0	0	0	0	0	0	0.7	
DINMORE	0.49	0	0	0	0	0	0	0	0	0.5	
WHITE ROCK	0	0	0	0	0	0.01	0	0	0	0.0	

^Total potentially developable area equates to the combined area of constrained and unconstrained land. This area suggests that the land identified is potentially developable with some physical intervention. The type and amount of intervention required will vary. Further assessment of these areas has been undertaken in Sieve 2.

Figure 3-2 Sieve 1 Criteria Assessment Results



NOTE: The total potentially developable area (displayed as 'unconstrained'/green on this figure) equates to the combined area of 'constrained' and 'unconstrained' ratings within the MCA model. This suggests that the land identified as 'green' is potentially developable with some physical intervention. The type and amount of intervention required will vary. Further assessment of these areas has been undertaken in Sieve 2.



Legend

- Ipswich Boundary
- Study Area (Industrial Planning Zones)
- State Controlled Road

Lots

Not Vacant

Sieve 1 Result (% Constrained)

- 0 - 40
- 40 - 50
- 50 - 60
- 60 - 70
- 70 - 80
- 80 - 90
- 90 - 100

DATA SOURCES

1. Boundaries for Ipswich, Study Area (i.e. Industrial Planning Zone) and State Controlled Road © State of Queensland, sourced from data.gov.au.
2. Basemap Imagery © ESRI World Imagery. Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

0 2000 4000 6000 8000 10000 m

Date Published: 9 Jul 2021
 Project Number:
 Client: ICC
 Drawn By: BARKERAO
 Map Projection EPSG:28356



From the Sieve 1 assessment the following findings are evident:

- The following suburbs have most unconstrained land potentially available industrial land for development:
 - Ebenezer
 - Jeebropilly
 - Mount Forbes
 - Swanbank
 - Willowbank
 - Riverview
 - New Chum.
- Of these suburbs, the following have the most vacant, or infill opportunities:
 - Ebenezer
 - Jeebropilly
 - Mount Forbes
 - Swanbank
 - Willowbank.
- The largest area of vacant land is located within Ebenezer with 801ha.

The suburbs with significant areas of vacant, developable vacant land, will be subject to Sieve 2 assessment in alignment. The following table provides a broad categorisation of the vacant land identified in Sieve 1.

Table 3-2 Summary of Sieve 1 Vacant Land

Type of industrial development area	Description	Area (ha)
Minor Infill Areas (not considered in Sieve 2)	Individual vacant or mostly vacant [^] lots sporadically located in existing, established industrial estates	25.25
Major Infill/ Expansion Areas	Large areas of unfragmented vacant or mostly vacant [^] lots located in existing, established industrial estates	541.50
Emerging Regional Industrial Areas	Industrial areas identified for significant future regional land supply in the South East Queensland Regional Plan	
Ebenezer/ EDQ unconstrained	EDQ owned Willowbank development area mapped as currently vacant, unconstrained and developable	290.00
Ebenezer (other)	Other mapped as currently vacant, unconstrained and developable areas in Ebenezer. A significant amount of this land is known to have plans for future development	23.38*
Swanbank	Area mapped as currently vacant, unconstrained and developable	348.52**
Total developable		856.75
Additional potential land (mine affected)		371.90
Excluded voids and mine disturbed areas		TBC

* Excludes voids and known areas of unconsolidated fill. Subject to various level of mining constraints

** Subject to various level of mining constraint

[^] Lots with over 60% vacant land as identified on aerial mapping

NOTE:

- The Minor Infill Areas represent those suburbs with less than 20 ha of vacant industrial land are typically in more mature areas and comprises largely infill opportunities.
- All other suburbs having vacant suitable industrial areas identified in Sieve 1 over 20 ha have been further assessed to determine which are most suited to meet the projected industrial land demand to 2041.

Limitations

While the MCA model is a powerful tool for screening broad Study Areas, it must be noted that there are several limitations including:

- Accuracy and currency of some data.
- Coarseness of some of the assumptions that may be made in determining performance ratings and weightings of evaluation criteria.

3.3.3 Sieve 2 Methodology

The second sieve criteria are less concerned with the proximity and/or physical typology of the attributes identified and more with the ability to develop and cost effectively service the precincts identified as having greatest suitability (least constrained) from Sieve 1. Using the Sieve 2 criteria, these precincts will be refined to define 'preferred development areas' and will be used as a basis for infrastructure assumptions.

For each preferred development area, mitigation strategies and development requirements will be identified that would enable the area to be developed. This could include access arrangements, infrastructure connection, earthworks, screening/ buffering, additional studies (heritage, contaminated land, effluent disposal capability etc.). The areas will also be aligned with in target industry sectors identified in the *Industry Property Market Assessment* in Section 4 of this report.

Identified industrial areas from Sieve 1 have been assessed against the criteria detailed in **Appendix A, Table A1.2** including key development considerations such as:

- Infrastructure and services
- Environmental impacts
- Social and planning considerations
- Commercial viability.

3.4 Sieve 2 Results

The results of the Sieve 2 assessment for both site considerations and contextual considerations are presented in **Appendix B** with the results summarised in **Table 3-33**. Note the rating suitability in many instances is a relative suitability between the different precincts and adopted for the purpose of helping to select the area's most appropriate for possible development. The tables describe site specific attributes within the preferred precincts that may constrain or compliment development

For criteria which are not considered to be constraints, but opportunities, the following ratings are given: (Minimal opportunity), (Neutral), (Moderate opportunity), (High opportunity). To maintain consistency in assessment, these all adopt the same colour rating as (Minimal Constraint), (Moderate Constraint) and (High constraint) respectively.

The outcomes of the assessment are summarised under each assessment criteria.

Table 3-3 Summary of Sieve 2 Assessment

Location / Area	Summary of Sieve 2 Assessment	Suitability rating per area of consideration						Key opportunities	Recommendations
		Planning		Environmental	Commercial		Infrastructure		
		Constraint	Opportunity		Constraint	Opportunity			
Amberley	<ul style="list-style-type: none"> Approximately 10ha unconstrained and 90ha with moderate. The 25ha RBIB should be retained. Area has low suitability for industrial development in the short term due to access and servicing limitations and need for further mining investigations. 	Moderate constraint	Moderate - High	Moderate constraint	Moderate constraint	High	Moderate constraint	<ul style="list-style-type: none"> Potentially suitable for low – medium impact business and industry in the long term Potential for higher impact industry where separation distance can be achieved High potential to leverage commercial/ synergistic opportunities from existing uses in the area. 	<ul style="list-style-type: none"> Further geotechnical assessments required, and development of area should be integrated with the wider Ebenezer Regional Employment Area.
Jeebropilly	<ul style="list-style-type: none"> Approximately 276ha of potentially suitable in the long term subject to further mining investigations. Area has low suitability for industrial development in the short term due to access and servicing limitations, need for further mining investigations and distance from commercial/synergistic opportunities. 	Minimal – Moderate constraint	Moderate	Moderate constraint	Moderate constraint	Minimal	Moderate constraint	<ul style="list-style-type: none"> Potentially suitable for low – medium impact business and industry in the long term Potential for higher impact industry where separation distance can be achieved Limited opportunity to leverage commercial/ synergistic opportunities due to its distance from established industrial areas. As a result, it is unlikely to be considered a short- or medium-term opportunity. 	<ul style="list-style-type: none"> Further geotechnical assessments required, and development of area should be integrated with the wider Ebenezer Regional Employment Area.
Ebenezer	<ul style="list-style-type: none"> Approximately 313ha potentially suitable in the long term subject to further mining investigations. Area has low suitability for industrial development in the short term due to access and servicing limitations and need for further mining investigations. 	Minimal constraint	High	Moderate constraint	Moderate constraint	Moderate	Moderate constraint	<ul style="list-style-type: none"> Potentially suitable for low – medium impact business and industry in the long term Potential for higher impact industry where separation distance can be achieved High potential to leverage development and servicing opportunities from future development of the EDQ Willowbank Industrial estate. Development potential is largely dependent on the infrastructure provision expected from the development of the EDQ Willowbank industrial estate. Without this leverage, infrastructure costs would prohibit short- or medium-term development of this area. 	<ul style="list-style-type: none"> Further geotechnical assessments required, and development of area should be integrated with the wider Ebenezer Regional Employment Area. Timing of infrastructure to service the EDQ land and wider Ebenezer industrial area should be reviewed by COUNCIL and UU.
Mount Forbes	<ul style="list-style-type: none"> Approximately 231ha potentially suitable in the long term subject to further mining investigations. Area has low suitability for industrial development in the short term due to access and servicing limitations and need for further mining investigations. 	Moderate- Minimal constraint	Moderate	Moderate constraint	Moderate constraint	Moderate	Moderate constraint	<ul style="list-style-type: none"> Potentially suitable for low – medium impact business and industry in the long term Potential for higher impact industry where separation distance can be achieved High potential to leverage development and servicing opportunities from future development of the EDQ Willowbank Industrial estate. Development potential is largely dependent on the infrastructure provision expected from the development of the EDQ Willowbank industrial estate. Without this leverage, infrastructure costs would prohibit short- or medium-term development of this area. 	<ul style="list-style-type: none"> Further geotechnical assessments required, and development of area should be integrated with the wider Ebenezer Regional Employment Area. Timing of infrastructure to service the EDQ land and wider Ebenezer industrial area should be reviewed by COUNCIL and UU.
Willowbank	<ul style="list-style-type: none"> Approximately 40 ha owned by EDQ is suitable for development subject to the timing of enabling infrastructure. A further 600ha potentially suitable in the long term subject to further mining investigations. Part of the EDQ land has moderate suitability for industrial development in the short term due to access and servicing limitations and need for further mining investigations. 	Minimal constraint	Moderate- High	Minimal – Moderate constraint	Moderate -Minimal constraint	High	Minimal – moderate constraint	<ul style="list-style-type: none"> Potentially suitable for low – medium impact business and industry in the long term Potential for higher impact industry where separation distance can be achieved High development potential from the planned and approved (40h Stage 1) EDQ Willowbank Industrial estate. However, 40ha of the EDQ land in Willowbank is part of one of several sites in SEQ earmarked as a potential intermodal hub site, subject to completion of a business case later in 2021. This land would only be available for alternative industrial uses if not selected for the intermodal hub. 	<ul style="list-style-type: none"> Further geotechnical assessments required to establish suitability of additional land for industrial development. Timing of infrastructure to service the EDQ land and wider Ebenezer industrial area should be reviewed by COUNCIL and UU.

Location / Area	Summary of Sieve 2 Assessment	Suitability rating per area of consideration						Key opportunities	Recommendations
		Planning		Environmental	Commercial		Infrastructure		
		Constraint	Opportunity		Constraint	Opportunity			
Mutdapilly	<ul style="list-style-type: none"> Approximately 251 ha owned by EDQ is suitable for development subject to the timing of enabling infrastructure. The EDQ land has moderate suitability for industrial development in the short term due to access and servicing limitations and need for further mining investigations. 	Minimal constraint	Moderate- High	Minimal – Moderate constraint	Moderate -Minimal constraint	High	Minimal – moderate constraint	<ul style="list-style-type: none"> Potentially suitable for low – medium impact business and industry in the long term Potential for higher impact industry where separation distance can be achieved High development potential from the planned and approved (40h Stage 1) EDQ Willowbank Industrial estate. However, 251ha of the EDQ land in Mutdapilly is part of one of several sites in SEQ earmarked as a potential intermodal hub site, subject to completion of a business case later in 2021. This land would only be available for alternative industrial uses if not selected for the intermodal hub. 	<ul style="list-style-type: none"> Further geotechnical assessments required to establish suitability of additional land for industrial development. Timing of infrastructure to service the EDQ land and wider Ebenezer industrial area should be reviewed by Council and UU.
Swanbank	<ul style="list-style-type: none"> Approximately 261ha is potentially suitable for industrial development although much of this area is affected by various levels of mining constraints, which constrains the ability to provide services and significantly increases the cost of development. Swanbank is not included in UU Netserv catchments although some trunk water and sewerage mains pass through the area and service pockets of development close to Redbank Plains Road. UU have no plans to service this area at this time. Much of the land zoned RBI Buffer covers former fly ash pond from the Swanbank Power Station. These areas are not considered to be geotechnically suited to industry development although may be suited to outdoor storage areas or ancillary industrial use with appropriate treatment. The area has overall moderate suitability for industrial development although the mining constraints, lack of services and high development costs lower the overall suitability of much of this area. 	Minimal constraint	Moderate- High	High-Moderate constraint	Moderate constraint	High	Moderate constraint	<ul style="list-style-type: none"> Parts of the site would be suitable for low, medium or high impact and business and industry subject to the ability to connect to existing infrastructure networks High impact uses would be suitable in the central most precincts with appropriate buffer distances, including existing high impact uses Low impact uses or establishment of a business park would be appropriate in the current low impact subarea adjacent the Centenary Highway and east of the Ripley Town Centre The ash pond areas within the Buffer zone are not considered suitable for industry without further remediation and should be retained as buffers. 	<ul style="list-style-type: none"> Undertake or update existing mining constraint risk assessment and approach UU to include existing developed and low risk areas into UU Connection Areas. Review LGIP timeframes for road upgrades in the southern part of the Swanbank Enterprise Area in line with growth in the Ripley Valley. Undertake more detailed commercial assessment of the area to identify potential tenants and use requirements.
Riverview	<ul style="list-style-type: none"> Approximately 33ha (3.6ha LBI, 12.57ha RBI Low Impact, 15.65ha RBI Medium Impact) is potentially suitable for business and industrial development although much of this land fall below the adopted flood level and around 10ha is potentially affected by mining constraints. The area is considered to have a moderate to high suitability to development subject to the above-mentioned flood and mining consideration. 	Minimal constraint	Moderate	Minimal – Moderate constraint	Minimal constraint	High	Minimal constraint	<ul style="list-style-type: none"> The area is considered suitable for low to medium impact business and industry consistent with current zoning. 	<ul style="list-style-type: none"> Area is suitable for development.
Wulkuraka	<ul style="list-style-type: none"> Approximately 30ha (3.4ha RBI Low Impact, 26.6ha RBI Medium Impact) are considered suitable for development. The area is considered to have a high suitability for development. 	Moderate- Minimal constraint	High	Minimal – Moderate constraint	Minimal constraint	High	Minimal - Moderate constraint	<ul style="list-style-type: none"> The area is considered suitable for low to medium impact business and industry consistent with current zoning 	<ul style="list-style-type: none"> Area is suitable for development. The Draft LAF proposes to rezone land south of the western extension of Chalk Street from RBI Low Impact to Environmental management. This would reduce the potential supply of land by approximately 4-5 ha. Being inconsistent with the findings of this assessment, this area should be reassessed.
Karrabin	<ul style="list-style-type: none"> Approximately 61ha (3ha LBI, 58ha RBI to Low and Medium Impact) are considered suitable for development. A significant amount of land in this area is constrained by an approval for a commercial scale solar farm (50 hectares) The area is considered to have a high suitability for development. 	Moderate constraint	Moderate- High	Moderate constraint	Moderate -Minimal constraint	Moderate	Minimal - Moderate constraint	<ul style="list-style-type: none"> The area is considered suitable for low to medium impact business and industry consistent with current zoning 	<ul style="list-style-type: none"> Area is suitable for development. Further assessment of lands proposed in the draft LAF for Environmental Management should be undertaken in light of assessment model findings.
Tivoli	<ul style="list-style-type: none"> Approximately 15ha (LBI) are considered suitable for development The area is considered to have a high suitability for development. 	Minimal constraint	Moderate- High	Minimal – Moderate constraint	Minimal constraint	High	Minimal constraint	<ul style="list-style-type: none"> The area is considered suitable for low impact industry or business park consistent with the current zoning The RBI Buffer area is considerably affected by flooding and is not considered suitable for development. 	<ul style="list-style-type: none"> Area is suitable for development.

Location / Area	Summary of Sieve 2 Assessment	Suitability rating per area of consideration						Key opportunities	Recommendations
		Planning		Environmental	Commercial		Infrastructure		
		Constraint	Opportunity	Constraint	Constraint	Opportunity	Constraint		
Bundamba	<ul style="list-style-type: none"> Approximately 90ha (66ha RBI Low Impact, 24ha RBI Medium Impact) are considered suitable for development. The area is considered to have a high suitability for development. 	Moderate constraint	High	Minimal – Moderate constraint	Moderate – Minimal constraint	High	Minimal – Moderate constraint	<ul style="list-style-type: none"> The area is considered suitable for low and medium impact business and industry consistent with current zoning Parts of the RBI Buffer area although physically suited for development should be retained to provide separation from the Bundamba WWTP. 	<ul style="list-style-type: none"> Area is suitable for development.
Yamanto	<ul style="list-style-type: none"> Approximately 45ha are considered suitable for development. The area is considered to have a high suitability for development. About 9ha of land in the LBI Buffer zone and north of Berry Street and west of the abattoir has been assessed as potentially suitable although not included in the assessment as it provides separation from the abattoir and associated works. There may be potential for some land extensive industry uses in this area. 	Moderate- Minimal constraint	Moderate- High	Minimal constraint	Moderate - Minimal constraint	High	Minimal - Moderate constraint	<ul style="list-style-type: none"> The area is considered suitable for low impact business and industry consistent with current zoning Given the nature of surrounding development and proximity to the hospital and university this location would be suitable for establishment of a business park. 	<ul style="list-style-type: none"> Area is suitable for development. Review the LBI Buffer area west of the abattoir to establish potential suitability for land extensive industry.
Flinders View	<ul style="list-style-type: none"> Approximately 17ha (LBI) are considered suitable for development. The area is considered to have a high suitability for development. 	Minimal constraint	Moderate- High	Minimal – Moderate constraint	Minimal constraint	High	Minimal - Moderate constraint	<ul style="list-style-type: none"> The area is considered suitable for low impact business and industry consistent with current zoning. 	<ul style="list-style-type: none"> Area is suitable for development.
New Chum	<ul style="list-style-type: none"> Approximately 70ha is potential suitable for RBI Medium Impact business and industrial development although the area is affected by mining constraints. The area has overall moderate suitability for industrial development although the mining constraints, lack of services and high development costs lower the overall suitability of much of this area. 	Moderate- Minimal constraint	Moderate- High	High- Moderate constraint	Moderate - Minimal constraint	High	Moderate – High constraint	<ul style="list-style-type: none"> Potentially suited to low to medium impact business and industries and activities with synergies with the adjacent resource recovery activities. 	<ul style="list-style-type: none"> Undertake further mining constraint risk assessment or retain area for land extensive resource recovery/ circular economy uses.
Redbank	<ul style="list-style-type: none"> Approximately 50ha (14ha RBI Low Impact, 36ha RBI Medium Impact) are considered suitable for development. The area is considered to have a high suitability for development, However, the majority of land identified for potential development lies within the Environmental Management or Special Area zone, lowering the overall suitability of much of this area. 	Minimal constraint	Moderate	Minimal – Moderate constraint	Minimal constraint	High	Minimal - Moderate constraint	<ul style="list-style-type: none"> The area is considered suitable for low impact business and industry consistent with current zoning. 	<ul style="list-style-type: none"> Area is suitable for development.
Redbank Plains	<ul style="list-style-type: none"> Approximately 18ha (LBI) are considered suitable for development. The area is considered to have a high suitability for development. 	Minimal – Moderate constraint	High	Minimal – Moderate constraint	Moderate - Minimal constraint	Moderate	Moderate constraint	<ul style="list-style-type: none"> The area is considered suitable for low impact business and industry consistent with current zoning Establishment of a business park on the Redbank Plains Road site would be suitable given the nature of adjoining development and level of exposure. 	<ul style="list-style-type: none"> Suitable for development subject to the extension of services.
Walloon	<ul style="list-style-type: none"> Approximately 29ha (LBII) are considered suitable for development. Ho The area has overall moderate suitability for industrial development although distance from services and DAs for residential uses lower the overall suitability of much of this area. 	Moderate- High constraint	High- Moderate	Minimal constraint	Moderate - Minimal constraint	High	Minimal - Moderate constraint	<ul style="list-style-type: none"> The area is considered suitable for local or low impact industry although it is currently outside the UU water and wastewater connection areas Development applications for incompatible uses (residential) over the majority of land identified in the sieve 1 assessment limits developability of the area. 	<ul style="list-style-type: none"> Area is suitable for development.

NOTE: some of the 371.90 ha of mining affected land could potentially be used for some industrial activities subject to the nature of constraint, level of associated risk and type of activity proposed. Some of this land may be suited to some land extensive activities with little or no remediation (such as for outdoor storage, lay down area, material stockpiling or where light weight or temporary building structures only are required) whereas other areas may have limited suitability due to level of risk.

3.5 Key Findings

The results of the Sieve 2 assessment confirms that the industrial areas of highest suitability for industrial development in the short term are those infill or expansion opportunities associated with existing industrial estates. Approximately 359ha are considered suitable for short term development as summarised in Table 3-2.

Table 3-2 Summary of Most Suitable Industrial Areas

Suburb	Total Area	LBI	RBI (LI)	RBI(MI)
Riverview	33	3.6	12.6	16.8
Wulkuraka	30	-	3.4	26.6
Karrabin*	61	3	29	29
Tivoli	15	-	15	-
Bundamba	90	-	66	24
Yamanto	45	45	-	-
Flinders View	17	17	-	-
Redbank	50	-	14	36
Redbank Plains	18	18	-	-
Totals	359	86.6	140	132.4

* Approximate area zoned RBII warrants further assessment based on model results

As indicated by the table, the amount of suitable vacant industrial land by zone is:

- Local Business and Industry: approximately 89ha
- Low impact: approximately 140ha
- Medium impact: approximately 132ha.

The land in the above table is additional to the limited infill and possible redevelopment opportunities of the remainder of Ipswich City's industrial areas, which combined have an estimated 43 ha of vacant suitable land. It should be noted that 100% development of these areas may not ever be achieved due to land ownership or other considerations.

There is also an additional 371ha of industrial zoned areas that are physically suited to development for which infrastructure has been planned (or is potentially capable of being extended) but not yet connected. These areas include:

- Approximately 51ha at the southern end of Swanbank east of the Ripley Town Centre, zoned RBI Low and Medium impact. This area is understood to be free from mining constraints
- Approximately 29 ha at Walloon currently zoned RBII
- Approximately 40ha of EDQ land at Willowbank which has been assessed as free from mining constraints zoned RBII
- Approximately 251ha of EDQ land at Mutdapilly also assessed as free from mining constraints and zoned RBII.

It should be noted that should Ebenezer be selected as the site for the proposed intermodal facility, the approximately 290ha of EDQ land would be required to accommodate all the associated infrastructure and allied uses. This will bring forward the need to identify additional suitable land in the Ebenezer Regional Industrial Area. It is understood that

EDQ has additional site suitability information related to the area (not available for this study). Council should work with EDQ to access and review the overall suitability of the area.

Other areas identified as being moderately suitable due to lack of services are relatively close to existing networks (although not identified as future connection areas in the Netserv plans) include some 70ha in New Chum and a further 200ha in Swanbank. However, these latter areas are also affected by mining constraints, and further geotechnical assessment should be carried out to determine the most suitable areas for future development and integrate these areas into Urban Utilities' network planning.

An additional 2,388.6 ha of RBII land within the Ebenezer Regional Industrial Area may be suitable subject to further assessment of mining constraints. Suitable areas should then be incorporated into future servicing strategies. Some of the land potentially affected by mining constraints may be suitable for some land extensive industrial enterprises (such as those that have a significant requirement for outdoor stockpiling or laydown areas) or activities with light or transportable building structures, depending on the nature of mining constraint and associated level of associated risk.

Additional findings from the assessment of existing industrial areas include the following:

- **Need for Rezoning**

Several of the areas outlined in **Table 3-33** will require changes to the current zoning to facilitate appropriate development. The identified land at Tivoli and Walloon currently zoned RBII will need to be rezoned to RBI (Low Impact). Some of the RBII land at Wulkuraka is proposed to be rezoned to Environmental Management in the draft LAF although the land use assessment for this study suggests a considerable portion of this land is free from constraints. This area may warrant further consideration by Council.

- **Use of Buffer Areas**

The industry buffer areas were also assessed as part of the Sieve 2 evaluation. Generally, the existing buffer areas are supported by the evaluation, either being physically constrained for development, are too fragmented for efficient development (such as at Karrabin), or provide required separation from sensitive or incompatible land uses. The draft LAF recommends some existing buffer land at Karrabin be rezoned to Environmental Management, but as noted above the suitability assessment conducted for this project suggest there could be more useable land, and this should be considered.

The one location where use of buffer land should be further considered is the land north of Berry Street in Yamanto. It would appear this buffer has been left to provide separation distance to the abattoir to the east. Depending on abattoir operational requirements there may be scope to use some of this area for land extensive industrial uses. The area is approximately 9ha.

- **Amendments to LGIP**

While most of the areas appear to be fully serviced, the LGIP indicates some road works are planned to cater for full development and approve connectivity across the City. There are programmed works that will improve the connectivity of Yamanto and Swanbank, and the timing of these will need to be reviewed considering the expected take up timeframes for each area, further addressed in Sections 9 and 14 of this report.

Further, there are planned infrastructure works for the Ebenezer Regional Industrial Area that will need to be aligned with Councils LGIP and UU Netserv plans to ensure the early stages of this area are available as required in the forecast period. As part of this the current Priority Infrastructure Area (PIA) will need to be extended to cover the Ebenezer Regional Industrial Area as well as parts of Karrabin and Swanbank, as discussed in Section 13.

- **Need for Additional Investigations**

Several of the above areas will require additional investigations to determine or confirm the nature of mining related constraints to development within the precinct. It is understood that EDQ have additional information in relation to the nature of mining constraints for much of the Ebenezer Regional Industrial Area. Access to this

information will be useful in identifying additional land to the EDQs 291ha that would be suitable for short – midterm industrial development in the likely event the EDQ’s land is required for the proposed intermodal hub.

Further investigations are also required into the types of employment generating uses that could be accommodated on land with various degrees of known mining constraint (possibly circular economy activities), particularly for area such as Swanbank and New Chum.

The areas identified from this assessment as most suited to industrial development generally align with the conclusions of the literature review (Section 2.2); largely confirming the proposed recommendation for the use of industrial land in the draft LAF and suitability for the priority industries previously identified by Council. The assessment also confirmed the fragmented nature of usable land in Swanbank seems to be an impediment to market take-up. Notably, the land use assessment indicated that the previous estimations of developable industrial land within Ipswich have overstate the available supply of developer opportunities.

To identify future infrastructure requirements and planning, the areas most suited to industrial development have been further aligned with opportunities identified in the demand assessment in Section 9 and 14 of this report.

3.5.1 Comparison of findings with the South East Queensland (SEQ) Regional Plan (ShapingSEQ) and Growth Monitoring Program (GMP) Land Supply and Development Monitoring (LSDM) assessments

The GMP annually monitors land supply and development activities for both residential and non-residential land uses in SEQ, including industry.

As discussed in Section 2.2.7, according to the Growth Monitoring Program Land Supply and Development Modelling Report (2019) there were approximately 4,165ha of planned industrial land in Ipswich and this was intended to occur on land zoned for medium and low impact industry, and in an industry investigation area of approximately 2,945ha.

As further discussed in Section 2.2.8, a subsequent report, SEQ Growth Monitoring Best Practice Research Phase 2 - Land Supply Types and Developability Rules - Review of Local Variations Final Report (RPS 2019) / SEQ Growth Monitoring Best Practice Research Phase 2 – Industrial Land Supply Developable Area Final Report (RPS 2019) the area of developable industrial land was assessed as 4,163.2ha, inclusive of 3,639.4ha in the RBII and RBI Buffer zones, mostly in Ebenezer.

The latest assessment based on the GIS modelling further reduces the amount of developable industrial land to an estimated 362ha zone LBI, RBI (low and medium impact) and a further 290ha zoned RBII comprising the proposed Willowbank Industrial Estate. A further 2,388.6ha of land zone RBII in the wider Ebenezer Regional Industrial Area is potentially suitable although much of this area is affected by past mining activities and requires further detailed suitability assessment.

The implications of the findings of the Sieve 2 assessment on the industrial land supply and demand balance and the apportioning of forecast demand across this industrial area is discussed in the following section.

Section 4 Industrial Property Market Overview

This section of the report provides an overview of the Ipswich City industrial land market to understand the current and historic dynamics likely to influence industrial land demand. The assessment considers the volume, value and median sale price for vacant and improved property (i.e., industrial zoned land with a building on it) located on industrial zoned land. Take-up rates have also been considered to inform the industrial land demand projections for the Ipswich City.

The property market analysis has been undertaken at a Council wide level and includes a breakdown following key industrial areas:

- Ebenezer
- Swanbank/New Chum
- Bundamba/Citiswich
- Carole Park
- Redbank
- Yamanto
- Wulkuraka/Karrabin
- Balance (the remaining areas).

A detailed assessment of the Industrial Property market affecting Ipswich is located in **Appendix C**.

4.1 Assessment Summary

From 2009-10 to 2019-20, there were an estimated 231 industrial property sales in Ipswich City, comprising of 115 vacant industrial land sales and 116 improved industrial property sales. Industrial sales activity was largely concentrated within the Carole Park, Bundamba, and Swanbank/New Chum industrial precincts. The general downturn in industrial land demand responsible for the drop in take-up between 2010 to 2013 and the increase in 2018.

Over this period, vacant industrial land in Ipswich City median sale price per square metre ranged from \$3.72 per square metre in the Ebenezer industrial area to \$241.70 per square metre in Carole Park industrial area. Median allotment size of vacant land sales was highest in Ebenezer and Swanbank/New Chum, achieving median allotment size of 393,790sqm and 171,007sqm, respectively. Whereas, improved industrial properties median sale price per square metre ranged from \$46.60 per square metre in Ebenezer (although this was based on two sales) to \$452.68 per square metre in Carole Park industrial area. Median industrial property allotments were highest in Swanbank/New Chum and Wulkuraka/Karrabin achieving median allotment size of 107,000sqm and 17,721sqm, respectively.

Historically, take up rates of vacant industrial land have been significant in Ipswich City, with 170.3 hectares of vacant land have taken up over the last ten years, representing an average of 15.5 hectares per annum. Noticeably, take up was highest in 2018-19 with 42.4 hectares taken up.

Section 5 Micro-economic and Macro-economic Trends Influencing the Future of Industry

The purpose of the industrial trends analysis is to identify existing and emerging industry trends which might have implications for land use planning of industrial and other employment areas within Ipswich City. Not all trends are likely to have explicit consequences for land use planning, but an understanding of those trends might provide useful context to policy makers. In the last five years, there has been significant interest among certain groups to identify ‘megatrends’ that might influence our community globally and locally. There are several megatrends reports in the public domain. While these reports typically describe different megatrends, a summary review of megatrends identified highlights some consistent themes. Through significant market research, the sections below detail macro and microeconomics trends which have been identified as influencing the future of industry and productive places.

A detailed assessment of micro-economic and macro-economic trends influencing the future of industry market in Ipswich is located in **Appendix D**.

5.1 Macro-Economic Trends

The macroeconomic trends detailed in this section are as follows:

- **Globalisation and changes in trade policy:** how the interdependence of economies affects trading patterns and the competitiveness of industrial sectors in Australia
- **Shifts in Industry Competitive Advantage:** changes which may arise from COVID-19. For example, potential shifts to onshoring reinforcing perceptions of Australia as a safe and clean manufacturer and potential impacts on skilled migration
- **Emerging Megatrends:** a broad range of megatrends which will shape industrial workforces around the world. The most significant trends include:
 - **Changes in Human Capital Requirements:** changes to the amount of human labour required in industry and the consequences of having a higher skilled, knowledge intense workforce overall
 - **Technological Growth:** exponential growth in technological capability through the Internet of Things (IoT), industry 4.0 and eCommerce
 - **Emergence of Advanced Logistics:** the integration of technology in the supply chain and how it can impact industry
 - **Porous Boundaries:** the boundaries associated with more flexible and agile labour markets reinforcing the project-based nature of advanced manufacturing
 - **Reshaping of the Workforce:** increases in female workforce participation in addition to second and third career options for an aging population having an impact on how productive places operate
 - **Increasing Knowledge Intensity:** increases in the volume of knowledge-based workers across the economic profile, including industry and the associated embedding of design in manufacturing and logistics
 - **Increasing Expectations Around ‘Soft Factors’:** this pertains to sustainability, organics, provenance, workplace flexibility and workforce expectations.

5.2 Macro and Micro Trends Implications

The macro-economic trends detailed in **Appendix D** indicate that there are a variety of international factors which will have implications for the future of industrial activity in Ipswich City. Globalisation and changes in trade policy will result in an increased volume of imports and exports requiring distribution throughout Australia. Ipswich has significant existing and proposed logistics and freight network infrastructure which seeks to further the efficiency of the regional and state-wide freight network, in turn furthering SEQ as a valuable trading partner. The transport, warehousing and postal services industry is anticipated to be a high-value industry and a significant source of employment in Ipswich and SEQ more broadly.

Additionally, the COVID-19 pandemic has proven the interdependence between Australia and the country's primary trading partners such as China and India. Due to the restrictions in place across the world to manage the pandemic many goods typically imported by Australia's trading partners were in short supply, leaving businesses and consumers without products. This pressure on imports is anticipated to lead to a resurgence in domestic manufacturing, particularly in necessary goods as opposed to discretionary goods.

Additionally, Queensland's richness in natural resources also provide opportunities for the sustainable energies industry to support future industrial activity in Ipswich City and broader SEQ.

Emerging megatrends in industrial activity include lower labour to capital ratios, changes in demographics, knowledge intensity and workplace flexibility. However, a common theme among these industry trends is that each of these trends is dependent on technological advancement. Technology is required to reduced human capital requirements, increase workplace flexibility, upskill significant proportions of the workforce or increase knowledge intensity in industrial activities. Therefore, the professional, scientific, and technical services industries will be a driving factor in the future as the emerging megatrends discussed in this section continue to permeate Australian industry. Finally, it is expected that the existing high value industry within Ipswich City will continue to contribute to the regions value and employment into the future (Section 5.2). Based on the emerging megatrends, the following industries are expected to be significant driving factors to both the SEQ and Ipswich City economies in the future:

- Transport, postal and warehousing
- Manufacturing
- Sustainable energy
- Education and training
- Professional, scientific and technology services
- Public administration and safety
- Construction and
- Health care and social assistance.

Section 6 Labour Force Considerations

This section of the report provides an overview of employment projections and labour force characteristics of Ipswich City Council and the SA2s. Additional detail is provided in **Appendix E-G** including the following sections:

- **Employment projections:** this section provides an overview of QGSO employment projections and employment retention for Ipswich City Council
- **Resident workforce characteristics:** this section details the characteristics of the resident workforce including industry of employment, education levels (total workforce and industrial workforce), occupation (total workforce and industrial workforce) and journey to work characteristics of industrial workforce. This analysis was undertaken at the LGA and SA2 level
- **Place of work characteristics:** this section details the characteristics of the employment by place of work including industry of employment, education levels (total workforce and industrial workforce), occupation (total workforce and industrial workforce) and journey to work characteristics of industrial workers. This analysis was undertaken at the LGA and SA2 level and
- **Implications for industrial land demand:** this section summarises the key employment and labour force characteristics of industrial sector workers within Ipswich City and the SA2s.

6.1 Industrial Sector Employment and Characteristics Summary

Employment projections for Ipswich City estimate that industrial employment will increase, however, will decrease in the overall incidence of total employment by 2041. Therefore, suggesting a decline in industrial employment opportunities within the LGA relative to other sectors. Additionally, the QGSO employment retention assessment suggests that there will be a relative decrease in worker retention across all sectors between 2020-21 and 2040-41. The culmination of increased workforce leakage and declining significance of industrial employment within the LGA suggests that industrial sections within Ipswich City will be particularly vulnerable. Ipswich City resident workforce has historically had a large proportion of manufacturing workers, however, between 2006 and 2016 this proportion has significantly decreased to approximately 10.0% of the resident workforce. A similar trend is also evident in the wholesale trade sector. However, the transport, postal and warehousing sector demonstrated a consistent incidence of workers across the three Census periods. Relative to the non-industrial sectors, these sectors have shown less promising employment growth over time in the resident workforce.

This trend in the resident workforce of Ipswich City shift from industrial employment to other industries is furthered by the proportion of the workforce with a bachelor's degree or higher increasing relatively faster than the incidence of persons with a certificate qualification. Additionally, over the past three Censuses the proportion of the resident workforce employed as professionals has increased whilst the incidence of industrial workers has declined (technicians and trades workers, machinery operators and drivers and labourers). Typically, the resident workforce has been dominated by blue-collar occupations, however, over the course of the past three Censuses it is evident that there is a shift towards white-collar employment requiring higher education.

Similarly to the resident workforce, the working population of Ipswich City has also demonstrated a decreasing proportion of employment in industrial sectors between 2006 and 2016. The manufacturing sector demonstrated the most significant decrease in the incidence of employment, totalling an 8.5% decline between 2006 and 2011. Additionally, the two populations in question have a similar incidence of persons holding a bachelors degree or higher across the three Censuses (significant growth over time) and an overall similar incidence of employment in most occupations.

Notably, overall, the incidence of persons with a post-school qualification is significantly lower in the working population than recorded for the resident workforce, demonstrating that in 2016 approximately 40.0% of workers employed in Ipswich City did not hold any post school qualification. This variance is particularly evident in the incidence of persons in Ipswich City working population holding a certificate. Whilst certificate attainment is necessary for many machinery and equipment operators and most technicians and trades workers, it is not necessary or required for labourers. Concurrently, the working population of Ipswich City did demonstrate a marginally higher incidence of labourers and technicians and trades workers relative to the resident workforce as of 2016.

Of industrial workers employed in Ipswich City in 2016 most also resided in Ipswich City but a significant proportion also resided within Brisbane City, most notably in the Forest Lake – Doolandella SA2 or within the Ipswich – North SA2 and are therefore not travelling a great distance between work and home. However, the industrial resident working population demonstrated increasing employment leakage from Ipswich City to other areas (particularly to Brisbane City) between the 2011 and 2016 Censuses.

The leaked industrial workforce was most significantly employed in the Rocklea – Acacia Ridge SA2 which is located in the SWIC and contains the Archerfield Airport, the Rocklea Markets and the Linfox Intermodal Terminal. Additionally, a significant proportion of persons were employed within the Wacol SA2 which is also located along the SWIC and is well connected by road and rail. The Wacol SA2 is home to the Wacol industrial area which offers broad range of employment opportunities due to the diversity of industrial activities within the development. Overall, as of the latest Census data there was still a significant proportion of industrial work retention in Ipswich City, however, it has been steadily declining over the last decade and based the latest QGSO employment projections this trend is anticipated to continue to 2041.

Section 7 Screening Methodology

To determine the dominant and emerging industry sectors within Ipswich City the following regional analysis techniques have been utilised as a screening methodology:

- Industry significance analysis
- Economic base or location quotient analysis
- Shift share analysis and
- Regional export value and growth.

These four regional analysis techniques are simple and easy to understand, thereby being ideal as bases of preliminary screening of industry sectors at a regional level. As each of these techniques has different strengths and weakness, all three techniques have been utilised, with each industry sector subject to all three techniques. Industry sectors that achieve an affirmative result across multiple techniques are either regionally significant or sectors for which Ipswich City maintains a competitive advantage.

The industry significance analysis, economic base or location quotient analysis, shift share analysis and regional export value and growth analysis all represent employment-based measures and rely on data from the 2011 and 2016 Census of Population and Housing.

The following provides a brief description of how each of the measures are calculated.

7.1 Industry Significance Analysis

Industry significance analysis seeks to identify whether a particular industry sub-sector (e.g. transport equipment and machinery manufacturing) is relatively significant within the broader industry (e.g. manufacturing). The measure of relative significance takes the form of a quotient that compares the industry share of a specific sub-sector against the average share of sub-sectors within a broader industry. An industry significance quotient greater than one indicates that a given industry sub-sector is relatively significant within the broader industry.

The formula for calculation is:

$$SQ = \frac{\text{Employment of Sub-sector A}}{\text{Employment of industry sector}} / \frac{1}{N}$$

Where:

- Employment of Sub-sector A: refers to the employment within the industry-sub-sector being evaluated (e.g. Transport equipment and machinery manufacturing)
- Employment of industry sector: refers to employment of the broader industry sector (e.g. Manufacturing) and
- N: refers to the number of sub-sectors within the broader industry sector.

The aim of industry significance analysis is to identify the disproportionately significant sub-sectors. The weakness of the approach is that the 'significance test' is determined by the number of sub-sectors identified within a broader industry. The number of sub-sectors is determined by the Australian New Zealand Standard Industry Classification (ANZSIC) system. As such, the determination of the number of sub-sectors could be considered arbitrary.

7.2 Location Quotient Analysis

Location quotient analysis (or economic base analysis as it is sometimes called) identifies whether any given industry sector within the region is over-represented in comparison to state or national averages. In short, this type of analysis allows for a simple assessment of competitive advantage. A region is considered to have a competitive advantage within an industry sector where that sector's share of regional employment exceeds the sector's share of state or national employment.

The formula for calculation is:

$$LQ_A = \frac{\text{Sector A share of employment within region}}{\text{Sector A share of employment within state}}$$

Where LQ_A refers to the location quotient for a given industry.

In addition to providing an indication of regional competitive advantage, location quotient analysis also identifies those sectors upon which the region has a disproportionately high reliance. While a location quotient is a static measure, when combined with an analysis of broader state or national context it can highlight the region's susceptibility to broader trends.

The location quotient technique has a number of deficiencies: firstly, it is a static measure and on its own provides little insight into regional trends. Secondly, it provides little insight into the competitive positioning of industry sectors that have a high capital intensity.

Within this report the location quotient for Ipswich City industry sectors is calculated by reference to the Queensland economy. Location quotients for Ipswich City have also been calculated relative to the SEQ economy as outlined in Section 5.2.1.

A location quotient that is greater than one signifies an affirmative value for the industry sector.

7.3 Shift Share Analysis

Shift share analysis determines proportion of regional economic growth or decline that can be attributed to national, industry based, and/or regional factors. From a regional perspective the analysis helps identify industries where regional factors have contributed to growth or decline. Shift share analysis generates three separate measures, including:

- **National (or state) Share (NS):** measures how much total employment in a region increased because of growth in the national or state economy over a period
- **Industry Mix (IM):** this measure identifies rapid or slow growing industry sectors within a region based on national (or state) growth rates for individual industry sectors
- **Regional Shift (RS):** this measure seeks to highlight a region's leading or lagging industry sectors by comparing the regional growth in a specific industry sector with the national (or state) growth for the same sector. In short, the regional shift identifies those sectors for which regional factors either contributed to, or detracted from, industry growth.

In the context of Ipswich City, the regional shift measure is most relevant to identifying sectors which benefit from a regional competitive advantage. Within this report the shift share analysis for Ipswich City industry sectors is calculated by reference to the Queensland economy.

The formulas for calculating the above measures are as follows:

$$NS = {}_i\text{region}^{t-1} \times \frac{QLDt}{QLDt-1}$$

$$IM = ({}_i\text{region}^{t-1} \times \frac{{}_iQLDt}{{}_iQLDt-1}) - NS$$

$$RS = {}_i\text{region}^{t-1} \times ({}_i\text{region}^t / {}_i\text{region}^{t-1} - {}_iQLDt / {}_iQLDt-1)$$

Where:

${}_i\text{region}^{t-1}$ refers to the regional employment within an industry (i) in the first period of the analysis (t-1)

${}_i\text{region}^t$ refers to the regional employment within an industry (i) in the second period of the analysis (t)

QLDt-1 refers to the total employment within the state in the first period of the analysis (t-1)

QLDt refers to the total employment within the state in the second period of the analysis (t)

${}_iQLDt-1$ refers to the employment within an industry (i) in the first period of the analysis (t-1)

${}_iQLDt$ refers to the employment within an industry (i) in the second period of the analysis (t)

The shift share model articulated above is the model in its simplest form. More complex variants of the model can be formulated to provide a more dynamic analysis of regional industry performance.

An affirmative result for the shift share analysis for the purposes of the screening process arises when a given industry sector achieves a positive (greater than zero) Regional Shift result. This implies that regional factors have contributed positively to the sector's performance.

Unlike industry significance analysis and location quotient analysis, shift share analysis has a temporal dimension. Therefore, inclusion of shift share analysis should overcome some of the limitations flowing from the static nature of the other two tests.

7.4 Dominant and Propulsive Sectors

To be classified as a dominant and propulsive sector for the assessment, the sector must achieve an affirmative result across at least two of the three analytical criteria described above (i.e. industry significance analysis, location quotient analysis and shift share analysis).

There were 44 sectors identified as dominant and propulsive within Ipswich City, including nine sectors likely to utilise industrial land within the manufacturing, construction, wholesale trade, transport, postal and warehousing and other services sectors.

Table 7-1 summarises all industry sectors at both the one and two-digit ANZSIC level which were identified as dominant and propulsive sectors, with those likely to utilise industrial land highlighted in grey.

Table 7-1 Dominant and Propulsive Sectors, Ipswich City

1-Digit Industry Sector	2-Digit Industry Sector
Agriculture, Forestry and Fishing	Agriculture
Manufacturing	Food product manufacturing
	Beverage and tobacco product manufacturing
	Wood product manufacturing
	Pulp, paper and converted paper product manufacturing

1-Digit Industry Sector	2-Digit Industry Sector
	Basic chemical and chemical product manufacturing
	Primary metal and metal product manufacturing
	Fabricated metal product manufacturing
	Machinery and equipment manufacturing
Electricity, Gas, Water and Waste Services	Water supply, sewerage and drainage services
	Waste collection, treatment and disposal services
Construction	Construction services
Wholesale Trade	Basic material wholesaling
	Machinery and equipment wholesaling
	Motor vehicle and motor vehicle parts wholesaling
	Grocery, liquor and tobacco product wholesaling
	Other goods wholesaling
Retail Trade	Motor vehicle and motor vehicle parts retailing
	Fuel retailing
	Food retailing
	Other store-based retailing
Accommodation and Food Services	Food and beverage services
Transport, Postal and Warehousing	Transport, postal and warehousing, nfd
	Road transport
	Rail transport
Information Media and Telecommunications	Publishing (except internet and music publishing)
	Motion picture and sound recording activities
	Internet publishing and broadcasting
	Telecommunications services
Financial and Insurance Services	Finance
	Auxiliary finance and insurance services
Rental, Hiring and Real Estate Services	Property operators and real estate services
Professional, Scientific and Technical Services	Professional, scientific and technical services (except computer system design and related services)
Administrative and Support Services	Administrative services
	Building cleaning, pest control and other support services
Public Administration and Safety	Public administration
	Defence
Education and Training	Preschool and school education
Health Care and Social Assistance	Hospitals
	Medical and other health care services

1-Digit Industry Sector	2-Digit Industry Sector
	Residential care services
	Social assistance services
Other Services	Repair and maintenance
	Personal and other services

Source: ABS Census of Population and Housing (2016) and CDM Smith Analysis (2020)

Of the eighteen dominant and propulsive sectors likely to utilise industrial land, eight recorded affirmative results across all three criteria. The assessment also highlighted that Ipswich City has strengths within the hospitals and electricity, gas and waste services sectors as demonstrated in Table 7-2 below.

Table 7-2 Dominant and Propulsive Sectors likely to Utilise Industrial Land – Results of Industry Significance (SQ), Location Quotient (LQ) and Regional Shift (RS) Assessment, 2016

2-Digit Industry Sector	SQ & LQ	SQ & RS	LQ & RS
Food product manufacturing	✓	✓	✓
Beverage and tobacco product manufacturing			✓
Wood product manufacturing			✓
Pulp, paper and converted paper product manufacturing			✓
Basic chemical and chemical product manufacturing	✓	✓	✓
Primary metal and metal product manufacturing	✓	✓	✓
Fabricated metal product manufacturing			✓
Machinery and equipment manufacturing			✓
Construction services		✓	
Basic material wholesaling		✓	
Machinery and equipment wholesaling		✓	
Motor vehicle and motor vehicle parts wholesaling	✓	✓	✓
Grocery, liquor and tobacco product wholesaling	✓	✓	✓
Other goods wholesaling		✓	
Transport, postal and warehousing, nfd			✓
Road transport	✓	✓	✓
Rail transport	✓		
Repair and maintenance		✓	

Source: ABS Census of Population and Housing (2016) and CDM Smith Analysis (2020)

7.5 Supply Chain Gaps

The industries that achieved an affirmative result across at least two of the regional significance and competitive advantage measures in Table 7-2 above were analysed in concordance with 2015-16 Australian National Accounts Input-Output tables to determine key upstream (input) and downstream (output) sectors. This assessment considered both industrial and non-industrial sectors that were found to be dominant and propulsive. The rationale for this approach is whilst a dominant and propulsive sector may not demand industrial land, it may generate demand for industrial land due to its supply chain activities.

A sector is considered a supply chain gap if it is identified as a key upstream or downstream sector but not identified as a dominant and propulsive sector. The industrial supply chain gaps most frequently identified in the assessment were:

- Petroleum and Coal Product Manufacturing
- Polymer Product Manufacturing and
- Professional, Scientific, Computer and Electronic Equipment Manufacturing.

Table 7-3 identifies the industrial supply chain gaps within Ipswich City.

Detailed tables to support the industrial supply chain gap assessment are contained within Appendix I.

Table 7-3 Industrial Supply Chain Gaps – Ipswich City, 2016

Industry Sector	No of Times Identified as Input / Output Sector
Petroleum and Coal Product Manufacturing	6
Polymer Product Manufacturing	5
Professional, Scientific, Computer and Electronic Equipment Manufacturing	5
Motor Vehicles and Parts Other Transport Equipment manufacturing	3
Electrical Equipment Manufacturing	2
Furniture Manufacturing	2
Human Pharmaceutical and Medicinal Product Manufacturing	2
Railway Rolling Stock Manufacturing	2
Tanned Leather, Dressed Fur and Leather Product Manufacturing	1
Water, Pipeline and Other Transport	1

Source: CDM Smith Analysis (2020)

Section 8 SWOT Analysis

The SWOT analysis considers the industrial land market in the City of Ipswich considering:

- Regional assets: assets or endowments that drive competitive advantage (these include both physical assets and endowments and workforce capability)
- Regional economic structure: how the economic structure positions the City of Ipswich considering regional, state, national and international competition, including supply chain capability and integration and
- Regional markets: the markets in which industrial land within the City of Ipswich would operate or support, including consideration of how this is likely to shift should the intermodal terminal at Willowbank ultimately be established.

Table 8-1 summaries the SWOT analysis for the City of Ipswich, based on the findings of the previous sections of the analysis.

Table 8-1 SWOT Analysis for City of Ipswich

<p>STRENGTHS</p> <ul style="list-style-type: none"> • Proximity to Warrego, Cunningham Highways, Port of Brisbane and other key freight corridors • High level of industrial land take-up rate in the City of Ipswich • Diverse economic base • Existing strengths within the wholesale trade and manufacturing sectors • Presence of skilled workforce • Comparatively affordable industrial land • Strong overseas and internal migration to Ipswich City 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> • Limited higher education opportunities within the City of Ipswich • Lack of existing infrastructure provision in emerging industrial areas, development likely at significant cost
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> • Potential to attract industrial businesses from other South East Queensland LGAs due to industrial land supply constraints and Ipswich's freight connections • Potential to provide large industrial land allotments to accommodate lumpy industrial investment in Ebenezer, Willowbank, New Chum etc. • Shift to domestic manufacturing to limit the impact of global crises such as COVID-19 provides a potential opportunity for the City of Ipswich to ramp up manufacturing • Potential for the development of renewable energy sector including the development of solar farms and greater focus on recycling and upcycling of goods • Potential to attract advanced logistics and transportation businesses with the establishment of the Willowbank Intermodal Terminal 	<p>THREATS</p> <ul style="list-style-type: none"> • Declining industrial employment opportunities within Ipswich City and increasing employment leakage indicative of industrial sector vulnerability • Potential future conflicts between residential growth and industrial land growth • Businesses within Ipswich City not keeping pace with skills requirements and shifting technological expectations

Section 9 Industrial Land Demand

9.1 Employment Projection Approach

9.1.1 Scenario Description

In determining the long-term demand for industrial land within Ipswich City, employment projections have been prepared under three scenarios. **Table 9-1** presents a concise overview of the differing approaches utilised in each industrial land demand projection scenario. Further detail of each approach is outlined below.

Table 9-1 Overview of Projection Approaches

Scenario	Overview of Approach Adopted
Scenario One	<ul style="list-style-type: none"> Adopt Queensland Treasury employment projections for Ipswich City
Scenario Two	<ul style="list-style-type: none"> Increase rate of employment growth assumed by Queensland Treasury to align more closely with projected population growth, considering historic alignment of employment growth with population growth
Scenario Three	<ul style="list-style-type: none"> Adopt Queensland Treasury employment projections for Ipswich City, with slight upward revision to employment growth between 2016 and 2041 Include an allowance for reallocation of industrial employment within Brisbane City to Ipswich City

Source: CDM Smith Estimates

Scenario One utilises Queensland Treasury employment projections at the one-digit industry sector for Ipswich City rebased to two-digit ANZSIC industry sector and allocated to SA2s based on our understanding employment distribution throughout the city.

Scenario Two prepared two employment projections (conservative and optimistic) at the two-digit ANZSIC sector level by considering both historic and projected population growth in contrast to historic and projected employment growth in Ipswich City. This comparison found that over the past 19 years (2000-01 to 2018-19), population growth and employment growth in Ipswich City have had similar growth rates, averaging 3.1% per annum and 3.2% per annum, respectively.

However, a comparison of population and employment projections prepared by QGSO and Queensland Treasury demonstrated a significantly higher growth rate anticipated for population relative to employment in the 2019 to 2041 period.

Therefore, this scenario provides two alternative relationships between population and employment growth over the projection horizon by the reducing the divergence between population and employment growth assumed by QGSO projections under Scenario One. To mitigate this discrepancy, two alternative (conservative and optimistic) estimates of employment growth were adopted. Conservatively, employment growth of 3.0% per annum between 2019 and 2041 was adopted, whereas the optimistic outlook adopted employment growth of 3.5% per annum over the projection period. The adopted growth rates were then applied to total employment and re-aggregated to the single-digit ANZSIC level based on the share of employment by industry from the QGSO employment projections.

Projections at the single-digit ANZSIC were then rebased to two-digit ANZSIC industry sector and allocated to SA2s based on our understanding employment distribution throughout the city.

Table 9-2 details the historic and projected employment and population growth rates under Scenario Two.

Table 9-2 Scenario Two Employment Growth Rate 2019 to 2041 Considerations

	Average Annual Growth Rate(%)
Historic Population Growth 2000-01 to 2018-19	3.1%
Historic Employment Growth 2000-01 to 2018-19	3.2%
Queensland Treasury Employment Projections, 2019 to 2041	
QGSO Population Projections (medium series), 2019 to 2041	
Adopted Employment Growth Rate	3.0% (conservative), 3.5% (optimistic)

Source: QGSO Population and Employment Projections (2018) and ProfileID (2018-19)

Scenario Three employment projections consider a reallocation of future industrial employment from Brisbane LGA to surrounding LGAs including Ipswich City. This scenario was undertaken as the Queensland Treasury employment projections for SEQ do not consider land supply constraints for the Brisbane LGA. As such, the projections do not adequately consider if Brisbane LGA has capacity to accommodate the projected industrial employment.

Our analysis has assumed a portion of industrial employment growth in Brisbane LGA under the Queensland Treasury projections is reallocated to surrounding SEQ LGAs, i.e., Ipswich City, Logan City and Moreton Bay, as these LGAs represent the most suitable alternatives to Brisbane LGA, particularly for land extensive industrial uses of a medium to high impact nature. The most significant redirection of industrial employment is to Ipswich in the form of continued extension of industrial corridor along the Warrego and Cunningham Highways. Scenario Three also makes some minor adjustments to projected employment within Ipswich City by 2041. Scenario Three has made the following adjustments to the Queensland Treasury employment projection estimates:

- 0.7% uplift in employment across all industry sectors relative to Queensland Treasury estimates by 2041, with the exception of electricity, gas, water and waste services, which has been revised downwards
- Reallocation of 18,386 industrial sector workers from Brisbane City to Ipswich City between 2016 and 2041, comprising:
 - 11,507 manufacturing workers
 - 1,632 wholesale trade workers and
 - 5,247 transport, postal and warehousing workers.

Under the Queensland Treasury employment projections, there is anticipated to be an additional 76,362 workers within the key industrial sectors of manufacturing, wholesale trade and transport, postal and warehousing between 2016 and 2041 in Brisbane LGA. Our assessment has assumed that 41,387 of these industrial workers are accommodated outside of Brisbane City, with Ipswich City accommodating just under half of these workers within industrial sectors (18,386 workers).

Table 9-3 Assumed redistribution of employment in industrial sectors from Brisbane LGA to Ipswich LGA, 2016-2041

Industrial Sector	Employment Redistributed from Brisbane City, 2016-41	Assumed % Captured by Ipswich City, 2016-41	Employment Redistributed to Ipswich City, 2016-41
Manufacturing	28,768	40.0%	11,507
Wholesale Trade	3,079	53.0%	1,632
Transport, Postal and Warehousing	9,539	55.0%	5,247
Total	41,387	44.4%	18,386

The assessment has assumed that the redistribution of industrial employment from Brisbane City towards surrounding LGAs such as Ipswich City commences in 2021 and increases over time as Brisbane LGA becomes increasingly constrained and unable to accommodate industrial employment growth.

Table 9-4 summarises the 2041 employment at the single digit ANZSIC level at 2041 for Ipswich City under the Queensland Treasury and Scenario Three estimates. This table identifies employment within Ipswich City under Scenario Three would be 18,860 persons higher than under Scenario One in 2041.

Table 9-4 Projected Employment by Industry Comparison, Scenario One (Queensland Treasury) and Scenario Three

	Scenario One	Scenario Three	Difference
Agriculture, Forestry and Fishing	241	243	2
Mining	889	896	7
Manufacturing	18,008	29,649	11,640
Electricity, Gas, Water and Waste Services	1,178	710	-468
Construction	10,355	10,432	76
Wholesale Trade	2,036	3,683	1,647
Retail Trade	12,404	12,496	92
Accommodation and Food Services	6,318	6,364	47
Transport, Postal and Warehousing	4,520	9,800	5,280
Information Media and Telecommunications	370	372	3
Financial and Insurance Services	1,516	1,527	11
Rental, Hiring and Real Estate Services	1,918	1,932	14
Professional, Scientific and Technical Services	5,079	5,116	38
Administrative and Support Services	4,151	4,182	31
Public Administration and Safety	10,655	10,734	79
Education and Training	15,507	15,622	115
Health Care and Social Assistance	28,357	28,567	209
Arts and Recreation Services	756	761	6
Other Services	4,541	4,574	34
Total	128,800	147,660	18,860

It is our view that Scenario Three represents the most realistic and likely scenario for the industrial future of Ipswich City, as it accounts for the overflow demand from Brisbane, an often overlooked, but significant factor. Scenario One and Two have been presented to provide a range of potential outcomes at either end of the scale of industrial land demand.

9.2 Industrial Land Demand Projections by Activity Type

Industrial land demand by activity type considered employment projections for the SA2s contained in Ipswich City based on the two-digit ANZSIC level projections under Scenario One, Scenario Two and Scenario Three.

Employment projections by SA2 were then converted to industrial land demand by activity type utilising employment to land use conversion rate for the relevant industry zones,

Industry zoned land under the Ipswich Planning Scheme falls under the following zones:

- Local business and Industry Zone – heavy manufacturing is not supported in this zone, as such, uses within this zone are primarily general industry, storage, retail/wholesale, and warehousing and distribution activities
- General Business and Industry Zone Low Impact – the preferred uses in this zone do not produce excess noise, traffic or emissions which could impact surrounding areas. Some preferred uses include, education and training facilities, clean manufacturing (electronics), general industry, equipment hire, storage, retail/wholesale, and warehousing and distribution activities
- General Business and Industry Zone Medium Impact – medium to large scale industrial activities with potential for significant off-site impacts. Some examples of acceptable uses on this zone are rail, transport, timber and metal processing industries, food manufacturers and concrete batching plants, including the manufacturing, processing, treating, breaking up or dismantling, finishing, repairing, packaging, storing, distributing and wholesaling products such as wood, metals and plastic.

These industrial zones do not entirely concord to the one-digit ANZSIC categories used by the QGSO to group employment projections. Therefore, in producing purposeful employment projections this assessment has adopted the following three levels of industrial activity:

- Low Impact Industry
- Medium Impact Industry and
- High Impact Industry.

These industry categories align with the Ipswich Planning Scheme as low impact industry is similar in function to the local business and industry zone. Additionally, the general business and industry zone is reflective of the medium and high impact industry adopted in this assessment. Adopting these industry categories also allows for an allocation of one-digit ANZSIC categories to industrial land zones which is required for the calculation of industrial land demand.

Table 9-5 provides a succinct summary of the allocation of industrial land uses to industrial activity type as per the Ipswich City Planning Scheme. A detailed breakdown of the allocation of industrial land uses to industrial zones is outlined in Appendix E.

Table 9-5 Concordance of One Digit ANZSIC Categories to Industrial Land Activity Type

ANZSIC Sector	Low Impact Industry	Medium Impact Industry	High Impact Industry
Agriculture, Forestry and Fishing	0.0%-25.0%	0.0%-15.0%	0.0%-0.0%
Mining	22.5%-45.0%	35.0%-62.5%	0.0%-10.0%
Manufacturing	0.0%-65.0%	10.0%-60.0%	0.0%-60.0%
Electricity, Gas, Water and Waste Services	0.0%-0.0%	0.0%-60.0%	12.5%-72.5%
Construction	5.0%-20.0%	0.0%-0.0%	0.0%-0.0%
Wholesale Trade	60.0%-75.0%	0.0%-0.0%	0.0%-0.0%
Retail Trade	0.0%-45.0%	0.0%-5.0%	0.0%-0.0%
Accommodation and Food Services	0.0%-0.0%	0.0%-0.0%	0.0%-0.0%
Transport, Postal and Warehousing	10.0%-60.0%	5.0%-70.0%	0.0%-47.5%
Information Media and Telecommunications	0.0%-27.5%	5.0%-65.0%	0.0%-0.0%
Financial and Insurance Services	0.0%-0.0%	0.0%-0.0%	0.0%-0.0%

ANZSIC Sector	Low Impact Industry	Medium Impact Industry	High Impact Industry
Rental, Hiring and Real Estate Services	0.0%-2.5%	0.0%-0.0%	0.0%-0.0%
Professional, Scientific and Technical Services	0.0%-5.0%	0.0%-0.0%	0.0%-0.0%
Administrative and Support Services	0.0%-52.5%	0.0%-0.0%	0.0%-0.0%
Public Administration and Safety	0.0%-0.0%	0.0%-0.0%	0.0%-0.0%
Education and Training	0.0%-0.0%	0.0%-0.0%	0.0%-0.0%
Health Care and Social Assistance	0.0%-0.0%	0.0%-0.0%	0.0%-0.0%
Arts and Recreation Services	0.0%-0.0%	0.0%-0.0%	0.0%-0.0%
Other Services	0.0%-5.0%	0.0%-0.0%	0.0%-0.0%

Source: CDM Smith Estimates

9.2.1 Employment Projections by Activity Type

These employment to land use conversions rates for Ipswich City were then applied to employment projections under Scenario One, two and three. Employment projections were derived at the SA2 level based on our understanding of two-digit ANZSIC employment distribution within Ipswich City. Employment projections by activity type were undertaken for the 2016 to 2041 period, with 2019 figure interpolated based on the 2016 and 2021 projections.

Based on this approach, under Scenario One, industrial employment is anticipated to grow from 15,011 workers in 2019 to 24,111 workers by 2041 in Ipswich City⁶. This equates to an average annual growth rate of 2.2% between 2019 and 2041.

The number of employed persons in low impact industry is expected to be the highest out of the three industry zonings, increasing from 5,255 workers in 2019 to 8,559 workers by 2041. Likewise, employed persons in medium impact industry is expected to increase from 5,246 workers in 2019 to 8,265 workers by 2041. Meanwhile, growth in employed persons in high impact industry is expected to be the lowest out of the three industry zonings, increasing from 4,511 workers in 2019 to 7,286 workers by 2041. The SA2s that are expected to contribute most to industrial employment growth under Scenario One (in terms of the projected number of employed workers by 2041) in Ipswich City are:

- Rosewood (2,091 employed persons)
- Bundamba (1,827 employed persons)
- Churchill-Yamanto (2,027 employed persons)
- Ipswich-Central (1,907 employed persons)
- Ripley (1,542 employed persons)
- Riverview (2,632 employed persons)
- Carole Park (5,841 employed persons) and
- Collingwood Park-Redbank (1,762 employed persons).

Within Ipswich City more broadly, the following sectors are anticipated to drive employment growth within the low, medium, and high industrial zoning:

- Low impact zoning: building cleaning, pest control and other support services (growth of 908 workers between 2019 and 2041)
- Medium impact zoning: machinery and equipment manufacturing (growth of 576 workers between 2019 and 2041) and

⁶ The aggregation of 22 SA2s within Ipswich City

- High Impact zoning: food product manufacturing (growth of 1,251 workers between 2019 and 2041).

Under Scenario Two (conservative), industrial employment within Ipswich City is anticipated to increase from 15,556 workers in 2019 to 30,050 workers in 2041, an increase of 14,495 workers over this period. This represents an average annual growth rate of 3.0% between 2019 and 2041. Employment within the low impact industry is anticipated to be the primarily driving force behind industrial employment within Ipswich City. The SA2s that are expected to contribute most to industrial employment growth under Scenario Two (in terms of the projected number of employed workers by 2041) in Ipswich City are:

- | | |
|--|---|
| ▪ Carole Park (7,280 employed persons) | ▪ Ipswich - Central (2,377 employed persons) |
| ▪ Riverview (3,281 employed persons) | ▪ Bundamba (2,277 employed persons) |
| ▪ Rosewood (2,606 employed persons) | ▪ Collingwood Park - Redbank (2,196 employed persons) and |
| ▪ Churchill - Yamanto (2,526 employed persons) | ▪ Ripley (1,922 employed persons). |

Within Ipswich City, the following sectors are anticipated to drive employment growth within the low, medium, and high industrial zoning:

- Low impact zoning: building cleaning, pest control and other support services (growth of 1,251 workers between 2019 and 2041)
- Medium impact zoning: food product manufacturing (growth of 936 workers between 2019 and 2041) and
- High Impact zoning: food product manufacturing (growth of 2,060 workers between 2019 and 2041).

Similarly, under Scenario Two (optimistic), industrial employment within Ipswich City is anticipated to increase from 15,782 workers in 2019 to 33,898 workers in 2041, an increase of 18,116 workers over this period. This represents an average annual growth rate of 3.5% between 2019 and 2041. Consistent with the Scenario Two conservative approach, employment within the low impact industry is anticipated to be the primarily driving force behind industrial employment within Ipswich City. The SA2s that are expected to contribute most to industrial employment growth under Scenario Two (in terms of the projected number of employed workers by 2041) in Ipswich City are:

- | | |
|--|---|
| ▪ Carole Park (8,212 employed persons) | ▪ Ipswich - Central (2,682 employed persons) |
| ▪ Riverview (3,701 employed persons) | ▪ Bundamba (2,568 employed persons) |
| ▪ Rosewood (2,940 employed persons) | ▪ Collingwood Park - Redbank (2,477 employed persons) and |
| ▪ Churchill - Yamanto (2,850 employed persons) | ▪ Ripley (2,168 employed persons). |

Within Ipswich City, the following sectors are anticipated to drive employment growth within the low, medium, and high industrial zoning:

- Low impact zoning: building cleaning, pest control and other support services (growth of 1,478 workers between 2019 and 2041)
- Medium impact zoning: food product manufacturing (growth of 1,183 workers between 2019 and 2041) and
- High Impact zoning: food product manufacturing (growth of 2,603 workers between 2019 and 2041).

Utilising the employment to land use conversion matrix, industrial employment within Ipswich City under Scenario Three is anticipated to increase from 15,011 workers in 2019 to 37,958 workers in 2041, an increase of some 22,947 workers over this period. This equates to an average annual growth rate of 4.3% between 2019 and 2041. Under Scenario Three, the SA2s that are expected to contribute most to industrial employment growth under Scenario Two (in terms of the projected number of employed persons by 2041) in Ipswich City are:

- Carole Park (9,591 employed persons)
- Riverview (4,317 employed persons)
- Rosewood (3,279 employed persons)
- Churchill - Yamanto (3,229 employed persons)
- Collingwood Park – Redbank SA2 (3,208 employed persons)
- Bundamba (2,975 employed persons)
- Ipswich - Central (2,787 employed persons) and
- Leichhardt – One Mile (2,204 employed persons).

Within Ipswich City, the food product manufacturing sector is anticipated to be the main driver of industrial employment growth between 2019 and 2041. Across all three scenarios, the New Chum SA2 is expected to record low industrial employment growth, surprising given that there is high provision of industrial land to support future industrial growth.

Scenario Three represents the preferred industrial employment projection scenario, which anticipates average annual industrial employment growth of 4.3% per annum.

Table 9-6 details industrial employment projections by zoning within Ipswich City, with Appendix F providing detailed industrial employment projections by zoning by SA2.

Table 9-6 Industrial Employment Projections by Zoning, Ipswich City, 2019 to 2041

	2019	2021	2026	2031	2036	2041
Scenario One						
Low Impact Industry	5,255	5,464	6,038	6,776	7,600	8,559
Medium Impact Industry	5,246	5,367	5,813	6,476	7,288	8,265
High Impact Industry	4,511	4,615	5,009	5,604	6,415	7,286
<i>Total</i>	<i>15,011</i>	<i>15,446</i>	<i>16,859</i>	<i>18,857</i>	<i>21,304</i>	<i>24,111</i>
Scenario Two (Conservative)						
Low Impact Industry	5,447	5,803	6,657	7,748	9,065	10,668
Medium Impact Industry	5,435	5,700	6,409	7,405	8,693	10,302
High Impact Industry	4,674	4,902	5,523	6,408	7,652	9,081
<i>Total</i>	<i>15,556</i>	<i>16,405</i>	<i>18,589</i>	<i>21,561</i>	<i>25,411</i>	<i>30,050</i>
Scenario Two (Optimistic)						
Low Impact Industry	5,526	5,945	6,986	8,329	9,982	12,034
Medium Impact Industry	5,514	5,839	6,725	7,960	9,573	11,621
High Impact Industry	4,742	5,021	5,796	6,888	8,426	10,244
<i>Total</i>	<i>15,782</i>	<i>16,805</i>	<i>19,507</i>	<i>23,177</i>	<i>27,982</i>	<i>33,898</i>
Scenario Three						
Low Impact Industry	5,255	5,956	7,115	8,667	10,465	12,534
Medium Impact Industry	5,246	5,879	7,109	8,949	11,227	13,891
High Impact Industry	4,511	4,951	5,877	7,312	9,264	11,533
<i>Total</i>	<i>15,011</i>	<i>16,786</i>	<i>20,101</i>	<i>24,928</i>	<i>30,956</i>	<i>37,958</i>

Source: CDM Smith Analysis

9.2.2 Net Industrial Land Demand Projections by Activity Type

Industrial land demand projections by industry type were converted to the following industry activity type, as per the Ipswich City Planning Scheme:

- Low Impact Industry Zone

- Medium Impact Industry Zone and
- High Impact Industry Zone.

As per Ipswich City's local government infrastructure plan all industry uses adopted a provision of 100 sqm per worker (100 workers per hectare). For this assessment a lower provision of workers per hectare has been adopted in order to represent the variation in employment densities based on the nature of industrial activities. Net industrial land demand in Ipswich City has been derived by applying the following employment densities to projected employment (Appendix E provides further detail):

- Low impact industry: 45 employees per hectare
- Medium impact industry: 35 employees per hectare and
- High impact industry: 30 employees per hectare.

Based on this approach, there is net industrial land demand of 417.0ha within Ipswich City in 2019 under Scenario One. By 2041, this figure is projected to increase to 669.2ha (up 252.2ha). Net industrial land demand for low impact industry is anticipated to be the lowest out of the three industry zonings, with net demand increasing from 116.8ha in 2019 to 190.2ha by 2041. Meanwhile, net industrial land demand for medium impact industry is anticipated to increase from 149.6ha in 2019 to 236.2ha by 2041. Similarly, net industrial land demand for high impact industry is anticipated to be the highest out of the three industry zonings, with net demand increasing from 150.4ha in 2019 to 242.9ha by 2041.

Net incremental industrial land demand based on 2019 levels is projection to be highest in the following SA2s:

- | | |
|------------------------------|----------------------------|
| ▪ Rosewood (35.0ha) | ▪ Ipswich-Central (32.2ha) |
| ▪ Carole Park (28.4ha) | ▪ Riverview (20.2ha) and |
| ▪ Churchill-Yamanto (33.8ha) | ▪ Riverview (20.2ha). |

Within Ipswich City, the following sectors are anticipated to drive industrial land demand within the low, medium, and high industrial zoning:

- Low impact zoning: building cleaning, pest control and other support services (growth in demand of 20ha by 2041)
- Medium impact zoning: machinery and equipment manufacturing (growth in demand of 16ha by 2041) and
- High Impact zoning: food product manufacturing (growth in demand of 42ha between by 2041).

Under Scenario Two (conservative), net industrial land demand in Ipswich City is anticipated to increase from 432.1 hectares in 2019 to 834.1 hectares in 2041, an increase of 402.0 hectares. Under this scenario, the high impact industrial land is anticipated to be the most significant driver of industrial land demand, increasing from 155.8 hectares in 2019 to 302.7 hectares in 2041, an increase to 146.9 hectares.

Net incremental industrial land demand based on 2019 levels is projection to be highest in the following SA2s:

- | | |
|------------------------|----------------------------------|
| ▪ Carole Park (63.9ha) | ▪ Churchill - Yamanto (46.8ha) |
| ▪ Riverview (37.4ha) | ▪ Ipswich - Central (44.5ha) and |
| ▪ Rosewood (48.2ha) | ▪ Ripley (40.5ha). |

Within Ipswich City, the following sectors are anticipated to drive industrial land demand within the low, medium, and high industrial zoning:

- Low impact zoning: building cleaning, pest control and other support services (growth in demand of 28ha by 2041)
- Medium impact zoning: food product manufacturing (growth in demand of 27ha by 2041) and
- High Impact zoning: food product manufacturing (growth in demand of 699ha between by 2041).

Similarly, under Scenario Two (optimistic), net industrial land demand in Ipswich City is anticipated to increase from 438.4 hectares in 2019 to 940.9 hectares in 2041, an increase of 502.5 hectares. Under the Scenario Two (optimistic), the high impact industrial land is anticipated to be the most significant driver of industrial land demand, increasing from 158.1 hectares in 2019 to 341.5 hectares in 2041, an increase to 183.4 hectares.

Net incremental industrial land demand based on 2019 levels is projection to be highest in the following SA2s:

- Carole Park (88.1ha)
- Riverview (49.1ha)
- Rosewood (56.9ha)
- Churchill - Yamanto (55.5ha)
- Ipswich - Central (52.6ha) and
- Ripley (46.7ha).

Within Ipswich City, the following sectors are anticipated to drive industrial land demand within the low, medium, and high industrial zoning:

- Low impact zoning: building cleaning, pest control and other support services (growth in demand of 33ha by 2041)
- Medium impact zoning: food product manufacturing (growth in demand of 34ha by 2041) and
- High Impact zoning: food product manufacturing (growth in demand of 67ha between by 2041).

Under Scenario Three, net industrial land demand in Ipswich City is anticipated to increase from 417.0 hectares in 2019 to 1,059.9 hectares in 2041, an increase of 642.8 hectares. The medium impact industrial land is anticipated to be the most significant driver of industrial land demand, increasing from 149.9 hectares in 2019 to 396.9 hectares in 2041, representing an increase of 247.0 hectares.

Under Scenario Three, net incremental industrial land demand based on 2019 levels is projection to be highest in the following SA2s:

- Carole Park (133.7ha)
- Riverview (70.4ha)
- Collingwood Park – Redbank (56.2ha)
- Rosewood (68.5ha)
- Churchill - Yamanto (67.5ha) and
- Ipswich - Central (56.1ha).

Under Scenario Three, the food product manufacturing sector is anticipated to be the main driver of industrial land demand across low, medium and high zoning, Table 9-7 provides a summary of the net industrial land demand by activity type for Ipswich City. A detailed breakdown by SA2 is provided in Appendix G.

Table 9-7 Net Industrial Land Demand Projections (ha) by Zoning, Ipswich City, 2019 to 2041

	2019	2021	2026	2031	2036	2041
Scenario One						
Low Impact Industry	116.8	121.4	134.2	150.6	168.9	190.2
Medium Impact Industry	149.9	153.3	166.1	185.0	208.2	236.2

	2019	2021	2026	2031	2036	2041
High Impact Industry	150.4	153.8	167.0	186.8	213.8	242.9
Total	417.0	428.6	467.2	522.4	591.0	669.2
Scenario Two (Conservative)						
Low Impact Industry	121.0	129.0	147.9	172.2	201.4	237.1
Medium Impact Industry	155.3	162.9	183.1	211.6	248.4	294.3
High Impact Industry	155.8	163.4	184.1	213.6	255.1	302.7
Total	432.1	455.2	515.2	597.4	704.9	834.1
Scenario Two (Optimistic)						
Low Impact Industry	122.8	132.1	155.2	185.1	221.8	267.4
Medium Impact Industry	157.5	166.8	192.2	227.4	273.5	332.0
High Impact Industry	158.1	167.4	193.2	229.6	280.9	341.5
Total	438.4	466.3	540.6	642.1	776.2	940.9
Scenario Three						
Low Impact Industry	116.8	132.3	158.1	192.6	232.6	278.5
Medium Impact Industry	149.9	168.0	203.1	255.7	320.8	396.9
High Impact Industry	150.4	165.0	195.9	243.7	308.8	384.4
Total	417.0	465.4	557.1	692.0	862.1	1,059.9

Source: CDM Smith Analysis

9.2.3 Comparison by Scenario

Within Ipswich City more broadly, net incremental Industrial land demand by activity type within Ipswich City by 2041 (based on 2019 levels) is anticipated to be highest under Scenario Three. In terms of zoning, Scenario One and Scenario Two (conservative and optimistic) anticipate net demand growth within Ipswich City to be highest within the high impact zoning, whereas Scenario Three anticipates growth to be highest in the medium impact zoning.

A small number of SA2s are anticipated to have negative net industrial land take up in the 2019 to 2041 period, which can be attributed to limited opportunities for the expansion of industrial activity, due to a lack of remaining zoned supply. Net incremental industrial land demand by zoning is anticipated to be highest under Scenario Three over the same period across the majority of SA2s. However, Scenario Two (conservative and optimistic) projections anticipate higher growth within Karalee – Barellan Point, Ripley and Bellbird Park – Brookwater SA2s compared to the other scenarios.

Scenario Three (the preferred Scenario) anticipates industrial land take up of 642.8 hectares between 2019 and 2041, comprising 161.8 hectares of low impact industry land, 247.0 hectares of medium impact industry land and 234.1 hectares of high impact industry land. The projected net incremental industrial land demand by activity type between 2019 and 2041 by SA2 and Ipswich City for Scenario One, two and three are reported in Table 9-8.

Table 9-8 Net Incremental Industrial Land Demand by Zoning, SA2, 2019-41

	Scenario One				Scenario Two (Conservative)				Scenario Two (Optimistic)				Scenario Three			
	Low	Medium	High	Total	Low	Medium	High	Total	Low	Medium	High	Total	Low	Medium	High	Total
Rosewood	11.4	12.3	11.3	35.0	15.8	17.2	15.2	48.2	18.6	20.5	17.8	56.9	19.0	25.7	23.9	68.5
Brassall	-0.2	-0.5	-0.5	-1.1	0.0	-0.4	-0.4	-0.9	0.1	-0.4	-0.4	-0.7	0.1	-0.2	-0.3	-0.4
Bundamba	3.3	9.7	6.6	19.7	6.2	14.7	10.1	31.0	8.2	18.0	12.4	38.6	11.6	24.5	15.3	51.4
Churchill - Yamanto	10.7	9.6	13.5	33.8	14.6	13.2	19.0	46.8	17.3	15.6	22.6	55.5	20.3	18.8	28.5	67.5
Ipswich - Central	8.4	13.0	10.8	32.2	11.9	17.5	15.1	44.5	14.2	20.5	18.0	52.6	14.9	26.3	14.9	56.1
Ipswich - East	1.9	2.0	2.9	6.9	3.2	2.9	4.1	10.1	4.0	3.4	4.8	12.3	4.7	4.2	5.7	14.6
Ipswich - North	0.0	0.1	-0.1	-0.1	0.1	0.2	0.0	0.3	0.2	0.3	0.1	0.6	0.3	0.5	0.1	0.8
Karalee - Barellan Point	0.9	0.3	1.4	2.6	1.3	0.5	2.1	3.9	1.7	0.7	2.5	4.8	1.6	1.1	0.9	3.6
Leichhardt - One Mile	2.9	6.7	6.1	15.7	4.8	10.0	9.7	24.4	6.0	12.3	12.0	30.3	7.9	16.3	15.7	39.9
North Ipswich - Tivoli	-0.4	-0.5	-0.1	-1.0	0.2	-0.2	0.1	0.0	0.5	0.0	0.2	0.8	1.1	0.6	0.4	2.2
Raceview	-0.3	-0.3	-0.2	-0.8	0.3	0.3	0.1	0.6	0.6	0.6	0.2	1.5	1.1	0.8	-0.1	1.9
Ripley	19.2	3.9	8.0	31.2	24.6	5.3	10.6	40.5	28.1	6.3	12.3	46.7	22.2	7.2	12.2	41.6
Riverview	1.9	5.4	12.9	20.2	4.4	9.7	23.3	37.4	6.1	12.6	30.3	49.1	9.5	18.0	42.9	70.4
Bellbird Park –	2.8	1.0	0.5	4.2	4.1	1.6	0.8	6.5	5.0	2.1	1.0	8.1	3.6	1.8	1.0	6.4
Camira - Gailes	-0.1	-0.4	-0.5	-1.0	0.1	-0.4	-0.4	-0.7	0.2	-0.3	-0.3	-0.4	0.1	-0.1	-0.2	-0.3
Carole Park	3.7	13.5	11.2	28.4	11.9	27.7	24.3	63.9	17.6	37.4	33.1	88.1	28.8	55.9	49.0	133.7
Collingwood Park –	2.4	8.4	3.4	14.2	4.3	14.8	5.9	25.1	5.7	19.2	7.6	32.4	5.1	37.3	13.8	56.2
Goodna	2.1	1.9	2.1	6.2	3.4	3.1	3.3	9.8	4.3	3.9	4.0	12.2	4.6	5.6	4.1	14.2
New Chum	-0.2	-0.3	-0.3	-0.8	-0.2	-0.3	-0.2	-0.7	-0.2	-0.3	-0.2	-0.6	-0.1	-0.2	-0.3	-0.6
Redbank Plains	-0.8	-0.8	-0.5	-2.1	-0.7	-0.7	-0.4	-1.8	-0.6	-0.7	-0.4	-1.6	-0.5	-0.4	-0.4	-1.3
Springfield	-0.1	0.3	0.7	0.9	0.0	0.4	1.0	1.4	0.1	0.5	1.2	1.8	0.2	0.7	1.5	2.4
Springfield Lakes	3.9	1.3	2.9	8.1	5.7	1.8	3.9	11.4	6.9	2.2	4.5	13.6	5.9	2.8	5.6	14.3
Ipswich City	73.4	86.3	92.5	252.2	116.0	139.1	146.9	402.0	144.6	174.5	183.4	502.5	161.8	247.0	234.1	642.8

Source: CDM Smith Analysis

9.3 Take-Up and Sequencing of Projected Industrial Land Demand

In undertaking the assessment of projected take up of industrial land by activity type within Ipswich City Council by SA2, consideration was first given to the incremental industrial land demand projections by SA2 (based on 2020 levels) as outlined in the proceeding sections.

On completion of this assessment, take-up was allocated within each SA2 to provide guidance to Council regarding the need to provide infrastructure upgrades to emerging industrial areas (e.g. Willowbank).

9.3.1 Concordance of Industrial Zones to SA2s

In undertaking the assessment of projected take up of industrial land by activity type within Ipswich City Council by SA2 and industrial precinct, a concordance exercise was undertaken to align industrial precincts with corresponding SA2s. Table 9-7 below provides a summary of industrial precincts to corresponding SA2s.

Table 9-9 Concordance of Industrial Zones to SA2s

SA2	Industrial Area
Rosewood	<ul style="list-style-type: none"> • Walloon Business and Industry Investigation • Willowbank Regional Business and Industry Buffer • Willowbank Regional Business and Industry Investigation • Jeebropilly Regional Business and Industry Buffer • Jeebropilly Regional Business and Industry Investigation • Ebenezer Regional Business and Industry Buffer • Ebenezer Regional Business and Industry Investigation • Mutdapilly Regional Business and Industry Buffer • Mutdapilly Regional Business and Industry Investigation • Mount Forbes Regional Business and Industry Buffer • Mount Forbes Regional Business and Industry Investigation • Amberley Regional Business and Industry Buffer • Amberley Regional Business and Industry Investigation
Bundamba	<ul style="list-style-type: none"> • Bundamba Local Business and Industry • Bundamba Regional Business and Industry - Low Impact • Bundamba Regional Business and Industry - Medium Impact • Bundamba Regional Business and Industry Buffer • Ebbw Vale Local Business and Industry • Ebbw Vale Regional Business and Industry - Low Impact • Ebbw Vale Regional Business and Industry Buffer • Dinmore Local Business and Industry
Carole Park	<ul style="list-style-type: none"> • Carole Park Regional Business and Industry - Low Impact • Carole Park Regional Business and Industry Buffer
Churchill - Yamanto	<ul style="list-style-type: none"> • Yamanto Local Business and Industry • Yamanto Local Business and Industry Buffer • Churchill Local Business and Industry • Churchill Local Business and Industry Buffer
Collingwood Park - Redbank	<ul style="list-style-type: none"> • Redbank Regional Business and Industry - Low Impact

SA2	Industrial Area
	<ul style="list-style-type: none"> Redbank Regional Business and Industry - Medium Impact Redbank Regional Business and Industry Buffer
Goodna	<ul style="list-style-type: none"> Goodna Local Business and Industry Goodna Local Business and Industry Buffer
Ipswich - Central	<ul style="list-style-type: none"> West Ipswich Local Business and Industry West Ipswich Local Business and Industry Buffer
Karalee - Barellan Point	<ul style="list-style-type: none"> Karalee Local Business and Industry
Leichhardt - One Mile	<ul style="list-style-type: none"> Karrabin Local Business and Industry Investigation Karrabin Regional Business and Industry - Medium Impact Karrabin Regional Business and Industry Buffer Karrabin Regional Business and Industry Investigation Wulkuraka Regional Business and Industry - Low Impact Wulkuraka Regional Business and Industry - Medium Impact Wulkuraka Regional Business and Industry Buffer
New Chum	<ul style="list-style-type: none"> New Chum Regional Business and Industry Investigation New Chum Regional Business and Industry (Med Impact Sub Area)
North Ipswich - Tivoli	<ul style="list-style-type: none"> Tivoli Local Business and Industry Buffer Tivoli Local Business and Industry Investigation North Tivoli Local Business and Industry Buffer North Tivoli Local Business and Industry Investigation
Raceview	<ul style="list-style-type: none"> Flinders View Local Business and Industry Flinders View Regional Business and Industry Buffer Raceview Local Business and Industry
Redbank Plains	<ul style="list-style-type: none"> Redbank Plains Local Business and Industry Redbank Plains Local Business and Industry Buffer Redbank Plains Regional Business and Industry Buffer
Ripley	<ul style="list-style-type: none"> Swanbank Regional Business and Industry - Medium Impact Swanbank Regional Business and Industry Buffer Swanbank Regional Business and Industry Investigation Swanbank Regional Business and Industry (Med Impact Sub Area) Swanbank Regional Business and Industry (Low Impact Sub Area) White Rock Regional Business and Industry Buffer
Riverview	<ul style="list-style-type: none"> Riverview Local Business and Industry Riverview Regional Business and Industry - Low Impact Riverview Regional Business and Industry - Medium Impact Riverview Regional Business and Industry Buffer

Source: CDM Smith Analysis

9.3.2 Concordance of Industrial Zoning to Activity Type

Industrial land demand projections were prepared for the low, medium and high impact activity types, which does not concord exactly with the zoning types under the Ipswich City Planning Scheme (2006), which are outlined below:

- Local Business and Industry
- Local Business and Industry Buffer
- Local Business and Industry Investigation
- Regional Business and Industry - Low Impact
- Regional Business and Industry - Medium Impact
- Regional Business and Industry Buffer
- Regional Business and Industry Investigation
- Regional Business and Industry (Med Impact Sub Area) and
- Regional Business and Industry (Low Impact Sub Area).

Recognising the activity types underpinning industrial land demand projections (high, medium and low impact) vary from the activity types underpinning estimates of vacant land supply (zones under the planning scheme), a concordance exercise was undertaken to align industrial zoning to activity type. Table 9-8 below summaries the concordance for the various activity types, it is worth noting, medium/high impact has been categorised as a single activity type recognising that medium impact uses can also be located in high impact industrial land.

Table 9-10 Concordance of Activity Type Underpinning Supply Estimates and Demand Projections

Industrial Zoning	Activity Type
Local Business and Industry	Low Impact
Local Business and Industry Buffer	Low Impact
Local Business and Industry Investigation	Low Impact
Regional Business and Industry - Low Impact	Low Impact
Regional Business and Industry (Low Impact Sub Area)	Low Impact
Regional Business and Industry - Medium Impact	Medium/High Impact
Regional Business and Industry Buffer	Low/Medium/High Impact
Regional Business and Industry Investigation	Medium/High Impact
Regional Business and Industry (Med Impact Sub Area)	Medium/High Impact

Source: CDM Smith Analysis

9.3.3 Remaining Supply by Activity Type and SA2

Estimates of remaining supply of vacant unconstrained and developable industrial land was derived by the activity types outlined in Table 9-9 above. This assessment identified Bundamba and Churchill – Yamanto SA2s as having the largest supply of vacant low impact industrial land. Conversely, Rosewood and Ripley SA2s were identified as having the highest volume of medium/high impact industrial land supply. Table 9-10 below summaries the existing supply of low impact and medium/high impact industrial land by SA2.

Table 9-11 Low Impact and Medium/High Impact Vacant Industrial Land Supply, SA2, 2020

SA2	Low Impact	Medium/High Impact
Rosewood	29.8	2,280.8
Brassall	-	-
Bundamba	67.9	58.7
Churchill – Yamanto	50.8	-
Ipswich – Central	3.9	-
Ipswich – East	-	-
Ipswich – North	-	-
Karalee - Barellan Point	9.3	-
Leichhardt - One Mile	6.4	116.8
North Ipswich – Tivoli	19.6	0.0
Raceview	24.7	20.7
Ripley	14.8	383.0
Riverview	16.2	47.1
Bellbird Park – Brookwater	-	-
Camira – Gales	-	-
Carole Park	5.7	0.7
Collingwood Park - Redbank	13.7	46.3
Goodna	8.7	0.0
New Chum	-	71.3
Redbank Plains	20.8	0.0
Springfield	-	-
Springfield Lakes	-	-

Source: CDM Smith Estimates

9.3.4 Projected Industrial Land Take-Up by SA2

The total vacant industrial land supply by activity and SA2 was then compared to incremental demand by activity type and SA2, and summarised in Appendix J. This analysis established the SA2s which are projected to have demand exceeding supply over the projection period, and vice versa. In the case, where demand exceeds existing supply within a given SA2, demand was reallocated to an SA2 which was considered an appropriate substitute with remaining supply to accommodate the demand.

The reallocation of demand was determined based on the following factors:

- Opportunities offered by other SA2s in Ipswich City. For those SA2s where demand exceeds supply, consideration was given to industrial areas which would represent a suitable substitute (e.g. which offered similar access to major freight corridors and were in relative proximity geographically) and had remaining supply within the appropriate zone (i.e. medium and high impact industry demand was allocated to regional business and industry zoned land, whereas low impact industry demand was allocated to local business and industry zones); and
- Development readiness of surrounding SA2s (i.e. existing or planned infrastructure and connectivity), recognising areas such as Willowbank (Rosewood SA2) would require significant infrastructure upgrades before industrial land take up could increase significantly.

As the supply within an industrial area exhausts, the remaining supply of lots is typically less desirable to the market, with prospective tenants typically weighing up between one of the less desirable lots in an area mostly built up against an industrial area with slightly fewer desirable features (e.g. slightly further away from markets / major freight routes) but with a broader range of lots to choose from (in terms of both lot size and location within the industrial estate).

The model has assumed that once 70% of vacant land supply is exhausted in a given SA2, half of the remaining demand is reallocated to what is perceived to be the next most desirable SA2 to locate their operations.

Table 9-10 below summaries low impact vacant industrial land take up between 2020 and 2041 by SA2 and scenario, with Appendix J providing further detail. Across all the scenarios analysed, take up of vacant industrial land is anticipated to be highest in the Bundamba, Churchill-Yamanto and Rosewood SA2s.

Table 9-12 Low Impact Industrial Land Take Up (ha) between 2020 and 2041 by SA2

SA2	Scenario One	Scenario Two (Conservative)	Scenario Two (Optimistic)	Scenario Three
Rosewood	11.6	16.7	21.0	21.6
Brassall	0.0	0.0	0.0	0.0
Bundamba	9.6	25.8	34.1	35.1
Churchill – Yamanto	8.9	17.6	21.4	25.2
Ipswich – Central	3.9	3.9	3.9	3.9
Ipswich – East	0.0	0.0	0.0	0.0
Ipswich – North	0.0	0.0	0.0	0.0
Karalee - Barellan Point	0.7	1.1	1.4	1.4
Leichhardt - One Mile	2.4	3.8	4.9	5.7
North Ipswich – Tivoli	-0.3	0.2	0.5	1.0
Raceview	-0.2	0.3	0.6	1.1
Ripley	13.9	14.8	14.8	14.7
Riverview	1.6	3.6	5.0	7.7
Bellbird Park – Brookwater	0.0	0.0	0.0	0.0
Camira – Gales	-0.1	0.0	0.0	0.0
Carole Park	2.9	5.7	5.7	5.7
Collingwood Park - Redbank	1.9	3.6	4.6	13.7
Goodna	1.7	2.7	3.4	3.7
New Chum	-0.2	-0.2	-0.2	0.0
Redbank Plains	12.4	12.6	18.8	13.9
Springfield	0.0	0.0	0.0	0.0
Springfield Lakes	0.0	0.0	0.0	0.0

Source: CDM Smith Estimates

By 2041, it is anticipated all SA2s will have less than 30% of available low impact vacant industrial land remaining. The remaining supply is projected to be concentrated in the Rosewood, Karalee – Barellan Point and Bundamba SA2s. However, under Scenario One, Rosewood and Bundamba SA2 are anticipated to exhaust 39.0% and 41.0% of available low impact industrial land. Table 9-12 below outlines SA2s that are anticipated to exhaust/retain supply of low impact industrial by 2041.

Table 9-13 Estimates of Remaining Low Industrial Land (% total zoned land) in 2041, by SA2

SA2	Scenario One	Scenario Two (Conservative)	Scenario Two (Optimistic)	Scenario Three
Rosewood	✖(39.0%)	✖(28.2%)	✖(18.8%)	✖(17.7%)
Brassall	✓	✓	✓	✓
Bundamba	✖(41.0%)	✖(29.5%)	✖(23.7%)	✖(23.0%)
Churchill – Yamanto	✖(25.4%)	✖(20.1%)	✖(17.8%)	✖(15.5%)
Ipswich – Central	✓	✓	✓	✓
Ipswich – East	✓	✓	✓	✓
Ipswich – North	✓	✓	✓	✓
Karalee - Barellan Point	✖(28.3%)	✖(27.1%)	✖(26.0%)	✖(26.1%)
Leichhardt - One Mile	✖(9.5%)	✖(6.3%)	✖(3.5%)	✖(1.7%)
North Ipswich – Tivoli	✖(11.6%)	✖(11.4%)	✖(11.2%)	✖(10.9%)
Raceview	✖(26.3%)	✖(25.8%)	✖(25.4%)	✖ (25.0%)
Ripley	✖(6.2%)	✓	✓	✓
Riverview	✖(18.5%)	✖(16.0%)	✖(14.2%)	✖(10.8%)
Bellbird Park – Brookwater	✓	✓	✓	✓
Camira – Gailes	✓	✓	✓	✓
Carole Park	✖(2.0%)	✓	✓	✓
Collingwood Park - Redbank	✖(10.0%)	✖(8.6%)	✖(7.7%)	✓
Goodna	✖(17.6%)	✖(15.1%)	✖(13.4%)	✖(12.7%)
New Chum	✓	✓	✓	✓
Redbank Plains	✖(29.9%)	✖(29.1%)	✖(7.0%)	✖(24.6%)
Springfield	✓	✓	✓	✓
Springfield Lakes	✓	✓	✓	✓

Note: ✓ indicates supply of vacant low impact industrial is exhausted, ✖ indicates supply of vacant low impact industrial remains.
Source: CDM Smith Estimates

Table 9-12 below summaries medium/high impact vacant industrial land taken up between 2021 and 2041 by SA2 and scenario, with Appendix J providing further detail. Take up of vacant industrial land is anticipated to be highest in the Bundamba, Churchill-Yamanto and Riverview SA2s.

Table 9-14 Medium/High Impact Industrial Land Take Up (ha) between 2021 to 2041, SA2

SA2	Scenario One	Scenario Two (Conservative)	Scenario Two (Optimistic)	Scenario Three
Rosewood	48.8	119.6	169.4	275.3
Brassall	-0.9	-0.8	-0.8	0.0
Bundamba	14.0	20.8	23.7	23.6
Churchill – Yamanto	0.0	0.0	0.0	0.0
Ipswich – Central	0.0	0.0	0.0	0.0
Ipswich – East	0.0	0.0	0.0	0.0

SA2	Scenario One	Scenario Two (Conservative)	Scenario Two (Optimistic)	Scenario Three
Ipswich – North	0.0	0.0	0.0	0.0
Karalee - Barellan Point	0.0	0.0	0.0	0.0
Leichhardt - One Mile	46.8	50.9	60.7	77.8
North Ipswich – Tivoli	-0.5	-0.1	0.0	0.0
Raceview	6.5	7.0	10.7	7.4
Ripley	14.5	19.6	23.1	25.7
Riverview	15.6	15.5	15.5	15.5
Bellbird Park – Brookwater	0.0	0.0	0.0	0.0
Camira – Gales	-0.8	-0.7	-0.6	0.0
Carole Park	0.7	0.7	0.7	0.7
Collingwood Park - Redbank	31.4	46.3	46.3	46.3
Goodna	0.0	0.0	0.0	0.0
New Chum	-0.5	-0.4	-0.4	-0.5
Redbank Plains	-0.2	0.0	0.0	0.0
Springfield	0.0	0.0	0.0	0.0
Springfield Lakes	0.0	0.0	0.0	0.0

Source: CDM Smith Estimates

Similarly, it is anticipated all SA2s will typically have less than 30% of available medium/high impact vacant industrial land remaining by 2041, with the exception of Rosewood SA2, Bundamba SA2 and Raceview SA2.

In the case of Rosewood SA2, there is anticipated to be significant vacant and zoned land remaining, recognising the significant area of land zoned for industrial activity. For Bundamba and Raceview SA2s, the relatively high incidence of remaining supply can be attributed to the fact that a significant proportion of remaining supply in both areas is within buffer zones, with the analysis avoiding encroachment within buffer zones over the projection horizon.

Table 9-13 below outlines SA2s that are anticipated to exhaust/retain supply of low impact industrial by 2041.

Table 9-15 Estimates of Remaining Medium/High Industrial Land (% total zoned land) in 2041, by SA2

SA2	Scenario One	Scenario Two (Conservative)	Scenario Two (Optimistic)	Scenario Three
Rosewood	✗(42.0%)	✗(40.7%)	✗(39.9%)	✗(37.8%)
Brassall	✓	✓	✓	✓
Bundamba	✗(38.0%)	✗(32.3%)	✗(29.8%)	✗(29.9%)
Churchill – Yamanto	✓	✓	✓	✓
Ipswich – Central	✓	✓	✓	✓
Ipswich – East	✓	✓	✓	✓
Ipswich – North	✓	✓	✓	✓
Karalee - Barellan Point	✓	✓	✓	✓
Leichhardt - One Mile	✗(30.5%)	✗(28.8%)	✗(24.5%)	✗(17.0%)
North Ipswich – Tivoli	✓	✓	✓	✓

SA2	Scenario One	Scenario Two (Conservative)	Scenario Two (Optimistic)	Scenario Three
Raceview	✖(56.7%)	✖(54.8%)	✖(40.0%)	✖(53.0%)
Ripley	✖(22.2%)	✖(21.9%)	✖(21.6%)	✖(21.5%)
Riverview	✖(12.8%)	✖(12.8%)	✖(12.8%)	✖(12.8%)
Bellbird Park – Brookwater	✓	✓	✓	✓
Camira – Gales	✓	✓	✓	✓
Carole Park	✓	✓	✓	✓
Collingwood Park - Redbank	✖(8.0%)	✓	✓	✓
Goodna	✓	✓	✓	✓
New Chum	✖(14.5%)	✖(14.5%)	✖(14.5%)	✖(14.5%)
Redbank Plains	✖(0.2%)	✓	✓	✓
Springfield	✓	✓	✓	✓
Springfield Lakes	✓	✓	✓	✓

Note: ✓ indicates supply of vacant medium/high impact industrial is exhausted, ✖ indicates supply of vacant medium/high impact industrial remains.

Source: CDM Smith Estimates

9.3.5 Projected Industrial Land Take-Up by Zone

As previously outlined, industrial land take-up at the SA2 level has been disaggregated to zone for each scenario under assessment. This provides a high level overview of the potential demand and need to service new industrial areas, in particular within the Rosewood SA2. In undertaking the assessment, the approach has assumed there will be limited take-up of industrial land within buffer zones over the projection horizon.

The analysis has identified that the Rosewood SA2 would account for a significant proportion of industrial land demand to 2041 within Ipswich City Council, with demand for up to ~220 hectares of allotments within the Willowbank Regional Business and Industry Investigation zone by 2041.

Table 9-14 provides an overview of the projected take-up of industrial land between 2020 and 2041 under each scenario by zone, with [Table 9-17](#) summarising the timing of industrial land take-up between 2020 and 2041 under Scenario Three (preferred scenario).

Table 9-16 Projected Industrial Land Take-Up by Zone and Scenario, 2020-2041

SA2	Industrial Area	Projected Take-Up, 2020-2041 (hectares)			
		Scenario 1	Scenario 2 - Conservative	Scenario 2 - Optimistic	Scenario 3
Rosewood	Walloon Business and Industry Investigation	11.6	16.7	21.0	21.6
	Willowbank Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Willowbank Regional Business and Industry Investigation	38.5	94.8	134.5	218.5
	Jeebropilly Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Jeebropilly Regional Business and Industry Investigation	0.0	0.0	0.0	0.0
	Ebenezer Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Ebenezer Regional Business and Industry Investigation	4.6	11.5	16.4	26.9
	Mutdapilly Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Mutdapilly Regional Business and Industry Investigation	0.0	0.0	0.0	0.0
	Mount Forbes Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Mount Forbes Regional Business and Industry Investigation	0.0	0.0	0.0	0.0
	Amberley Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Amberley Regional Business and Industry Investigation	5.7	13.3	18.5	29.9
	Total	60.4	136.3	190.4	296.8
Bundamba	Bundamba Local Business and Industry	0.0	0.0	0.0	0.0
	Bundamba Regional Business and Industry - Low Impact	9.6	25.8	34.1	35.1
	Bundamba Regional Business and Industry - Medium Impact	14.0	20.8	23.7	23.6
	Bundamba Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Ebbw Vale Local Business and Industry	0.0	0.0	0.0	0.0
	Ebbw Vale Regional Business and Industry - Low Impact	0.0	0.0	0.0	0.0
	Ebbw Vale Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Dinmore Local Business and Industry	0.0	0.0	0.0	0.0
	Total	23.6	46.6	57.8	58.7
Carole Park	Carole Park Regional Business and Industry - Low Impact	2.9	5.7	5.7	5.7
	Carole Park Regional Business and Industry Buffer	0.7	0.7	0.7	0.7
	Total	3.6	6.4	6.4	6.4
Churchill - Yamanto	Yamanto Local Business and Industry	8.5	16.7	20.4	23.9
	Yamanto Local Business and Industry Buffer	0.0	0.0	0.0	0.0

SA2	Industrial Area	Projected Take-Up, 2020-2041 (hectares)			
		Scenario 1	Scenario 2 - Conservative	Scenario 2 - Optimistic	Scenario 3
	Churchill Local Business and Industry	0.4	0.9	1.1	1.3
	Churchill Local Business and Industry Buffer	0.0	0.0	0.0	0.0
	Total	8.9	17.6	21.4	25.2
Collingwood Park - Redbank	Redbank Regional Business and Industry - Low Impact	1.9	3.6	4.6	13.7
	Redbank Regional Business and Industry - Medium Impact	31.4	46.3	46.3	46.3
	Redbank Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Total	33.3	49.8	50.9	60.0
Goodna	Goodna Local Business and Industry	1.7	2.7	3.4	3.7
	Goodna Local Business and Industry Buffer	0.0	0.0	0.0	0.0
	Total	1.7	2.7	3.4	3.7
Ipswich - Central	West Ipswich Local Business and Industry	3.3	3.2	3.3	3.3
	West Ipswich Local Business and Industry Buffer	0.7	0.7	0.6	0.6
	Total	3.9	3.9	3.9	3.9
Karalee - Barellan Point	Karalee Local Business and Industry	0.7	1.1	1.4	1.4
	Total	0.7	1.1	1.4	1.4
Leichhardt - One Mile	Karrabin Local Business and Industry Investigation	1.2	1.9	2.5	2.9
	Karrabin Regional Business and Industry - Medium Impact	14.2	14.6	21.2	19.6
	Karrabin Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Karrabin Regional Business and Industry Investigation	16.2	18.4	18.2	33.5
	Wulkuraka Regional Business and Industry - Low Impact	1.2	1.9	2.5	2.9
	Wulkuraka Regional Business and Industry - Medium Impact	16.4	17.8	21.2	24.6
	Wulkuraka Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Total	49.2	54.6	65.7	83.5
New Chum	New Chum Regional Business and Industry Investigation	-0.5	-0.4	-0.4	-0.5
	New Chum Regional Business and Industry (Med Impact Sub Area)	-0.2	-0.2	-0.2	0.0
	Total	-0.7	-0.6	-0.6	-0.5
North Ipswich - Tivoli	Tivoli Local Business and Industry Buffer	0.0	0.0	0.0	0.0
	Tivoli Local Business and Industry Investigation	-0.5	0.2	0.5	0.9
	North Tivoli Local Business and Industry Buffer	0.0	0.0	0.0	0.0

SA2	Industrial Area	Projected Take-Up, 2020-2041 (hectares)			
		Scenario 1	Scenario 2 - Conservative	Scenario 2 - Optimistic	Scenario 3
	North Tivoli Local Business and Industry Investigation	-0.3	0.0	0.0	0.0
	Total	-0.8	0.1	0.5	1.0
Raceview	Flinders View Local Business and Industry	-0.1	0.2	0.5	0.8
	Flinders View Regional Business and Industry Buffer	6.5	7.0	10.7	7.4
	Raceview Local Business and Industry	0.0	0.1	0.2	0.3
	Total	6.4	7.3	11.3	8.5
Redbank Plains	Redbank Plains Local Business and Industry	11.8	12.0	17.8	13.2
	Redbank Plains Local Business and Industry Buffer	0.6	0.6	0.9	0.7
	Redbank Plains Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Total	12.4	12.6	18.8	13.9
Ripley	Swanbank Regional Business and Industry - Medium Impact	8.0	10.8	12.7	14.1
	Swanbank Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Swanbank Regional Business and Industry Investigation	1.4	2.0	2.3	2.6
	Swanbank Regional Business and Industry (Med Impact Sub Area)	5.1	6.9	8.1	9.0
	Swanbank Regional Business and Industry (Low Impact Sub Area)	13.9	14.8	14.8	14.7
	White Rock Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Total	28.4	34.4	37.8	40.4
Riverview	Riverview Local Business and Industry	0.3	0.7	1.0	1.5
	Riverview Regional Business and Industry - Low Impact	1.3	2.9	4.0	6.1
	Riverview Regional Business and Industry - Medium Impact	15.1	15.5	15.5	15.5
	Riverview Regional Business and Industry Buffer	0.0	0.0	0.0	0.0
	Total	16.7	19.1	20.5	23.2

Table 9-17 Projected Industrial Land Take-Up by Zone – Scenario Three, 2020-2041

SA2	Industrial Area	Projected Take-Up (hectares)					
		2020-21	2021-26	2026-31	2031-36	2036-41	2020-41
Rosewood	Walloon Business and Industry Investigation	0.4	1.8	3.7	8.9	6.7	21.6
	Willowbank Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Willowbank Regional Business and Industry Investigation	0.0	7.4	33.3	78.9	98.9	218.5
	Jeebropilly Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Jeebropilly Regional Business and Industry Investigation	0.0	0.0	0.0	0.0	0.0	0.0
	Ebenezer Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Ebenezer Regional Business and Industry Investigation	0.0	0.5	4.2	9.9	12.4	26.9
	Mutdapilly Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Mutdapilly Regional Business and Industry Investigation	0.0	0.0	0.0	0.0	0.0	0.0
	Mount Forbes Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Mount Forbes Regional Business and Industry Investigation	0.0	0.0	0.0	0.0	0.0	0.0
	Amberley Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Amberley Regional Business and Industry Investigation	2.1	1.4	4.2	9.9	12.4	29.9
	Total	2.5	11.1	45.3	107.6	130.4	296.8
Bundamba	Bundamba Local Business and Industry	0.0	0.0	0.0	0.0	0.0	0.0
	Bundamba Regional Business and Industry - Low Impact	3.2	8.5	6.0	6.6	10.9	35.1
	Bundamba Regional Business and Industry - Medium Impact	2.4	8.2	9.4	3.4	0.2	23.6
	Bundamba Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Ebbw Vale Local Business and Industry	0.0	0.0	0.0	0.0	0.0	0.0
	Ebbw Vale Regional Business and Industry - Low Impact	0.0	0.0	0.0	0.0	0.0	0.0
	Ebbw Vale Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Dinmore Local Business and Industry	0.0	0.0	0.0	0.0	0.0	0.0
	Total	5.5	16.7	15.4	10.0	11.0	58.7
Carole Park	Carole Park Regional Business and Industry - Low Impact	1.1	2.8	1.8	0.0	0.0	5.7
	Carole Park Regional Business and Industry Buffer	0.3	0.3	0.0	0.0	0.0	0.7
	Total	1.4	3.2	1.8	0.0	0.0	6.4
Churchill - Yamanto	Yamanto Local Business and Industry	0.7	1.9	3.7	6.0	11.6	23.9
	Yamanto Local Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0

SA2	Industrial Area	Projected Take-Up (hectares)					
		2020-21	2021-26	2026-31	2031-36	2036-41	2020-41
	Churchill Local Business and Industry	0.0	0.1	0.2	0.3	0.6	1.3
	Churchill Local Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.7	2.0	3.9	6.4	12.2	25.2
Collingwood Park - Redbank	Redbank Regional Business and Industry - Low Impact	0.2	1.5	5.1	5.4	1.6	13.7
	Redbank Regional Business and Industry - Medium Impact	3.7	17.5	19.4	5.6	0.0	46.3
	Redbank Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Total	3.9	19.0	24.5	11.0	1.6	60.0
Goodna	Goodna Local Business and Industry	0.1	0.7	1.0	0.8	1.0	3.7
	Goodna Local Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.1	0.7	1.0	0.8	1.0	3.7
Ipswich - Central	West Ipswich Local Business and Industry	0.5	1.3	1.5	0.0	0.0	3.3
	West Ipswich Local Business and Industry Buffer	0.0	0.1	0.5	0.0	0.0	0.6
	Total	0.5	1.3	2.1	0.0	0.0	3.9
Karalee - Barellan Point	Karalee Local Business and Industry	0.1	0.1	0.3	0.3	0.5	1.4
	Total	0.1	0.1	0.3	0.3	0.5	1.4
Leichhardt - One Mile	Karrabin Local Business and Industry Investigation	0.1	0.3	0.6	1.0	1.0	2.9
	Karrabin Regional Business and Industry - Medium Impact	1.3	5.2	5.9	3.8	3.6	19.6
	Karrabin Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Karrabin Regional Business and Industry Investigation	1.1	4.4	5.0	7.6	15.4	33.5
	Wulkuraka Regional Business and Industry - Low Impact	0.1	0.3	0.6	1.0	1.0	2.9
	Wulkuraka Regional Business and Industry - Medium Impact	1.3	5.2	5.9	7.6	4.7	24.6
	Wulkuraka Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Total	3.8	15.3	17.9	21.0	25.6	83.5
New Chum	New Chum Regional Business and Industry Investigation	0.0	0.0	-0.1	-0.2	-0.2	-0.5
	New Chum Regional Business and Industry (Med Impact Sub Area)	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	-0.1	-0.2	-0.2	-0.5
North Ipswich - Tivoli	Tivoli Local Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Tivoli Local Business and Industry Investigation	0.1	0.5	0.4	0.0	0.0	0.9
	North Tivoli Local Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0

SA2	Industrial Area	Projected Take-Up (hectares)					
		2020-21	2021-26	2026-31	2031-36	2036-41	2020-41
	North Tivoli Local Business and Industry Investigation	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.1	0.5	0.4	0.0	0.0	1.0
Raceview	Flinders View Local Business and Industry	0.0	0.1	0.2	0.3	0.2	0.8
	Flinders View Regional Business and Industry Buffer	1.2	4.7	1.3	0.2	0.1	7.4
	Raceview Local Business and Industry	0.0	0.0	0.1	0.1	0.1	0.3
	Total	1.2	4.8	1.5	0.6	0.4	8.5
Redbank Plains	Redbank Plains Local Business and Industry	0.8	2.0	1.9	3.1	5.3	13.2
	Redbank Plains Local Business and Industry Buffer	0.0	0.1	0.1	0.2	0.3	0.7
	Redbank Plains Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.9	2.2	2.0	3.2	5.6	13.9
Ripley	Swanbank Regional Business and Industry - Medium Impact	0.3	1.6	3.0	4.0	5.2	14.1
	Swanbank Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Swanbank Regional Business and Industry Investigation	0.1	0.3	0.6	0.7	0.9	2.6
	Swanbank Regional Business and Industry (Med Impact Sub Area)	0.2	1.0	1.9	2.6	3.3	9.0
	Swanbank Regional Business and Industry (Low Impact Sub Area)	0.5	3.1	5.7	2.7	2.8	14.7
	White Rock Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Total	1.1	5.9	11.2	10.0	12.1	40.4
Riverview	Riverview Local Business and Industry	0.1	0.2	0.3	0.5	0.5	1.5
	Riverview Regional Business and Industry - Low Impact	0.2	0.8	1.4	1.8	2.0	6.1
	Riverview Regional Business and Industry - Medium Impact	1.2	5.6	6.3	0.6	1.9	15.5
	Riverview Regional Business and Industry Buffer	0.0	0.0	0.0	0.0	0.0	0.0
	Total	1.5	6.6	8.0	2.8	4.4	23.2

9.4 Summary

The demand assessment, as presented in **Table 9-16** of the report outlines that future demand to 2041 is likely to be approximately:

- **Low impact industry:** Additional 73.4 hectares to 161.8 hectares over and above current demand and
- **Medium and high impact industry:** Additional 178.8 hectares to 481.1 hectares over and above current demand.

The Sieve 2 assessment, as presented in Section 3.4 of the report identified that there is approximately 362 hectares of zoned land to accommodate industrial development in Ipswich in the short term, comprising:

- **Local/ Low impact industry:** 229 hectares and
- **Medium and high impact industry:** 132 hectares.

This land is contained within infill or expansion opportunities with existing industrial estates in Riverview, Wulkuraka, Karrabin, Bundamba, Yamanto, Redbank and Redbank Plains.

This analysis highlights whilst there is sufficient remaining low impact industry zoned land to meet projected demand in Ipswich City Council to 2041 under all scenarios, there is significant need to improve servicing to other zoned industrial areas to accommodate future demand for medium and high impact industry activity in Ipswich. The timing for which additional supply will need to be brought to market under each scenario is as follows:

- Scenario One: 2039
- Scenario Two (Conservative): 2034
- Scenario Two (Optimistic): 2032
- Scenario Three (preferred scenario): 2030.

New Chum and Swanbank have been identified as moderately suitable to accommodate future demand, although further geotechnical assessment is required to determine the most suitable areas for future development. The take-up assessment has assumed whilst there is some take-up with Swanbank to 2041, the market preference is assumed to shift to Willowbank, as the industrial areas of highest suitability begin to exhaust. The current 290 hectares that is relatively unconstrained at Willowbank would be available for medium and high impact industry if not selected for the proposed intermodal hub. Should the intermodal hub ultimately proceed, additional opportunities would need to be investigated within the broader Ebenezer MEIA.

Appendix F provides projections of industrial sector employment retention for Ipswich City and SA2s. The employment retentions projections have been informed by the three employment scenarios outlined in this section of the report and usual resident workforce projections detailed in this section. In undertaking this analysis, the net inflow and outflow of industrial workers can be determined which in turn will have impact on industrial land demand at the SA2 and broader Citywide level.

Section 10 Stakeholder Consultation

As part of the investigation of industrial land needs in Ipswich, CDM Smith undertook professional interviews with several entities involved in industrial land development or sales within Ipswich or across SEQ. The purpose of the interviews was to identify or understand impediments to take-up of industrial land within Ipswich.

To facilitate maximum participation CDM Smith agreed to only disclose the organisations interviewed and to not attribute specific responses to a particular organization.

Industrial property agents interviewed included representatives from:

- JLL
- Colliers International
- CBRE and
- Savills.

Industrial land developers interviewed included representatives from:

- Walker Corporation
- AVID Property Group (formerly Investa)
- Macquarie Goodman
- Economic Development Queensland
- Vassallo and
- NewGen Business Park.

Government agencies interviewed included representatives from:

- Department of State Development Infrastructure and Planning (Regional Planning)
- Department of State Development Infrastructure and Planning (Cities Transformation Taskforce)
- Department of Transport and Main Roads and
- Australian Rail Track Corporation.

Peak bodies interviewed included representatives from:

- Property Council of Australia and
- Urban Development Institute of Australia.

Only feedback relevant to the industrial land needs investigation have been reported.

The outcomes of the interviews have been allocated to the following issues categories:

- Regional development and timing for Ipswich
- Infrastructure servicing
- Inland Rail and related projects
- 'First mover' concerns
- Perceptions relating to accessibility and
- Perceptions relating to constraints.

10.1 Regional Development and Timing

The overwhelming consensus among stakeholders was that Ipswich has a clear and obvious role and function to fulfill in terms as a major industrial hub for SEQ with the potential to establish Ipswich as a western gateway to SEQ or at least the greater metropolitan area. However, respondents were split as to whether or not Ipswich was (a) currently fulfilling that role, (b) would fulfill that role in the short term or (c) would fulfill that role in the medium to long term (10-15 years). Respondents that contended that Ipswich was presently fulfilling a regional role and function tended to have industrial developments that were currently in market. Agents tended to be of the view that Ipswich would see its importance as a major industrial location increase over the short or medium term.

The perceptions relating to Ipswich's regional development role and function related to whether or not respondents felt that the South West Industrial Corridor (SWIC) as identified under the Brisbane planning scheme was at capacity or about to be exhausted. Agents tended to express the view that as supply in SWIC has tightened there has been rising interest in industrial sites in Parkinson/Larapinta and ATC North for those buyers without a pressing budget constraint. This tended to reflect the desirability of these locations over Ipswich locations for the time being. A key factor reported by agents for this was where industrial tenants were looking to relocate or expand, the residential location of the workforce (or in some cases decision makers within the workforce) tended to focus interest on Brisbane locations. Agents expressed that this trend is moderating as residential development accelerates within Ipswich, principally within Greater Springfield and Ripley Valley.

Developers noted that the competitive advantage of Ipswich was largely attributable to price, availability of alternative lot sizes and configurations and to those industrial land users with a high reliance on interstate road freight. Developers did cite tenant interest from those enterprises currently operating from capacity constrained sites in Acacia Ridge and Archerfield where urban road network congestion was adversely impacting freight efficiency, as well as enterprises on these sites having potential 'over built' their sites and now lacking adequate hard stand or heavy vehicle movement or loading/unloading space. Above all, respondents agreed that there was a strong regional (i.e., SEQ) development imperative to see ongoing industrial development within Ipswich.

10.2 Infrastructure Servicing

A lack of serviced industrial land was cited as a key, but general issue by agents and peak bodies. Industrial developers had mixed views in relation to availability of trunk infrastructure, with developers of existing estates being general satisfied with infrastructure servicing, while those with projects yet to be developed citing a lack of trunk infrastructure or certainty in relation to funding of infrastructure being a key and site-specific concern.

Agents noted that fragmentation of developable land within Swanbank and New Chum has stifled development interest, however some new developments are moving through the early stages of the development pipeline. Agents were agreed that development of industrial land within Ebenezer MEIA (including Willowbank and Jeebropilly) was necessarily impeded by a lack of certainty of when and where trunk infrastructure would be provided. It was noted that the delivery of the Queensland Government's Willowbank Industrial Area could stimulate additional development within Ebenezer MEIA because it would bring trunk infrastructure into Ebenezer MEIA. This was accepted by government agencies, however government agencies also cited that there are potentially several major transport upgrades that are also necessary in the medium to long term, including interchange upgrades along the Cunningham Highway and the Ipswich Western Bypass.

The City Transformation Taskforce noted that Ipswich and particularly the Ebenezer MEIA featured prominently within the Trade and Enterprise Spine initiative articulated within 'Transforming SEQ' (the SEQ City Deal Proposition Paper). The Department of Transport and Main Roads also advised that Ebenezer was a potential location for an intermodal terminal along the Inland Rail alignment (other locations under consideration included expansion of Acacia Ridge, Bromelton and potential sites in Toowoomba and Greenbank). The delivery of an intermodal terminal would have implications for the delivery of infrastructure to Ebenezer MEIA. Several respondents from across the respective respondent groups did articulate that given the likely regional role and function of Ipswich in terms of industrial land supply, there is potentially a State interest in addressing infrastructure gaps.

10.3 Inland Rail and Related Projects

As mentioned above, there are several initiatives that are related to the delivery of Inland Rail that could stimulate industrial interest in Ipswich, and more particularly Ebenezer MEIA. Some stakeholders anticipate the Gowrie to Kagaru section of the Inland Rail will be delivered in the long term, as opposed to the short to medium term.

Some of the government agencies and one of the peak bodies contended that the delivery of Inland Rail would necessitate the delivery of a new intermodal terminal within SEQ. However, these respondents declined to express a view as to what would be the most appropriate location, noting the potential for strong interest from potential proponents at Toowoomba, Ebenezer and Bromelton. All respondents noted that expansion of intermodal facilities at Acacia Ridge would be challenging. Industrial developers within Ipswich all agreed that the delivery of an intermodal terminal at Ebenezer would catalyse accelerated industrial land take-up within Ipswich and would likely attract increased interest from major industrial property trusts, which are currently focusing investment interest within the SWIC and ATC.

10.4 'First Mover' Concerns

The identification of 'first mover' concerns was exclusively raised by property agents. The observation was that many prospective tenants are part of broader supply chains, with some enterprises more critical in the supply chain than others. Agents reported that some prospective tenants raise concerns about being the first in their supply chain network to relocate to new estates within Ipswich. This is particularly the case for those businesses that have benefited from historical supply chain clustering, with many of these businesses being in the SWIC or Brisbane's Northern Industrial area (Virginia, Geebung, Banyo, Northgate). Similarly, those enterprises with long standing workforces cited concerns about workforce disruption if they were to relocate.

Industrial developers did not articulate this phenomenon in the same strong terms but did concede that the location of supply and customer businesses did influence tenant or purchaser intent.

10.5 Perceptions Relating to Accessibility

From a road freight perspective, Ipswich is recognized as having high levels of accessibility to the interstate road freight network, principally via the Warrego Highway, Cunningham Highway and Logan Motorway, however agents noted concerns about the 'last mile' first mile' accessibility of parts of Swanbank, New Chum and Ebenezer MEIA. The quality of internal access in these areas is highly variable and in some instances road pavements have been compromised. This is also acknowledged by industrial developers in these areas, including those currently in active marketing.

When pressed, respondents raising these concerns advised that issues might be able to be resolved through the delivery of high quality 'industrial arterial roads' of adequate width and pavement strength. One developer raised concerns that there was some use of roads in these areas by heavy vehicle combinations that were not lawful in those areas, and that had adverse impacts on pavement durability. This was unable to be confirmed with the Department of Transport and Main Roads. Agents advised that new estates with direct access to one of the major freight corridors would be highly desirable, citing the Willowbank Industrial Area as a key example of a potential new estate directly accessible via the Cunningham Highway. However, agents also noted some concerns relating to whether Willowbank Industrial Area would be seen as directly accessible to the Warrego Highway in the absence of the Ipswich Western Bypass being delivered.

10.6 Perceptions Relating to Constraints

All respondents noted that Ipswich has a long and well-known history of both underground and open cut mining, with the region having several open cut voids as well as both documented and undocumented underground mine workings. An active developer in the region confirmed that perceptions relating to void and undermining constraints

and risks was a major challenge to overcome when trying to secure a sale. This was confirmed by all agents interviewed, who stated that concerns about such constraints was almost always expressed by any prospective buyer and by most prospective tenants.

Discussions with a developer who also builds premises indicated that even though there are building techniques available to potential manage ground movement impacts on structural integrity of buildings these techniques invariably involve articulation joints to facilitate building movement. Some tenants will accept slab and building movement, while others, particularly those with automated systems are discourage by the potential for excessive 'calibration costs'. This refers to the cost associated with the need to regularly recalibrate machinery and plant to account for movement and this can be excessive where there is a high degree of automation.

Agents also note that there is a large number of sites that are being marketed to prospective end users that are not fully serviced. These sites in particular are challenging to 'move' because in the absence of being part of a high quality serviced industrial estate, uncertainty surrounding constraints tends to be heightened.

10.7 Summary

In summary, there is a general recognition of the locational attributes of Ipswich to fulfill a regional role and function in terms of industrial land use, however uncertainty relating to infrastructure and servicing is identified as a major impediment to take-up. Predictably, take up will improve once the market is confident that the required infrastructure and servicing will be delivered.

Section 11 Voids, Landfill and Circular Economy

As previously mentioned, the Ipswich LGA has a long history of open cut and underground mining, primarily for coal. This has left several large mining voids throughout Ipswich primarily in the Swanbank, New Chum and Ebenezer MEIAs.

The management of mining voids has presented a challenge for the region for several years. On the one hand, these voids represent a potential strategic resource. However, like any resource, unsustainable consumption can have adverse environmental, social and economic impacts. This section of the report is not intended to represent a comprehensive assessment of key environmental, social and economic issues associated with the potential use of mining voids, but rather a strategic overview. The principal use of mining voids in Ipswich has been in the form of landfills. There are three main waste streams that are directed to landfills, including:

- Municipal solid waste, primarily household waste collected from general waste bins
- Construction and demolition waste, primarily building and construction waste, including but not limited to concrete, steel, timber, fibre cement, plasterboard, etc.
- Commercial and industrial waste, primarily paper and board packaging waste, timber and steel waste associated with industrial or commercial processes, etc.

While landfill development within Ipswich has included dedicated landfills that accommodate all three waste streams, more recent development activity for dedicated landfills within Ipswich has been targeting construction and demolition waste. Dedicated landfills can be differentiated with residual landfills as part of integrated 'waste to resources' or 'waste to energy' projects, where landfill is required to manage residual waste. A review of recent proposals across Queensland indicates that some 'waste to resources' or 'waste to energy' projects are primarily landfill projects with some diversion of waste. In 2018-19, the overall waste recovery rate in Queensland was 48.67%⁷, with the recovery rates for the respective waste streams being:

- Municipal solid waste: 27.39%
- Commercial and industrial waste: 49.78% and
- Construction and demolition waste: 58.00%.

To provide context, South Australia, which is the leading jurisdiction in terms of waste diversion achieved a diversion/recovery rate of 83.8%⁸, with the recovery rates for the respective waste streams being:

- Municipal solid waste: 52.4%
- Commercial and industrial waste: 87.2% and
- Construction and demolition waste: 90.0%.

Nationally, Queensland is one of the worst performing jurisdictions in terms of waste diversion. Queensland's poor performance represents an opportunity to grow a recycling and resource recovery industry, with South Australia's performance demonstrating that high levels of diversion are achievable within the confines of existing technology. Total waste generated in Queensland during 2018-19 was approximately 11 million tonnes, with construction and demolition waste representing close to half of Queensland's waste generation. Relevantly, the South Australian experience demonstrates that construction and demolition waste has the highest potential for resource recovery and recycling. Based on Queensland's current performance, a 'circular economy' project that included a residual land fill that did not improve the average diversion rate in a given waste stream is most likely only a 'circular economy' project in name only. Hence, the need for proponents of such projects to demonstrate high rates of waste diversion and recovery.

⁷ Queensland Government (2020) 'Recycling and Waste in Queensland, 2019'

⁸ Green Industries SA (2020) 'South Australia's Recycling Activity Survey 2018-19 Report'

11.1 Queensland Waste Strategy

In 2019, the Queensland Government introduced the Waste Management and Resource Recovery Strategy, which aims to introduce a better way to manage waste in Queensland by harnessing the potential value of waste as a resource. The strategy seeks to achieve this through the transition to a more circular economy, reduce the amount of waste going to landfill (or being dumped illegally) and provide a more sustainable source of end-of-life products and materials to create new products. The strategy includes several foundation measures, including:

- The introduction of a ban on the supply of single-use lightweight plastic shopping bags from 1 July 2018
- The introduction of a Container Refund Scheme to improve recycling of beverage containers from 1 November 2018
- Regulatory reform of the regulated waste and environmentally relevant activity frameworks
- The development of strategic partnerships to improve the management of organic wastes
- The development of the Litter and Illegal Dumping: A Plan for Queensland
- The development of a Plastic Pollution Reduction Plan
- The introduction of a waste disposal levy commencing 1 July 2019
- The establishment of a \$100 million three-year Resource Recovery Industry Development Program
- The announcement of a \$5 million Waste to Biofutures Fund
- Queensland Resource Recovery Industries 10 Year Roadmap and Action Plan
- Queensland Biofutures 10 Year Roadmap and Action Plan.

Key measures that are likely to influence outcomes in Ipswich include the introduction of the waste levy to discourage the importation of waste into Queensland, which has historically driven some of the demand for landfills within Ipswich, along with measures to encourage the development of circular economy projects.

11.2 Environmental Challenges

Environmental issues frequently associated with landfill activities includes:

- Contamination of groundwater and surface water via leachate
- Odour
- Noise
- Bird and pest management
- Visual impacts
- Traffic, particularly heavy vehicle traffic.

Landfill applications must address each of these issues through appropriate impact assessments and management plans.

The scale and consequence of environmental impacts depends on the location and context of potential landfill sites. For the most part, mining voids are located in areas currently designated for industrial use or industrial investigation. Planning instruments seek to ensure adequate buffering from sensitive sites, with physical separation a key management strategy for environmental impacts such as odour and noise. Visual amenity impacts are common associated with the view lines from key locations to the proposed landfill site and the potential mound height of a proposed landfill. Site specific assessment would determine whether a proposed facility would result in unreasonable impacts in terms of visual amenity, odour and noise.

Similarly, traffic issues will depend on the existing and planned road network in place and the existing and anticipated vehicle volumes along access roads and arterial corridors. Again, the scale of these impacts are site specific. Unlike some other impacts, traffic impacts can be mitigated through road investment and upgrade, which if directly required as a result of a proposed landfill can form part of the conditions package for an approval. Many of the aforementioned impacts can be managed through management plans and are typically only present when the landfill is operational. Once landfill operations are ceased, the landfill is capped leaving an earthen mound.

Groundwater and surface water impacts can arise both during and after cessation of operations of a landfill. Uncontrolled runoff from a landfill can lead to contamination of surface water and potential groundwater if the runoff can penetrate to the groundwater. Water accumulation in the void can result in contaminated water finding its way into the groundwater and later the contaminated groundwater adversely impacting surface water. The key mitigation strategy for contamination of groundwater is sealing of the void usually with a clay or similar material and daily management in the form of daily cover fill. Environmental management plans should stipulate the appropriate management response based on the risk associated with the landfill's surrounding geology and waste stream being disposed.

When it is time to cap a landfill a certain amount of mounding is required to facilitate runoff and to stop pooling of water on the mound. The degree of slope required can vary, however a consistent fall of more than five percent is commonly considered to be sufficient. Many landfills proposed within Ipswich have sought to create large and steep mounds to maximise landfill capacity. From an environmental management perspective these large and steep mounds facilitate runoff but do materially change the geography and topography of a locality, which in turn can have visual impact consequences.

In summary, the environmental impacts of landfill development for the most part can be adequately managed through management plans and mitigation measures. Circular economy projects will also have potential environmental impacts associated with being a large-scale industrial activity. As with any large-scale industrial activity, circular economy projects will need to be subject to appropriate environmental impact assessments and management plans. Traffic impacts for circular economy projects are likely to be similar to landfill projects, with waste/feedstock still needing to be transported to a project site.

11.3 Social and Economic Challenges

There has been and continues to be growing community resistance to the development of new landfills within Ipswich. Some of these concerns relate to environmental or traffic related issues, others relate to community identify concerns (i.e., Ipswich being the 'landfill capital' of SEQ), while other concerns relate to the low value nature of the activity. As with any large-scale industrial activity with the potential for offsite impacts, landfills will have environmental, social and economic impacts that will need to be managed.

At a macro level the disposal of waste via landfills can have a significant opportunity cost if that 'waste' has an economic value in terms of reuse. However, the economic consequences at a local or regional level can be more significant. For example, the direct full time equivalent employment (FTEs) generation associated with recycling 10,000 tonnes of waste is approximately nine FTEs. Alternatively, the direct employment generation of landfilling 10,000 tonnes of waste is less than three FTEs. The higher FTE for recycling is due to the higher number of activities associated with the recycling process, and in particular the sorting, transfer and transformation of materials into new products, and the labour-intensive nature of some of these processes compared with landfill-related employment⁹. Additionally, the different employment intensity is also caused by the higher value created by diverting 'waste' away from disposal and towards re-use. CSIRO (2021) Circular Economy Roadmap for Plastics, Glass, Paper and Tyres explores pathways for recycling and reuse of key waste items. The underlying circular economy process articulated by CSIRO is outlined in Figure 12-1 below.

⁹ Access Economics (2009) 'Employment in waste management and recycling', prepared for The Department of Environment, Water, Heritage and the Arts, July 2009

Figure 11-1 Circular Economy Process, CSIRO



Source: CSIRO

As pointed out by CSIRO, the key challenge associated with delivering circular economy projects and above activities currently undertaken relate to collection, sorting and procuring a consistent supply of feedstock, whether that be in terms of plastics, glass, paper or tyres. According to CSIRO, technology for re-use or re-manufacturing of waste products exists for a large range of waste products, however collection, sorting and securing of supply remains a substantial logistics challenge. In addition to 'waste to resources' activities (i.e., reuse and re-manufacturing), there is also opportunity to deliver 'waste to energy' projects where waste is a dedicated feedstock, or by-product heat from pyrolysis (an incineration process to separate waste at a molecular level for reuse). As with more traditional recycling projects the employment multiplier associated with 'waste to resources' and 'waste to energy' projects are substantially higher than simply landfilling waste. Further, employment opportunities created by circular economy projects are more diverse and include opportunities for unskilled semi-skilled and highly skilled workers.

11.4 Summary

In the context that Ipswich's mining voids represent a resource, there are environment, social and economic benefits associated with seeing the 'life' of these resources extended by diverting waste away from landfill to circular economy projects where landfill is only required for residual waste.

There is ample evidence that significant waste reduction and diversion is achievable, with other states outperforming Queensland in terms of waste diversion. The technology exists, however logistics associated with collection, sorting and security of supply can be challenging. Environmental impacts can be managed through traditional processes of impact assessment and management plans. The transition away from dedicated landfills to 'waste to resources' or 'waste to energy' projects have a strong potential to deliver an employment dividend to Ipswich both in terms of the number and quality of employment opportunities.

Section 12 Recommendation of Priority Industries

The following opportunities and constraints analysis is based on the key requirements of the priority industry activities. We are aware that intensive horticulture projects have been actively considering Ipswich as a location, particularly those that have significant CO² requirements (e.g., sealed green and glass houses). We consider these as part of the circular economy sector because they typically require co-location or close location to a major CO² emitter. The key requirements of the priority activities are considered against what the Ipswich LGA has to offer, which is defined in terms of land availability, infrastructure, accessibility, workforce capability, etc.

There is a general recognition from key industry stakeholders of the locational attributes of Ipswich to fulfill a regional role and function in terms of industrial land use, however uncertainty relating to infrastructure and servicing is identified as a major impediment to take-up. As a result, the majority of the constraints and recommendations are focussed on infrastructure provision.

Table 12-1 Assessment of Ipswich Priority Industry Activities

Priority Industry Activity	Opportunities	Constraints	Recommendations on Promotion and Attraction
Transport and logistics, including large scale distribution centres	<ul style="list-style-type: none"> • Availability of large areas of minimally fragmented land able to be developed into large lots with significant buffering • Location on Queensland's most significant road freight corridor • Highway upgrades approved • Future Inland Rail development • Existing workforce capability • High levels of accessibility to the interstate road freight network, principally via the Warrego Highway, Cunningham Highway and Logan Motorway • Agents advised that new estates with direct access to one of the major freight corridors would be highly desirable, citing the Willowbank Industrial Area as a key example of a potential new estate directly accessible via the Cunningham Highway. • Ebenezer is a potential location for an intermodal terminal along the Inland Rail alignment. If so, area then potentially a State interest in addressing infrastructure gaps. 	<ul style="list-style-type: none"> • Local agents concerned about the 'last mile' first mile' accessibility of parts of Swanbank, New Chum and Ebenezer MEIA • Agents noted that fragmentation of developable land within Swanbank and New Chum has stifled development interest • Market perception relating to the lack of direct accessibility of Willowbank Industrial Area to the Warrego Highway in the absence of the Ipswich Western Bypass being delivered • Quality of internal access in these areas is highly variable • Lack of 'ready to go' serviced industrial land. 	<ul style="list-style-type: none"> • Ongoing liaison and consultation with TMR on timing and implementation of planned infrastructure • Identify transport infrastructure upgrades and thresholds for upgrades in LGIP • Ongoing liaison with EDQ to coordinate the development and infrastructure delivery of the Ebenezer Regional Industrial Area.
Circular economy enterprises	<ul style="list-style-type: none"> • The increasing demand for more sustainable waste solutions, including measures to attract those activities that can contribute to a circular economy to reduce waste streams, may bring new opportunities for these areas. 	<ul style="list-style-type: none"> • Negative market perception relating to voids and undermining constraints and risks • 'First mover' concerns particularly for those businesses that have benefited from historical supply chain clustering 	<ul style="list-style-type: none"> • Council to undertake detailed assessment/ mapping of voids • Consider Planning Scheme incentives to encourage circular economy enterprises /catalytic development. • Introduction of the waste levy to discourage the

Priority Industry Activity	Opportunities	Constraints	Recommendations on Promotion and Attraction
	<ul style="list-style-type: none"> Using waste streams from existing food processing and agricultural activities in the region provides further potential opportunities for biofuels and bioenergy production industries, in existing well buffered locations with access to regional infrastructure networks such as Swanbank, New Chum. Opportunity to utilise existing mining voids for 'waste to resources' or 'waste to energy' industry Ipswich established as a resource hub Potential for direct highway and rail access State and federal support. 	<ul style="list-style-type: none"> Reliable access to suitable waste or input streams and competition with other regions. 	<p>importation of waste into Queensland along with measures to encourage the development of circular economy projects.</p>
Knowledge based industries	<ul style="list-style-type: none"> Knowledge and technology precincts associated with the Ipswich City and Springfield RECs, underpins the city's success to date in attracting a diverse range of employment offerings In 2019, CSIRO identified eight emerging knowledge intensive industries that Queensland should pursue. The emerging knowledge intensive industries identified – <ul style="list-style-type: none"> Sustainable Energy Cyber -Physical Security Smart Mining, Exploration and Extraction Personalised and Preventative Healthcare Advanced Materials and Precision Engineering Next Generation Aerospace and Space Technologies Advanced Agriculture Circular Commodities Emerging Megatrends include Changes in Human Capital Requirements: changes to the amount of human labour required in industry and the consequences of having a higher skilled, knowledge intense workforce overall. Knowledge intensive jobs are expected to be the key 	<ul style="list-style-type: none"> Limited opportunity for greenfield, purpose built, high quality employment precincts. Ipswich City is not yet predominantly reliant on a knowledge intensive economy. However, Ipswich City will need to focus on transitioning lower skilled workers into roles which will remain relevant when the city is heavily reliant on knowledge intense sectors. 	<ul style="list-style-type: none"> Include suitable areas for knowledge-based industry precincts in future structure planning of the ERIA and within /adjacent to future residential areas.

Priority Industry Activity	Opportunities	Constraints	Recommendations on Promotion and Attraction
	driving force for job creation and economic growth.		
Defence and allied defence industries	<ul style="list-style-type: none"> • Established RAAF Base Amberley and the Military Vehicle Centre of Excellence at Redbank Peninsular provide a range of employment opportunities for defence personnel and private employees including highly specialised manufacturing, aviation and aerospace, and logistics • Existing workforce capability • Site well insulated from incompatible development through land use planning and provide opportunity for additional growth • The Department of Defence own land south of RAAF Base Amberley and would be a key stakeholder in any future use of this land. 	<ul style="list-style-type: none"> • Need for coordination with Department of Defence in relation to security and access considerations. 	<ul style="list-style-type: none"> • Continue to promote Ipswich as a focus for defence related industry and innovation.
ALL (relating to all forms of industrial development in Ipswich)	<ul style="list-style-type: none"> • There is significant opportunity for Ipswich to benefit from the ongoing expansion of the South West Industrial Corridor, which will be further reinforced by the delivery of Inland Rail and possibly an Intermodal Terminal at Ebenezer, as well as broader initiatives in the SEQ Trade and Enterprise Spine • Delivery of the Queensland Government's Willowbank Industrial Area could stimulate additional development within the Ebenezer Regional Industrial Area as it would provide trunk infrastructure • Delivery of an intermodal terminal at Ebenezer/Willowbank would catalyse accelerated industrial land take-up within Ipswich and would likely attract increased interest from major industrial property trusts, which are currently focusing investment interest within the SWIC and ATC • Ipswich has a clear and obvious role and function to fulfill in terms as a major industrial hub for SEQ. 	<ul style="list-style-type: none"> • Relative shortage of constraint free and serviced industrial land readily available for large scale industrial development. 	<ul style="list-style-type: none"> • Encourage catalytic development: LGIP charges review and incentives • Ongoing liaison and consultation with UU and TMR to inform infrastructure planning and planning scheme draft • Ongoing liaison with EDQ to coordinate the development and infrastructure delivery of the Ebenezer Regional Industrial Area.

Several design and siting considerations applicable to these priority industries are provided in **Table 12-2** below. These would be minimal requirements for the priority industries listed and the range of industrial areas within Ipswich would be collectively capable of meeting these. A detailed review of the industrial planning provisions within the current planning scheme should be carried out to ensure there are no onerous and dated provisions that could be an impediment to industrial investment in the city.

Table 12-2 Industry Implementation Considerations

Industry	Industry examples	Design and siting considerations
Knowledge based industries	<ul style="list-style-type: none"> • Personalised and preventive health care • Advance material and precision engineering • Aerospace and space technologies • Advanced agriculture • Circular commodities • Sustainable energy • Physical security • Smart mining / exploration. 	<ul style="list-style-type: none"> • Most suitable for local /low impact industrial areas with high amenity, particularly those that do not generate heavy vehicle traffic or require 24 hour operation. • Business park like settings would suite many of these activities with high amenity and security • Where located adjacent or within established residential areas high levels or architectural design would be appropriate • Locations which provide good connectivity with customers synergistic uses or supply chain activities • Locations with access to required infrastructure networks.
Defence and allied defence industries	<ul style="list-style-type: none"> • Aerospace and avionics • Special vehicle manufacturing • Defence support activities (supply chain, maintenance logistics). 	<ul style="list-style-type: none"> • Locations which provide good connectivity with customers synergistic uses or supply chain activities • Potentially 24hour operations • High levels of security • Potentially medium impact zoning • Bespoke building requirements.
Transport and logistics including large scale distribution centres	<ul style="list-style-type: none"> • Intermodal facilities • Storage and warehousing • Transport depots • Distribution systems. 	<ul style="list-style-type: none"> • Access to regional and interstate road network • Access to rail network for intermodal facilities • Large areas with minimal levels of fragmentation • On site segregation of heavy vehicle and light traffic • Locations suitable for 24 hour operation • Separation from sensitive uses to avoid noise, air and light emission impacts • Onsite stormwater management and treatment • Bespoke building design • High levels of security.

Section 13 Critical Infrastructure Requirements and Implementation

13.1 Infrastructure Required to Service Land Demand

From the assessment of industrial areas, review of Councils Local Government Infrastructure Plan (LGIP), UU Netserv Plans and discussion with ICC, TMR and UU representatives, the following observations are provided in relation to infrastructure requirements to service the industrial areas:

- Most of the short-term land in existing industrial estates is already serviced or is capable of being serviced and included in Councils Priority Infrastructure Area (PIA) and UU Future Connection Areas. The exceptions include land in the New Chum and Swanbank areas. Potentially suitable land in these locations is generally fragmented due to the underlying mining constraints and is not included in Council's Priority Infrastructure Area (PIA).

Consideration should be given to extending the PIA to include those developable areas adjoining existing or proposed development or adjacent to the existing road network, as identified in the Concept Master Plans for these areas in the current planning scheme. This would enable UU to incorporate these areas in the Netserv Plans and for council to revisit the timeframes for internal road works in these areas, currently viewed by the market as a disincentive for investment (discussed further below).

For New Chum this would include the development area in the north of the precinct near the existing access road and the area in the south west near the Redbank Road and Cunningham Highway interchange. For Swanbank it includes the partially developed area on the southern side of Redbank Road and the low and medium impact industry area and business park area east of the Ripley Town Centre.

- The LGIP proposes some transport network upgrades in the vicinity of several existing industrial areas that will potentially improve the accessibility and connectivity of these areas. The timing of these works needs to be reviewed in the light of the projected uptake of industrial land in these areas to determining the value of bringing forward these works. The key areas identified are as follows:
 - **Yamanto**- the LGIP identifies the future upgrading of Lobb Street currently programmed for 2036-41. Implementation of these works will provide improved connectivity between the Yamanto industrial precinct and those on the northern side of the city at Wulkuraka.
 - **Flinders View** – currently programmed works for Brigg and Edwards Street and for Ripley Road will provide improved connectivity from this area to the Ripley Valley and Cunningham Highway. These works are currently programmed for 2021-26 which align with forecast development timeframes for this area which indicate land will be progressively taken up until 2041.
 - **Swanbank** - as noted above the market has expressed “last mile – first mile” concerns in relation to this area, the quality of internal roadworks and the fragmentation of developable areas due to mining constraints being a significant disincentive for investment in this location. The LGIP has programmed numerous internal road networks for this area which may warrant review giving this market perception. In particular, the road network servicing the southern precinct east of the Ripley Town Centre is not programmed for commencement until 2036-41. This area potentially provides an additional employment precinct for the Ripley Valley and the timing of works should be reviewed to align with infrastructure provision in the Ripley Valley PDA.
- Internal roadworks in the ERIA are currently programmed to occur from 2036 in the LGIP. Two of the four land take up scenarios suggest parts of this area will be required prior to this time, one scenario by 2030. Given the lead time associated infrastructure planning and provision, programmed works in the ERIA should be reviewed as a matter of priority. Consideration will need to be given to identifying priority development areas additional to the EDQ holdings, given EDQs land may be entirely consumed by the proposed intermodal hub. It is noted that much of the traffic envisaged in this area will comprise heavy vehicles associated with the freight and logistics

and potential resource recovery activities in this area which will need to be considered in the road network planning.

- Considerable infrastructure planning has been carried out by EDQ for parts of the ERIA and is included in the current planning scheme as Implementation Guideline 32. In terms of roadworks and access to the regional road network, initial internal network planning has been included in councils LGIP and agreement has been reached with TMR in relation to the location and configuration of highway interchanges, together with upgrading triggers. However, while EDQ have undertaken initial planning for water and sewerage infrastructure for the entire area, UU advise this area will not be included in its service connection area and UU will not resume responsibility for the infrastructure until it falls within Councils PIA.

13.1.1 Catalytic Infrastructure

Key catalytic infrastructure includes water, sewerage and roadworks (including and interchange upgrade with the Cunningham Highway) for the first stage of the Willowbank industrial area within the ERIA. As mentioned above, EDQ has already undertaken infrastructure planning for the ERIA and the area will need to be incorporated into Councils PIA to trigger the involvement of UU and inclusion in their Netserv planning.

Other catalytic infrastructure that is likely to improve the market perception of industrial land in Ipswich includes:

- Additional internal roadworks in Swanbank and potentially New Chum to address “first mile and last mile” concerns in relation to development in these areas
- Confirmation of timing and programming of the Western Bypass to improve connectivity between the Cunningham and Warrego Highways and the overall regional connectivity of the ERIA. This connection may also provide improved access to the northern parts of the ERIA which could be required by 2030 should EDQ lands be required for the intermodal facility
- Delivery of the Calvert to Kagaru section of Inland Rail and the potential Willowbank (Ebenezer) intermodal terminal. The delivery of intermodal terminals is considered by Inland Rail/the Federal Government to be important to fully realising the benefits of Inland Rail and maximising productivity in Australia’s freight network. The Australian Government is proposing to invest up to \$14.5 billion to develop and build Inland Rail, which has been declared a priority infrastructure project for Australia. The balance of funds is to be provided by grant funding, ARTC's direct contribution and through a Public Private Partnership.

13.2 Local Government Infrastructure Plan Considerations

Other implementation mechanisms and key policy considerations to address gaps between the current status of industrial land and infrastructure provision and where Council ‘need to be’ to meet demand is addressed in this section of the report. Considerations include:

- Current (infrastructure) policy framework assumptions contained in the LGIP.
- Industry trends in employment density and traffic generation and the changing natures of water services utilities (as outlined in UUs “Utility of the Future” direction paper).
- Findings from stakeholder engagement including opportunities for, and impediments to, infrastructure provision to existing industrial or industrial investigation areas.

13.2.1 Employment Generation Rates

The State’s mandated LGIP requires Councils to consider projected growth in both residential and non-residential land uses. Projections for Non-Residential uses are typically considered across the following defined LGIP development types:

- Industrial
- Retail

- Commercial and
- Other non-residential uses.

For Non-Residential land uses, the standard LGIP template first identifies anticipated growth in terms of Gross Floor Area (GFA) across the region. These estimates are typically based on a combination of land use studies, market knowledge and GIS data.

Employment factors are then typically applied to GFA estimates to determine likely employment generated by non-residential development. These employment factors vary between regions and may even vary considerably across a Council. As part of this project, an assessment of the employment generation rates applied by a selected group of Councils Peers has been undertaken. The peer group includes *Brisbane City Council*, *City of Gold Coast*, *Moreton Bay Regional Council* and *Sunshine Coast Regional Council*. A measure for industry is also included which was provided by the State in one of its early Infrastructure Charges calculators.

The employment generation rates estimated from the LGIP are a measure of the area of GFA per employee. While some of these Councils have a considerable spread in the rate of GFA per employee, Table 13-1 summarises the mean (or average) and median (the middle) values used by each Council.

Table 13-1 LGIP Measure of m² GFA Per Employee Across the Region

Peer Council	m ² GFA per employee	
	Mean	Median
Ipswich City Council (ICC)	134	100
Brisbane City Council (BCC)	89	56
City of Gold Coast (CoGC)	31	21
Moreton Bay Regional Council (MBRC)	137	137
Sunshine Coast Regional Council (SCRC)	60	59
State (RICS/ICS Calculator)	110	110

The outcomes contained in Table 13-1 illustrates the range of estimates of GFA per employee across different land uses with the more densely developed areas (such as Gold Coast) generating more employment per square meter of GFA and those areas that tend to be less densely development (e.g., Moreton Bay Regional Council) having larger areas of GFA per employee. Significant differences between the mean and median rates among some Councils suggests a broader range of variability within those areas.

The measure applied in this report in estimating employment is based on employees per hectare. To comment on the validity of these employment rates, we need to convert the measures indicated in Table 13-1 into a comparable measure of job generation. The measure of m² GFA per employee can be converted to employees per ha by estimating the likely industrial GFA per hectare. In doing so, we need to nominate the *site coverage* (i.e., the proportion of the site that's available for development) and *plot ratio* (the proportion of available land that can be converted to GFA). In terms of site coverage, this report has applied a rate of 0.75 which is considered consistent with industry averages. In terms of plot ratio for industrial uses, recent studies suggest an appropriate multiplier in the order of 0.5.

Applying both measures suggests that for every gross hectare of developable land could yield 3,750m² of Industrial GFA. This compares favourably with non-residential planned densities (as per Council's LGIP Table 13.7.1.3) for industrial development which range from 2,000 to 5,000 m² GFA/ha. Applying this measure to the rates identified in Table 13-1 suggests implied job generation rates as outlined in Table 13-2.

Table 13-2 Implied Employment Generation per Hectare

	Implied job generation rate (per Ha)		CDM Smith estimates		
	Mean	Median	Low Impact industry (employees per ha)	Medium Impact Industry (employees per ha)	High Impact Industry (employees per ha)
Ipswich City Council (ICC)	28	37	45	35	30
Brisbane City Council (BCC)	42	67			
City of Gold Coast (CoGC)	121	177			
Logan City Council (LCC)					
Moreton Bay Regional Council (MBRC)	27	27			
Sunshine Coast Regional Council (SCRC)	62	64			
State (RICS/ICS Calculator)	34	34			

The outcomes contained in Table 13-2 illustrate:

- Proposed estimates of employees per ha adopted in this report are consistent with rates implied in the Ipswich LGIP.
- While rates vary across the regional peers, the estimates adopted in this report are broadly consistent with Council's peer group.

13.2.2 Infrastructure Demand Projections

Council's planned density and demand generation rates for trunk infrastructure networks are contained in Table 13.7.1.3 of the LGIP. The LGIP is unusual in the sense that it does not include stormwater as a trunk infrastructure network. In addition, as water and wastewater services are provided by Urban Utilities and therefore the demand generation rates for these assets are determined independently of Council.

The result is that the LGIP only includes demand generation rates for the transport network and public parks/land for community facilities. As the latter is not relevant to non-residential land uses, the key element of Council trunk infrastructure demand for industrial uses is the transport rate.

The LGIP identifies a demand generation rate for transport trips per ha as being 140 vehicle trips. Comparison of such demand generation rate is problematic given that Ipswich's peer group apply different combinations of demand (with some using gross ha, others use developable ha and Gold Coast applying a measure of "Total Use Area"). Regardless, a broad assessment of Council's current rate (approximately 140vpd per hectare) falls between the regional maxima and minima demand generation rate.

Table 13-3 Demand Generation Rate for trip generation for industrial land uses

Planned density and demand generation rate for a trunk infrastructure network				
Column 1	Column 2	Column 3	Column 4	
Area classification	LGIP development type (Sub Area)	Planned density	Demand generation rate for a trunk infrastructure network	
Zone		Non-residential m ² GFA/ha	Transport network vehicle trips/ha	Public Parks and Land for Community Facilities Network persons/ha
Urban Areas Locality				
Local Business and Industry	Industrial	5,000	140	0
	Industrial	2,000	140	0

Planned density and demand generation rate for a trunk infrastructure network				
Column 1	Column 2	Column 3	Column 4	
Area classification	LGIP development type (Sub Area)	Planned density	Demand generation rate for a trunk infrastructure network	
Zone		Non-residential m ² GFA/ha	Transport network vehicle trips/ha	Public Parks and Land for Community Facilities Network persons/ha
Local Business and Industry Investigation	Industrial (SU74, SU75)	133		
Special Uses	Industrial (SU54)	3,000	6.5 / residential lot	2.74 / residential lot
	Industrial (SU67)	4,000		
	Industrial (SU25, SU72, SU73)	5,000		
	Industrial (SA5, SA9, SA25, SA29)	5,000		
Regionally Significant Business Enterprise and Industry Areas Locality				
Regional Business and Industry	Industrial (RB2L, RB2M)	4,000	140	0
	Industrial (RB1L, RB1M, RB3L, RB3M, RB4L, RB4M)	5,000		
	Industrial (RBIA1.3)	1,750		
	Industrial (RBIA2, RBIA2.1, RBIA3, RBIA3.1)	2,600		
Regional Business and Industry Investigation	Industrial (RBIA1, RBIA1.4, RBIA4, CSE)	5,000	140	
Service Trades and Showgrounds	Industrial	4,000	65	0

13.2.3 Trip Generation Rates

Traffic generation rates for industrial land use have been adopted in the LGIP for the purpose of determining infrastructure works and potential contributions. The rates adopted by Council relevant to industrial use are as follows:

- RBI 140 vehicle trips /ha (per day) Density 5,000m²/ ha
- Business Park 400 vehicle trips/ha /day
- LBI 140 vehicle trips /ha/day 4,000m² /ha.

A desktop review of other jurisdictions and guidelines indicates rates are often based on GFA of developable area. The Ipswich rates would be the equivalent to 7trips per day (tpd)/100m² GFA for RBI and LBI and 40 tpd for 100m² of business park (which assumes has a higher retail function and patron turnover). The Gold Coast City Council adopt 0.05 trips per day/m² of developable Total Use Area (TUA) for all industrial vehicle trips. Expressed in terms of GFA this would equate to 5 tpd/100m² GFA. Maranoa Regional Council adopt a general rate of 4.5 vehicle trips per day/100m² for industrial development. The Traffic Authority of NSW - Policies, Guidelines and Procedures for Traffic Generating Developments suggests the following rates:

- Road transport terminal 5 per 100 sq m GFA Industry:
- Factories 5 per 100 sq m GFA
- Warehouses 4 per 100 sq m GFA.
- Business parks and industrial estates¹⁰ (average of) 7.83 per 100 sq m GFA.

¹⁰ Transport NSW, Guide to Traffic Generating Developments – updated traffic surveys, August 2013

In comparison with the latter rates, Council traffic generate rates would appear to be marginally higher than rates from the other jurisdictions and guidelines. Accurate traffic generation rates are difficult to procure and the application of generic rates to determine infrastructure charges such as those above is typically applied.

As part of this project CDM Smith have consulted with several traffic specialists, one of which provided advice in the recent P&E Court case *Toowoomba Regional Council v Wagner Investments Pty Ltd & Anor* [2020]. This case involved a meaningful attempt to calculate or estimate the demand on transport trunk infrastructure each of those uses might generate, rather than the adoption of the broad brush GFA approach adopted by the Council.

It was found in this court case that the application of generic rates to some specific industrial activities resulted in charges “that could not sensibly be said to fall within the range of possible lawful outcomes”. However, in a subsequent hearing in the Court of Appeal it was found that section 636(1) of the SPA “does not require the calculation of the levied charge to be by reference to actual additional demand generated by the development, provided there is some additional demand”. Rather, “the appropriate infrastructure charge for additional demand generated by the development is reflected in the ‘broad brush’ application of the adopted charge.”

This case indicates that for the purposes of determining infrastructure charges there is currently no need for the application of bespoke traffic generation rates as the CoA has endorsed the use of the broad-brush application of the adopted charge under SPA.

However, Council advises that the trip generation rates within the LGIP are not what the transport model uses to determine network requirements. Instead, the transport model generates vehicle trips based on population, employment numbers and trip purposes rather than GFA. Understanding the characteristics and distribution of trip generating land uses is fundamental to transport modelling. The allocation of employment growth by industry sector at the SA2 level prepared as part of this assessment will enable Council to refine this model.

While additional reliable information on the traffic generation characteristics of specific industry types discussed in this report was not able to be sourced, it is recommended that Council undertake, targeted 24 hour traffic surveys of in selected industrial locations or premises.

13.2.4 General Comment on Infrastructure Charges Regime

Infrastructure charges are set/capped by the State. The current capped Maximum Adopted Charge for industrial applications are as follows:

- Low and Medium Impact Industry - \$54/m² GFA
- High Impact/Special Industry - \$75.60 /m² GFA.

This charge is intended to include roads and water services. There is a separate provision of \$10.80 per m² impervious area to recover costs associated with provision of trunk stormwater. These charge rates do not include provision for public open space and land for community facilities.

Ipswich City Council’s charges for non-residential use apply only to the transport network. A charge has been determined for each of 52 charges catchments across Council. The charge rates applied for Low, Medium and High impact industry are generally in the range \$35-\$62/m² GFA (although there are some outliers with a minimum of \$10.57/m² GFA and a maximum of \$88.67/m² GFA).

As the assumptions applied to date are broadly consistent with the demand generation rates outlined in Councils Table 13.7.1.3, the assumptions are that there would be little/no impact on the resultant scope of trunk (transport) infrastructure (and therefore the cost) to accommodate growth and the required investment expected to be broadly consistent with Councils current LGIP projections.

However, the charge levied by Council seems to be derived to be cost reflective where the maximum charge rate set by the state is not cost reflective. This means that it is likely that any change in the scope of trunk infrastructure may have an impact on individual charges catchments (this may be either positive or negative). While Council’s detailed calculation of a charge by catchment seems to reflect an attempt to align the cost of provision trunk infrastructure

with demand on a subregional basis and recognising that this is an ideal approach, there are additional considerations for Council including:

- The infrastructure charge effectively acts as a cost to access an agreed standard of service. To that extent, the charge can be regarded more as a rate/tax which is agnostic to the scope of trunk infrastructure necessary to service specific areas.
- The adoption of a series of regional charges catchments also introduces a degree of complexity into Councils charge's regime. Many Councils are adopting the maximum charge (or a percentage of the maximum charge) as the relevant rate which is applied across the region. Such a "postage stamp" approach reflects an assumption that all users are gaining access to a comparable standard of service (regardless of how many assets are used) as well as simplifies the application of charges which may have administrative benefits for both Council and developers.
- Councils trip generation rates for industrial zones is similar though marginally higher than those observed in other jurisdictions. Additional targeted traffic survey data would be required to make meaningful recommendations in support of changes to the traffic generation rates for industry types and land use zones.

Section 14 Conclusions and Recommendations

14.1 Conclusions

From the above analysis the key conclusions are as follow:

- **Demand and Supply of Industrial Land**
 - Future demand to 2041 is likely to be approximately:
 - **Low impact industry:** Additional 73.4 hectares to 161.8 hectares over and above current demand and
 - **Medium and high impact industry:** Additional 178.8 hectares to 481.1 hectares over and above current demand.
 - The Sieve 2 assessment, identified that there is approximately 362 hectares of zoned land which has highest suitability to accommodate industrial development in Ipswich in the short term, comprising:
 - **Low impact industry:** 229 hectares and
 - **Medium and high impact industry:** 132 hectares.
 - This land is mostly contained within infill or expansion opportunities with existing industrial estates in Riverview, Wulkuraka, Karrabin, Bundamba, Yamanto, Redbank and Redbank Plains.
 - This analysis highlights whilst there is sufficient remaining low impact industry zoned land to meet projected demand in Ipswich City Council to 2041 under all scenarios, there is significant need to improve servicing to other zoned industrial areas to accommodate future demand for medium and high impact industry activity in Ipswich. Under two demand scenarios this additional land could be needed as soon as around 2030.
 - New Chum and Swanbank have been identified as moderately suitable to accommodate future demand, although further geotechnical assessment is required to determine the most suitable areas for future development. The take-up assessment has assumed whilst there is some take-up with Swanbank to 2041, the market preference is assumed to shift to Willowbank, as the industrial areas of highest suitability begin to exhaust.
 - The current 290 hectares that is relatively unconstrained at Willowbank would be available for medium and high impact industry if not selected for the proposed intermodal hub. Should the intermodal hub ultimately proceed, additional opportunities would need to be investigated within the broader Ebenezer MEIA.
- **Type of Industrial Land**
 - The range and distribution of industrial land generally well aligns with the priority industries identified for Ipswich, namely knowledge-based industries, defence and allied industries, circular economy activities and transport and logistics industries. Many of the existing industrial estates can cater for the low impact, local business and industry and business park type activities, demand for which is not forecast to exceed zoned land supply by 2041. However, the forecast shortage of land suitable for medium to high impact activities will need to be addressed particularly if the forecast demand for transport and logistics activities is to be met. Addressing the current market perceptions associated with Swanbank and bringing forward catalytic infrastructure for the ERIA are considered important priorities to meet industry demand to 2041.
- **Catalytic Infrastructure**
 - Catalytic infrastructure required to both secure future industrial land supply and provide greater confidence to some industrial stakeholders to invest in the city includes:
 - Water, sewerage and roadworks (including and interchange upgrade with the Cunningham Highway) for the first stage of the Willowbank industrial area within the ERIA

- Additional internal roadworks in Swanbank and potentially New Chum to address “first mile and last mile” concerns in relation to development in these areas
 - Confirmation of timing and programming of the Western Bypass to improve connectivity between the Cunningham and Warrego Highways and the overall regional connectivity of the ERIA. This connection may also provide improved access to the northern parts of the ERIA which could be required by 2030 should EDQ lands be required for the intermodal
 - Delivery of the Calvert to Kagaru section of Inland Rail and the potential Willowbank (Ebenezer) intermodal terminal. The delivery of intermodal terminals is considered by Inland Rail/the Federal Government to be important to fully realising the benefits of Inland Rail and maximising productivity in Australia’s freight network.
- **Use of Voids**
 - In the context that Ipswich’s mining voids represent a resource, there are environment, social and economic benefits associated with seeing the ‘life’ of these resources extended by diverting waste away from landfill to circular economy projects where landfill is only required for residual waste.
 - There is ample evidence that significant waste reduction and diversion is achievable, with other states outperforming Queensland in terms of waste diversion. The technology exists, however logistics associated with collection, sorting and security of supply can be challenging. Environmental impacts can be managed through traditional processes of impact assessment and management plans. The transition away from dedicated landfills to ‘waste to resources’ or ‘waste to energy’ projects have a strong potential to deliver an employment dividend to Ipswich both in terms of the number and quality of employment opportunities.

14.2 Planning Policy Recommendations

It is recommended that Council give consideration to the following planning policy recommendations:

- **Land Use Considerations**
 - Several of the areas identified for development will require changes to the current zoning to facilitate appropriate development. The identified land at Tivoli and Walloon currently zoned RBII will need to be rezoned to RBI (Low Impact). Some of the RBII land at Wulkuraka is proposed to be rezoned to Environmental Management in the draft LAF although the land use assessment for this study suggests a considerable portion of this land is free from constraints. This area may warrant further consideration by council.
 - Land within the ERIA will require rezoning from industry investigation although it may be prudent to hold off any action on this area until the final decision on the intermodal hub is made as this will dictate the need for additional land the that held by the EDQ.
 - Business parks have a role in the suite of industrial land offerings in Ipswich particularly in light of the some of the emerging industry sectors and priority industries. Many of the knowledge based and high technology enterprises for example are low impact in nature and can require a high amenity location. Increasingly a range of synergistic or supporting commercial activities are often collocated with these to create fully integrated employment areas. Several locations are identified for these in the draft LAF and it is recommended other locations be identified in some of the emerging development areas, particularly within the ERIA and potentially the Ripley Valley.
 - Business parks should contain uses with similar traffic generation requirements. It would be inappropriate to mix enterprises with high heavy and commercial traffic generation characteristics with activities which only generate light traffic.

- **Use of Buffer Areas**
 - The industry buffer areas were also assessed as part of the Sieve 2 evaluation. In general, the existing buffer areas are supported by the evaluation, either being physically constrained for development, too fragmented for efficient development, or providing required separation from sensitive or incompatible land uses. The draft LAF recommends some existing buffer land be rezoned to Environmental Management, but as noted above the suitability assessment conducted for this project suggest there could be more useable land, and this should be considered.
 - The one location where use of buffer land should be further considered is the land north of Berry Street in Yamanto. It would appear this buffer has been left to provide separation distance to the abattoir to the east. Depending on abattoir operational requirements there may be scope to use some of this area for land extensive industrial uses. The area is approximately 9ha.
- **Planning for the ERIA**
 - Further planning for industrial land uses within the ERIA is required particularly if Willowbank is chosen the preferred location for the inland rail intermodal facility. Ongoing liaison with both TMR and UU will be critical in ensuring the catalytic infrastructure needed to bring suitable areas to the market is coordinated as part of this planning. In addition, consideration should be given to identifying locations within the ERIA for each of the priority industry sectors so that appropriated internal connectivity and buffers areas can be identified.
 - This planning should also be coordinated with, and be used to help focus, additional mining risk assessment for areas within the ERIA.
- **Amendments to the LGIP**
 - While most of the areas appear to be fully serviced, the LGIP indicates some road works are planned to cater for full development and approve connectivity across the City. There are programmed works that will improve the connectivity of Yamanto and Swanbank, and the timing of these will need to be reviewed in light of the expected take up timeframes for each area.
 - Further, there are planned infrastructure works for the Ebenezer Regional Industrial Area that will need to be aligned with Councils LGIP and incorporated in UU Netserv plans in order to ensure the early stages of this area are available as required in the forecast period. Councils current Priority Infrastructure Area will need to be extended to cover the Ebenezer Regional Industrial Area as well as developable areas within Karrabin, Swanbank and New Chum.
 - The employment projections adopted for the LGIP should be reviewed in context of the industry employment projections by SA2 prepared as part of this assessment.
 - Target traffic surveys should be carried out to refine the traffic generation rates for industry types to be used in future transport model updates.

14.3 Next Steps

To further the planning for industrial development in Ipswich City the following is recommended Council:

- Undertake a detailed assessment and identification of voids within the industrial zoned areas.
- Undertake further assessment of the mining constraints in the ERIA. This should include liaison with EDQ in relation to access to further undermining assessments, identification of information gaps and the need for any additional assessments. Identify those areas with minimal mining risk that could be suited for appropriated types of industrial land use.
- Identify preferred areas for industrial development within the ERIA over and above EDQ's 290ha Willowbank industrial area which may need to be activated in the event the EDQ site is adopted as the site for the proposed intermodal facility associated with the inland rail.

- Following the above and in collaboration with EDQ, further the preparation of a more detailed structure plans for the ERIA or for those areas targeted for early release based on infrastructure provision.
- Liaise with UU to have the ERIA included in their Netserv Plans and to incorporated infrastructure planning work already completed by EDQ.
- Continue to liaise the TMR over the timing of the Cunningham Highway / Warrego Highway connection road and interchange on the Cunningham Highway to provide improved access to the ERIA from areas west of Ipswich.
- Continue to promote Ipswich as a focus for defence related industry and innovation.

Section 15 References

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