Upper North Island Industrial Land Demand

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Background

Authors: Kel Sanderson, John Williamson, Richard Paling, Fiona Stokes & Hugh Dixon

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Executive summary

Background

This project has been initiated by UNISA. BERL, Ascari Partners Ltd. and Richard Paling Consulting Ltd have worked together to identify and recommend a consistent approach that UNISA members could adopt to determine the demand for industrial land.

There are two objectives that this project has sought to meet:

- To develop a better understanding of the trends that determine industrial land needs (both general and specific) over the next 10, 20 and 30 year periods, and the key factors that influence industry decisions on where they locate.
- To refine the collected industrial land supply data from the UNISA Freight Story to better identify and understand the characteristics of current industrial land availability, and any emerging opportunities to make smart and efficient investment decisions.

Five key tasks have been completed to meet these objectives, and each section of this report provides analysis and narrative about these tasks. The tasks were:

- Engaging with industry stakeholders through an online survey that explored the preferred characteristics of industrial land by sector.
- Determining if there are any major differences between the regulatory, planning or charging policies of the UNISA districts and regions that could influence the investment decisions of industry in selecting industrial land.
- Setting out a qualitative checklist on the common characteristics and locations of land desired by industry, along with the barriers. This checklist should draw on the findings from the two previous tasks.
- Recommending a standardised method that UNISA councils could adopt to determine the future demand for industrial land.
- Undertaking a case study using the standardised method to illustrate how the method could work at a Territorial Authority (TLA) level.

Evidence

The patterns of industrial land use in the UNISA area can be tracked at a high level using CoreLogic data. Overall, this data indicates that the total amount of industrial land has increased between 1996 and 2012, that utilisation of this land has grown, and that land value per hectare has varied by industry.

The land area recorded as occupied by known industry types increased between 1996 and 2012, from approximately 7,300 hectares to approximately 9,500 hectares. This figure of industrial land is consistent with the estimate in the Upper North Island Freight Story of 7,730 hectares of industrial land. The Freight Story figure is based on sites of 50 hectares or greater, while our figure includes all titles.[1] This measure of land area includes the net not the gross land area, which includes roads, and does not include land classified as 'Industrial Mixed Use and Other' or vacant industrial land.[2]

[1] UNISA in partnership with Auckland Transport, KiwiRail, and the NZ Transport Agency. (2013). Upper North Island Freight Story: Reducing the cost of doing business in New Zealand through an upper North Island lens.

[2] Land classified as "Industrial Mixed-Use and Other" has been excluded from this analysis because we are unable to determine what activity is occurring on this land.

As mentioned, the CoreLogic data implies that the utilisation of industrial land has improved in the UNISA area between 1996 and 2012. In 1996, for every 100 hectares of occupied industrial land, there were 72 hectares of vacant industrial land. By 2011, for every 100 hectares of occupied industrial land, there were 34 hectares of vacant industrial land.

Land value per hectare has also varied by industry, with the price per hectare of heavy industrial land remaining fairly stable while that of light industry and warehousing and distribution has grown markedly. But the value per hectare of vacant industrial land has remained well below that of occupied industrial land and one-third the value of vacant commercial land. This implies that there could be reasonably priced vacant industrial land available for development in the UNISA area.

However, this data observation does not indicate whether this vacant industrial land is in the right location, or has the characteristics required by the industries that are projected to grow. To draw this conclusion would require further, detailed investigation at a Census Area Unit (CAU) level by UNISA members.

UNISA Industry Survey

The UNISA Industry Survey was a sample of firms in different industries across the UNISA area. Together, the 37 firms that replied to the survey employed an estimated 6,000 employees, occupied over 550 hectares, and generated revenue of approximately $3.6 billion. Their buildings occupied about 1.2 million square metres of floor space, and the overall employment density of these firms was approximately 10 employees per hectare.

Overall, the survey provided an insight into the factors that influence where an industry/business locates, and some indication of the general and specific trends that could drive the demand for industrial land. The characteristics of the surveyed firms also provided an insight into employment and employment density across industries.

At a broad level, the survey evidence suggests that the key factors that influence where an industry/business locates include:

- Land use zoning
- Market, including suppliers and customers
- Transport infrastructure, especially roads
- A skilled workforce
- Telecommunications.

Nearly all firms in all industries require industrial land that has access to transport and telecommunications infrastructure, and a skilled workforce. In addition, firms in land-intensive industries require industrial land that is suitably zoned, so that future expansion can be accommodated.

Firms in the primary and processing industries also need to be close to suppliers, but suitably distanced from non-industrial areas. These firms need to have access to land that is at a low cost and has low regulatory and planning fees. These same factors apply to firms in heavy industry as they require large sites suitably distanced from non-industrial areas for their sometimes noxious activity. Heavy industry also typically requires access to rail.

Transport and storage firms also require large sites and good access to transport and a skilled workforce, but they are typically attracted to purpose-built Greenfield developments. This is in contrast to firms in light industry. Since many are SMEs and/or start-up businesses, these firms are attracted by land and/or existing premises that can be geographically close to the owner's residence. Being geographically close to suppliers and customers is desirable, but not very important provided there is good access to transport links.

Previous studies in the UNISA area have used employment and population forecasts to determine industrial land demand. These studies have considered the number of additional jobs that could be created across a forecast period, and concentrated on growth in specific industries such as manufacturing, wholesale trade, and transport and storage. They have assumed that the current average employment density across all industry types will continue into the future. However, this assumption will not hold true if there are significant differences in employment density across industries, nor if there is projected to be a change in the mix of industries that are located in an area in the future.

The characteristics of the UNISA Industry Survey firms indicate that employment density varies widely between industries. These results are support by other sources of information on employment density that indicate in the future firms in the primary, processing and heavy industries will require approximately 10 employees per hectare. This change will occur as New Zealand moves to add further value to processed products, and more automation is introduced into the processing industries. This will be balanced to some extent by employment density in light industries and related services increasing to approximately 50 employees per hectare.

Any studies on industrial land and industrial land demand by UNISA members should therefore take into account the characteristics of the industries and firms currently located on industrial land, including employment density. This snapshot of current activity will assist UNISA members to understand how any change in industrial activity and employment density could influence the future demand for industrial land.

The impact of regulations, planning and charges

The use of more precise zoning would protect and support the more efficient uptake of industrial land within the UNISA area. Land use planning is the most significant regulatory and policy influence affecting the supply and uptake of industrial land for industrial purposes in this area.

Regulatory costs do matter to firms and developers, but are significantly less influential than the pricing effect arising from permissive zoning. Regulatory costs matter the most where zoning is permissive, as additional costs on top of higher land prices make industrial land uses less economic.

In situations where growth pressures are absent, permissive zoning of land for industrial purposes can be an advantage, providing flexibility for developers and firms. However, where growth pressures exist the widely observed effect of permissive zoning is that other types of land use emerge in areas intended for industrial activity.

This results in industrial activity being crowded out as land values respond to the higher value opportunities afforded by retail and commercial development. This also reduces the effective supply of industrial land and industrial activity may relocate to areas where land values are lower, further crowding out other activities.

Industrial land demand models

Two approaches were examined as part of our research to determine a standardised method to estimate industrial land demand. These approaches both focused on the future shape of the labour market and employment.

1. Industrial land demand is driven by industrial labour supply, where demand is based on projected population growth and labour force behaviour in the UNISA area.
2. Industrial land demand is driven by industrial labour demand, where demand is based on projected economic growth in the UNISA area.

The data sets that could be drawn on under these two approaches include population and labour market projections, or industry activity and employment projections.

For labour supply models, the assumptions would include:

- Population projections, including implied projections regarding mortality, fertility and migration
- Labour force participation rates
- The share of employment on industrial land
- The number of employees per hectare and/or floor space per employee.

For industry demand models, the assumptions would include:

- A basis for projecting future activity levels by different industries, such as generally trends or an economic model
- The number of employees per hectare and/or floor space per employee, by industry type
- An allowance for future changes in employee density
- An allowance for buffer zones around 'noxious' or 'noisy' industries.

Our research has found that there is wide variation in the demand for industrial land under labour supply models, and less extreme variation under industrial demand models. We therefore recommend that UNISA members adopt an industrial labour demand model as their standard method, and have used data and information on industrial land in the Northland Region as a case study to illustrate the merits of this method.

A case study using the industrial land demand model: The Northland Region

In this case study we consider what the Northland economy could look like in 2031 under a Business as Usual situation (BAU) and under a growth scenario.

The BAU scenario considered the rate of employment growth in key industries in the Northland Region over the last 10 years, and compared this growth rate to the same industries nationally. It then assumed that this difference in economic growth would continue to 2031.

- Under the BAU scenario, the total amount of occupied industrial land in the Northland Region could increase by 33 percent, from 1,746 hectares in 2013 to 2,318 hectares in 2031.

The Growth scenario assumed that the future growth of Auckland will have a greater 'osmotic' effect on Northland. For example, employment growth in Auckland is expected to exceed that of New Zealand towards 2031. This 'Auckland effect' will positively impact on Northland, bringing the average growth rate of Northland industries up to that of the New Zealand average. For industries that grew faster than the national average over the last 10 years, we assume that this higher than average growth rate continues.

- Under the Growth scenario the total amount of occupied industrial land in Northland could be expected to increase by 55 percent, from 1,746 hectares in 2013 to 2,710 hectares in 2031. This is an aspirational high-growth scenario, and an additional 392 hectares of industrial land are occupied under this scenario compared to the BAU.

To determine what the percentage change per annum in employment should be under each of the scenarios, we considered how the New Zealand economy is currently performing, how the Northland economy is performing compared to the New Zealand economy, and what the comparative advantages of the Northland Region are. We then looked at the performance of the Northland regional economy over the last 10 years, and compared this performance to the national average. This data provided the baseline information for our modelling because the projected change in employment was used to estimate the required floor area or land area per employee required by a business within an industry. This data is then used to estimate the number of hectares of industrial land needed to support that level of employment.

Recommendation

We recommend that:

- UNISA members adopt a standard method to determine the future demand for industrial land.
- This method should be driven by industrial labour demand based on projected economic growth in the UNISA area, including employment density. A worked example of our recommended demand method is shown through our case study of Northland.

The benefits to UNISA members of establishing a common method are:

- Members can undertake controlled experiments to determine the amount and type of industrial land needed across their district or region under various growth scenarios.
- Members can determine if investment in additional serviced industrial land is required in their local authority area, or can delay this decision until such time as it is likely to be required.
- The allocation of industrial land that is broadly consistent with the expected demand for this land, across the UNISA area.

An understanding of employment density across different industries, and changes in employment density over time is fundamental to understand the factors driving the demand for industrial land. We would therefore recommend that UNISA members survey firms in industrial areas to gather this data and information.

Finally, as the economy evolves the share of employment in strictly industrial jobs will change. We therefore recommend that UNISA members tailor the development of industrial land to meet the needs of the different types of industry that are projected to expand in the future economy.

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1 Introduction

1.1 The Freight Story

The purpose of the Upper North Island Strategic Alliance (UNISA) is to better understand the range of issues that face the Upper North Island, especially, but not limited to, infrastructure and land development matters.

In 2013, an evidence base on freight activities in the Upper North Island was developed by UNISA in conjunction with Auckland Transport, KiwiRail, and NZTA. The purpose of this study was to identify critical freight-related issues, and build an evidence base for future decision-making. This study is known as the Upper North Island Freight Story.[3]

1.2 Industrial land

Seven critical freight-related issues were identified in the Freight Story, two of which relate to land. The first issue related to the utilisation of industrial land, and the need to understand the likely supply of and demand for industrial land (amount, type and location) across the Upper North Island. The second issue related to a lack of strategic, integrated land use, and transport planning and investment.

A key finding from the Freight Story was the identification of approximately 7,720 hectares of existing industrial land in the Upper North Island. Further, this land could increase to approximately 13,000 hectares by 2041.[4] As a result of this finding, one of the key strategic questions that arose from the Freight Story was how can local government work together to better understand the need for and future plans regarding this land, as well as identify what attracts and/or places barriers on industry to develop it.

1.3 Approach taken

This project has been initiated by UNISA. BERL, Ascari Partners Ltd. and Richard Paling Consulting Ltd have worked together to identify and recommend a consistent approach that UNISA members could adopt to determine the demand for industrial land.

There are two objectives that this project has sought to meet:

- To develop a better understanding of the trends that determine industrial land needs (both general and specific) over the next 10, 20 and 30 year periods, and the key factors that influence industry decisions on where they locate.
- To refine the collected industrial land supply data from the UNISA Freight Story to better understand the characteristics of current industrial land availability, and any emerging opportunities to make smart and efficient investment decisions.

Five key tasks have been completed to meet these objectives, and each section of this report provides analysis and narrative about these tasks. These tasks were:

- Engaging with industry stakeholders through an online survey that explored the preferred characteristics of industrial land by sector.

[3] UNISA in partnership with Auckland Transport, KiwiRail, and the NZ Transport Agency. (2013). Upper North Island Freight Story: Reducing the cost of doing business in New Zealand through an upper North Island lens.

[4] Ibid.

- Determining if there are any major differences between the regulatory, planning or charging policies of the UNISA districts and regions that could influence the investment decisions of industry in selecting industrial land.
- Setting out a qualitative checklist on the common characteristics and locations of land desired by industry, along with the barriers. This checklist should draw on the findings from the two previous tasks.
- Recommending a standardised method that UNISA councils could adopt to determine the future demand for industrial land.
- Undertaking a case study using the standardised method to illustrate how the method could work at a regional and TLA level.

2 Industrial land use

Previous studies on the demand for industrial land within the UNISA area have focused on population and employment projections, and the impact these projections will have on industrial land.[5] These studies have focused on population growth and labour force behaviour, and have argued that employment growth will determine the demand for industrial land. Further, these studies rely heavily on assumptions regarding a single, average employment density and/or floor area ratio for total employment.

The number of employees per hectare is the fundamental measure of employment density on industrial land. This measure is relevant to determine space requirements for businesses in heavy industry, primary processing, warehousing, storage and logistics, and some light industry. However, firms in light industries increasingly have multi-level design and production buildings, as well as buildings to house their IT and accounts departments. In these industries, as well as in technical and business services, the relevant measure of employment density is the area of floor space per employee.

Employment density and the amount of floor space per employee varies widely across industry, as illustrated in the results of the UNISA Industry Survey discussed in a later section of this report. Assumptions regarding employment density and floor area ratios are evolving with changes in production and processing, investment in machinery and equipment, and investment in employee training and skills. This variation indicates that UNISA members should take into account the mix and characteristics of the industries expected in their area, when determining future industrial land requirements.

Other key issues that have been identified in the previous studies on industrial land within the UNISA area are in relation to:

- A lack of definition in regards to what land is considered industrial land.
- A lack of explanation as to how various ratios are determined, such as the ratio of employees per hectare used as part of the employment projections, and in turn the demand for industrial land.
- Unspecified employment to land ratios.
- Assumptions around employee density ratios, floor area ratios and site yield, and that these assumptions are not made explicit.
- Assumptions that historic growth trends and patterns will continue.

2.1 Definition of industrial land

The definition of industrial land used in projections within the UNISA area and in international studies has generally followed two approaches:

- Industrial land is land used in productive industry; generally manufacturing, processing, trades, and servicing.

[5] See for example Property Economics. (2010). Future Proof Business Land Data Assessment. Property Economics Ltd: Auckland; Property Economics. (2012). SmartGrowth Commercial Update. Property Economics Ltd: Auckland; Property Economics. (2009). Economic Development Profile Statement. Waipa District Council: Cambridge; Mead, A. (2007). Hamilton Industrial Land Study. Hamilton City Council: Hamilton; Latitude Planning Services. (2011). North Waikato Industrial Study: Summary of Key Findings. Waikato District Council Strategic Policy Team: Hamilton; Phil McDermott Consultants Ltd. (2006). Business Land Requirements Review: Western Bay of Plenty. Phil McDermott Consultants Ltd: Auckland.

- Industrial land is generally in industrial estates, which include the provision of technical and professional services and in some cases provide personal services for industrial employees.

The approach suggested by the UNISA Steering Group is that this project concentrates on the demand for 'core' industrial land, including land that accommodates trades and services. The information available is from CoreLogic and is the area of land included in the land titles with industrial use This means it is the net industrial land area, not the gross area including roads. Individual councils can then add any implied land required - either in the industrial area or by land being freed-up due to industry moving – into their individual land demand studies.

We recommend that UNISA members adopt this definition of industrial land in the first instance. We also recommend that UNISA members examine industrial land areas at a Census Area Unit (CAU) level.

2.2 Information available on industrial land use

The aim of this study was to investigate and recommend a standard method that UNISA members could adopt to determine the future demand for industrial land. There are 20 Districts and Cities within the UNISA area, ranging in size from Auckland City with a population of 1.4 million people, to Kawerau District with a population of 6,400. The resources available to each local authority in their planning and zoning analyses and activities are similarly wide ranging.

2.2.1 The information needed

To better understand the characteristics of industrial land the following information is required for each CAU [6]:

- The number of businesses in each of the main industries occupying the industrial land
- The number of hectares of industrial land occupied by these businesses
- The total employment in these businesses.

There are 746 CAUs within the UNISA area, which is about 60,000 square kilometres. This means the average size of a CAU is approximately 8,000 hectares, and the average population is approximately 3,000 people.

To provide a standard method that can be most readily applied by the greatest number of UNISA members, we have based our investigations on readily available national data sets rather than customised data that would have to be purchased by each TLA.

2.2.2 The information readily available

We recommend that UNISA members use CoreLogic data on industrial land and Statistics New Zealand Business Demography data on employment. Both of these data sets are available at CAU level.

[6] Statistics New Zealand Census Area Units (CAUs) are a single geographic entity. In urban areas, CAUs generally coincide with a suburb or part of a suburb and normally contain a population of 3,000 to 5,000 people. In rural areas, a CAU can have a low population count and include only two or three meshblocks. CAUs are continually assessed as part of alterations to local authority boundaries, and any classification changes are released annually on 1 January.

Table 2.1 illustrates how Statistics New Zealand industry activity and employment data (ANZSIC) concords with CoreLogic industrial land use data. Concordance between property categories and employment classifications is important to determine the current employment on industrial land and the potential future demand for industrial labour and subsequently industrial land.

Table 2.1 Concordance between classifications

ANZSIC Code	CoreLogic property category
C11 Food Product Manufacturing	Food industry
C12 Beverage and Tobacco Product Manufacturing	Food industry
C13 Textile, Leather, Clothing and Footwear Manufacturing	Light industry
C14 Wood Product Manufacturing	Light industry
C15 Pulp, Paper and Converted Paper Product Manufacturing	Light industry
C17 Petroleum and Coal Product Manufacturing	Noxious industry
C18 Basic Chemical and Chemical Product Manufacturing	Noxious industry
C19 Polymer Product and Rubber Product Manufacturing	Light industry
C20 Non-Metallic Mineral Product Manufacturing	Light industry
C21 Primary Metal and Metal Product Manufacturing	Heavy industry
C22 Fabricated Metal Product Manufacturing	Heavy industry
C23 Transport Equipment Manufacturing	Heavy industry
C24 Machinery and Equipment Manufacturing	Light industry
C25 Furniture and Other Manufacturing	Light industry
E32 Construction Services	Industrial services
F33 Basic Material Wholesaling	Warehousing
F34 Machinery and Equipment Wholesaling	Warehousing
F36 Grocery, Liquor and Tobacco Product Wholesaling	Warehousing
F37 Other Goods Wholesaling	Warehousing
I52 Transport Support Services	Warehousing
I53 Warehousing and Storage Services	Warehousing
L66 Rental and Hiring Services (except Real Estate)	Industrial services
N721 Employment Services	Industrial services
N732 Packaging and Labelling Services	Industrial services

Source: BERL

For each CAU the following data is required:

- The number of businesses in each of the main industries occupying the industrial land
- The number of hectares of industrial land occupied by these businesses
- The total employment in these businesses.

CoreLogic property data

Property data at a CAU level is available from CoreLogic using two different classifications:

- The first classification system is a **property classification**, where a property is classified as one of seven industrial property types. This classification is based on zoning and what the land can be used for. For example land used for dairy manufacturing will be classified as heavy industry land.

- The second classification system is a **land use classification**, where a property is classified as one of 71 different land uses. This classification is based on the specific use of industrial land within an area. For industrial land throughout the Northland Region, the land can be split into 71 different land use categories for the period 2001 to 2014.

We recommend that for a council undertaking a **broad study of industrial land** within their local authority boundaries that they start with the **property classification data set**.

This data set is best for analysing a large number of CAUs, providing overall data on the amount of industrial land, and identifying CAUs of particular interest that either have a large amount of industrial land in use or a large amount of employment associated with industrial land.

We recommend that once a council has identified a **small number of key CAUs**, they should consider obtaining the **land use data set** for these CAUs.

The land use classification data set is best for providing detailed data on industrial land use within key CAUs, and for providing a potentially more accurate match between industrial land use and employment. For example, land used for parking, road transport, or engineering, metalworking, appliances and machinery businesses. But not all land use codes are as specific as these examples such as land that is used for office, retail or industrial purposes.

Statistics New Zealand employment data

Employment by industry data is available from Statistics New Zealand in the annual Business Demography Database (BDD). The data is provided by industry, as per the ANZSIC classification system, and records business activity units at a CAU level. This data is for the year ending March and is for employee counts.

Employee counts are a headcount, it does not tell you how many hours per week each person is employed in an industry or business works. However, for the purposes of determining employment density, employee counts data is sufficient.

Employment by industry data is also available from the five-yearly Census Place of Work data. This data is also provided by the ANZSIC classification system. However, neither the BDD survey nor the Census obtains complete coverage, and there can be some variation in the numbers between data sets.

Data issues

CoreLogic data on land use by industry provides land areas and values for each land title, but it is not a comprehensive data set and it does not contain a definite number of businesses. This means one single business may use more than one title or a number of businesses could be located on a single title.

Historical data on industrial land from 1995 to the present is not complete and errors are present. There have also been changes in classifications and or interpretation of industries during this time. The use of this data requires some ‘data-cleaning’; nevertheless, this is a large, comprehensive and useful database.

There are fundamental differences between the Statistics New Zealand employment by industry data and the CoreLogic industrial land use data. Any exercise applying these data sets requires that the data is interrogated for any apparent inconsistencies. This is because a collation of these two data sets can be attempted at a high-level, but at a finer level of detail figures with a spurious level of

accuracy are generated. However, this checking exercise would allow local authority staff to gain more knowledge of land use by industry within their TLA, which may be useful.

In addition, in the course of this work we have found some figures in the CoreLogic database that are unlikely to be correct. We have adjusted some of these and are comfortable that our high-level picture of industrial land use is correct. However, we would suggest that people wishing to use the detailed information within this data set subject any questionable number to the common sense test, and if possible, refer back to the local authority where the land is located.

2.3 Industrial land use in the UNISA area, 1997-2012

The patterns of industrial land use in the UNISA area from 1997 to 2012 can be tracked at a high level using CoreLogic data. Overall, this data indicates that the total amount of industrial land has increased, and that the utilisation of this land has also grown. Land value per hectare has also varied by industry, with the price per hectare of heavy industrial land remaining fairly stable while that of light industry, and warehousing and distribution has grown markedly.

The land area recorded as occupied by known industry types increased during this period, from approximately 7,300 hectares to approximately 9,500 hectares. This area does not include land classified as 'Industrial Mixed Use and Other', or vacant industrial land. This figure is consistent with the estimate in the Upper North Island Freight Story of 7,730 hectares of industrial land. The Freight Story figure is based on sites of 50 hectares or greater, while our figure includes all titles.[7]

The CoreLogic data also implies that the utilisation of industrial land has improved over the period. In 1997, for every 100 hectares of occupied industrial land, there were 72 hectares of vacant industrial land. By 2011, for every 100 hectares of occupied industrial land, there were 34 hectares of vacant industrial land.

Despite an increase in industrial land use, the value per hectare of vacant industrial land has been well below that of occupied industrial land during this period, and only one-third the value of vacant commercial land. This implies that there could be reasonably priced vacant industrial land available for development in the UNISA area. It does not however indicate whether this land is in the right location, or has the characteristics required by the types of industry that are projected to expand. To draw this conclusion would require further, detailed investigation.

2.3.1 Changes in industrial land use

The CoreLogic data indicates that the amount of industrial land used for light industry has increased steadily from about 2,450 hectares in 1997, to approximately 2,700 hectares in the period from 2010 to 2012. The value of land used for light industry was caught up in the property boom from 2004 to 2009, and the average land value increased during this period from $500,000 per hectare, to $1.8 million per hectare. In some areas of UNISA, part of this increase could also be due to permissive zoning that has allowed industrial land to change to commercial land.

The database shows that the amount of industrial land used for heavy industry increased from 2,950 hectares in 1997, to approximately 5,000 hectares in the period 2002 to 2004. This area then dropped to about 3,000 hectares in 2006, and has remained largely unchanged since. This large increase in land indicates that the data should be scrutinised further to see if there was a classification change during the period 2002 to 2004.

[7] UNISA in partnership with Auckland Transport, KiwiRail, and the NZ Transport Agency. (2013). Upper North Island Freight Story: Reducing the cost of doing business in New Zealand through an upper North Island lens.

The average value per hectare of industrial land used for heavy industry purposes has remained fairly stable since 2010, while most other industrial land prices have eased.

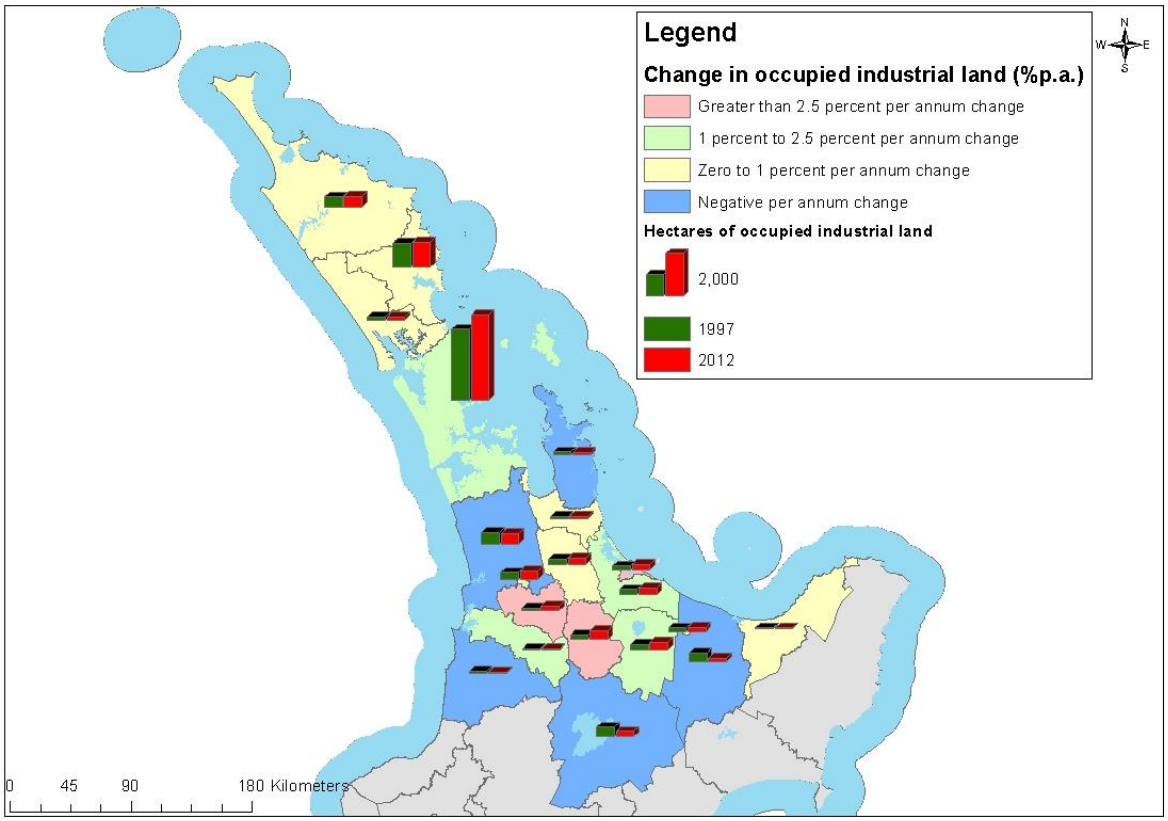
Industrial land occupied by businesses engaged in warehousing, storage and logistics has increased from 750 hectares in 1997, to 1,600 hectares in 2012. Warehousing and distribution tends to be more concentrated in larger cities, and this is reflected in average land values. Land value per hectare for businesses engaged in warehousing and distribution was approximately $800,000 per hectare in 2004. This increased to approximately $2.6 million per hectare by 2010. This land value has followed quite closely the values of commercial vacant land and commercial mixed-use land, rather than the much lower priced industrial vacant land.

Our observation from this high-level analysis, is that some industrial land, especially that used in warehousing and distribution, is increasingly being sought for commercial, and commercial mixed-use development. The implication of this, is that if the industrial production on industrial land is to be retained, then more precise zoning must be applied to these areas.

2.3.2 Geographic changes

Figure 2.1 shows the absolute change in the number of hectares of industrial land between 1997 and 2012, and the percentage per annum change during this period.[8]

Figure 2.1 Changes in occupied industrial land, 1997-2012[9]



[8]Waipa District had incomplete occupied industrial land records in 1997. The earliest year with complete records was 2005, and this year has been used instead as a benchmark for this District.

[9] Data used in this map is sourced from CoreLogic.

In absolute terms, Auckland had the largest increase in occupied industrial land between 1997 and 2012, with an additional 670 hectares. It should be noted that the 2012 CoreLogic database recorded that Auckland had 4,000 hectares of occupied industrial land and Whangarei District had over 1,100 hectares of occupied industrial land. All of the other local authorities had less than 500 hectares of occupied industrial land.

2.4 Employment density

The number of employees per hectare is the basic measure of employment density on industrial land. Population-based projections of the demand for industrial land generally assume that the current average employment density across all industry types will continue into the future. This assumption will not hold true if there are significant differences in employment density across different industries, nor if there is projected to be a change in the mix of industries in the future.

The actual employment density in any group of businesses will depend on the specific type and nature of the industries. There are no 'Golden Rules' as to what employment densities should be, however there are some principles that are usually found to apply. Firstly on the more expensive, inner urban land, the employment density in any industry is usually higher than on lower value, fringe urban land. Secondly as productivity increases, often due to the increasing application of new technologies, the employment density in any particular industry tends to decline over time.

An understanding of employment density across different industries and changes in employment density over time is fundamental to understanding the factors driving the demand for industrial land. We would therefore recommend that UNISA members survey firms in industrial areas to gather this data and information.

We recommend that UNISA members survey firms in the large independent industries in their area as well as those in mixed industrial areas as to their likely plans for expansion on their current site or any additional activities that could be located elsewhere in the region. This is particularly important if there is vacant industrial land available in these CAUs, which indicates the capacity for expansion.

A survey of businesses located on industrial land would help UNISA members to better understand the factors driving changes in demand for industrial land, and if these factors are likely to result in changes in employment density. The levels of employment density are relatively similar in the same industry in different locations. Also, the trends in each industry are relatively slow-moving so the knowledge gained in this type of survey is likely to remain relevant for some time.

2.4.1 Employees per hectare – CoreLogic and Statistics New Zealand data

To estimate employment density in the UNISA area, an average of employees per hectare has been determined at a high level using CoreLogic data on land titles and industrial land use, and Statistics New Zealand employee counts data. It is difficult to obtain concordance between these two data sets as CoreLogic data is allocated across seven broad categories of industry land use, while Statistics New Zealand classifies industries using a classification system called ANZSIC.

Table 2.2 shows the number of titles and total area in hectares across six CoreLogic industries that occupy industrial land.[10] It also illustrates the average area occupied by businesses on these titles.

[10] Land classified as "Industrial Mixed-Use and Other" has been excluded from this analysis because we are unable to determine what activity is occurring on this land.

Table 2.2 Indicative industry employment densities, UNISA area

Approximate Industry categorisation		Property IQ data			Stats ANZSIC06 Data			
Property IQ Industries	Stats ANZSIC06 industries aggregated	Titles	Total Area	Average area	Activity Units	Employment Count (ECT)	Employment density	Firm size
		Number	*Hectares*	*Hectares*	*Number*	*Number*	*ECTs /ha*	*ECT/AU*
Food	Food processing or specialised food storage	96	178	1.9	326	15,153	85	46
Heavy	Heavy, large-scale manufacturing, vehicles, aluminium, steel production	317	2,843	9.0	944	8,899	3	9
Light	Light manufacturinig	7,322	2,628	0.4	9,230	70,775	27	8
Noxious	Noxious or dangerous: oil refineries, natural gas conversion	110	439	4.0	313	4,996	11	16
Services	Services that usually have an interface with general public as direct clients	7,728	1,747	0.2	6,670	33,654	19	5
Warehousing	Warehousing, wholesaling with or without associated retailing	4,062	1,610	0.4	5,443	44,797	28	8
	Total	**19,635**	**9,445**	**0.5**	**22,926**	**178,274**	***19***	**8**

Source: Property IQ, Statistics NZ, BERL

Overall, businesses engaged in the noxious and heavy industries have a small number of titles but the average area required by their business is larger. Further, their employment density is lower than those businesses engaged in food processing, warehousing, and light industries.

Businesses engaged in heavy industry had the largest total land area, at approximately 2,840 hectares and an employment density of three employees per hectare. The average firm size was nine employees, with approximately 940 businesses involved in heavy industry on industrial land in the UNISA area.

In contrast, businesses engaged in food processing had the smallest total land area, at approximately 178 hectares and an employment density of 85 employees per hectare. The average firm size was 46 employees, with approximately 330 businesses involved in food processing on industrial land.

These order-of-magnitude figures on employment density can be compared with the data and information obtained from the UNISA Industry Survey, shown in Table 2.4 below.

2.4.2 Employees per hectare –UNISA Industry Survey

The UNISA Industry Survey was a sample of firms in different industries across the UNISA area. Together, the 37 firms that replied to the survey employed an estimated 6,000 employees, occupied over 550 hectares, and generated revenue of approximately $3.6 billion.

Their buildings occupied about 1.2 million square metres of floor space, and the overall employment density of these firms was approximately 10 employees per hectare. This means each employee required about 200 square metres of floor space.

Overall, the survey provided an insight into the factors that influence where an industry/business locates, and some indication of the general and specific trends that could drive the demand for industrial land. The characteristics of the surveyed firms also provided an insight into employment and employment density across industries. These characteristics are shown in Table 2.3.

Table 2.3 Characteristics of UNISA Industry Survey firms

Survey Characteristic	*Units*	Total
Firms responding	*Number*	37
Employees	*Number*	5,896
Revenue	*$ million*	$3,596
Land area	*Hectares*	558
Buildings floor area	*'000m²*	1,225
Building share of site	*Percent*	22%
Derived coefficients		
Employees per hectare	*Number*	11
Floor area per employee	*Sq.Metres*	208
Revenue per hectare	*$ million*	$6
Revenue per 1,000 m²	*$ million*	$3

Source: UNISA/ BERL survey 2014

The firms were asked about employment, area of land occupied, percentage of site covered, and revenue. This information allowed us to derive some high-level approximations of land use employment density. We then assumed that the actual level of activity for each firm and each characteristic was at the midpoint of the range. For some missing characteristics, we obtained publicly available information on the firm.

The derived coefficients in each industry generally differed quite widely from these averages. Also, in a relatively small sample like this, a single large firm can significantly affect the averages across an industry. For this reason we have provided the following:

- The total land area and number of employees across the five industries surveyed, and the 'Modal' figures for the approximate levels of employees per hectare and floor area per employee.
- An approximate of annual business revenue per hectare in each industry. This provides a high-level estimate of the industries' relative ability to pay higher or lower prices per hectare for industrial land.

Table 2.4 UNISA Survey firms by industry

Survey Industry Characteristic	*Units*	Primary and processing	Food manufacture	Heavy industry	Light industry	Transport storage
Firms responding	*Number*	10	2	3	16	4
Employees	*Number*	1,753	450	1,275	1,987	363
Land area	*Hectares*	276	16	160	41	9
Buildings floor area	*'000m²*	383	97	463	181	24
Building share of site	*%*	14%	61%	29%	44%	28%
'Modal' employees /hectare	*Number*	*10*	*30*	*8*	*50*	*40*
'Modal' floor area / employee	*Sq.Metres*	*100*	*150*	*350*	*40*	*65*
Approx. revenue per hectare	*$ million*	$7	$24	$3	$16	$21

Source: UNISA/ BERL survey 2014

Surveyed firms in:

- The primary and processing industries generally had large buildings, large sites (about 28 hectares), low employee density and low site cover. A number of these firms were in rural areas and not competing with other industries for land.
- Heavy industry had similar characteristics to those in the primary and processing industries. The exception being they had even larger sites, at over 50 hectares. Due to their noxious nature - noise, dust and smell - these large businesses were often located away from other industry.
- Food manufacturing also had similar characteristics to those firms in primary and processing and light industry, but their land area and floor area was generally smaller.
- Light industry had an average land area of 2.5 hectares, but this average is distorted by two large firms on large sites. The buildings on these sites covered nearly 50 percent of the land, and the businesses generated revenue per hectare of approximately $16 million. Employee density coefficients of 50 employees per hectare and 40 square metres floor space per employee were considered typical of light industry businesses.
- The transport and storage industry included courier businesses that employed large numbers of people. The average floor area per employee was lower than expected in major storage facilities due to this.

2.4.3 Comparisons

A comparison of the employment density calculated using CoreLogic/Statistics New Zealand data and the information obtained from the UNISA Industry Survey respondents indicates:

- **Food processing, specialised storage**: CoreLogic/Statistics New Zealand: 85 employees per hectare; UNISA Industry Survey: 30 employees per hectare. Comment: Survey sample very small.
- **Heavy, large-scale industry**: CoreLogic/Statistics New Zealand: three employees per hectare; UNISA Industry Survey: eight employees per hectare. Comment: Similar order-of-magnitude.
- **Light manufacturing**: CoreLogic/Statistics New Zealand: 27 employees per hectare; UNISA Industry Survey: 50 employees per hectare. Comment: Similar order-of-magnitude.

- **Warehousing transport, storage:** CoreLogic/Statistics New Zealand: 28 employees per hectare; UNISA Industry Survey: 40 employees per hectare. Comment: Similar order-of-magnitude.

Overall, this data and our subsequent comparison indicates that employment density varies and that this variation can be influenced by supply and demand issues such as land scarcity and land values in different urban and semi-rural areas. This variation also reinforces the need to obtain actual figures from industry on employment densities and floor space ratios to determine useful coefficients. Extensive surveys and measurements may be required; however, drawing on evidence from similar analyses in other jurisdictions is also useful.[11]

2.5 Floor space per employee

A second measure of employment density is the area (square metres) of floor space per employee. As discussed earlier, increasingly firms in light industries have multi-level design and production buildings as well as buildings to house their IT and accounts departments. In these industries, as in technical and business services, the relevant measure of employment density is the area of floor space per employee.

BERL has in the past, and for the present research, accessed a number of studies on employment density in urban areas. These include:

- Business surveys completed by Manukau City for spatial planning and transport projects. Manukau City completed a census of industrial ratepayers and recorded their industrial and commercial floor space.
- Various data sets from the City of Melbourne Census of Land Use and Employment (CLUE), including the *CLUE 2012 City of Melbourne Summary Report*, December 2013.
- Various data sets from the City of Sydney Floor Space and Employment Survey (FES), including the *City of Sydney Local Government Area Summary Report 2012*, 2013.
- From the Federal Emergency Management Agency (FEMA), the US technical manual for Multi-Hazard Loss Estimation known as *HAZUS MR4*. .

Data from each of these studies has been combined and summarised to provide an order-of-magnitude estimate of the floor space per employee across various industries. These estimates are shown in Table 2.5. This table illustrates that overall floor space per employee is declining, but the differences between industries remains.

[11] See for example, City of Melbourne Census of Land Use and employment (CLUE), Various including e.g. *CLUE 2012 City of Melbourne Summary Report*; City of Sydney Floor Space and Employment Survey (FES), Various including e.g. *City of Sydney Local Government Area Summary Report 2012*.

Table 2.5 Average floor space per employee, by industry

Industry Types	Approx. Internal Floor Space M^2 / worker
Finance, business services	17-25
Food and beverage services	20-25
Social and community services	30-50
Retail trade	40-45
Manufacturing	60-90
Wholesale	50-60
Transport / storage	100+

Source: Melbourne CLUE 2002 - 2012; Sydney FES 2001-2012; Manukau City 2004, BERL

Overall, data from Melbourne and Sydney indicates that the average floor space per employee is trending downwards. For instance, in the 10 years between 2002 and 2012, the average floor space per employee in manufacturing declined by 11 percent, from 74 square metres per employee to 66 square metres. Average floor space per employee in wholesale trade in Melbourne (which excludes storage) was a little erratic, but it also declined during this period from 59 to 42 square metres.

In the UNISA Industry Survey, the approximate floor space per employee in manufacturing was 40 square metres, compared to 60 to 90 square metres in Table 2.5. Food manufacturers in the UNISA Industry Survey indicated that their business had 150 square metres per employee, which when added to manufacturing lifts the overall employment density towards 60 square metres per employee, as noted in Table 2.5 above.

For the wholesale, transport and storage industries, 65 square metres per employee was estimated in the UNISA Industry survey, compared in Table 2.5 with approximately 50 to 60 square metres per employee in warehousing or over 100 square metres per employee in transport and storage. However, it should be noted that the composition of the warehousing, transport and storage industries differs between surveys. For example in the Melbourne CLUE data the classification transport, postal and storage, had an average floor space of around 300 square metres per employee.

Unfortunately, the sources we have accessed did not have comparable figures for heavy industry and primary processing. Overall, however, the UNISA Industry Survey responses on employment density are supported by other studies on this subject, as noted in Table 2.5.

2.6 The importance of location - UNISA Industry Survey

In the UNISA Industry Survey, firms were asked to determine to what the extent location was Very Important, Somewhat Important, Neutral, Somewhat Unimportant or Not Important to the success of their business. The majority of firms, 65 percent, stated that location was somewhat important while 30 percent stated that location was very important to the success of their business.

Location is very important or somewhat important because it determines access to:

- Transport infrastructure (81 percent), especially roads (92 percent)
- A skilled workforce (78 percent)
- Telecommunications (78 percent).

Of importance to a smaller number of firms was access to:

- Suitable premises (57 percent)
- Suitably zoned land to allow for expansion (46 percent)
- Access to rail (41 percent)
- Land suitably distanced from non-industrial areas, or buffer land (35 percent).

Geographical factors were considered somewhat important or very important influencers on business location, especially being close to:

- The firm's suppliers (54 percent)
- The firm's customers (49 percent)
- The owner's residence (27 percent)
- Businesses in the same industry or supply chain (22 percent).

Only 16 percent of businesses felt it was somewhat important to be geographically close to built amenities (cafes, shops, medical centres, banks, childcare), or to natural amenities (beach, forests, parks, open spaces).

Costs that were stated as being somewhat important or very important in influencing the location of the business were:

- The cost of regulatory compliance (73 percent)
- The costs of buying or leasing land (59 percent).

We explore further the potential impact of regulatory compliance, planning and land use changes in Section 3.

2.6.1 Location factors important to specific industries

There are significant differences between industries in regards to the importance of location.

Firms in the primary and processing industries included dairy, meat, forestry and wood processing. For these firms, access to road transport was most important along with access to skilled workers and telecommunications. Being geographically close to suppliers and customers was also somewhat important. The low cost of regulatory compliance was very important to 30 percent of these firms, while the low cost of land was very important to 20 percent of them.

Firms in heavy industry stated access to road and rail transport was very important, along with the low cost of regulatory compliance and access to land suitably distanced from non-industrial areas. It was also considered important that these firms were located close to suppliers.

Storage and transport firms stated access to road transport and telecommunications, the ability to access skilled workers and suitable premises, and land zoned suitable for expansion were very important. With this last point in mind, the cost of land was more important to these firms than the cost of regulatory compliance.

Firms in light industry had a broader scope of location factors that were most important to their success. Access to road transport, skilled workers, telecommunications and premises were high on their list. Being geographically close to suppliers, the owner's residence, and customers also ranked highly. The cost of regulatory compliance and land was somewhat important to 75 to 80 percent of these firms.

2.7 Summary

The UNISA Industry Survey provided an insight into the factors that influence where an industry locates and some indication of the trends that could drive the demand for industrial land. The characteristics of the surveyed firms also provided an insight into employment and employment density across industries.

The survey evidence suggests that nearly all firms in all industries require industrial land that has access to transport and telecommunications infrastructure and access to a skilled workforce. In addition, firms in land-intensive industries require industrial land that is suitably zoned, so that future expansion can be accommodated.

Firms in the primary and processing industries also need to be close to suppliers, but suitably distanced from non-industrial areas, and have access to land that is at a low cost and has low regulatory and planning fees. These same factors apply to firms in heavy industry as they require large sites suitably distanced from non-industrial areas for their sometimes noxious activity. Heavy industry also typically requires access to rail.

Transport and storage firms also require large sites and good access to transport and a skilled workforce, but they are typically attracted to purpose-built Greenfield developments. This is in contrast to firms in light industry. Since many are SMEs and/or start-up businesses, these firms are attracted by land and/or existing premises that can be geographically close to the owner's residence. Being geographically close to suppliers and customers is probably desirable but not very important, provided there is good access to transport links.

Finally, the survey results support other sources of employment density information that indicate in the future firms in the primary, processing and heavy industries will require approximately 10 employees per hectare. This change will occur as New Zealand moves to add further value to processed products, and more automation is introduced into the processing industries. This will be balanced to some extent by employment density in light industries and related services increasing to approximately 50 employees per hectare.

3 The impact of regulations, planning and charges

UNISA members provided information on their regulatory, planning and charging policies to assist this project to understand if there are any major differences between the districts and regions, and if these differences could influence the investment decisions of industry in selecting industrial land and/or locations.

3.1 Land use planning

The information provided did not strongly indicate that regional planning frameworks were unduly influencing patterns of industrial land development. The only potential issue related to heavy industrial land use requiring water takes and/or discharges.

3.1.1 Issues

The information provided by UNISA members indicates that in certain circumstances, generally where growth pressures are limited, a small number of councils felt that permissive zoning of land intended for industrial purposes might be seen as an advantage. In these cases, permissive zoning provided flexibility for developers and firms whereas restrictive zoning may have limited development. In these areas, zoning decisions need to be well informed by demand forecasts, to ensure an appropriate outcome.

- For example, a district council response noted that “Council has an excess of serviced industrial land available” but felt that “the current, liberal, planning approach poses no significant problem.”

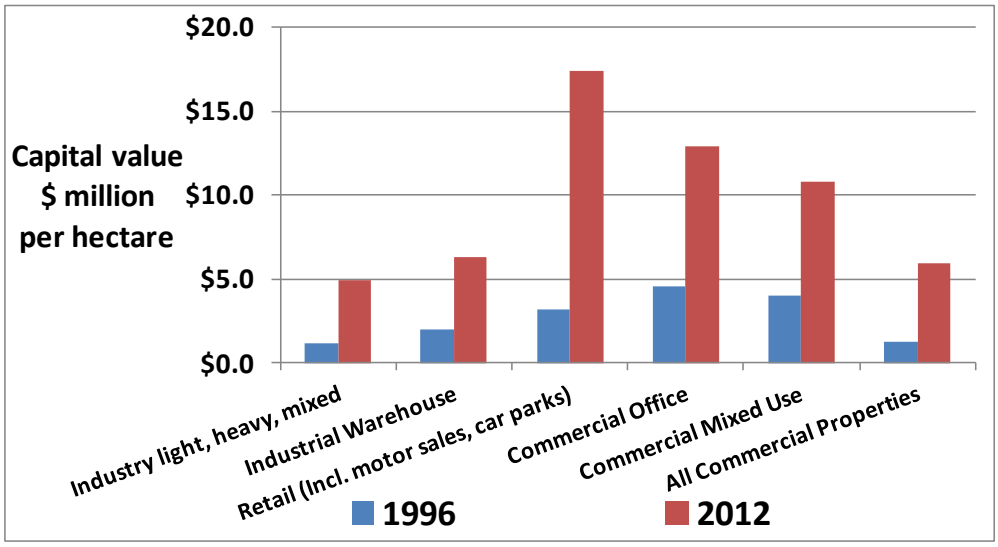
However for other Councils, including some where growth pressures exist or modest growth is occurring, the effect of permissive zoning is that land uses other than those intended have emerged. This has resulted in a proliferation of retail developments and some commercial activity.

- For example, one council noted, “a trend of retail and commercial activities establishing within the industrial zones. The result being “the perception that the rules are not strict enough.”
- Another district plan contains relatively liberal zone provisions for industrial and commercial zones. It is now recognised that, “this can result in market forces influencing land use choice and subsequent land use dominance.”
- In another district, big box retail in an industrial zoned area has largely priced out the industrial land uses from establishing in the zone. The flow-on effect has been a concentration of industrial uses in the surrounding, cheaper rural production zoned areas, displacing the desired rural activities.

3.1.2 Example of the impact of permissive zoning on industrial land use

In an industrial area studied by BERL, a private plan change allowed for a permissive zoning regime to emerge and significantly changed the nature of the land use in that area. Consequent on this change, a major retail area was developed in an area that was predominantly industrial, with large warehousing and logistics businesses. The impact on the relative property values before the change (1996) and after the change (2012) is shown in Figure 3.1 below.

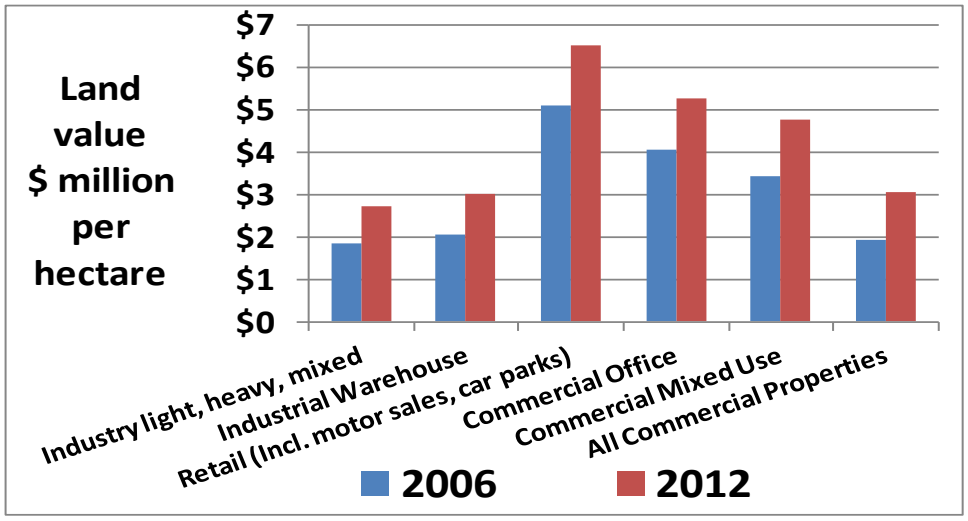
Figure 3.1 Capital Value in Commercial Land Uses, 1996 and 2012



The relative capital values per hectare of industry land, industrial warehouse, commercial office, and commercial mixed use land in this area were similar in 2012 to what they were in 1996. The one land use in this area that increased its capital and land value considerably was retail, and this puts pressure on industrial users. What this means is that retail land use can now offer significantly more value per hectare than land used for purposes such as commercial offices, warehouses or industry.

The differences in land values per hectare between 1996 and 2012 are so large that it is difficult to put this on a graph. Instead we have concentrated on the relatively short period between 2006 and 2012 and the land value change during that period, as shown in Figure 3.2 below.

Figure 3.2 Land Value in Commercial Land Uses, 2012



This graph shows that in the six-year period the land value per hectare increased by about $1 million, to $1.4 million per hectare across each land use. For industrial uses and warehousing, land values increased by about 50 percent on 2006 values, whereas land values for retail and commercial land uses increased by under 30 percent, on 2006 values. It seems apparent that the existence of strong demand for land for retail and commercial uses has induced a large increase in the value of industrial land.

An indication of the importance of land value increases to industry can be gauged by looking at the average title size for industrial and warehousing land in UNISA, which is 0.4 hectares. Since land value has increased by about $1 million per hectare, the increase in land costs to a firm intending to operate in light industry or warehousing would be approximately $400,000. This is significantly greater than the charges listed in Table 6.2 in our appendix.

- The higher value opportunities afforded by retail and commercial development reduces the effective supply of industrial land. In many cases **increases in land value are likely to be significantly higher and much more influential than consenting and utility connection fees associated with a given site**. It is therefore critically important to understand the effect of zoning policies.
- **Industrial activity may be forced to locate to areas where land is available, land values are lower, and the zoning is suitably permissive. This could lead to the crowding out of other activities such as agriculture**.
- In addition, although not directly relevant to this study, a further effect is that existing centres are hollowed out as commercial and retail activities gravitate to cheaper, peripheral land.

Overall, land use planning is the most significant regulatory and policy influence affecting the supply and uptake of industrial land for industrial purposes. This provides a very strong message that if the present function of industrial areas is to be retained then changes in land use cannot be left to the property market alone to resolve. Changes in accessibility by alternative transport modes and/or specific zoning changes may be required. The advantage of this approach is that in areas where competing, higher value land uses could crowd out industrial activity, industrial land for industrial purposes could be protected and industrial land supply maintained. It also has the added benefit of protecting the vitality of planned commercial and retail centres.

3.2 Development contributions

The information gathered confirms that it is very difficult to make meaningful comparisons between the development contributions charged by councils due to the significant level of detail within most development contribution policies. Development contributions can vary significantly between councils, and often vary between areas within one council's boundaries. Development contributions can also be very location specific.

However, this is to be expected where development contributions are being used as a policy tool to reflect (at least loosely) the true costs of growth, as these costs can differ between locations. For some local authorities, the difference in the level of development contributions is a proactive tool intended to directly influence locational choices, and attract development to the areas best able to accommodate growth.

3.2.1 Issues

Given this observation, there is at least one notable policy difference across councils relating to the setting of development contributions. Some councils have adopted a policy of explicitly averaging the cost of growth either fully across the region, or across broad areas of the region (e.g. north, south, rural etc.) and do not use development contributions as a 'lever' to actively direct development to certain areas.

Other councils do levy development contributions on a location specific basis, which uses a mixture of district wide and local industrial/business zone specific charges, which vary considerably across locations.

This variability in policy objectives reflects that the setting of development contributions is the responsibility of each council under the guidance of the Local Government Act. Councils have reasonable flexibility to determine the ways in which they allocate the costs of growth to firstly, the growth community versus existing ratepayers and secondly, across the growth community. The result is the significant variability in charges confirmed by the survey responses.

Opportunities

The better question in relation to development contributions policy is, whether the differences between development contributions for industrial activities in each council area is influencing industry investment decisions in a way that was not intended, and is this detrimental to development?

There is an opportunity for councils to review their development contributions policies and related effects to determine whether or not this is the case. If it is so, then councils should consider making changes to development contributions policies to remove any distortions.

However, the evidence provided by councils does not suggest that this is as significant an issue as might be expected. From the information received, it appears that the level of development contributions is significantly less of a material concern when compared to the effect that permissive zoning can have on land prices.

3.3 Wastewater, stormwater and water connection fees

The evidence suggests that in most cases the cost of utility connections is a relatively small component of the overall cost of purchasing and developing a site. It does not immediately indicate a strong linkage between utility connection fees and patterns of industrial land use and development.

3.3.1 Issues

The only potential issue relates to Watercare connection fees for industrial customers in Auckland who use large volumes of water. It was suggested that these fees may be causing some businesses to look for alternative locations outside of Auckland. If Watercare's connection fees was felt to be a significant issue it would be worthwhile undertaking further analysis to determine whether this was adversely impacting on firm's location choices, while recognising the need to send clear market signals related to the cost of providing water.

3.4 Resource consent fees

The evidence provided suggests that, with the exception of one district council, there is little significant difference across the costs of non-notified and notified consents. Although often cited by some groups as a major constraint to development, the evidence does not indicate that consent fees are adversely impacting either the scale or patterns of development.

Although consent fees will impact marginally on the uptake and development of land, including industrial land, with the one exception noted these fees do not appear likely to significantly impact on the distribution of industrial developments.

3.5 Summary

Land use planning is the most significant regulatory and policy influence affecting the supply and uptake of industrial land for industrial purposes. If development contributions are being used to reflect the true costs of growth, the best policy response would be to use a more precise zoning structure to limit competition for industrial land and reduce development costs.

Regulatory costs do matter to firms and developers, but are significantly less influential than the pricing effect arising from permissive zoning. Regulatory costs matter the most where zoning is permissive, as additional costs on top of higher land prices make industrial land uses less economic. The use of more precise zoning would protect and support the more efficient uptake of industrial land.

In situations where growth pressures are absent, permissive zoning of land for industrial purposes can be an advantage, providing flexibility for developers and firms. However, where growth pressures exist the widely observed effect of permissive zoning is that other types of land use emerge in areas intended for industrial activity. Industrial activity is crowded out as land values respond to the higher value opportunities afforded by retail and commercial development, making industrial developments uneconomic and reducing the effective supply of industrial land. It is important to recognise that in many cases this increase in land value (pricing effect) is likely to be significantly higher and much more influential in promoting unintended patterns of development than regulatory costs.

Given the importance of the pricing effect from permissive zoning, an opportunity exists to move towards the use of more precise zoning, particularly in growth areas, to protect and support a more efficient uptake of industrial land.

4 Industrial land demand models

A key benefit of establishing a common method to estimate industrial land demand is that UNISA members can determine if their allocation of industrial land is broadly consistent with the expected demand across the UNISA area. Further, UNISA members can determine if investment in additional serviced industrial land is required, or can delay this investment until such time as it is likely to be required.

Two approaches were examined as part of our research to determine a standardised method to estimate industrial land demand. These approaches both focused on the future shape of the labour market and employment.

3. Industrial land demand is driven by industrial labour supply, where demand is based on projected population growth and labour force behaviour in the UNISA area.
4. Industrial land demand is driven by industrial labour demand, where demand is based on projected economic growth in the UNISA area.

The data sets that could be drawn on under these two approaches include population and labour market projections, or industry activity and employment projections.

For labour supply models, the assumptions would include:

- Population projections, including implied projections regarding mortality, fertility and migration
- Labour force participation rates
- The share of employment on industrial land
- The number of employees per hectare and/or floor space per employee.

For industry demand models, the assumptions would include:

- A basis for projecting future activity levels by different industries, such as generally trends or an economic model
- The number of employees per hectare and/or floor space per employee, by industry type
- An allowance for future changes in employee density
- An allowance for buffer zones around ‘noxious’ or ‘noisy’ industries.

Our research has found that there is wide variation in the demand for industrial land under labour supply models, and less extreme variation under industrial demand models.

4.1 Industrial labour supply approach

As noted in Section 2, previous studies on the demand for industrial land within the UNISA area have focused on population growth and labour supply. These studies have considered the supply of people that are available to work on industrial land, but have not taken in to account demand side factors such as changes in the size of the businesses that occupy the industrial land due to an increase in production and output driven by new orders, or further investment in new plant, equipment and machinery.

4.1.1 Research using this approach

This method - industrial land demand driven by industrial labour supply - has also been used in Western Australia, where a study on the regions of Perth and Peel identified where areas of industrial land could be banked due to potential future demand.

This study, known as the *Industrial Land Strategy: Perth and Peel Regions*, outlined a number of actions to ensure the ongoing availability of an immediate supply of industrial land, a 15-year rolling land bank, and a framework to ensure existing industrial land is 'protected' to ensure and sustain long-term industrial activity.

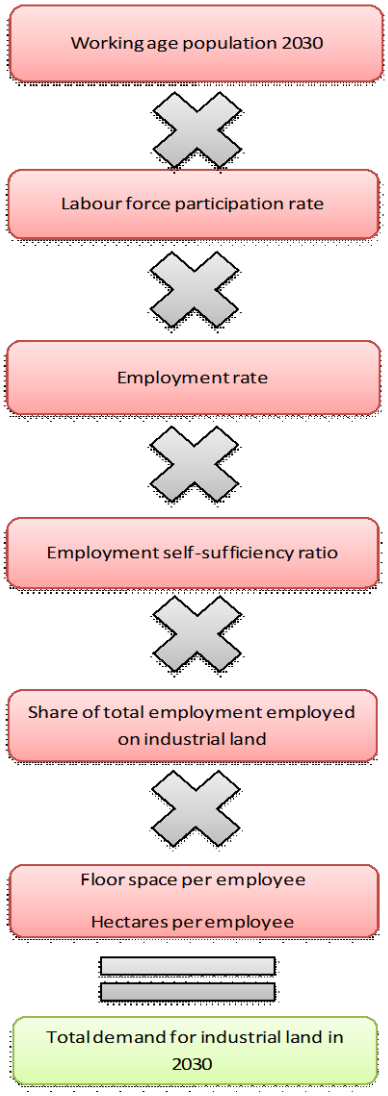
The study looked at three scenarios: Business as Usual, Low Growth and High Growth. The main drivers of industrial land were identified as population and settlement growth, economic growth, location criteria such as access to infrastructure, and market preferences. This study calculated demand for industrial land based on proportionate growth in a sector. Expected demand also took in to account projected growth in the Working Age Population.[12]

The steps undertaken in this study provide a working example of this approach, and are presented in Figure 4.1 below.

1. Project the Working Age Population (WAP) in Perth and Peel regions (P&P) to 2030.
2. Multiply the P&P WAP by the average Labour Force Participation Rate (LFPR) for Western Australia (WA).
3. Obtain the employment rate in the labour force for WA to estimate the employed portion of the Labour Force in P&P.
4. Derive the self-sufficiency average across WA and apply that to P&P (This could be very misleading if there is actually or potentially significant commuting into an industrial area).
5. Derive future employment in an industry by determining employment share of current employment in industrial estates in WA (the share was 20 percent) and apply this to the employed.
6. Divide industrial employees by the average number of employees per hectare across all industrial estates in WA (The actual figure was 12 to 14 employees per hectare).

[12] Hollett, R. & Batina, K. (2010). Industrial Land Strategy – Signposting the Industrial Estates of Tomorrow. Aurecongroup: Perth.

Figure 4.1 Industrial labour supply as a driver of industrial land demand



Research undertaken on industrial land in Portland, Oregon also focused on the number of people employed in industries that could be located on industrial land. This data was then converted into employment density using square feet per employee. This allowed the authors to determine the potential vacant land, due to the shortfall between current industrial land and the land required per employee.[13]

Closer to home, councils involved in the FutureProof project, for example, forecast industrial jobs and the land area required for those jobs to 2041. These forecasts assumed the same proportion of employment in each sector towards 2041, and did not take in to account changes in productivity or land requirements.[14] Similarly, councils involved in the SmartGrowth project used annualised employment growth rates and considered the floor space requirements of this employment growth across industry sectors.

[13] ECONorthwest, Group Mackenzie, & Johnson Gardner. (2003). Market Demand Analysis Report for the Citywide Industrial Lands Inventory and Assessment. Portland: Orgeon.

[14] Property Economics. (2010). Future Proof Business Land Data Assessment. Property Economics Ltd: Auckland.

This research argued that growth in employment within commercial and industrial sectors towards 2051 (from 2011) will lead to a demand for commercial buildings and industrial land.[15] This argument is based on population and household projections, and labour force participation rates.

4.1.2 Issues with this approach

An analysis of how population and employment projections are converted into industrial land demand needs to demonstrate variability among sectors, over time, and between places. Empirical work BERL has completed on regions, cities and towns throughout New Zealand indicates that **a number of these coefficients will differ between towns and cities within a region, and across a region**.

As discussed in section 2, employment density and the amount of floor space per employee varies widely across industry and is evolving. McDermott Consultants argue that **employment densities may change** in the future due to greater capital intensity – greater investment in plant, machinery and equipment leading to a reduction in employment; higher environmental standards impacting on floor area ratios and site coverage; and increasing automation increasing building floor space per employee and a reduction in floor area ratios.[16] This variation indicates that UNISA members should take into account the various types of industry expected in their area when determining future industrial land requirements.

There is an assumption underlying approaches that focus on labour supply and industrial land demand that all industrial employment growth will be on vacant land, rather than within existing businesses or on currently occupied land. This assumption is flawed as some businesses will have spare capacity to increase employment without the need for additional gross floor area, and existing industrial sites may have the capacity to expand on their current site.[17] In addition, these projections do not take in to account the average annual uptake of land. [18]

This supply-side approach also assumes a situation where employees turn up for work and an employer emerges to employ them. In such a situation the relative wage rate in a region will fall, or just rise sufficiently to employ the number of employees available. This may, however, be a long-term process.

4.2 Industrial labour demand approach

The alternative approach to industrial land demand being driven by industrial labour supply is one where industrial labour demand drives the demand for land. This labour demand is based on projected economic growth in the UNISA area. To be successful, such an approach needs to project the shape of the economy, the industries included in that economy, and the industrial land needed by these industries to operate in the future.

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[15] Property Economics. (2012). SmartGrowth Commercial Update. Property Economics Ltd: Auckland.

[16] Phil McDermott Consultants Ltd. (2006). Business Land Requirements Review: Western Bay of Plenty. Phil McDermott Consultants Ltd: Auckland.

[17] This issue was discussed in, for example, Mead, A. (2007). Hamilton Industrial Land Study. Hamilton City Council: Hamilton. The expansion of business activities within the current site is also discussed by UNISA survey respondents, with many indicating that they will expand their business by increasing the number of people they employ and/or expanding their operations within their current site rather than purchasing additional land.

[18] A study on industrial land by Darroch Research in 2010, for example, showed that there was a weak uptake of industrial land in the Auckland Region due to low industrial development. Cited in Latitude Planning Services. (2011). North Waikato Industrial Study: Summary of Key Findings. Waikato District Council Strategic Policy Team: Hamilton.

One approach to projecting the shape of the economy is to use an economic model. A Computable General Equilibrium (CGE) model is a well-tested and accepted methodology.[19] CGE models are whole-of-economy models that are used in economic policy analysis and for measuring the economy-wide effects of change. CGE models can be dynamic or static, and they assume that all players in the economy are either maximising their utility or profits.

4.2.1 The CGE model

BERL has developed and applied one or two variations of a CGE model to the New Zealand economy since the 1970s.[20] This model provides a projection of the New Zealand economy, in terms of the size and shape of industries, and the overall economy. It gives a comprehensive description of industry activity levels according to macroeconomic assumptions, including population levels and labour supply.

CGE projections are a controlled experiment not a forecast. It is therefore usual to run two scenarios to test the future impact of optional assumptions. Another approach is to complete a Business As Usual (BAU) scenario and compare this to a change or 'shock' to the economy.

4.2.2 Research using this approach

In 2005, BERL used the CGE model to do a projection for a Client. The results of this projection are shown in Table 4.1 as a working example. Here, we illustrate the projected change as per the CGE model results with the actual employment change recorded between 2003 and 2011. The BAU scenario was projected to 2011. This comparison raises a number of points in regards to the general use of data over a significant period, and using the CGE model to project the future shape of the economy.

Table 4.1 Example of CGE model results vs actual employment

Sector summary Employment FTEs	CGE Model completed in 2006 for 2011: NZSIC classification			Actual employment 2003 and 2011 ANZSIC06		
	2003 Actual	2011 Projected	Change %p.a.	2003	2011	Change %p.a.
Primary	153.6	156.5	0.2%	145.0	143.8	-0.1%
Manufacturing and Building	364.6	435.1	2.2%	400.7	414.6	0.4%
Retail and Distribution	439.7	531.9	2.4%	463.2	463.0	0.0%
Business Services	290.4	357.6	2.6%	268.0	346.6	3.3%
Recreation Services	92.8	111.9	2.4%	90.0	112.8	2.9%
Social Services	299.3	365.8	2.5%	359.7	481.5	3.7%
Total	**1,640.5**	**1,958.7**	**2.2%**	**1,726.6**	**1,962.2**	**1.6%**

[19] The New Zealand Treasury uses CGE modelling for studying the economy-wide impact of economic policies. For further information see, The Treasury. (2012). Economy-Wide Impacts of Industry Policy: CGE Modelling. Treasury Working Paper 12/05.

[20] As an example, BERL has used CGE modelling in research on the Northern and Western Auckland areas. CGE modelling is widely used in Australia, where there is a CGE model developed for each State. They are used to analyse the impacts of major investments such as Brisbane Airport's second runway.

In regards to general data use:

- The actual total Full-Time Equivalents (FTEs) recorded for 2003 in the modelling done in 2006, was 1.64 million FTEs. The actual total FTEs recorded for 2003 in the same Household Labour Force Survey (HLFS) today is 1.73 million FTEs. This is because there have been two processes for re-basing the HLFS data since 2003. The implication of this is that the actual level of employment measured at any given point in time may change. It also means employment change expressed in percentage terms is more comparable than the absolute number of FTEs employed.
- The classification method used by Statistics New Zealand to classify industries changed from NZSIC to ANZSIC96, and then ANZSIC06 during this period. Consequently the sectors comprised of aggregated industries are not completely comparable. This is again shown by comparing the two sets of 2003 data.
- The CGE modelling or projection in 2006 of the economy in 2011 was for relatively similar increases in employment across the sectors, with the exception of the primary sector. The actual outcome is rather different with the primary, manufacturing, retail, and distribution sectors all having low employment growth. The obvious cause of this was the Global Financial Crisis (GFC). For a forecast to be successful it would have had to forecast the GFC, which in 2006 few people were doing. However the BAU projection, perhaps surprisingly, still gives an overall employment growth rate of 2.2 percent per annum. This is not a lot higher than the GFC-delivered growth rate of 1.6 percent per annum.

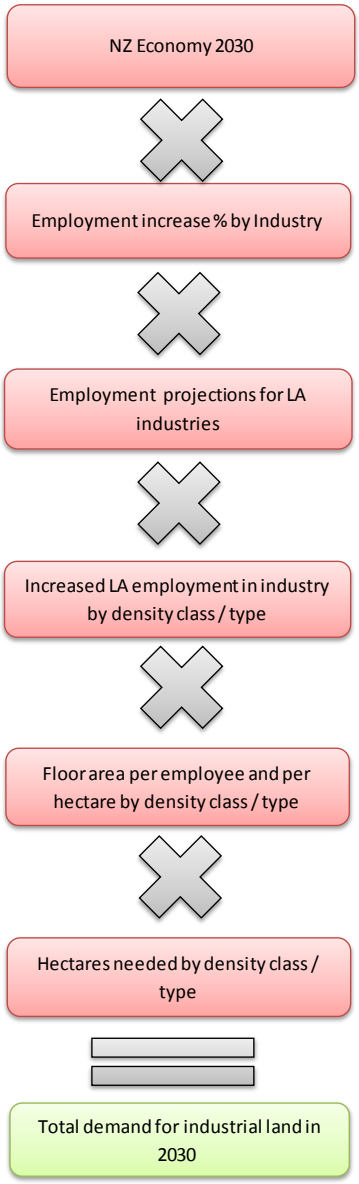
In regards to approaches using the CGE model for projecting the shape of the economy:

- The best use of the CGE model is to complete an informed projection of the shape of the economy in the target snapshot year, and then a second controlled experiment where a possible change or 'shock is included.
- This comparison will show the expected levels of economic activity in the target year, and the range of employment and associated activity that may be expected.

The output of the CGE model that can be used to determine the demand for industrial land is the percentage change in industrial employment per annum. These projected employment levels can then be used with estimates of the required floor area per employee to determine the total floor area required by a business within an industry. A similar conversion can then be made to estimate the hectares of land needed for that level of employment.

The steps that can be undertaken using this approach are shown below in Figure 4.2.

Figure 4.2 Industrial labour demand as a driver of industrial land demand



4.2.3 Issues with this approach

The CGE model can be used to provide a macroeconomic picture of the UNISA area in 10, 20 and 30 years' time. The model considers the impact of the various drivers for industrial land from the point of view of employment by industry and occupation, as well as from the point of view of outputs from the various industries, and what this means in terms of exports and the demand for importing goods. The model considers labour and capital investments, and if labour constraints could occur due to growth in any one part of the economy. Household income and consumption is also considered along with government consumption and the trade balance.

However, while the model considers the impact on the economy and the demand for industrial land of various industry drivers, **these drivers will be different at a district and a regional level**. This is because each district and region has different comparative advantages.

This means that while we can use demographic (population) and employment (industry employee counts) projections to determine the potential demand for industrial land, it is also important to have **a reality check that considers the quantum of this demand** from the point of view of the whole area (the Upper North Island), as well as the individual districts and regions. This reality check is possible due to the CGE model being a controlled experiment rather than a forecast.

There are two issues that need further consideration in regards to how a CGE model could be used to project the likely future shape of the UNISA economy. Firstly, **the CGE model is for the whole New Zealand economy rather than the UNISA economy**. Secondly, it is important to consider **what a relevant alternative scenario would be to the BAU**.

The UNISA area contains about one-half of the New Zealand economy. A projection of the shape and size of the New Zealand economy to a snapshot year like 2030 is likely to give a good indication of the size and shape of the overall UNISA economy in that snapshot year. Currently, a major unknown in the UNISA area is whether or not, or at what pace, the Auckland Unitary Plan will result in a significant increase in urban density, population and productivity in Auckland. It is expected that this will be reflected in industrial expansion, not only in Auckland, but in other areas of New Zealand complementary with Auckland. Assumptions as to the impact on the New Zealand population (reflecting mainly net migration) of the successful implementation of the Unitary Plan could therefore be a relevant scenario to consider and compare with the BAU scenario.

4.3 Worked example using the two approaches

The following is a worked example of industrial land projections using the two approaches discussed. A hypothetical local authority termed “Middle City” has been created, and is a weighted average of all the local authorities in the UNISA area.

4.3.1 Projected industrial jobs

The hypothetical “Middle City” had a population of 53,000 in 2013, and approximately 5,900 industrial jobs. By 2030, the population is projected to increase to 70,000.

Under the industrial labour supply method (labelled population-based projection in the table), the number of industrial jobs would increase from approximately 5,900 in 2013, to 7,000 by 2030. Under the labour demand method (labelled industry demand projection), the number of industrial jobs would increase to approximately 7,100 by 2030, as shown in Table 4.2 below.

Table 4.2 Middle City industrial job increases, 2013 to 2030

Middle City	**Population 2013** *('000)*	**Industrial Jobs 2013** *('000)*	**Population 2030** *('000)*	**Industrial Jobs 2030** *('000)*
Population - based projection	53	5.9	70	7.0
Industry demand projection		5.9		7.1

Source: BERL Calculations

The total increase in industrial jobs is similar under each method, at about 19 percent. This is to be expected, as the same population projections were used. However, the rate of industrial job increase is very different under the two methods.

The increase in jobs under the first method largely reflects the projected population increase. The increase in jobs under the second method reflects the industry profile of the jobs presently in "Middle City" and their relative growth rate through to 2030. The "Middle City" projections therefore give us an indication of the average increase in jobs across the UNISA area.

However, given the wide range of TLAs in UNISA, it is important to do a reality check to see how each projection method could be applied, and the range of job increases possible. We have therefore applied the two methods to each TLA. Table 4.3 shows the TLA with the highest percentage increase in industrial jobs and that of the lowest.

Table 4.3 Industrial job projected increases, averages and ranges to 2030

Projection method	Industrial Job Increase UNISA		Increase Highest TLA	Change Lowest TLA
	('000)	(%)	(%)	(%)
Population - based projection	1.1	19%	39% High TLA	-16% Low TLA
Industry demand projection	1.2	20%	23% High TLA	16% Low TLA

Source: BERL Calculations

Under the population-based projection method the highest increase in industrial jobs between 2013 and 2030 was about 39 percent in a "High TLA" and the lowest was a decrease of about 16 percent in a "Low TLA".

- While the total number of jobs in a "High TLA" may increase through to 2030 at the same rate as the expected population increase, namely 39 percent, it is highly unlikely that the increase in industrial jobs will continue at that rate. Similarly, it is a large assumption that industrial jobs in a "Low TLA" will decrease by 16 percent.

This method assumes that if the population is expected to decrease, the number of jobs is also expected to decrease. More importantly, it discounts the possibility that a TLA may be a desirable location for industrial development, that it could expand industrial production and employment, or that it could attract industrial employees who commute from a nearby urban centre. There are many examples of these types of TLAs in New Zealand, including UNISA members.

Estimating industrial job growth in the UNISA area to 2030 using the industry demand projection method gives the same total increase, approximately 19-20 percent. The range varies according to the industrial composition of a TLA and the industries that are expected to grow through to 2030. However, the overall job increase in all the TLAs falls into a narrower range of 16 to 23 percent over the period. While there can be relatively large percentage changes in industrial employment in smaller TLAs in the short-term, for example when a large employer restructures or closes down, experience shows that in the medium-term these changes even out.

4.3.2 Projected industrial land

The demand for industrial land in "Middle City" in 2030 was calculated using the projected increase in industrial jobs. The increase in industrial land was 19 and 18 percent respectively under each method, which is similar to the estimated increase in industrial jobs.

The projected increase in industrial land area and employment density under each method is shown in Table 4.4 below.

Table 4.4 Projected industrial land increases to 2030, two methods

Middle City	2013			2030		Land area Change 2013 to 2030	
	Employment		Land area	Land area	Employment density		
	Number	Density					
	ECT	*ECT / Ha*	*Hectares*	*Hectares*	*ECT / Ha*	*Hectares*	*Percent*
Population - based projection	5,865	21	276	329	21	53	19%
Industry demand projection	5,865	actual	276	324	22	49	18%

Source: BERL Calculations

Under the population-based projection method, employment density per hectare stays the same in 2030 as it was in 2013. Consequently the increase in land demand is 19 percent, the same as the increase in industrial jobs.

Using the industry demand projection method, employment density is 22 employees per hectare in 2030 compared with 21 in 2013. This is because the fastest growing industries in 2030 are slightly less land-intensive than the average in 2013.

This worked example illustrates that using a population-based projection to estimate industrial land demand will result in a distorted profile across the UNISA area. For example, in discrete areas such as an industrial development or a single TLA, the self-sufficiency ratio of workers compared with jobs is relevant. However, in a large area such as the UNISA area, it becomes largely irrelevant and can confound the calculations. An industry demand projection, in contrast, allows UNISA to test how changes in industry profiles (such as employment density or activity) can affect the demand for industrial land.

4.4 Applying the industrial labour demand approach

It is assumed that UNISA members will complete a projection of the shape of the economy to a future target date 10, 20 and/or 30 years ahead. This can be done using a CGE model or another acceptable approach that models employment by industry.

Whatever the method used, we recommend that some form of sensitivity analysis is done. This would preferably be a scenario of a higher growth economy than that seen under a BAU scenario. The main purpose of the second scenario is to provide some confidence that, at a higher level, the size of the economy and therefore the demand for different types of industrial land is not likely to be dramatically larger than under the BAU. The main output from the BAU scenario would be the percentage increase in employment across each main industry from the base year to a future snapshot year.

Within the UNISA area, these projected employment levels can then be used with estimates of the required floor area per employee to determine the total floor area required by a business within an industry. A similar conversion can then be made to estimate the hectares of land needed for that level of employment. The actual density changes in employees per hectare are likely to vary according to general urban density, but percentage density changes should give a reasonable approximation.

4.5 Summary

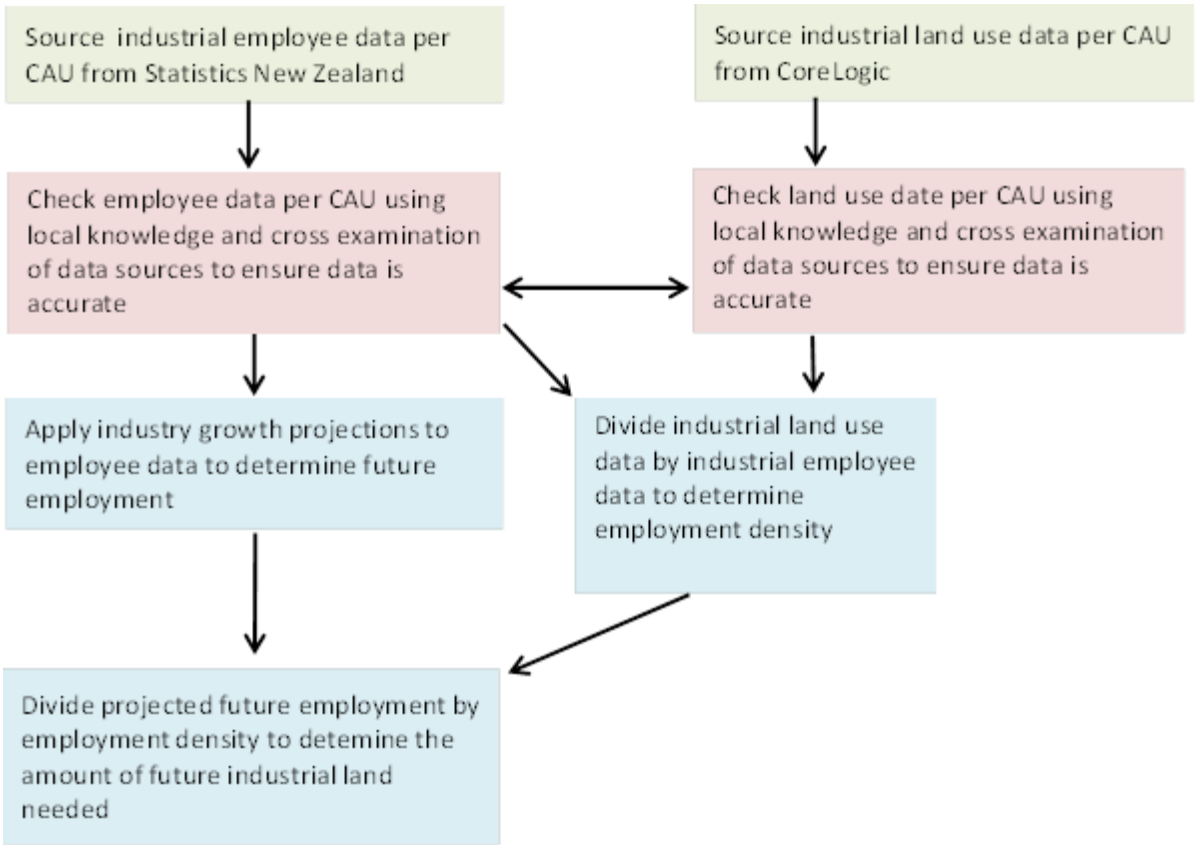
The UNISA area contains about one-half of the New Zealand economy, and UNISA members include large and small local authorities. This makes it difficult to adopt a one-size-fits-all approach.

As such, for a smaller local authority the basic approach we would recommend is:

- Record and analyse the existing occupied industrial land to determine the number of hectares in each main type of industrial use. These main industry types should at least include heavy industry, large-scale primary processing, light industry, warehousing, transport and storage.
- Determine the increase in industrial land demand for each industry type in the future year by multiplying the current hectares for that industry by the expected percentage increase in employment, or the total UNISA land area for that type of land by the future year.

Using this simple approach there is no need to access and analyse existing industrial activity or employment density in the different activities on the industrial land. However, for local authorities who want to project industrial land demand in more detail, the first step is to determine current industrial land use in more detail. To do this, we suggest the following steps in Figure 4.3.

Figure 4.3 Applying the standardised method



Larger local authorities may require their staff to apply more complex approaches to estimate future industrial land demand according to a greater detail of industry profile, and changes in projected employment density by industry. Nevertheless, in order to obtain some consistency across the UNISA area, the underlying parameters would be the same.

Once UNISA members have developed a set of projections on industrial land demand, the individual local authorities will then have an opportunity to explore how those projections apply to their own situation.

In the future, UNISA members may engage in a consultation process on forthcoming industrial land zoning. The individual local authority can then obtain a better picture as to whether or not their individual industrial land area is sufficient or excessive in relation to overall industrial land demand in UNISA. The individual local authority can then determine if investment in additional serviced industrial land is required in their local authority area, or if they can delay this decision until such time as it is likely to be required.

The greater knowledge each local authority develops on the requirements for, and areas of land required by industry types in the future, the more likely that industrial development across UNISA will become efficient and complementary with industries and activities in appropriate locations.

4.5.1 Illustrative case study

The next section of our report is an illustrative case study where the reader is taken through the recommended standardised method using data and information from the Northland Region. This is the fifth key task undertaken as part of this research.

Why the Northland Region?

In The Freight Story a unique situation was identified in the Northland Region. The amount of industrial land in Northland was calculated at 1,534 hectares with 547 hectares of existing industrial land and 987 hectares of industrial land available in the short-term (until 2021). This study argued that all of the industrial land in the Northland Region was ‘existing’ or ‘ready to go now’.

This is a significant amount of industrial land and the UNISA Steering Group saw merit in exploring the situation in the Northland Region in more detail. The following case study provides a high-level overview of industrial land use in the Northland Region, and uses the recommended industrial land demand method to show how this approach can be used to consider the future demand for industrial land.

5 A case study: Industrial land in the Northland Region

5.1 High-level findings on industrial land

CoreLogic property data indicates that 1,369 industrial land titles exist in the Northland Region. Together, these titles represent 2,548 hectares of industrial land.[21] Of the 2,548 hectares of industrial land, 1,746 hectares is occupied and is on 954 titles. A total of 802 hectares is recorded as vacant industrial land and is on 415 titles.[22]

Table 5.1 Occupied and vacant industrial land, Northland Region, 2013

District	Occupied Industrial		Vacant Industrial		Total Industrial	
	Titles	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*
Far North District	**266**	**400.3**	**68**	**28.2**	**334**	**428.4**
Whangarei District	**572**	**1,224.2**	**323**	**765.5**	**895**	**1,989.7**
Kaipara District	**116**	**121.8**	**24**	**8.4**	**140**	**130.1**
TOTAL	**954**	**1,746.2**	**415**	**802.1**	**1369**	**2,548.3**

Source: CoreLogic, BERL

Across the Districts, the Far North District had 428 hectares of industrial land, the Whangarei District had 1,989 hectares, and Kaipara District had 130 hectares. Heavy industry occupied the largest amount of industrial land, at 930 hectares, with the smallest amount being used for warehousing, at 39 hectares.

Table 5.2 Industrial land by industry classifications, 2013

District	Heavy		Light		Warehouse		Service		Mixed		Noxious	
	Titles	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*
Far North District	**4**	**170.0**	**144**	**150.9**	**21**	**19.9**	**96**	**55.6**	**0**	**0.0**	**1**	**3.8**
Whangarei District	**14**	**723.0**	**81**	**90.9**	**38**	**4.7**	**330**	**69.0**	**100**	**131.6**	**9**	**205.0**
Kaipara District	**5**	**37.0**	**52**	**33.4**	**20**	**14.0**	**18**	**4.3**	**19**	**23.2**	**2**	**9.9**
TOTAL	**23**	**930.0**	**277**	**275.2**	**79**	**38.6**	**444**	**128.9**	**119**	**154.8**	**12**	**218.7**

Source: CoreLogic, BERL

The Whangarei District had the largest amount of heavy industrial land, at 723 hectares while the Far North District had the largest amount of light industrial land, at 150 hectares. At 205 hectares, the largest amount of noxious industrial land is also found in the Whangarei District.

[21] This figure is larger than the amount of industrial land in Northland noted in the Freight Story, calculated at 1,534 hectares. The CoreLogic data includes all industrial land of whatever area, whereas the Freight Story included only sites over 50 hectares.

[22] Industrial land data is available from CoreLogic from 1995; however, for our current purposes we have focused on data for the 2013 year as this is the latest complete data set.

A general observation from Table 5.2 is that heavy and noxious industries have large title sizes, while other industry groups - namely light, warehouse, service and mixed industries – have an average title size of one hectare. The large title sizes in heavy and noxious industries could be providing space for a large-scale plant, but they could also be providing some level of buffer between the plant and their neighbours. The average size of these titles is 40 hectares for heavy industries, and 20 hectares per title for noxious industries.

The demand for industrial land generally occurs in areas where there is already some industrial activity occurring. This is because expanding businesses want access to the existing industrial services that these mixed industrial areas provide. In some regions there may be the potential for completely new 'greenfield' industrial estates to be developed; but we believe this is very unlikely in Northland.

For these reasons, it is useful to identify areas or CAUs that have a mix of existing industrial businesses as these suggest an industrial estate may be present. Table 5.3 highlights that the seven key industrial CAUs within the Northland Region. These CAUs in the Kaipara District are Dargaville; in the Far North District are Kaitaia East and Kerikeri; and in the Whangarei District are Marsden Ruakaka, Springs Flat, Whangarei Central, and Port Limeburners. These are shown in Figure 5.1

The boundaries of CAUs are to some extent arbitrary, and may omit part of a settlement which contains industrial plants. We understand that this is the case with the CAUs in Kaipara District around Maungaturoto, Mangawhai and Kaiwaka. There is 62 hectares of industrial land in this area, mostly in the CAU named Rehia Oneriri, which is mainly rural and abuts settlements that have industries.

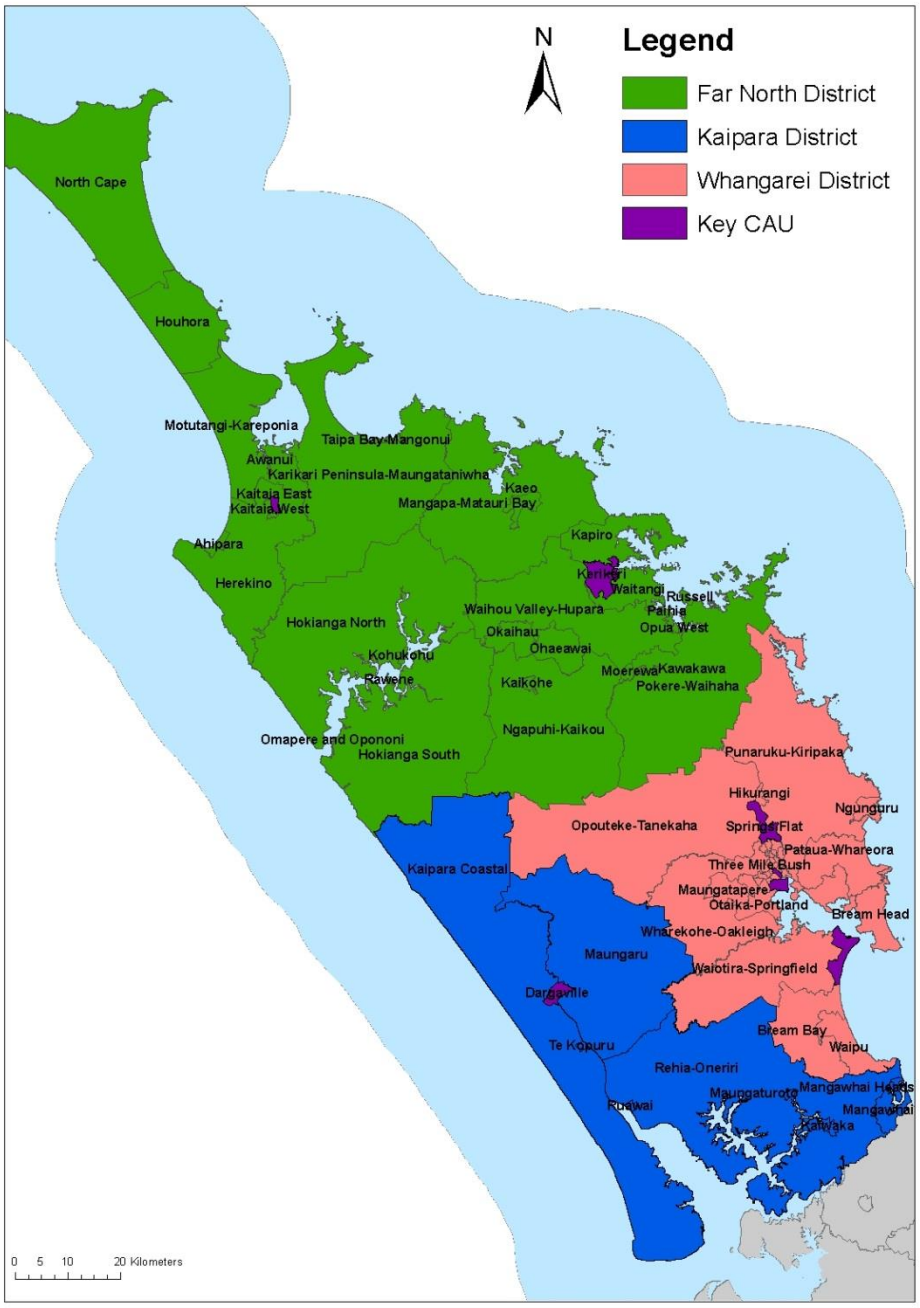
Table 5.3 Location of industrial land by CAU, Northland Region, 2013

Census Area Unit	Food		Heavy		Light		Warehouse		Service		Mixed		Noxious		Occupied Industrial		Vacant Industrial		Total Industrial	
	Titles	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*	*Titles*	*Hectares*
Far North District																				
Awanui					6	6.0									6	6.0	1	1.0	7	7.0
Karikari Peninsula-Maungataniwha					6	12.0			3	5.0					9	17.0			9	17.0
Herekino			***1***	***149.0***	2	0.8									3	149.8			3	149.8
Motutangi-Kareponia					5	12.0									5	12.0	1	1.0	6	13.0
Kaitaia East			***1***	***11.0***	23	13.0	1	1.3	30	8.0					55	33.3	23	10.7	78	44.0
Kerikeri					36	8.0	5	8.2	27	10.0					68	26.2	12	1.4	80	27.6
Opua East					2	3.5									2	3.5			2	3.5
Moerewa			***2***	***10.0***	2	0.2									4	10.2			4	10.2
Waitangi					***1***	***69.0***									1	69.0			1	69.0
Pokere-Waihaha					1	0.0							***1***	***3.8***	2	3.9			2	3.9
Waihou Valley-Hupara					26	14.6	2	4.6	20	23.0					48	42.2	13	9.0	61	51.2
Kaikohe					34	11.8	13	5.8	16	9.6					63	27.2	18	5.1	81	32.3
Sub Total Far North			**4**	**170.0**	**144**	**150.9**	**21**	**19.9**	**96**	**55.6**	**0**	**0.0**	**1**	**3.8**	**266**	**400.3**	**68**	**28.2**	**334**	**428.4**
Whangarei District																				
Opouteke-Tanekaha															0	0.0			0	0.0
Marsden Point-Ruakaka			3	13.0	15	28.5			14	3.0	4	62.0	***3***	***140.9***	39	247.4	***37***	***438.2***	76	685.6
Wharekohe-Oakleigh			***1***	***504.0***											1	504.0			1	504.0
Waiotira-Springfield															0	0.0	***194***	***197.7***	194	197.7
Punaruku-Kiripaka															0	0.0			0	0.0
Waipu															0	0.0			0	0.0
Pataua-Whareora					***1***	***9.0***									1	9.0			1	9.0
Springs Flat			***2***	***166.0***	9	10.9			11	7.0	6	15.0			28	198.9	16	12.6	44	211.5
Abbey caves			***1***	***10.0***											1	10.0	2	3.6	3	13.6
Otaika-Portland					3	9.7									3	9.7	3	3.0	6	12.7
Kamo West															0	0.0			0	0.0
Kamo East					3	0.3	3	0.3	5	5.0					11	5.6	2	1.3	13	6.9
Whau Valley															0	0.0			0	0.0
Whangarei Central					6	0.7	35	4.4	179	11.6	39	6.6			259	23.3	17	2.2	276	25.5
Riverside															0	0.0			0	0.0
Morningside					9	1.3			23	2.0					32	3.3	14	6.2	46	9.5
Port-Limeburners			7	30.0	35	30.5			98	40.4	14	2.1	6	64.1	160	167.1	***38***	***100.7***	198	267.8
Hikurangi											37	45.9			37	45.9			37	45.9
Sub Total Whangarei			**14**	**723.0**	**81**	**90.9**	**38**	**4.7**	**330**	**69.0**	**100**	**131.6**	**9**	**205.0**	**572**	**1,224.2**	**323**	**765.5**	**895**	**1,989.7**
Kaipara District																				
Kaipara Coastal			2	7.0									***1***	***5.5***	3	12.5			3	12.5
Dargaville			2	10.0	36	11.7	20	14.0	18	4.3	17	6.9			93	46.9	24	8.4	117	55.3
Maungaturoto			***1***	***20.0***											1	20.0			1	20.0
Kaiwaka															0	0.0			0	0.0
Rehia-Oneriri					16	21.7					2	16.3	1	4.4	19	42.4			19	42.4
Sub Total Kaipara			5	37.0	52	33.4	20	14.0	18	4.3	19	23.2	2	9.9	116	121.8	24	8.4	140	130.1
TOTAL			**23**	**930.0**	**277**	**275.2**	**79**	**38.6**	**444**	**128.9**	**119**	**154.8**	**12**	**218.7**	**954**	**1,746.2**	**415**	**802.1**	**1369**	**2,548.3**

Note: **Large plant sites and large vacant areas are highlighted in Bold, Italics :** ***1*** ***11.0***

Source: CoreLogic, BERL

Figure 5.1 Map of Northland Region including key CAUs



5.1.1 CAUs with large industrial sites

There are 19 titles in Northland that indicate a large area on a single, or possibly two or three titles. These titles cover approximately 1,100 hectares, or an average area of nearly 60 hectares per title. Our fieldwork in the Far North indicated that the large site with a heavy industry in Herekino CAU (probably a sawmill) no longer has an operational industry.

Table 5.4 Location of large industrial sites by CAU, 2013

Census Area Unit	Heavy		Light		Warehouse		Noxious	
	Titles	Ha.	Titles	Ha.	Titles	Ha.	Titles	Ha.
Far North District								
Herekino	1	149						
Kaitaia East	1	11						
Moerewa	2	10						
Waitangi			1	69				
Pokere-Waihaha							1	4
Waihou Valley Hupara					2	5		
Whangarei District								
Marsden Ruakaka							3	141
Wharekohe Oakleigh	1	504						
Pataua Whareora			1	9				
Springs Flat	2	166						
Abbey caves	1	10						
Kaipara District								
Kaipara Coastal							1	5
Dargaville	2	10						
Maungaturoto	1	20						
Rehia Oneriri							1	4
TOTAL	**11**	**880**	**2**	**78**	**2**	**5**	**6**	**155**

Source: CoreLogic, BERL

5.1.2 CAUs with mixed industries

The CAUs in the Northland Region can cover a significant land area; this means that the sites of heavy and noxious industries can be remote from other industrial sites, such as the light and service industries. Overall, 75 percent of all industrial titles are in the mixed-industry CAUs, but these titles only occupy about 44 percent of the industrial land in all of the CAUs

Table 5.5 below shows the mixed-industry CAUs. Of these, two CAUs have large single plants located in them, while three have noxious industries. It is possible to identify some of these industries immediately; for example the heavy industry in the Springs Flat CAU is the Fonterra Kauri milk plant and the noxious industry in the Marsden Ruakaka CAU is NZ Refining.

Table 5.5 CAUs with a mix of industry on industrial land, Northland region, 2013

Census Area Unit with industry mix	Heavy		Light		Warehouse		Service		Mixed		Noxious		Occupd Ind.		Vacant Ind.		Total Industrial	
	Titles	*Ha.*	*Titles*	*Ha.*	*Titles*	*Ha.*	*Titles*	*Ha.*	*Titles*	*Ha.*	*Titles*	*Ha.*	*Titles*	*Ha.*	*Titles*	*Ha.*	*Titles*	*Ha.*
Far North District																		
Kaitaia East	***1***	***11.0***	23	13.0	1	1.3	30	8.0					55	33.3	23	10.7	78	44
Kerikeri			36	8.0	5	8.2	27	10.0					68	26.2	12	1.4	80	28
Sub Total Far North	**1**	**11.0**	**59**	**21.0**	**6**	**9.5**	**57**	**18.0**	**0**	**0.0**	**0**	**0.0**	**123**	**59.5**	**35**	**12.1**	**158**	**72**
Whangarei District																		
Marsden Ruakaka	3	13.0	15	28.5			14	3.0	4	62.0	***3***	***140.9***	39	247.4	***37***	***438.2***	76	686
Springs Flat	***2***	***166.0***	9	10.9			11	7.0	6	15.0			28	198.9	16	12.6	44	212
Whangarei Central			6	0.7	35	4.4	179	11.6	39	6.6			259	23.3	17	2.2	276	25
Port- Limeburners	7	30.0	35	30.5			98	40.4	14	2.1	6	64.1	160	167.1	***38***	***100.7***	198	268
Sub Total Whangarei	**12**	**209.0**	**65**	**70.6**	**35**	**4.4**	**302**	**62.0**	**63**	**85.7**	**9**	**205.0**	**486**	**636.7**	**108**	**553.7**	**594**	**1,190**
Kaipara District																		
Dargaville	2	10.0	36	11.7	20	14.0	18	4.3	17	6.9			93	46.9	24	8.4	117	55
Sub Total Kaipara	**2**	**10.0**	**36**	**11.7**	**20**	**14.0**	**18**	**4.3**	**17**	**6.9**	**0**	**0.0**	**93**	**46.9**	**24**	**8.4**	**117**	**55**
TOTAL Mixed Industry CAUs	**15**	**230.0**	**160**	**103.3**	**61**	**27.9**	**377**	**84.3**	**80**	**92.6**	**9**	**205.0**	**702**	**743.1**	**167**	**574.1**	**869**	**1,317**
Total in all CUAs	**23**	**930.0**	**261**	**253.5**	**79**	**38.6**	**444**	**128.9**	**117**	**138.5**	**11**	**214.3**	**935**	**1,703.8**	**415**	**802.1**	**1,350**	**2,506**
Share Mixed Industry CAUs	**65%**	**25%**	**61%**	**41%**	**77%**	**72%**	**85%**	**65%**	**68%**	**67%**	**82%**	**96%**	**75%**	**44%**	**40%**	**72%**	**64%**	**53%**
Average title size:																		
Mixed Industry CAUs		**15.3**		**0.6**		**0.5**		**0.2**		**1.2**		**22.8**		**1.1**		**3.4**		**1.5**
All CAUs		**40.4**		**1.0**		**0.5**		**0.3**		**1.2**		**19.5**		**1.8**		**1.9**		**1.9**

Note: **Large plant sites and large vacant areas are highlighted in Bold, Italics, Underlined :** ***1*** ***11.0*** ***Source: CoreLogic, BERL***

5.1.3 CAUs with large areas of vacant industrial land

In three CAUs in the Northland Region there are large areas of vacant industrial land. These are Marsden Ruakaka with 438 hectares; Waiotira Springfield with 198 hectares; and Port Limeburners with 101 hectares.

5.1.4 Assessment of the property and land use classification data sets

We assessed the property and land use classification data sets for the Northland Region. The purpose of this assessment was to determine if either of the data sets provides higher quality data than the other, or if the data sets work best in conjunction with each other.

The CoreLogic Property Classification data

The main benefits of using the property classification data set is that it provides a broad overview of the total number of hectares of industrial land, and a basic breakdown of the types of industrial land. This data set also allows a fairly straightforward match between industrial land and employment.

This data set is best suited for examining large numbers of CAUs. This is because its small number of industrial land classifications allows for more timely analysis, simpler matches with industry employment data, and better comparisons between CAUs. This data set is also very useful in identifying CAUs with significant amounts of industrial land, which could require more detailed analysis.

One of the key disadvantages of the data set however is that it is harder to be 100 percent certain that specific businesses or land users have been assigned the correct property classification, given the broad categories, and that the associated employment has been correctly assigned.

The Corelogic Land Use data

The land use data set can provide a more detailed breakdown of land usage within each CAU. For example, land used for food, drink and tobacco manufacturing, land used for producing timber products or furniture, or land used for manufacturing building materials other than timber.

However, the land use data set requires more subjective matching of land uses and industries, and this matching can possibly result in the undercounting of employees employed on industrial land. This is evidenced by the number of specific land use categories that have land but no employment. This greater level of detail also requires more time to subjectively match the data.

A second issue with the land use classification data set is the data quality. The data set contains a large number of land use categories, and only a small number of properties fit into each code. This makes the data set more susceptible to data quality issues, such as the misclassification of land.

Our assessment

To assess the usefulness of these classifications from CoreLogic, we analysed the hectares of industrial land, employee counts and employees per hectare data from both data sets. We undertook this analysis for the seven key CAUs identified in the Northland Region, as the amount of industrial land is significant within each of these CAUs.

- Overall the total amount of industrial land per CAU is very similar for both data sets, with the exception of Port Limeburners, which had a difference of 70.6 hectares.

- Overall the total number of employees is higher when using the property classification data set than the land use data set, with the exception of Kerikeri where employees using the land use data set was higher than using the property classification data set.
- Overall the employees per hectare is fairly similar for both data sets, with the exception of Whangarei Central, which had difference of 14.6 employees per hectare between the two data sets.

5.2 High-level findings on industrial employment

Using the Statistics New Zealand Business Demography data for 2013, we analysed employment data at a CAU level in the heavy, light, warehouse, service, and noxious industries as these are the key CoreLogic land use categories where industrial land is located in the Northland Region. The number of employees in each of the industries, as classified by CoreLogic land use categories, is shown by CAU in Table 5.6.

5.2.1 CAUs with employment on industrial land

Approximately 7,915 employees were working on industrial land in the Northland Region in 2013.

Land used for light manufacturing had the largest employment, at 2,527 people. Light industries include textile, wood product, furniture, and machinery and equipment manufacturing. The largest concentration of employees is in the Port Limeburners CAU in Whangarei District, which has 570 employees.

Land used for industrial services had the second largest employment, with approximately 1,980 employed. Industrial services includes businesses engaged in rental and hiring services, employment services, construction services, and labelling and packaging services.

The Whangarei District had the greatest number of industrial employees, with 5,470 in total. The District also had the four CAUs with the largest number of industrial employees: Whangarei Central, just over 1,500; Port Limeburners, with nearly 1,500; Marsden Point-Ruakaka at 770; and Springs Flat with over 600. All four CAUs had a mix of industry types.

Together, this information on employment and land use allows us to obtain:

- An indication of employment density by main land use in the mixed-use CAUs
- Information on business activity and employment density at the large industrial sites that we have already identified.

Table 5.6 Employees by CoreLogic industry classifications and CAU, 2013

Census Area Unit	Food *Employees*	Heavy *Employees*	Light *Employees*	Warehouse *Employees*	Service *Employees*	Noxious *Employees*	Total Industrial *Employees*
Far North District							
Awanui	0	0	18	6	0	0	24
Karikari Peninsula-Maungataniwha	0	0	12	3	15	0	30
Herekino	0	0	9	0	3	0	12
Motutangi-Kareponia	12	0	6	0	46	0	64
Kaitaia East	0	15	259	36	147	0	457
Kerikeri	0	20	149	76	84	0	329
Opua East	0	29	9	0	0	0	38
Moerewa	230	0	3	0	3	0	236
Waitangi	0	9	73	3	9	35	129
Pokere-Waihaha	0	0	15	0	12	0	27
Waihou Valley-Hupara	9	3	39	24	76	0	151
Kaikohe	0	0	18	18	12	3	51
Sub Total Far North	**251**	**76**	**610**	**166**	**407**	**38**	**1,548**
Whangarei District							
Opouteke-Tanekaha	0	0	6	6	36	0	48
Marsden Point-Ruakaka	0	3	281	20	104	363	771
Wharekohe-Oakleigh	0	0	6	0	48	0	54
Waiotira-Springfield	0	0	18	0	15	0	33
Punaruku-Kiripaka	6	6	15	27	54	0	108
Waipu	0	0	120	0	12	12	144
Pataua-Whareora	0	6	31	3	9	0	49
Springs Flat	350	53	79	45	80	0	607
Abbey caves	0	0	50	3	43	0	96
Otaika-Portland	0	0	208	3	0	0	211
Kamo West	0	9	3	18	27	0	57
Kamo East	0	0	18	3	18	0	39
Whau Valley	0	3	3	0	24	0	30
Whangarei Central	6	195	184	324	798	70	1,577
Riverside	0	9	6	0	9	0	24
Morningside	0	15	6	48	39	0	108
Port-Limeburners	20	339	571	429	105	0	1,464
Hikurangi	20	0	30	0	3	0	53
Sub Total Whangarei	**402**	**638**	**1,635**	**929**	**1,424**	**445**	**5,473**
Kaipara District							
Kaipara Coastal	0	0	48	0	6	0	54
Dargaville	286	18	57	75	94	0	530
Maungaturoto	15	0	20	30	0	0	65
Kaiwaka	0	0	60	0	0	0	60
Rehia-Oneriri	3	0	97	40	45	0	185
Sub Total Kaipara	**304**	**18**	**282**	**145**	**145**	**0**	**894**
TOTAL	**957**	**732**	**2,527**	**1,240**	**1,976**	**483**	**7,915**

Source: CoreLogic, BERL

The actual employment density in any group of businesses will depend on the specific type and nature of the industries. There are no 'Golden Rules' as to what employment densities should be, however there are some principles that are usually found to apply. Firstly on the more expensive, inner urban land, the employment density in any industry is usually higher than on lower value, fringe urban land. Secondly as productivity increases, often due to the increasing application of new technologies, the employment density in any particular industry tends to decline over time.

We recommend that UNISA members attempt to refine these simple calculations where possible through surveys or discussions with employers and businesses operating on large industrial sites. This is necessary to provide useful employment density coefficients to project employment by industry.

5.2.2 Employment density in CAUs with mixed industries

To estimate average employment density, the employment data from Table 5.7 is combined with the land use data from Table 5.5. This is a simple calculation that considers the number of employees in each of the industries and the amount of industrial land that each of these industries occupies.

Table 5.7 Employee counts in mixed industry CAUs and industry classifications, 2013

Census Area Unit with industry mix	Food *Employees*	Heavy *Employees*	Light *Employees*	Warehouse *Employees*	Service *Employees*	Noxious *Employees*	Total Industrial *Employees*
Far North District							
Kaitaia East	0	15	259	36	147	0	457
Kerikeri	0	20	149	76	84	0	329
Sub Total Far North	**0**	**35**	**408**	**112**	**231**	**0**	**786**
Whangarei District							
Marsden Point-Ruakaka	0	3	281	20	104	363	771
Springs Flat	350	53	79	45	80	0	607
Whangarei Central	6	195	184	324	798	70	1,577
Port-Limeburners	20	339	571	429	105	0	1,464
Sub Total Whangarei	**376**	**590**	**1,115**	**818**	**1,087**	**433**	**4,419**
Kaipara District							
Dargaville	286	18	57	75	94	0	530
Sub Total Kaipara	**286**	**18**	**57**	**75**	**94**	**0**	**530**
Total in all Key CAUs	**662**	**643**	**1,580**	**1,005**	**1,412**	**433**	**5,735**
Average employees per Key CAU	**95**	**92**	**226**	**144**	**202**	**62**	**819**

Source: CoreLogic, BERL

The issues in regards to the differences between the Statistics New Zealand employment by industry data and the CoreLogic industrial land use data comes in to play here. The respective classifications in regards to 'industry' are made as follows:

- Statistics New Zealand classifies industry based on the main activity
- CoreLogic classifies industrial land use based on the main activity of the business that occupies this land.

A meshing of the two can be attempted at a high-level, but attempts to collate this data at a finer level generate figures with a spurious level of accuracy. Despite these shortcomings, these are the main sources of information, and the average employment density figures that we provide in Table 5.8 for the mixed-industry CAUs are therefore estimates and high-level indications only.

Table 5.8 Employment density by CAU and industry classifications, 2013

Census Area Unit with industry mix	Food *Employees / Hectare*	Heavy *Employees / Hectare*	Light *Employees / Hectare*	Warehouse *Employees / Hectare*	Service *Employees / Hectare*	Noxious *Employees / Hectare*	Total Industrial *Employees / Hectare*
Far North District							
Kaitaia East		1.4	19.9	27.7	18.4		10.4
Kerikeri			18.6	9.3	8.4		11.9
Sub Total Far North		**3.2**	**19.4**	**11.8**	**12.8**		**11.0**
Whangarei District							
Marsden Point-Ruakaka		0.2	9.9		34.7	2.6	1.1
Springs Flat		0.3	7.2		11.4		2.9
Whangarei Central			262.9	73.6	68.8		61.9
Port-Limeburners	4.5	11.3	18.7		2.6		5.5
Sub Total Whangarei	**5.8**	**2.8**	**15.8**	**185.9**	**17.5**	**2.1**	**3.7**
Kaipara District							
Dargaville	914.0	1.8	4.9	5.4	21.9		9.6
Sub Total Kaipara	**914.0**	**1.8**	**4.9**	**5.4**	**21.9**		**9.6**
Employees per Hectare for all CAUs	**89.5**	**0.8**	**9.2**	**32.1**	**15.3**	**2.2**	**3.1**

Source: CoreLogic, BERL

5.2.3 Employees and employment density in large industries

In the Northland Region, we have identified 11 large plants or industries that are generally on a single industrial land title. To consider employment density in these areas, we used the two-digit industry classifications shown in Table 2.1. The fit is not complete in all cases, and our attempted fit is shown in Table 5.9.

The table shows that it is possible to identify the industry activity for a number of sites and estimate the employment density per hectare. It also becomes clear that even at the two-digit level a single industry classification will include a range of industry types.

The most common industry in Table 5.9 is Wood Product Manufacturing (C14). There are six plants recorded on large titles in Northland in this industry. Each plant has quite different employment densities: Waitangi, 1.0 employee per hectare; Springs Flat (averaged) 2.4 employees per hectare; Abbey Caves 5.0 employees per hectare; Kaipara Coastal (presumed) 8 employees per hectare; Rehia Oneriri, 10 employees per hectare; and Kaitaia East 22 employees per hectare. This difference in density indicates that these industries include a range of operators from breakdown sawmills, to high-level wood processing and manufacturing.

The second most common industry noted is Food Product Manufacturing, which includes the low-density large dairy plants at Maungaturoto and the Kauri plant in Springs Flat. These plants have employment densities of one or two people per hectare. This contrasts with the food plants in Dargaville and Moerewa which are presumably the meat processing and packing plants of Silver Fern Farms and AFFCO, respectively. These plants have employment densities of 20 to 30 people per hectare.

In the Wood Product Manufacturing and Food Product Manufacturing industries it is important to determine if the lower-density primary processing plants are likely to increase their manufacturing content and employment density in the future. If so, this industry expansion could be achieved on their existing sites, rather than on new sites or require additional land.

Table 5.9 Large industry employment and employment density, 2013

Census Area Unit	Industry: Actual or *Presumed*	Employment	Density	Large industry land use							
				Heavy		Light		Warehouse		Noxious	
		Number	Empl/Ha.	Titles	Ha.	Titles	Ha.	Titles	Ha.	Titles	Ha.
Far North District											
Herekino	?	?	?	1	149						
Kaitaia East	C14 Wood Product Manufacturing	250	22.7	1	11						
Moerewa	C11 Food Product Manufacturing	220	22.0	2	10						
Waitangi	C14 Wood Product Manufacturing	70	1.0			1	69				
Pokere-Waihaha	?	?	?							1	4
Waihou Valley Hupara	F33 Basic Material Wholesaling	20)	7.6					2	5		
	F36 Grocery, Liquor and Tobacco Product Wholesaling	15)									
Whangarei District											
Marsden Ruakaka	C17 Petroleum and Coal Product Manufacturing	360	2.6							3	141
Wharekohe Oakleigh	?	?	?	1	504						
Pataua Whareora	?	?	?			1	9				
Springs Flat	C11 Food Product Manufacturing	350)	2.4	2	166						
	C14 Wood Product Manufacturing	55)									
Abbey caves	C14 Wood Product Manufacturing	50	5.0	1	10						
Kaipara District											
Kaipara Coastal	*C14 Wood Product Manufacturing*	45	8.2							1	5
Dargaville	C11 Food Product Manufacturing	280)	30.0	2	10						
	C22 Fabricated Metal Product Manufacturing	20)									
Maungaturoto	C11 Food Product Manufacturing	15	0.8	1	20						
Rehia Oneriri	*C14 Wood Product Manufacturing*	45	10.2							1	4
TOTAL				**11**	**880**	**2**	**78**	**2**	**5**	**6**	**155**

Source: CoreLogic, StatisticsNZ, BERL

A major difficulty of desk-based research is also illustrated here. For six of the CAUs that show a large industrial site in one or other of the four industry types, there is no employment in that two-digit industry. For two of the CAUs that show a large 'noxious' industry, there is no such industry employment, however there is a wood product manufacturing site in each CAU. We have therefore assumed that these plants have been classified as 'noxious' in the CoreLogic land use data set. These observations again indicate the importance of UNISA members following the desk-based research with a survey of the actual situation in the field.

5.3 The Kaipara District

The Kaipara District had 130 hectares of industrial land in 2013 across 140 titles. This land was fairly well spread with approximately 121.8 hectares recorded as being occupied industrial land, 23.2 hectares mixed industrial and 37 hectares noted as heavy industrial land. Approximately 8.4 hectares of vacant industrial land was recorded in the CoreLogic data set across 24 titles.

However, as we note above, the boundaries of CAUs are to some extent arbitrary and may omit part of a settlement that contains industrial plants. We understand that this is the case with the CAUs in Kaipara District around the settlements of Maungaturoto, Mangawhai and Kaiwaka. There is 62 hectares of industrial land in this area, mostly in the CAU named Rehia Oneriri.

The Rehia Oneriri CAU is mainly rural and it abuts settlements which have industries. These industries include one site of 20 hectares in heavy industry in Maungaturoto, which will be the Fonterra dairy factory; 16 light industry sites covering a total of 21.7 hectares; two mixed-industry sites covering a total of 16.3 hectares; and one noxious industry covering 4.4 hectares. The mixed industry and the noxious industry sites are of a significant size.

In 2013, the Kaipara District had approximately 890 employees employed on industrial land. The largest areas where people were employed was on land classified as food manufacturing and light industry. Overall, only one CAU in the District had significant amounts of industrial land and employment - Dargaville.

5.3.1 Dargaville CAU industrial land and employment

The Dargaville CAU had approximately 530 employees working on industrial land in 2013. This CAU had approximately 55.3 hectares of industrial land across 117 titles. There was approximately 8.4 hectares of vacant industrial land in the Dargaville CAU in 2013, and this vacant land was spread across 24 titles. The largest amount of land was used in warehousing in this CAU, at approximately 14 hectares, and the least amount was used by service industries, at approximately 4.3 hectares. With 18 titles, the amount of land per service industry business in this CAU was approximately 0.2 of a hectare. A more detailed examination of land use within these broad categories is shown in Table 5.10.

Table 5.10 Dargaville land use categories, hectares and employment, 2013

Dargaville Land Use	Hectares 2013	Employees 2013	Employees per hectare 2013
Specific land use			
Depots and Yards	4.7	42	9.1
Engineering, Metalworking, Appliances and Machinery	6.4	11	1.7
Parking	0.7	9	13.7
Timber products, and Furniture	4.3	7	1.7
Building Materials other than Timber	1.1	2	1.7
Food, Drink and Tobacco	14.1	290	20.6
Other Industries, including Storage	7.2	65	9.1
Road Transport	0.3	2	9.1
General land use			
Commercial	1.8	16	8.7
Multi-use within Commercial	0.7	6	8.7
Offices	0.3	3	8.7
Retail	1.1	36	33.6
Industrial	0.1	1	10.6
Multi-use within Industrial	2.2	23	10.6
Services	0.1	14	134.9
Total land use	**44.9**	**528**	**11.8**
Other land use[1]			
Other	6.4	na	na
Vacant			
Vacant	7.5	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

Table 5.10 shows the total number of employees matched to each land use category and the employee to hectares ratio for 2013.[23] Eight specific land use categories were identified, with a further six general land use categories also identified for industrial land within the Dargaville CAU.

[23] In the appendix, a table shows the change in the area over time - 2001, 2006 and 2013 - for each specific and general land use category identified for the Dargaville CAU.

The data presented in this table is from the CoreLogic property classification data set, and there is a small difference in the total amount of industrial land. This table provides a more detailed picture of industrial land use and employment, and draws on our assumptions regarding employment density. In total these 19 land use categories account for 44.8 hectares out of the 58.8 hectares of industrial land located within the Dargaville CAU. The remaining 14 hectares is split between vacant land (7.5 hectares) and other land use categories (6.5 hectares).

Other land use categories are land use categories that we were unable to match to an industry, or were assigned a non-industrial land use code. For example, passive outdoor or public communal land uses were unable to be matched to an industry, while residential land use is obviously not an industrial land use, even if it is on industrial zoned land.

Here, we would again emphasise that the database should be scrutinised for possible errors and the order of magnitude estimates of the main land area, industrial land use types, employment, and employment density should be cross-checked through fieldwork or a simple census of industrial activity. An example of why this type of scrutiny is important can be seen in the allocation of light industrial land to the Rehia-Oneriri CAU.

Light industry occupied 33.4 hectares of industrial land in the Kaipara District in 2013, and approximately 14 hectares was in Dargaville. However, the Rehia-Oneriri CAU recorded 21.7 hectares of land occupied by light industry. On face value this allocation does not appear obscure; however, common sense indicates that this is a rural CAU that abuts the settlements of Maungaturoto, Mangawhai and Kaiwaka, and these areas contain industrial plants.

5.4 Whangarei District

The Whangarei District had approximately 1,990 hectares of industrial land in 2013 across 895 titles. The majority of this land is occupied, at 1,224.2 hectares with 765.5 hectares of vacant industrial land. The Whangarei District has the largest amount of vacant industrial land in the Northland Region, and this land is spread across 323 titles. There are four key CAUs in the Whangarei District with significant amounts of industrial land and employment. These are Springs Flat, Whangarei Central, Marsden Point, and Port Limeburners.

Approximately 723 hectares of industrial land was used by heavy industry in this District in 2013, and 205 hectares of industrial land was used by noxious industry. Smaller amounts of land were used by light industry and service industries, and mixed-industrial use occupied approximately 131.6 hectares of industrial land.

In 2013, the Whangarei District had approximately 5,473 employees employed on industrial land. Light industry occupies approximately 90 hectares of industrial land in this District, but employs the largest number of people, at 1,635 employees. Approximately 570 of these employees are located within the Port Limeburners CAU, while 281 employees are located on industrial land classified as light industry within the Marsden Point CAU.

Approximately 638 employees were located on land in the heavy industries, with the majority again working within the Port Limeburners CAU, and 445 employees were located on land in the noxious industries, with 363 employed within the Marsden Point CAU. These employment figures again emphasise the importance of understanding employment densities and floor space ratios to determine the future demand for industrial land.

The following tables show the total number of employees matched to each land use category and the employee to hectare ratios for 2013 for the four key CAUs in the Whangarei District - Springs Flat, Whangarei Central, Marsden Point, and Port Limeburners.[24] The number of land use categories and general land use categories identified for industrial land varies by CAU.

As noted in the earlier discussion on the Kaipara District, the data presented in these tables is from the CoreLogic property classification data set, and there is a small difference in the total amount of industrial land. These tables provide a more detailed picture of industrial land use and employment, and draw on our assumptions regarding employment density.

5.4.1 Springs Flat CAU industrial land and employment

As shown in Table 5.11, six specific land use categories were identified, with a general land use category also identified for industrial land within the Springs Flat CAU. In total these seven land use categories accounted for 200 out of the 213 hectares of industrial land located within this CAU. The remaining 13 hectares was split between vacant land (7.1 hectares) and other land use categories (5.9 hectares).

Table 5.11 Springs Flat land use categories, hectares and employment

Springs Flat Land Use	Hectares 2013	Employees 2013	Employees per hectare 2013
Specific land use			
Depots and Yards	10.3	36	3.5
Engineering, Metalworking, Appliances and Machinery	3.1	0	0.0
Food, Drink and Tobacco	0.1	350	2,671.8
Other Industries, including Storage	1.1	4	3.5
Timber products, and Furniture	12.4	55	4.5
Transport	0.0	0	0.0
General land use			
Industrial	173.0	75	0.4
Total land use	**200.0**	**520**	**2.6**
Other land use[1]			
Other	5.9	na	na
Vacant			
Vacant	7.1	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

Comparing the total hectares in 2013 from the above table with the total from Table 5.5, shows a difference of one hectare, with Springs Flat having 212 hectares of industrial land recorded in Table 5.5, compared to 213 hectares in the table above. Table 5.5 shows around 12.6 hectares of vacant industrial land within Springs Flat, while the table above shows 7.1 hectares, a difference of 5.5 hectares.

[24] In the appendix, a table shows the change in the area over time - 2001, 2006 and 2013 - for each specific and general land use category identified in the four key CAUs.

Comparing employment and employees per hectare with the totals in Table 5.7 and Table 5.8, shows a difference of 107 employees using the two different CoreLogic data sets. However, the number of employees per hectare data is similar between the data sets; with 2.6 employees per hectares noted using the land use data set and 2.9 employees per hectares using the property classification data set.

5.4.2 Whangarei Central CAU industrial land and employment

In Table 5.12 10 specific land use categories were identified, with a further seven general land use categories identified for industrial land within the Whangarei Central CAU.

In total these 17 land use categories accounted for 22.4 out of the 24.5 hectares of industrial land located within this CAU. The remaining 2.1 hectares was split between vacant land (1.4 hectares) and other land use categories (0.7 hectares).

Table 5.12 Whangarei Central land use categories, hectares and employment

Whangarei Central Land Use	Hectares 2013	Employees 2013	Employees per hectare 2013
Specific land use			
Car Parking	0.2	4	18.8
Depots and Yards	2.4	89	38.0
Engineering, Metalworking, Appliances and Machinery	4.5	170	37.8
Food, Drink and Tobacco	0.6	21	35.2
Other Industries, including Storage	1.5	58	38.0
Timber products, and Furniture	2.2	20	9.3
Building Materials other than Timber	0.6	5	9.3
Chemical,Plastic,Rubber,Paper	0.5	75	154.4
Road Transport	0.2	7	38.0
Textiles, Leather and Fur	0.0	50	1,644.7
General land use			
Commercial	0.6	29	48.3
Multi-use within Commercial	1.7	83	48.3
Multi-use within Industrial	2.4	79	32.8
Offices	0.5	22	48.3
Retail	2.5	220	88.7
Wholesale	1.2	289	246.4
Industrial	0.9	30	32.8
Services	0.5	215	396.7
Total land use	**22.9**	**1,467**	**64.0**
Other land use[1]			
Other	0.2	na	na
Vacant			
Vacant	1.4	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

Comparing the total number of hectares and the amount of vacant industrial land shown in Table 5.12 with the amounts shown in Table 5.5 indicates minimal differences between the data sets. However, comparing employment and employees per hectare with the totals in Table 5.7 and Table 5.8, shows that overall we have 1,193 employees using land use and 1,728 with property classification, a difference of 535 employees. Employees per hectare data is a little closer together between the data sets with 53.3 employees per hectares for land use data, and 67.9 employees per hectares using property classification.

5.4.3 Marsden Point CAU industrial land and employment

Nine specific land use categories were identified in the Marsden Point CAU, along with two general land use categories. In total these 11 land use categories accounted for 246.1 of the 681.5 hectares of industrial land located within the CAU.

The remaining 435.4 hectares was split between vacant land (121.5 hectares), industrial land used for a dairy farm (199.2 hectares), and other land use categories (114.7 hectares).

Table 5.13 Marsden Point land use categories, hectares and employment

Marsden Point Land Use	Hectares 2013	Employees 2013	Employees per hectare 2013
Specific land use			
Personal and Property Protect	0.1	3	21.9
Building Materials other than Timber	1.0	4	4.4
Chemical,Plastic,Rubber,Paper	4.0	3	0.7
Depots and Yards	7.7	8	1.1
Food, Drink and Tobacco	0.1	0	0.0
Other Industries, including Storage	120.9	131	1.1
Road Transport	0.2	0	1.1
Timber products, and Furniture	39.5	176	4.4
Engineering, Metalworking, Appliances and Machinery	9.7	100	10.3
General land use			
Multi-use within Industrial	62.7	365	5.8
Industrial	0.1	0	5.8
Total land use	**246.1**	**791**	**3.2**
Other land use[1]			
Other	114.7	na	na
Dairying[2]	199.2	na	na
Vacant			
Vacant	121.5	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

(2) This is land zoned industrial in the 1960s but is currently being used as a dairy farm

Comparing the total hectares in 2013 from Table 5.13 with the total from Table 5.5 shows a difference of 4.5 hectares. The Marsden Point CAU in Table 5.5 had 686 hectares of industrial land recorded, compared to 681.5 hectares in the table above. Table 5.5 also shows around 438.2 hectares of vacant industrial land within the Marsden Point CAU, while the table above shows 121.5 hectares, a difference of 316.7 hectares.

Comparing employment totals in Table 5.7 and Table 5.8 shows a difference of 172 employees, but the employees per hectare data is much closer between the data sets; with 2.9 employees per hectares for land use data, and 1.3 employees per hectares using property classification.

5.4.4 Port Limeburners CAU industrial land and employment

In the Port Limeburners CAU, 11 specific land use categories were identified, with a further five general land use categories identified for industrial land. In total these 16 land use categories accounted for 236.9 hectares out of the 338.6 hectares of industrial land located within this CAU. The remaining 101.7 hectares was split between vacant land (55.4 hectares) and the other land use categories (46.3 hectares).

Table 5.14 Port Limeburners land use categories, hectares and employment

Port Limeburners Land Use	Hectares 2013	Employees 2013	Employees per hectare 2013
Specific land use			
Other Industries, including Storage	38.3	8	0.2
Building Materials other than Timber	11.7	26	2.2
Chemical,Plastic,Rubber,Paper	1.0	45	43.6
Depots and Yards	34.7	7	0.2
Engineering, Metalworking, Appliances and Machinery	35.1	220	6.3
Food, Drink and Tobacco	6.8	20	2.9
Road Transport	0.4	197	532.8
Sanitary	0.3	100	286.0
Textiles, Leather and Fur	0.6	6	10.3
Timber products, and Furniture	74.6	164	2.2
Transport	0.2	98	532.8
General land use			
Industrial	5.0	69	14.0
Multi-use within Industrial	24.9	349	14.0
Offices	0.0	0	0.0
Retail	0.4	23	56.1
Wholesale	2.9	450	155.0
Services	3.4	0	0.0
Total land use	**240.3**	**1,782**	**7.4**
Other land use[1]			
Other	42.9	na	na
Vacant			
Vacant	55.4	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

There is a difference of 70.6 hectares of industrial land if we compare the above table with Table 5.5. There is also a difference of 45.3 hectares of vacant industrial land, with Table 5.5 showing around 100.7 hectares of vacant industrial land within the Port Limeburners CAU and Table 5.14 shows 55.4 hectares. The data for this CAU is also problematic in regards to employment with the land use data set indicating that 1,452 employees are employed on industrial land, and the property classification data set indicating 1,577 employees. This leads to a difference of 125 employees.

The number of employees per hectare data is closer between the data sets; with 6.1 employees per hectare under the land use data set and 5.9 employees per hectare using the property classification data set.

5.5 The Far North District

The Far North District had approximately 428.4 hectares of industrial land in 2013 across 334 titles. The majority of this land is occupied, at 400.3 hectares with 68 hectares of vacant industrial land. There are two key CAUs in the Far North District with significant amounts of industrial land and employment. These are Kaitaia East and Kerikeri.

Approximately 170 hectares of industrial land was used by heavy industry in this District in 2013, and 150.9 hectares of industrial land was used by light industry. The service industries occupied 55.6 hectares of industrial land, and smaller amounts of land were used by warehousing.

In 2013, the Far North District had approximately 1,548 employees employed on industrial land. Light industry occupies approximately 150 hectares of industrial land in this District, but employs the largest number of people, at 610 employees. Approximately 259 of these employees are located within the Kaitaia East CAU, while 149 employees are located on industrial land classified as light industry within the Kerikeri CAU.

Approximately 407 employees were located on land in the service industries, with the majority again working within the Kaitaia East CAU, and 251 employees were located on land in the food industries, with 230 employed within the Moerewa CAU, indicating the presence of the meat processing plant. These employment figures again emphasise the importance of understanding employment densities and floor space ratios to determine the future demand for industrial land.

The following tables show the total number of employees matched to each land use category and the employee to hectare ratios for 2013 for the two key CAUs in the District.[25] The number of land use categories and general land use categories identified for industrial land varies by CAU.

As noted in the earlier discussion on the Kaipara District, the data presented in these tables is from the CoreLogic property classification data set, and there is a small difference in the total amount of industrial land. These tables provide a more detailed picture of industrial land use and employment, and draw on our assumptions regarding employment density.

5.5.1 Industrial land use and employment in Kaitaia East

Nine specific land use categories were identified in the Kaitaia East CAU, with a further two general land use categories also identified for industrial land. In total these 11 land use categories accounted for 29.6 out of the 45.3 hectares of industrial land located within this CAU. The remaining 15.7 hectares was split between vacant land (8.9 hectares) and other land use categories (6.8 hectares).

[25] In the appendix, a table shows the change in the area over time - 2001, 2006 and 2013 - for each specific and general land use category identified in the four key CAUs.

Table 5.15 Kaitaia East land use categories, hectares and employment

Kaitaia East Land Use	Hectares 2013	Employees 2013	Employees per hectare 2013
Specific land use			
Engineering, Metalworking, Appliances and Machinery	7.7	6	0.8
Building Materials other than Timber	2.0	224	109.5
Chemical,Plastic,Rubber,Paper	11.2	0	0.0
Depots and Yards	4.4	69	15.6
Food, Drink and Tobacco	0.2	0	0.0
Road Transport	2.0	32	15.6
Textiles, Leather and Fur	0.1	0	0.0
Timber products, and Furniture	0.2	26	109.5
General land use			
Retail	0.3	20	58.1
Industrial	0.0	0	na
Multi-use within Transport	1.2	19	15.6
Multi-use within Industrial	5.1	27	5.2
Multi-use within Commercial	0.6	4	7.6
Services	0.1	16	173.5
Total land use	**35.4**	**444**	**12.5**
Other land use[1]			
Other	1.0	na	na
Vacant			
Vacant	8.9	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

Comparing the two CoreLogic data sets, the total amount of occupied and vacant industrial land in the Kaitaia East CAU is relatively similar. However, when we compare the data on employment and employees per hectare, there is a difference of 75 employees between the two data sets and the employment density is noticeable different. In the land use data set the employment density is 13.5 employees per hectare, while in the property classification data set the ratio is 10.8 employees per hectare.

5.5.2 Industrial land use and employment in Kerikeri

There are six specific land use categories in the Kerikeri CAU, with a further six general land use categories for industrial land. In total these 12 land use categories account for 21.2 out of the 28.2 hectares of industrial land located within this CAU. The remaining seven hectares was split between vacant land (1.1 hectares) and other land use categories (5.9 hectares).

Table 5.16 Kerikeri land use categories, hectares and employment

Kerikeri Land Use	Hectares 2013	Employees 2013	Employees per hectare 2013
Specific land use			
Engineering, Metalworking, Appliances and Machinery	3.1	12	3.8
Other Industries, including Storage	6.9	38	5.6
Building Materials other than Timber	2.0	29	14.7
Depots and Yards	1.2	7	5.6
Food, Drink and Tobacco	0.3	63	183.0
Timber products, and Furniture	0.1	1	14.7
General land use			
Commercial	0.0	0	0.0
Multi-use within Commercial	0.8	8	10.2
Retail	2.9	140	48.9
Industrial	0.0	0	0.0
Multi-use within Industrial	3.3	49	14.6
Wholesale	0.6	85	132.7
Multi use within Rural Industry	5.5	40	7.3
Services	0.1	0	0.0
Total land use	**26.8**	**472**	**17.6**
Other land use[1]			
Other	0.3	na	na
Vacant			
Vacant	1.1	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

There is very little difference between the occupied and vacant industrial land listed for the Kerikeri CAU in the two CoreLogic data sets. The one difference that does arise is for employment, and that is also relatively small with a difference of nine employees. Again, however there is a difference in the employees per hectare data, with the ratio of 18.5 employees per hectare in the land use data set and 14 employees per hectare using the property classification data set.

5.6 The future demand for industrial land: CGE modelling

The previous discussion has considered the amount of industrial land in the Northland Region, where this land is located, the type of industries that may be occupying this land, and the number of people that may be employed by the various businesses occupying this land. A key outcome of these considerations was employment density. This information was required to project the future demand for industrial land using our recommended labour demand model.

In this section, we consider the shape of the New Zealand economy in 2031 and test our recommended labour demand model in the Northland Region. To do this, we use the BERL Computable General Equilibrium (CGE) model. The output from the CGE model that is used to determine the demand for industrial land is the percentage change in industrial employment per annum.

The projected change in employment is used to estimate the required floor area or land area per employee required by a business within an industry. This data is then used to estimate the number of hectares of industrial land needed to support that level of employment.

As discussed in a previous section, CGE projections are a controlled experiment not a forecast. It is therefore usual to run two scenarios to test the future impact of the assumptions made. In this case study we have considered what the Northland economy could look like in 2031 under a Business as Usual situation (BAU) and under a growth scenario.

- **BAU scenario:** This scenario considered the rate of employment growth in key industries in the Northland Region over the last 10 years, and compared this growth rate to the same industries nationally. It then assumed that this difference in economic growth would continue to 2031.
- **Growth scenario:** This scenario assumed that the future growth of Auckland will have a greater 'osmotic' effect on Northland. For example, employment growth in Auckland is expected to exceed that of New Zealand towards 2031. This 'Auckland effect' will positively impact on Northland, bringing the average growth rate of Northland industries up to that of the New Zealand average. For industries that grew higher than the national average for the last 10 years, we assume that this higher than average growth rate continues.

To determine what the percentage change per annum should be under the BAU and growth scenarios, it is important to understand how the New Zealand economy is currently performing and also how the economy of the Northland Region is performing compared to New Zealand. This data provided the baseline information, and helped us to determine what trends have occurred in the past and what is likely to occur in the future.

5.6.1 The economy of the Northland Region

A snapshot of the economy of the Northland Region in 2013 is provided in Table 5.17. This table shows the composition of the economy in terms of employment, GDP and business numbers across each of the main sectors.

Table 5.17 Composition of the Northland economy, 2013

Sectors (2013)	FTEs	%	GDP (2013$m)	%	Business units	%
Primary	7,826	*14.7%*	849	*17.7%*	5,446	*27.8%*
Manufacturing	5,263	*9.9%*	804	*16.8%*	725	*3.7%*
Construction	4,126	*7.8%*	272	*5.7%*	2,028	*10.4%*
Wholesale and Distribution	3,688	*6.9%*	492	*10.3%*	1,011	*5.2%*
Retail Trade and Services	10,059	*18.9%*	553	*11.5%*	2,728	*13.9%*
Business Services	6,938	*13.1%*	802	*16.7%*	5,995	*30.6%*
Arts and Recreation Services	693	*1.3%*	56	*1.2%*	326	*1.7%*
Social Services	14,514	*27.3%*	964	*20.1%*	1,326	*6.8%*
Sub-total (excluding O.O.D.)	53,108	100.0%	4,791	100.0%	19,585	100.0%
*Owner-Occupied Dwellings (O.O.D)**			965			
Total	**53,108**		**5,756**		**19,585**	

* Imputed value, included in Total GDP only

Source: BERL Regional Database, 2013

In terms of employment, the social services sector is the largest employer in the Northland Region with 14,500 FTEs in 2013 or 27 percent of total employment. This sector employs people in the health and education industries, local and central government, and law and order including the courts and prisons. This sector is a large employer in most regions.

The second largest area of employment is the retail trade sector with 19 percent of total employment, and the primary sector with 15 percent of total employment in the Region is the third largest. While not large in terms of employment, the manufacturing sector is significant in terms of GDP with 17 percent of total GDP in the Northland Region being generated by this industry.

How the economy of the Northland Region has fared over the last 10 years can be measured across key performance indicators such as GDP and resident population growth, employment and productivity growth, and any changes in the number or size of businesses.

Table 5.18 shows the percentage change per annum in these indicators over the last 10 years for the Northland Region and New Zealand.

Table 5.18 Key Performance Indicators, Northland Region and NZ, 2003-2013

Key Performance Indicators	%pa for 2003 - 2013	
	Northland Region	New Zealand
Resident population growth	**0.5**	0.9
GDP growth	**1.9**	2.1
GDP per capita growth	**1.4**	1.2
Employment growth	**0.9**	1.5
Labour productivity growth	**1.1**	0.7
Business units growth	**0.8**	1.8
Business size growth	**0.1**	-0.3

Source: BERL Regional Database, 2013

Overall, the economy of the Northland Region has performed poorer compared to the New Zealand economy across all of these key indicators. We can therefore assume that this slower rate of growth will continue under our BAU scenario.

In comparison, the economy of the Auckland Region has grown faster than the New Zealand average across key indicators such as resident population, GDP and employment, and the number and size of businesses. Table 5.19 illustrates this difference in growth over the last 10 years. We can therefore assume that this growth will continue in Auckland, and that it will continue to impact on the national average. In the growth scenario we discuss this as the 'Auckland effect'.

This 'Auckland effect' will positively impact on Northland, bringing the average growth rate of Northland industries up to that of the New Zealand average. For industries that grew higher than the national average for the last 10 years, we assume that this higher than average growth rate continues. These industries that are higher than the national average include parts of the primary sector, food manufacturing, wholesaling, machinery and equipment manufacturing, furniture and other manufacturing, and parts of the infrastructure and transport sectors.

Table 5.19 Key Performance Indicators, Auckland Region and NZ, 2003-2013

Key Performance Indicators	%pa for 2003 - 2013	
	Auckland Region	New Zealand
Resident population growth	**1.3**	0.9
GDP growth	**2.6**	2.1
GDP per capita growth	**1.3**	1.2
Employment growth	**1.9**	1.5
Labour productivity growth	**0.8**	0.7
Business units growth	**2.4**	1.8
Business size growth	**-0.4**	-0.3

Source: BERL Regional Database, 2013

In terms of the industries that occupy industrial land, we calculated the projected percentage change per annum in employment across each of these industries to estimate the required floor area or land area per employee. These employment growth rates are shown in Table 5.20 for each scenario, and by each industrial land classification.

Table 5.20 Scenario results by industry classification, percent per annum change to 2031

Industry classification	BAU scenario %pa change to 2031	Growth scenario %pa change to 2031
Heavy industry	0.8%	2.0%
Food industry	-2.0%	0.6%
Light industry	2.4%	2.8%
Noxious industry	3.3%	3.8%
Warehousing	1.7%	1.8%
Industrial services	1.4%	1.9%

Source: BERL

5.6.2 BAU scenario results: land use and employment changes to 2031

Under the BAU scenario, the total amount of occupied industrial land in the Northland Region could increase by 33 percent, from 1,746 hectares in 2013 to 2,318 hectares in 2031.

Table 5.21 summarises the results of the BAU scenario. It shows:

- The amount of industrial land by property classification in 2013
- The number of employees and employment density in 2013, based on the industrial land property classifications
- The projected number of employees in each of the industrial land classifications by 2031
- The amount of industrial land that will be required in 2031 based on the 2013 employment density.

These results are shown for the Northland Region as a whole, and by the individual districts.

Table 5.21 BAU scenario results, industrial land and employment, by district, to 2031

Property Classification		Far North District	Whangarei District	Kaipara District	Northland Region
Heavy Industry	Land 2013	182.5	731.2	38.1	951.8
	Employees 2013	76	665	18	759
	Employment/ha	0.4	0.9	0.5	0.8
	Employees 2031	88	766	21	875
	Land 2031	210.3	842.7	43.9	1,096.9
Food Industry	Land 2013	1.8	5.2	0.3	7.3
	Employees 2013	251	405	304	960
	Employment/ha	138.7	77.6	971.6	130.8
	Employees 2031	177	285	214	676
	Land 2031	1.3	3.7	0.2	5.2
Light Industry	Land 2013	177.7	101.3	59.3	338.4
	Employees 2013	718	1,731	340	2,789
	Employment/ha	4.0	17.1	5.7	8.2
	Employees 2031	1,086	2,618	514	4,218
	Land 2031	268.7	153.3	89.7	511.7
Warehousing	Land 2013	25.3	25.7	16.6	67.6
	Employees 2013	205	1,012	220	1,437
	Employment/ha	8.1	39.3	13.2	21.2
	Employees 2031	274	1,354	294	1,923
	Land 2031	33.8	34.4	22.3	90.5
Industrial Services	Land 2013	81.3	73.7	16.6	171.5
	Employees 2013	684	1,807	166	2,657
	Employment/ha	8.4	24.5	10.0	15.5
	Employees 2031	887	2,343	215	3,445
	Land 2031	105.4	95.5	21.5	222.4
Noxious Industry	Land 2013	4.4	205.5	9.9	219.8
	Employees 2013	41	445	0	486
	Employment/ha	9.3	2.2	0.0	2.2
	Employees 2031	75	810	0	884
	Land 2031	8.0	373.9	9.9	391.7
Total Industrial	Land 2013	472.9	1,142.7	140.8	1,756.4
	Employees 2013	1,975	6,065	1,048	9,088
	Employment/ha	4.2	5.3	7.4	5.2
	Employees 2031	2,586	8,176	1,259	12,021
	Land 2031	627.5	1,503.5	187.5	2,318.5
Mixed use	Land 2013	8.9	137.3	28.1	174.2
Vacant Land	Land 2013	37.4	766.2	9.5	813.0
Extra land needed	**Land 2031**	**126.1**	**-268.1**	**65.3**	**-76.7**

Source: BERL, Statistics NZ and CoreLogic

Employment trends over the last 10 years are reflected in the expected changes in employment and land demand going forward. The food processing and manufacturing industries, for example, have increased productivity on their existing sites over the last 10 years and reduced employment. These plants have also been able to produce higher value products on their existing sites. We therefore assume that these trends continue.

This contrasts with some light industrial sites, where growing employment in light industry has required additional industrial land. This growth in land demand from light industry is shown in the table, where an additional 173 hectares is required by light industry businesses in Northland by 2031.

Also the expansion of activity at Marsden Point Refinery has increased the area required by this noxious industry over the last 10 years. We have included this assumption under our BAU scenario, and employment and land area has grown in this industry. However, it would be useful for the Council to check whether or not additional area is likely to be needed going forward.

This indicates another major factor in industrial land demand and supply in Northland. The table indicates that in the Whangarei District in 2013 there was 766 hectares of vacant industrial land. A major part of that is the 300 hectares of vacant industrial land in the Marsden Point CAU that was set aside in the 1960s. This was a strategic acquisition promoted by the then Chair of the Northland Harbour Board, Ralph Trimmer. It was established and continues to operate as a dairy farm, has not had significant investment to develop it for industrial use, and may yet be required for a strategic development. This strategic development is based on the assumption that some major facility or industry becomes commercially unviable in Auckland, due to high land prices, and relocates to the Whangarei District.

One possible facility that could fall in to this category is the vehicle import terminal in Auckland. This facility will come under increasing pressure in the future due to plans to re-develop the Fort Street area, to obtain community and commercial access to the waterfront in this area.

It could therefore be argued that the continuing existence of 300 hectares of vacant land in this area does not indicate an over-investment in infrastructure for industrial land, but instead keeps this land available to attract a significant activity to Northland in the future.

5.6.3 Growth scenario results: land use and employment changes to 2031

Under the Growth scenario the total amount of occupied industrial land in Northland could be expected to increase by 55 percent, from 1,746 hectares in 2013 to 2,710 hectares in 2031. This is an aspirational high-growth scenario, and an additional 392 hectares of industrial land is occupied under this scenario compared to the BAU.

Overall this scenario indicates that the Far North District will require an additional 210 hectares of industrial land in 2031 – this is additional to the 37 hectares of vacant industrial land there is currently. Similarly the Kaipara District would require an additional 85 hectares of industrial land in 2031, this is in addition to the 9.5 hectares of vacant industrial land they have now.

In the Whangarei District, the amount of industrial land required in 2031 is 766 hectares. This is the amount of vacant land there is presently in the District. However, as we noted above, 300 hectares of the current vacant industrial land is being held as a dairy farm for the possibility of strategic future use. What this scenario indicates is that if some of the "Auckland Effect" includes the re-location or development of a major facility or industry suited to the Marsden Point site, then the rest of the vacant industrial land will be taken up by industry growth through to 2031. If on the other hand, the 300 hectares of vacant land has not attracted an industry and remains a dairy farm, then the Whangarei District will need to develop an additional 300 hectares of industrial land by 2031.

Table 5.22 Growth Scenario Districts' employment and industrial land use to 2031

Property Classification		Far North District	Whangarei District	Kaipara District	Northland Region
Heavy Industry	Land 2013	182.5	749.6	38.1	970.1
	Employees 2013	76	665	18	759
	Employment/ha	0.4	0.9	0.5	0.8
	Employees 2031	109	955	26	1,090
	Land 2031	262.2	1,076.8	54.7	1,393.7
Food Industry	Land 2013	1.8	5.2	0.3	7.3
	Employees 2013	251	405	304	960
	Employment/ha	138.7	77.6	971.6	130.8
	Employees 2031	281	454	341	1,077
	Land 2031	2.0	5.9	0.4	8.2
Light Industry	Land 2013	177.7	101.3	59.3	338.4
	Employees 2013	718	1,731	340	2,789
	Employment/ha	4.0	17.1	5.7	8.2
	Employees 2031	1,169	2,819	554	4,542
	Land 2031	289.4	165.0	96.6	551.1
Warehousing	Land 2013	25.3	25.7	16.6	67.6
	Employees 2013	205	1,012	220	1,437
	Employment/ha	8.1	39.3	13.2	21.2
	Employees 2031	284	1,401	304	1,989
	Land 2031	35.0	35.6	23.0	93.6
Industrial Service	Land 2013	81.3	73.7	16.6	171.5
	Employees 2013	684	1,807	166	2,657
	Employment/ha	8.4	24.5	10.0	15.5
	Employees 2031	968	2,558	235	3,761
	Land 2031	115.0	104.3	23.5	242.8
Noxious Industry	Land 2013	4.4	205.5	9.9	219.8
	Employees 2013	41	445	0	486
	Employment/ha	9.3	2.2	0.0	2.2
	Employees 2031	80	871	0	952
	Land 2031	8.6	402.4	9.9	420.9
Total Industrial	Land 2013	472.9	1,161.0	140.8	1,774.8
	Employees 2013	1,975	6,065	1,048	9,088
	Employment/ha	4.2	5.2	7.4	5.1
	Employees 2031	2,892	9,058	1,460	13,411
	Land 2031	712.2	1,790.0	208.0	2,710.3
Mixed use	Land 2013	8.9	137.3	28.1	174.2
Vacant Land	Land 2013	37.4	766.2	9.5	813.0
Extra land needed	**Land 2031**	**210.8**	**0.1**	**85.8**	**296.7**

Source: BERL, Statistics NZ and CoreLogic

The intention of this second scenario was that it would be aspirational but realistic in terms of the potential demand for industrial land. We have therefore adopted the assumption that the Northland Region benefits from what we have termed the 'Auckland effect'.

- This means that if the economy of Auckland City grows stronger than the rest of New Zealand, as it is expected to do, then there will be a growing demand for substantial areas of land within an accessible distance of Auckland.
- We expect that this 'Auckland effect' could lift economic growth in Northland to a level a little above the rest of New Zealand, but not as high as Auckland itself.

Under this scenario, each industry in Northland grows at the national average through to 2031. The exception to this assumption is if an industry is already growing at a higher rate than the national average, due to the Northland Region having a comparative advantage in that industry, then the higher rate is used.

5.7 Summary

Our research has found that there is wide variation in the demand for industrial land under labour supply models, and less extreme variation under industrial demand models. We have used data and information on industrial land in the Northland Region as a case study to illustrate the merits of UNISA members adopting an industrial labour demand model as their standard method.

In this case study we have considered what the Northland economy could look like in 2031 under two scenarios. The BAU scenario considered the rate of employment growth in key industries in the Northland Region over the last 10 years, and compared this growth rate to the same industries nationally. It then assumed that this difference in economic growth would continue to 2031.

- Under the BAU scenario, the total amount of occupied industrial land in the Northland Region could increase by 33 percent, from 1,746 hectares in 2013 to 2,318 hectares in 2031.

The Growth scenario assumed that the future growth of Auckland will have a greater 'osmotic' effect on Northland. For example, employment growth in Auckland is expected to exceed that of New Zealand towards 2031. This 'Auckland effect' will positively impact on Northland, bringing the average growth rate of Northland industries up to that of the New Zealand average. For industries that grew faster than the national average over the last 10 years, we assume that this higher than average growth rate continues.

- Under the Growth scenario the total amount of occupied industrial land in Northland could be expected to increase by 55 percent, from 1,746 hectares in 2013 to 2,710 hectares in 2031. This is an aspirational high-growth scenario, and an additional 392 hectares of industrial land are occupied under this scenario compared to the BAU.

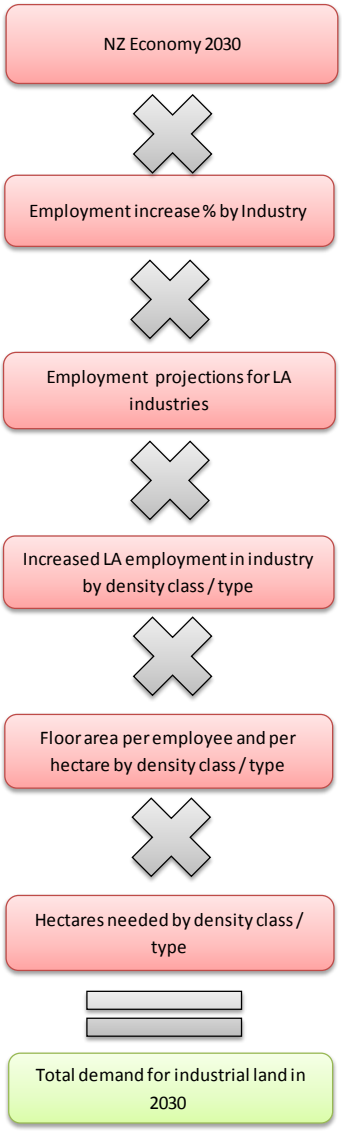
To determine what the percentage change per annum in employment should be under each of the scenarios, we considered how the New Zealand economy is currently performing, how the Northland economy is performing compared to the New Zealand economy, and what the comparative advantages of the Northland Region are. We then looked at the performance of the Northland regional economy over the last 10 years, and compared this performance to the national average. This data provided the baseline information for our modelling because the projected change in employment was used to estimate the required floor area or land area per employee required by a business within an industry. This data was then used to estimate the number of hectares of industrial land needed to support that level of employment.

6 Recommendations

We recommend that:

- UNISA members adopt a standard method to determine the future demand for industrial land.
- That the standard method be driven by industrial labour demand, where demand is based on projected economic growth in the UNISA area. This demand method is shown in Figure 6.1, and we have adopted as an example year, 2030.

Figure 6.1 Industrial labour demand as a driver of industrial land demand



The recommended approach will allow UNISA members to undertake controlled experiments to determine the amount and type of industrial land needed across their district or region under various growth scenarios.

This recommendation is based on our review of previous studies that have attempted to quantify the demand for industrial land, engagement with industry through an industry survey, and our analysis of the regulatory and financial policy issues that may encourage the efficient uptake of industrial land.

An understanding of employment density across different industries and changes in employment density over time is fundamental to understanding the factors driving the demand for industrial land. We would therefore recommend that UNISA members survey firms in industrial areas to gather this data and information.

We recommend that UNISA members survey firms in the large independent industries in their area as well as those in mixed industrial areas as to their likely plans for expansion on their current site or any additional activities that could be located elsewhere in the region. This is particularly important if there is vacant industrial land available in these CAUs, which indicates the capacity for expansion.

A survey of businesses located on industrial land would help UNISA members to better understand the factors driving changes in demand for industrial land, and if these factors are likely to result in changes in employment density. The levels of employment density are relatively similar in the same industry in different locations. Also, the trends in each industry are relatively slow-moving so the knowledge gained in this type of survey is likely to remain relevant for some time.

We also considered the regional economies of the Upper North Island between 1992 and 2013 using the BERL Regional Database. This database contains information on population, employment (Full-Time Equivalents and Employee Counts), GDP, productivity, and business units. Data on employment, GDP, productivity and business units is at a detailed industry level by TLA.

Overall, the UNISA Industry Survey provided an insight into the factors that influence where an industry/business locates and some indication of the general and specific trends that could drive the demand for industrial land. In addition, the characteristics of the firms provided an insight into employment and employment density across industries. These characteristics indicated that employment per hectare varies widely, and that caution should therefore be applied in industrial land projections. This finding further supports our recommendation that individual TLAs within the UNISA area should take into account the mix of industry expected in their area, when determining industrial land requirements.

A review of regulatory, planning and charging policies in the UNISA districts and regions suggests that land use planning is the most significant regulatory and policy influence affecting the supply and uptake of industrial land for industrial purposes, and that the use of more precise zoning would lead to a more efficient uptake of industrial land.

Regulatory costs do matter to firms and developers when they are considering industrial land area, but are significantly less influential than the pricing effect arising from permissive zoning. These costs matter most where zoning is permissive, as additional costs on top of higher land prices make industrial land uses even less economic.

Appendix A References

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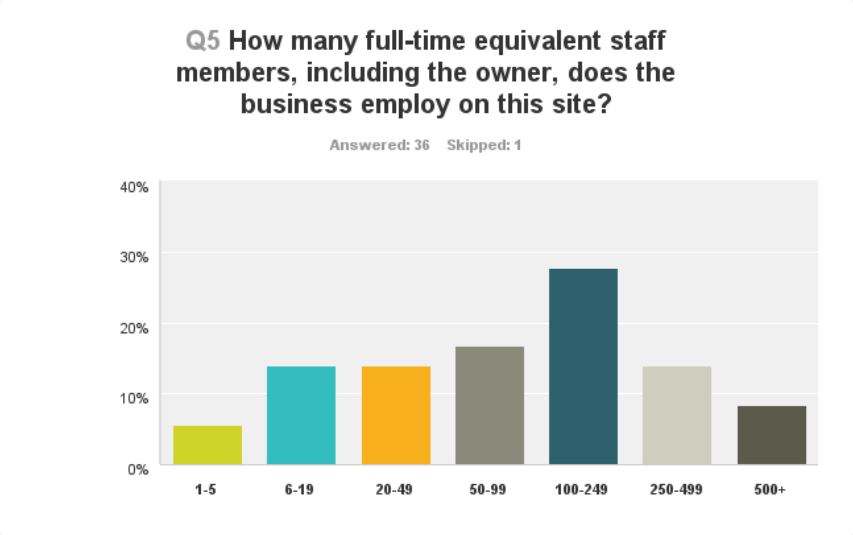
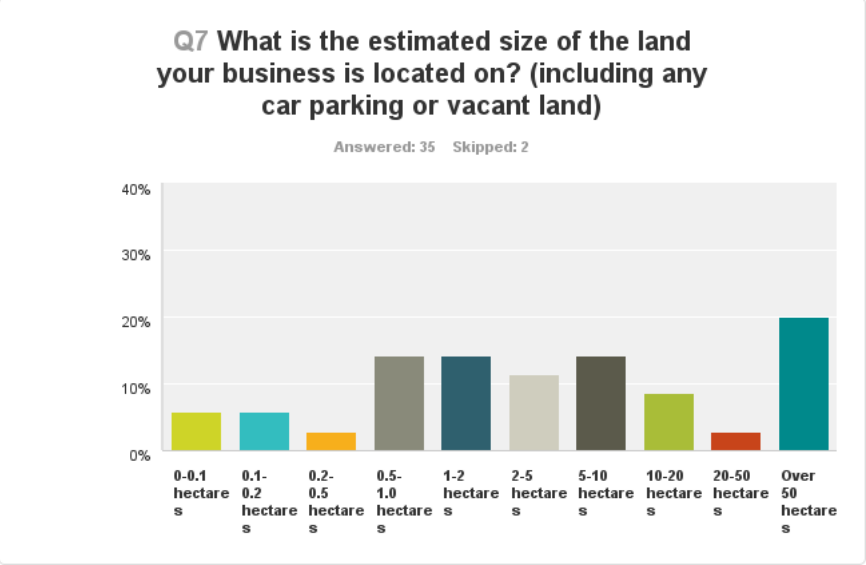
Appendix B UNISA Industry Survey

Charts that illustrate surveyed firm characteristics





Location factors affecting business success

Sixty-five percent of the 37 businesses surveyed said that choice of location is somewhat important or very important to their business success.

Table 6.1 Importance of factors in business location

Survey responses on impact of location factors (Responses, N=37)	Somewhat important	Very important		Somewhat or Very Important		Somewhat unimportant	Not important		Somewhat unimportant or not important		Neutral or no response	
	(Number)	*(Number)*	*(Percent)*	*(Number)*	*(Percent)*	*(Number)*	*(Number)*	*(Percent)*	*(Number)*	*(Percent)*	*(Number)*	*(Percent)*
To what extent does the choice of location impact on the success of your firm?	13	11	30%	24	**65%**	7	1	3%	8	**22%**	5	**14%**
How important are the following factors in influencing the location of the business?												
Being geographically close to:												
your customers	12	6	16%	18	**49%**	2	13	35%	15	**41%**	4	**11%**
your suppliers	14	6	16%	20	**54%**	5	5	14%	10	**27%**	7	**19%**
similar businesses in the same industry or supply chain	6	2	5%	8	**22%**	6	17	46%	23	**62%**	6	**16%**
the owner's residence	7	3	8%	10	**27%**	3	20	54%	23	**62%**	4	**11%**
built amenities (cafes, shops, medical centres, banks, childcare)	6	0	0%	6	**16%**	7	17	46%	24	**65%**	7	**19%**
natural amenities (beach, forests, parks, open spaces)	4	2	5%	6	**16%**	5	24	65%	29	**78%**	2	**5%**
Access to:												
land suitably distanced from non-industrial areas	9	4	11%	13	**35%**	3	14	38%	17	**46%**	7	**19%**
suitably zoned land for future expansion	9	8	22%	17	**46%**	5	7	19%	12	**32%**	8	**22%**
suitable premises	14	7	19%	21	**57%**	2	7	19%	9	**24%**	7	**19%**
a skilled workforce	16	13	35%	29	**78%**	0	3	8%	3	**8%**	5	**14%**
telecommunications infrastructure	15	14	38%	29	**78%**	1	2	5%	3	**8%**	5	**14%**
transport infrastructure	9	21	57%	30	**81%**	3	1	3%	4	**11%**	3	**8%**
Road	11	24	65%	35	**95%**	1	1	3%	2	**5%**	0	**0%**
Rail	3	12	32%	15	**41%**	8	6	16%	14	**38%**	8	**22%**
Other	2	11	30%	13	**35%**	4	5	14%	9	**24%**	15	**41%**
Low cost of:												
owning or leasing suitable land	16	6	16%	22	**59%**	2	3	8%	5	**14%**	10	**27%**
regulatory compliance	16	11	30%	27	**73%**	1	1	3%	2	**5%**	8	**22%**

Source: UNISA/ BERL survey 2014

Appendix C Regulatory, planning, and charging policies

A key task of this project was to determine if there are any major differences between the regulatory, planning or charging policies of the UNISA districts and regions that could influence the investment decisions of industry in selecting industrial land. Relevant information was gathered from councils and a specific task was to provide an analysis of the information; determine the nature of the observed differences; and identify any opportunities that could arise from the identified regulatory and financial policy issues to encourage more efficient uptake of industrial land.

Council Officers were asked to compile a list of all activities listed in Operative and Proposed District Plans in all industrial zones throughout the city or district (including business zones if industrial activities are allowed in those zones) and were asked to comment on:

- How the actual activities being undertaken in each zone compare with the intended activity(ies)

Councils were also asked to comment on the effectiveness of zoning for land use outcomes, meaning the ability of councils to achieve intended land use outcomes through the zoning of land. To determine this, councils were asked to comment on:

- The ability of councils to effectively achieve land use outcomes from zoning of land
- Whether zoning can be too restrictive and prevent desired development or whether it can be too permissive and lead to unforeseen development patterns
- Whether higher value land uses can potentially price out industrial activity.

Other information sought included:

- Whether an activity may be listed as permitted, but standards mean that activity requires permission.
- A description of the main purpose of a particular Zone (as stated in the Operative/Proposed District Plan).

Information outlining development contributions for industrial activities in each council district/city area was sought from respondents. Information on the cost of development contributions for commercial activities was also sought to determine whether any cost differential existed between the two. The key question was whether there are major differences between development contributions for industrial activities in each council district/city area which may influence industry investment decisions.

Respondents were asked to provide a simplified set of connection fees and charges, provided below. These connection costs may be a material consideration that influences land use. In practise, however, it is very difficult to assess their effects in a meaningful way across all the councils, as these fees depend on a range of variables, including the type and size of the connection.

Table 6.2 Connection fees, wastewater, stormwater and water

	Response	Population (Y)	Population (N)	Population (Y) as % UNISA
UNISA Member Councils				
Northland Regional Council	**N (n/a)**			
Bay of Plenty Regional Council	**N (n/a)**			
Waikato Regional Council	**N (n/a)**			
Whangarei District Council	**Y**	76,995		3.40%
Auckland Council	**Y**	1,415,550		63.20%
Hamilton City Council	**Y**	141,612		6.30%
Tauranga City Council	**Y**	114,789		5.10%
UNISA Area Councils				
Far North District Council	**Y**	55,734		2.50%
Kaipara District Council	**Y**	18,960		0.80%
Waikato District Council	Y	63,378		2.80%
Thames-Coromandel District Council	N		26,181	
Hauraki District Council	N		17,811	
Matamata-Piako District Council	**Y**	31,536		1.40%
Waipa District Council	**Y**	46,668		
South Waikato District Council	**Y**	22,071		1.00%
Otorohonga District Council	N		9,138	
Waitomo District Council	N		8,907	
Taupo District Council	N		32,907	
Rotorua District Council	**Y**	65,280		2.90%
Western BoP District Council	Y	43,692		2.00%
Whakatane District Council	N		32,691	
Kawerau District Council	**Y**	6,363		0.40%
Opotiki District Council	**Y**	8,436		0.30%
Total and %age UNISA Population covered by survey respondents	**2,238,699**	**2,111,064**	**127,635**	**94.30%**

Source: UNISA Councils, ASCARI calculations

Respondents were asked to provide the schedule of fees for the main types of resource consent. The table below provides an abridged summary of fees based on the range of low to high for notified and non-notified consents:

Table 6.3 Resource consent fees, notified and non-notified

UNISA Member Councils	Wastewater	Stormwater	Water
Whangarei District Council	$423	$0 (mitigate on site)	$293 to $724
Auckland Council	$9,775 per HUE (3 waters)		
Hamilton City Council	$205	$5 to $762	$619
Tauranga City Council	$215	$215	$215
UNISA Area Councils			
Far North District Council			$1,000 to $1,500 (res)
Kaipara District Council	Variable	Variable	$1,160-$1,360
Matamata-Piako District Council			
Waipa District Council	Variable	Variable	Variable
South Waikato District Council	$100	$0	$180
Waikato District Council	Variable		$120 - $2,228
Rotorua District Council	$92	$92	$92
Western BoP District Council	Variable	$70 - $240	Variable
Kawerau District Council	By negotiation	By negotiation	By negotiation
Opotiki District Council	By negotiation	By negotiation	By negotiation

Source: UNISA Councils, ASCARI calculations

A key task of this project was to determine if there are any major differences between the regulatory, planning or charging policies of the UNISA districts and regions that could influence the investment decisions of industry in selecting industrial land. Relevant information was gathered from councils and a specific task was to provide an analysis of the information; determine the nature of the observed differences; and identify any opportunities that could arise from the identified regulatory and financial policy issues to encourage more efficient uptake of industrial land.

Council Officers were asked to compile a list of all activities listed in Operative and Proposed District Plans in all industrial zones throughout the city or district (including business zones if industrial activities are allowed in those zones) and were asked to comment on:

- How the actual activities being undertaken in each zone compare with the intended activity(ies)

Councils were also asked to comment on the effectiveness of zoning for land use outcomes, meaning the ability of councils to achieve intended land use outcomes through the zoning of land. To determine this, councils were asked to comment on:

- The ability of councils to effectively achieve land use outcomes from zoning of land
- Whether zoning can be too restrictive and prevent desired development or whether it can be too permissive and lead to unforeseen development patterns
- Whether higher value land uses can potentially price out industrial activity.

Other information sought included:

- Whether an activity may be listed as permitted, but standards mean that activity requires permission.
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Respondents were asked to provide a simplified set of connection fees and charges, provided below. These connection costs may be a material consideration that influences land use. In practise, however, it is very difficult to assess their effects in a meaningful way across all the councils, as these fees depend on a range of variables, including the type and size of the connection.

Table 6.4 Connection fees, wastewater, stormwater and water

	Response	Population (Y)	Population (N)	Population (Y) as % UNISA
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Waikato Regional Council	**N (n/a)**			
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Auckland Council	**Y**	1,415,550		63.20%
Hamilton City Council	**Y**	141,612		6.30%
Tauranga City Council	**Y**	114,789		5.10%
UNISA Area Councils				
Far North District Council	**Y**	55,734		2.50%
Kaipara District Council	**Y**	18,960		0.80%
Waikato District Council	Y	63,378		2.80%
Thames-Coromandel District Council	N		26,181	
Hauraki District Council	N		17,811	
Matamata-Piako District Council	**Y**	31,536		1.40%
Waipa District Council	**Y**	46,668		
South Waikato District Council	**Y**	22,071		1.00%
Otorohonga District Council	N		9,138	
Waitomo District Council	N		8,907	
Taupo District Council	N		32,907	
Rotorua District Council	**Y**	65,280		2.90%
Western BoP District Council	Y	43,692		2.00%
Whakatane District Council	N		32,691	
Kawerau District Council	**Y**	6,363		0.40%
Opotiki District Council	**Y**	8,436		0.30%
Total and %age UNISA Population covered by survey respondents	**2,238,699**	**2,111,064**	**127,635**	**94.30%**

Source: UNISA Councils, ASCARI calculations

Respondents were asked to provide the schedule of fees for the main types of resource consent. The table below provides an abridged summary of fees based on the range of low to high for notified and non-notified consents:

Table 6.5 Resource consent fees, notified and non-notified

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Hamilton City Council	$205	$5 to $762	$619
Tauranga City Council	$215	$215	$215
UNISA Area Councils			
Far North District Council			$1,000 to $1,500 (res)
Kaipara District Council	Variable	Variable	$1,160-$1,360
Matamata-Piako District Council			
Waipa District Council	Variable	Variable	Variable
South Waikato District Council	$100	$0	$180
Waikato District Council	Variable		$120 - $2,228
Rotorua District Council	$92	$92	$92
Western BoP District Council	Variable	$70 - $240	Variable
Kawerau District Council	By negotiation	By negotiation	By negotiation
Opotiki District Council	By negotiation	By negotiation	By negotiation

Source: UNISA Councils, ASCARI calculations

Appendix D Data concordance

Table 6.6 CoreLogic land use categories

CoreLogic Land Use categories	
Bach	Personal and Property Protect
Building Materials other than Timber	Public Communal - Unlicenced
Car Parking	Religious
Chemical,Plastic,Rubber,Paper	Residential
Commercial	Retail
Dairying	Road Transport
Defence	Rural Industry
Depots and Yards	Sanitary
Educational	Services
Electricity	Single Unit - Lifestyle
Engineering, Metalworking, Appliances and Machinery	Single Unit excluding Bach
Food, Drink and Tobacco	Special Accomodation
Halls	Specialist Livestock
Industrial	Stock Finishing
Market Gardens and Orchards	Store Livestock
Multi Unit - Lifestyle	Textiles, Leather and Fur
Multi use within Rural Industry	Timber products, and Furniture
Multi-unit	Transport
Multi-use within Commercial	Utility Services
Multi-use within Industrial	Vacant
Multi-use within Lifestyle	Vacant Commercial
Multi-use within Residential	Vacant Community Services
Multi-use within Transport	Vacant Industrial
Offices	Vacant Recreational
Other	Vacant Residential
Other Industries, including Storage	Vacant Transport
Parking	Vacant Utility Services
Passive indoor	Vacant/Indeterminate
Passive outdoor	Wholesale

Source: CoreLogic

Table 6.7 Dargaville land use categories, hectares and employment, 2001, 2006 and 2013

Dargaville	Hectares			Employees			Employees per hectare		
Land Use	2001	2006	2013	2001	2006	2013	2001	2006	2013
Specific land use									
Depots and Yards	3.6	4.7	4.7	14	23	42	3.9	4.8	9.1
Engineering, Metalworking, Appliances and Machinery	4.6	5.1	6.4	16	16	11	3.5	3.2	1.7
Parking	0.6	0.6	0.7	6	9	9	9.1	14.5	13.7
Timber products, and Furniture	0.5	3.5	4.3	2	10	7	3.3	3.0	1.7
Building Materials other than Timber	4.1	1.5	1.1	13	5	2	3.3	3.0	1.7
Food, Drink and Tobacco	20.3	21.6	14.1	310	240	290	15.3	11.1	20.6
Other Industries, including Storage	5.3	6.5	7.2	21	31	65	3.9	4.8	9.1
Road Transport	0.0	0.3	0.3	0	1	2	na	4.8	9.1
General land use									
Commercial	0.0	1.8	1.8	0	17	16	na	9.5	8.7
Multi-use within Commercial	0.8	0.8	0.7	22	7	6	28.1	9.5	8.7
Offices	0.0	1.8	0.3	0	17	3	na	9.5	8.7
Retail	0.6	0.6	1.1	58	32	36	97.0	57.0	33.6
Industrial	0.0	0.1	0.1	0	2	1	na	27.7	10.6
Multi-use within Industrial	1.1	2.1	2.2	46	58	23	43.2	27.7	10.6
Services	0.0	0.1	0.1	0	0	14	na	0.0	134.9
Total land use	**41.5**	**51.0**	**44.9**	**508**	**468**	**528**	**12.2**	**9.2**	**11.8**
Other land use[1]									
Other	4.1	6.3	6.4	na	na	na	na	na	na
Vacant									
Vacant	2.2	2.0	7.5	na	na	na	na	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

Table 6.8 Springs Flat land use categories, hectares and employment, 2001, 2006 and 2013

Springs Flat	Hectares			Employees			Employees per hectare		
Land Use	2001	2006	2013	2001	2006	2013	2001	2006	2013
Specific land use									
Depots and Yards	7.8	10.3	10.3	18	22	36	2.3	2.2	3.5
Engineering, Metalworking, Appliances and Machinery	0.8	1.0	3.1	0	6	0	0.0	6.0	0.0
Food, Drink and Tobacco	0.1	0.1	0.1	310	360	350	2,366.4	2,748.1	2,671.8
Other Industries, including Storage	0.7	0.9	1.1	2	2	4	2.3	2.2	3.5
Timber products, and Furniture	10.9	10.9	12.4	55	95	55	5.0	8.7	4.5
Transport	0.0	0.3	0.0	0	1	0	0.0	0.0	0.0
General land use									
Industrial	173.5	165.7	173.0	65	71	75	0.4	0.4	0.4
Total land use	**193.8**	**189.2**	**200.0**	**450**	**557**	**520**	**2.3**	**2.9**	**2.6**
Other land use[1]									
Other	0.7	0.5	5.9	na	na	na	na	na	na
Vacant									
Vacant	9.3	9.3	7.1	na	na	na	na	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

Table 6.9 Whangarei Central land use categories, hectares and employment, 2001, 2006 and 2013

Whangarei Central	Hectares			Employees			Employees per hectare		
Land Use	2001	2006	2013	2001	2006	2013	2001	2006	2013
Specific land use									
Car Parking	0.4	0.4	0.2	65	51	4	182.4	144.4	18.8
Depots and Yards	3.0	3.1	2.4	221	148	89	74.9	47.7	38.0
Engineering, Metalworking, Appliances and Machinery	5.1	4.7	4.5	260	235	170	50.5	50.4	37.8
Food, Drink and Tobacco	0.8	0.8	0.6	16	22	21	21.1	29.2	35.2
Other Industries, including Storage	0.3	0.3	1.5	24	16	58	74.9	47.7	38.0
Timber products, and Furniture	1.9	3.3	2.2	17	33	20	9.2	10.1	9.3
Building Materials other than Timber	1.4	1.7	0.6	13	17	5	9.2	10.1	9.3
Chemical,Plastic,Rubber,Paper	0.5	0.5	0.5	120	70	75	263.6	144.2	154.4
Road Transport	0.5	0.5	0.2	34	22	7	74.9	47.7	38.0
Textiles, Leather and Fur	0.2	0.1	0.0	40	65	50	229.9	584.0	1,644.7
General land use									
Commercial	0.6	0.6	0.6	31	30	29	53.1	49.1	48.3
Multi-use within Commercial	1.0	1.4	1.7	54	70	83	53.1	49.1	48.3
Multi-use within Industrial	3.8	3.1	2.4	176	147	79	46.5	47.3	32.8
Offices	0.5	0.5	0.5	28	23	22	53.1	49.1	48.3
Retail	2.5	5.1	2.5	413	651	220	164.4	127.1	88.7
Wholesale	1.2	1.2	1.2	391	383	289	333.2	326.1	246.4
Industrial	0.3	0.9	0.9	14	43	30	46.5	47.3	32.8
Services	0.5	0.5	0.5	14	170	215	28.4	330.8	396.7
Total land use	**24.3**	**28.5**	**22.9**	**1,930**	**2,195**	**1,467**	**79.5**	**76.9**	**64.0**
Other land use[1]									
Other	0.2	0.2	0.2	na	na	na	na	na	na
Vacant									
Vacant	1.8	1.1	1.4	na	na	na	na	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

Table 6.10 Marsden Point land use categories, hectares and employment, 2001, 2006 and 2013

Marsden Point	Hectares			Employees			Employees per hectare		
Land Use	2001	2006	2013	2001	2006	2013	2001	2006	2013
Specific land use									
Personal and Property Protect	0.0	0.0	0.1	0	0	3	na	na	21.9
Building Materials other than Timber	0.3	0.3	1.0	3	2	4	10.6	7.4	4.4
Chemical,Plastic,Rubber,Paper	4.0	4.0	4.0	3	0	3	0.7	0.0	0.7
Depots and Yards	2.0	13.5	7.7	0	9	8	0.1	0.7	1.1
Food, Drink and Tobacco	0.2	0.2	0.1	0	0	0	0.0	0.0	0.0
Other Industries, including Storage	119.8	119.8	120.9	15	81	131	0.1	0.7	1.1
Road Transport	0.2	0.2	0.2	0	0	0	0.1	0.7	1.1
Timber products, and Furniture	0.0	25.3	39.5	0	188	176	na	7.4	4.4
Engineering, Metalworking, Appliances and Machinery	1.7	1.8	9.7	83	103	100	48.5	58.0	10.3
General land use									
Multi-use within Industrial	0.7	0.7	62.7	180	188	365	255.3	265.4	5.8
Industrial	0.0	0.1	0.1	0	22	0	na	265.4	5.8
Total land use	**128.9**	**165.8**	**246.1**	**284**	**593**	**791**	**2.2**	**3.6**	**3.2**
Other land use[1]									
Other	48.8	48.8	114.7	na	na	na	na	na	na
Dairying[2]	0.0	47.8	199.2	na	na	na	na	na	na
Vacant									
Vacant	77.7	137.3	121.5	na	na	na	na	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

(2) This is land zoned industrial in the 1960s but is currently being used as a dairy farm

Table 6.11 Port Limeburners land use categories, hectares and employment, 2001, 2006 and 2013

Port Limeburners	Hectares			Employees			Employees per hectare		
Land Use	2001	2006	2013	2001	2006	2013	2001	2006	2013
Specific land use									
Other Industries, including Storage	28.1	28.3	38.3	14	30	8	0.5	1.1	0.2
Building Materials other than Timber	10.6	11.6	11.7	94	84	26	8.9	7.3	2.2
Chemical,Plastic,Rubber,Paper	1.0	1.0	1.0	6	30	45	5.8	29.1	43.6
Depots and Yards	20.9	13.8	34.7	11	15	7	0.5	1.1	0.2
Engineering, Metalworking, Appliances and Machinery	19.1	23.9	35.1	200	310	220	10.5	13.0	6.3
Food, Drink and Tobacco	8.4	8.0	6.8	20	65	20	2.4	8.1	2.9
Road Transport	0.0	0.0	0.4	0	0	197	na	na	532.8
Sanitary	0.0	0.3	0.3	0	25	100	na	71.5	286.0
Textiles, Leather and Fur	0.6	0.6	0.6	0	3	6	0.0	5.1	10.3
Timber products, and Furniture	11.9	25.5	74.6	106	186	164	8.9	7.3	2.2
Transport	0.2	0.2	0.2	246	219	98	1,340.8	1,194.5	532.8
General land use									
Industrial	5.1	3.0	5.0	13	11	69	2.6	3.7	14.0
Multi-use within Industrial	89.2	89.8	24.9	231	336	349	2.6	3.7	14.0
Offices	0.5	0.4	0.0	20	21	0	38.6	51.1	0.0
Retail	0.0	0.8	0.4	0	23	23	na	30.9	56.1
Wholesale	6.2	6.2	2.9	290	370	450	47.0	59.9	155.0
Services	0.0	0.2	3.4	0	9	0	na	39.1	0.0
Total land use	**201.8**	**213.5**	**240.3**	**1,250**	**1,738**	**1,782**	**6.2**	**8.1**	**7.4**
Other land use[1]									
Other	0.2	0.0	42.9	na	na	na	na	na	na
Vacant									
Vacant	11.0	27.8	55.4	na	na	na	na	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

Table 6.12 Kaitaia East land use categories, hectares and employment, 2001, 2006 and 2013

Kaitaia East	Hectares			Employees			Employees per hectare		
Land Use	2001	2006	2013	2001	2006	2013	2001	2006	2013
Specific land use									
Engineering, Metalworking, Appliances and Machinery	7.1	7.6	7.7	12	18	6	1.6	2.3	0.8
Building Materials other than Timber	1.9	2.0	2.0	249	305	224	130.8	149.0	109.5
Chemical,Plastic,Rubber,Paper	11.1	11.2	11.2	0	0	0	0.0	0.0	0.0
Depots and Yards	1.6	3.0	4.4	22	38	69	13.9	12.8	15.6
Food, Drink and Tobacco	0.3	1.8	0.2	25	35	0	72.8	19.0	0.0
Road Transport	2.0	2.0	2.0	28	26	32	13.9	12.8	15.6
Textiles, Leather and Fur	0.1	0.1	0.1	0	0	0	0.0	0.0	0.0
Timber products, and Furniture	0.2	0.2	0.2	31	35	26	130.8	149.0	109.5
General land use									
Retail	0.1	0.3	0.3	10	36	20	77.9	104.5	58.1
Industrial	0.8	2.1	0.0	20	29	0	25.6	13.6	na
Multi-use within Transport	0.0	1.2	1.2	0	16	19	na	12.8	15.6
Multi-use within Industrial	1.1	1.4	5.1	28	19	27	25.6	13.6	5.2
Multi-use within Commercial	0.4	0.4	0.6	6	7	4	13.9	15.3	7.6
Services	0.2	0.1	0.1	0	26	16	0.0	274.7	173.5
Total land use	**27.0**	**33.7**	**35.4**	**431**	**589**	**444**	**16.0**	**17.5**	**12.5**
Other land use[1]									
Other	1.6	1.4	1.0	na	na	na	na	na	na
Vacant									
Vacant	1.2	3.6	8.9	na	na	na	na	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

Table 6.13 Kerikeri land use categories, hectares and employment, 2001, 2006 and 2013

Kerikeri	Hectares			Employees			Employees per hectare		
Land Use	2001	2006	2013	2001	2006	2013	2001	2006	2013
Specific land use									
Engineering, Metalworking, Appliances and Machinery	0.7	1.1	3.1	14	27	12	21.6	24.5	3.8
Other Industries, including Storage	7.9	6.9	6.9	33	62	38	4.2	9.0	5.6
Building Materials other than Timber	0.1	0.4	2.0	24	37	29	231.2	87.7	14.7
Depots and Yards	0.2	2.4	1.2	1	21	7	4.2	9.0	5.6
Food, Drink and Tobacco	0.1	0.3	0.3	43	90	63	319.7	261.4	183.0
Timber products, and Furniture	0.1	0.1	0.1	21	8	1	231.2	87.7	14.7
General land use									
Commercial	0.3	0.3	0.0	13	9	0	0.0	0.0	0.0
Multi-use within Commercial	0.0	0.5	0.8	0	15	8	na	28.7	10.2
Retail	0.6	0.6	2.9	58	69	140	101.9	121.3	48.9
Industrial	0.4	0.7	0.0	15	17	0	0.0	0.0	0.0
Multi-use within Industrial	1.5	2.0	3.3	52	52	49	35.6	25.8	14.6
Wholesale	0.6	0.6	0.6	20	40	85	31.2	62.4	132.7
Multi use within Rural Industry	0.0	0.0	5.5	0	0	40	na	na	7.3
Services	0.5	0.1	0.1	35	7	0	69.2	51.7	0.0
Total land use	**12.9**	**16.1**	**26.8**	**330**	**454**	**472**	**25.5**	**28.3**	**17.6**
Other land use[1]									
Other	0.0	0.4	0.3	na	na	na	na	na	na
Vacant									
Vacant	0.5	1.3	1.1	na	na	na	na	na	na

Source: BERL Calculations, Core Logic and Statistics NZ

Notes:

(1) Other land use is industrial land that is in use, but cannot be matched to an industry

Table 6.14 Industries in the CGE model

No.	Industry	No.	Industry
1	Horticulture and fruit growing	28	Residential construction
2	Sheep, beef, livestock and cropping	29	Other construction
3	Dairy cattle farming	30	Industrial goods wholesaling
4	Other farming	31	Other wholesaling
5	Services to agriculture, hunting & trapping	32	Retail trade
6	Forestry & logging	33	Accommodation, cafes & restaurants
7	Fishing	34	Road freight transport
8	Mining & quarrying	35	Road passenger transport
9	Oil & gas extraction and exploration & petroleum refining	36	Rail, water, air transport and transport services
10	Meat and dairy product processing	37	Communication services
11	Other food processing & mfg	38	Finance
12	Beverage malt and tobacco mfg	39	Insurance
13	Textiles, clothing, footwear & leather mfg	40	Services to finance and insurance
14	Log sawmilling, timber dressing & other wood product mfg	41	Real estate
15	Paper and paper product mfg	42	Equipment hire and investors in other property
16	Printing, publishing & recorded media	43	Ownership of owner-occupied dwellings
17	Chemical and chemical product mfg	44	Scientific research, technical & computer services
18	Rubber and plastic product mfg	45	Other business services
19	Non-metallic mineral product mfg	46	Central govt administration & defence
20	Basic metal manufacturing	47	Local govt administration
21	Structural, sheet and fabricated metal product mfg	48	Pre-school, primary, secondary & education
22	Transport equipment mfg	49	Other education
23	Machinery and other equipment mfg	50	Hospitals and nursing homes
24	Other manufacturing	51	Other health and community services
25	Electricity generation & transmission and gas supply	52	Sport, cultural and recreational services
26	Water supply	53	Personal and other services
27	Sewerage, drainage and waste disposal services		

Table 6.15 Concordance between ANZSIC codes and CGE Industry

ANZSIC Code	CGE Industry
C11 Food Product Manufacturing	10 Meat and dairy product processing
	11 Other food processing & mfg
C12 Beverage and Tobacco Product Manufacturing	12 Beverage malt and tobacco mfg
C13 Textile, Leather, Clothing and Footwear Manufacturing	13 Textiles, clothing, footwear & leather mfg
C14 Wood Product Manufacturing	14 Log sawmilling, timber dressing & other wood product mfg
C15 Pulp, Paper and Converted Paper Product Manufacturing	15 Paper and paper product mfg
C17 Petroleum and Coal Product Manufacturing	9 Oil & gas extraction and exploration & petroleum refining
C18 Basic Chemical and Chemical Product Manufacturing	17 Chemical and chemical product mfg
C19 Polymer Product and Rubber Product Manufacturing	18 Rubber and plastic product mfg
C20 Non-Metallic Mineral Product Manufacturing	19 Non-metallic mineral product mfg
C21 Primary Metal and Metal Product Manufacturing	20 Basic metal manufacturing
C22 Fabricated Metal Product Manufacturing	21 Structural, sheet and fabricated metal product mfg
C23 Transport Equipment Manufacturing	22 Transport equipment mfg
C24 Machinery and Equipment Manufacturing	23 Machinery and other equipment mfg
C25 Furniture and Other Manufacturing	24 Other manufacturing
E32 Construction Services	29 Other construction
F33 Basic Material Wholesaling	30 Industrial goods wholesaling
F34 Machinery and Equipment Wholesaling	30 Industrial goods wholesaling
F36 Grocery, Liquor and Tobacco Product Wholesaling	31 Other wholesaling
F37 Other Goods Wholesaling	31 Other wholesaling
I52 Transport Support Services	36 Rail, water, air transport and transport services
I53 Warehousing and Storage Services	36 Rail, water, air transport and transport services
L66 Rental and Hiring Services (except Real Estate)	42 Equipment hire and investors in other property
N721 Employment Services	45 Other business services
N732 Packaging and Labelling Services	45 Other business services

Source: BERL

Table 6.16 CoreLogic land use categories with industry and CGE matches

Specific land use categories	Industry match	CGE Industries
Building Materials other than Timber	Wood manufacturing other than timber	14
Car Parking	Parking Services	53
Chemical,Plastic,Rubber,Paper	Chemical and Rubber Manufacturing	17 and 18
Depots and Yards	Other Warehousing and Storage Services	36
Engineering, Metalworking, Appliances and Machinery	Machinery manufacturing	23
Food, Drink and Tobacco	Food and Beverage manufacturing	10, 11 and 12
Other Industries, including Storage	Other Warehousing and Storage Services	36
Personal and Property Protect	Investigation and Security Services	46
Road Transport	Road Freight Transport	34
Sanitary	Waste collection and treatment	27
Textiles, Leather and Fur	Textile manufacturing	13
Timber products, and Furniture	Wood manufacturing	14
Transport	Freight Forwarding Services	36
General land use categories	**Industry match**	**CGE Industries**
Commercial	Professional Services	44
Industrial	Manufacturing	10 to 24
Multi-use within Commercial	Professional Services	44
Multi-use within Industrial	Manufacturing	10 to 24
Multi-use within Transport	Freight Forwarding Services	36
Offices	Professional Services	44
Retail	Retail	32
Multi use within Rural Industry	Primary	1 to 5
Services	Services	45
Wholesale	Wholesale	30 and 31

Source: BERL and CoreLogic