

Group 1
Additional Greenfield
Land Requirements, 2001-2031

Prepared for



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1 Introduction

1.1 Background

Since 2003, Market Economics Ltd (MEL) has produced the following three assessments of likely future business land patterns, taking into account projections of employment growth and likely business land supply for the Auckland Regional Council (ARC).

- Auckland Regional Council Business Land Study Stage One
- Auckland Regional Council Business Land Study Stage Two
- Auckland Regional Council Business Land Study Stage Three

Each subsequent report/model has explored different objectives and tested the likely business land demand patterns given varying supply constraints.

For each of these assessments, ARC's primary objective was to understand anticipated employment growth in relation to likely business land supply for 2011, 2021 and 2031 at the regional level.

In October 2006 the Auckland Regional Business Land Strategy (BLS) was produced. It identified the need for additional greenfield land to provide for anticipated growth of Group 1 business sectors (manufacturing, transport and storage, construction, wholesale trade). In accordance with the Regional Growth Strategy, other business sectors will be encouraged to locate and intensify in existing town centres and growth corridors. However, due to their locational needs, this is not possible for Group 1 sectors. Therefore this study seeks to identify the amount of additional greenfield land that will be required in the Auckland Region to provide for future growth of Group 1 sectors.

1.2 Objective

The objective of this study is to estimate the demand for additional greenfield land by Group 1 business sectors to 2031 for the Auckland Region.

The Auckland Region Business Land Strategy (ARC) categorises the following industries as Group 1 business activities:

- Manufacturing (ANZSIC C)
- Construction (ANZSIC E)
- Wholesale trade (ANZSIC F)
- Transport and storage (ANZSIC I).

This report estimates the quantity of additional land that will be required for Group 1 business activity **over and above** that likely to be provided in existing vacant business land, as identified by the

ARC Capacity for Growth Study (2006), and future sector greenfield areas.

1.3 Assumptions

The results of this report rely on a number of assumptions. Where assumptions have been made, these have been highlighted within a text box in each relevant analysis section.

2 Methodology

2.1 Summary

There are four stages to this assessment.

1. Future Group 1 Employment: Estimate future Group 1 employment for Auckland Region using the Market Economics' Economic Futures Model (EFM) (Section 3.1).
2. Estimate shares of Group 1 employment that will be attracted to Greenfield land: To estimate the share of Group 1 employment that could be attracted to Greenfield land, historical Group 1 employment location patterns have been analysed across the Formal Economic Structure (FES) for 1997, 2001 and 2005 using Statistics New Zealand (SNZ) Business Directory (BD) data. This analysis shows the distribution of Group 1 business activity by centre, business area and non-commercial area to explore whether there are shifting dynamics in the location patterns of Group 1 employment.
3. Future Group 1 Employment Land: Firstly, the quantity of land available for Group 1 activity according to zoning provisions in each TA's District Plan was identified. Secondly, future capacity for the sector greenfield areas and vacant business land was estimated, using a representative employment density.
4. Future Land Requirements for Group 1 Employment: Compare future Group 1 employment demand (FTEs) with available capacity to indicate the quantity of land (over and above that already available) that will be required to meet the needs of the Group 1 sector to 2031.

2.2 Data Sources

This assessment draws on the following data sources:

- Market Economics' Economic Futures Model Employment Projections. The Economic Futures Model uses detailed data on population growth and export growth under "business-as-usual" conditions to set up an input-output table for Auckland Region's economy. The flow-on effects within the Region resulting from this growth are determined by applying appropriate growth rates (Section 3.1) to the Region's input-output table. Through this process, the potential economic outcomes for the Auckland Region under a business-as-usual scenario can be determined. The Business Land and Economy Group (BLEG) have decided to use the EFM employment projections rather than the Auckland Regional Economic Development Strategy (AREDS) projections used in the ARC Business Land Model because the information underlying the

projection set is more recent, and therefore reliable in terms of current trends. In addition, the EFM projections forecast higher total employment growth, meaning that the results of this study will err more strongly towards a “worst case scenario” for Group 1 greenfield land requirements, than the lower AREDS projections would allow for.

- ARC Business Land Model Formal Economic Structure (FES). In Stage One of the Business Land Model, Auckland Region meshblocks were defined according to their economic role (centres, business areas and non commercial areas). The FES provides a spatial framework that can be used to analyse information from other sources, such as employment data from the SNZ BD.
- Statistics New Zealand Business Directory Data (1997, 2001, 2005). SNZ has historically collected detailed information about employment by meshblock (full-time equivalents, FTEs). Recently SNZ has revised their collection methods to record data for employment counts (ECs) (a combination of full and part time employment). Market Economics has converted this information into FTE estimates for more recent periods to compare with historical data. The conversion ratios were derived from the 2003 Business Directory data set, which contained a comparison between FTEs and ECs. It has become apparent from further analysis that the relationship between ECs and FTEs is not static. Therefore, it is not recommended to apply 2003 ECs to FTEs ratios to future employment projections.
- ARC Business Land Strategy (BLS). This study uses estimates of sector greenfield land from Table 1 of the BLS.
- Capacity for Growth Study, 2006 (ARC). The estimates of vacant business land and vacant potential land from ARC’s Capacity for Growth Study 2006 have been used to estimate the quantity of vacant land that is currently available (Table 2.1). The study identifies two distinct categories of vacant business land;
 - i. Vacant Business Land is any parcel of land that contains no buildings and is zoned for business activities.
 - ii. Vacant Potential Land is any parcel of land which is greater than 2,000m², and has one building on it but also has a proportion of land which is undeveloped.

Table 2.1 Vacant Business Land by TA (2006)

TA	Vacant Business Land (Ha)	Vacant Potential Land (Ha)	Total Vacant Business (Ha)
Rodney District	31.7	11.2	42.9
North Shore City	112.5	18.9	131.4
Waitakere City	58.0	44.2	102.2
Auckland City	93.9	37.9	131.8
Manukau City	246.8	351.8	598.6
Papakura District	-	-	-
Franklin District	-	-	-
Auckland Region Total	542.9	464.0	1,006.9

- Consultation with representatives from BLEG, 2006 & 2007. BLEG is comprised of a number of representatives from Auckland's territorial authorities. This group has reviewed the study and provided information surrounding the assumptions. For example, BLEG representatives have indicated which portions of vacant land would be suitable for Group 1 activity according to zoning rules and market requirements.

3 Analysis and Results

3.1 Economic Futures Model Employment Projections

This analysis uses the Market Economics' proprietary Economic Futures Model (EFM) projections of employment by industry sector for Auckland Region to estimate future Group 1 employment. The EFM uses quantitative projections of domestic household consumption and international exports to produce projections of employment growth by industry sector. Growth in domestic household consumption is based on ARC's population projections for the Auckland Region. Growth in international exports is based on statistical time series analysis of commodity production.

The population projections used in this study were obtained from ARC. The projections are available under three scenarios, namely: low, medium and high series. Each series is designed using different fertility, mortality and migration assumptions. The high projection series is, for example, based on high fertility, low mortality and high migration. These assumptions are based on short and long term historical trend analysis, government policy and other relevant information.

To project export growth into the future, it was necessary to follow two pathways. First, for the goods producing industries of the economy, export data obtained from the New Zealand Harmonised System (NZHS) was used to project export growth. The NZHS records exports for more than 10,000 commodities. Using a concordance provided by SNZ, the commodity exports were matched to the 48 industries contained within the Auckland Region Input-Output table. Projections based on constant price Free On Board (FOB) values for the period 1994 to 2005 were then projected to determine a long run of average growth for each industry. Secondly in the service industries, where exports are intangible, future growth rates were based on historical FTE growth over the period 1987 to 2004.

Assumption 1

This assessment models **medium** employment projections.

3.1.1 Future Group 1 Employment

Overall, total employment in the Auckland Region (excluding agricultural sectors) is forecast to grow by 261,110 FTEs between 2001 and 2031, reaching 761,860 FTEs by 2031 (Tables 3.1 and 3.2).

Group 1 sector employment is projected to grow by 43% (85,300 FTEs) between 2001 and 2031, reaching 283,020 FTEs (Table 3.2).

Table 3.1 Group 1 Employment Projections, 2001-2031

Group 1 Sector	Employment (FTEs)			
	2001	2011	2021	2031
Manufacturing	83,380	94,740	107,190	121,030
Construction	37,170	43,020	48,010	52,900
Wholesale Trade	51,900	59,400	66,720	74,040
Transport & Storage	25,260	28,820	31,840	35,050
Total Group 1 Sector Employment	197,710	225,980	253,760	283,020
Total Employment (excl Agriculture)	500,750	602,330	681,230	761,860

Table 3.2 Group 1 Employment Growth, 2001-2031

Group 1 Sector	Employment Growth (FTEs)			
	2001-2011	2011-2021	2021-2031	2001-2031
Manufacturing	11,370	12,440	13,840	37,650
Construction	5,840	5,000	4,890	15,730
Wholesale Trade	7,500	7,320	7,310	22,130
Transport & Storage	3,560	3,020	3,210	9,790
Total Group 1 Sector Employment	28,270	27,780	29,260	85,300
Total Employment (excl Agriculture)	101,580	78,900	80,630	261,110

Manufacturing will be the fastest growing Group 1 sector (45%), accounting for 44% of total Group 1 sector growth, with 37,650 new jobs. The key growth sectors within Manufacturing, accounting for 70% of growth, will be:

- Machinery and equipment manufacturing
- Structural, sheet and fabricated metal product manufacturing
- Transport equipment manufacturing
- Printing, publishing and recorded media
- Other food manufacturing

Wholesale Trade will be the next most significant sector, growing by 43% (22,130 FTEs). The Construction and Transport and Storage sectors will grow by 15,730 FTEs and 9,790 FTEs respectively.

3.2 Shares of Group 1 Employment Attracted to Greenfield Areas

Group 1 sectors have specific locational requirements that may not be easily met in existing business areas or commercial areas. This study assumes that greenfield areas will be more attractive to new Group 1 sector businesses than existing business areas. However not all Group 1 employment growth will locate in greenfield land in the future, as some businesses may want to locate in existing centres and business areas by intensifying or redeveloping. It is difficult to predict the share of activity that will seek to establish in greenfield areas, especially given that most greenfield land is not close to existing business hubs in metropolitan Auckland.

To estimate the share of Group 1 employment growth that will be attracted to greenfield land in the future, we have analysed where Group 1 employment has located in the past. It has been assumed that greenfield areas will attract similar shares of Group 1 activity as existing business areas and that greenfield land will be more attractive to new

businesses than existing areas.

Assumption 2

Greenfield areas will attract similar shares of Group 1 activity as existing business areas, and will be more attractive to new businesses than existing business areas.

**3.2.1 Group 1
Employment
Distribution
(1997, 2001,
2005)**

To understand patterns and provide a mechanism for allocating future economic growth, MEL developed a framework during Stage One of the Business Land Model called the Formal Economic Structure (FES). The framework describes both spatial patterns and functional aggregations of business activity. The FES comprises the Region’s commercial centres and business areas, together with areas designated for community and civic activity as well as residential purposes.¹

The spatial distribution of Group 1 employment has been analysed for 1997, 2001 and 2005, to help inform the estimates of the share of Group 1 employment growth that will be attracted to greenfield land. Tables 3.3 and 3.4 show the Regional distribution of Group 1 employment by FES location (centres, business areas, and non commercial areas).

Table 3.3 Group 1 Employment by FES, 1997, 2001 and 2005

Location	Manufacturing	Construction	Transport & Storage	Wholesale Trade	Total Group 1 Activity
1997					
Centres	21,480	5,560	14,130	7,120	48,290
Business Areas	63,130	9,630	30,080	12,800	115,640
Non Commercial Areas	7,000	18,830	5,460	4,700	35,990
<i>Total</i>	<i>91,610</i>	<i>34,020</i>	<i>49,670</i>	<i>24,620</i>	<i>199,920</i>
2001					
Centres	19,210	6,510	14,710	7,250	47,670
Business Areas	57,070	11,290	30,700	13,140	112,200
Non Commercial Areas	7,100	19,380	6,490	4,870	37,830
<i>Total</i>	<i>83,370</i>	<i>37,170</i>	<i>51,900</i>	<i>25,260</i>	<i>197,700</i>
2005					
Centres	18,700	7,720	14,350	7,880	48,660
Business Areas	61,870	15,270	34,660	15,280	127,080
Non Commercial Areas	6,110	19,690	5,580	4,670	36,060
<i>Total</i>	<i>86,680</i>	<i>42,690</i>	<i>54,590</i>	<i>27,830</i>	<i>211,790</i>

Table 3.4 shows that business areas have been slowly gaining an increasing proportion of manufacturing over time, up from 68.9% in 1997 to 71.7% in 2005. The proportion of construction activity locating in business areas has increased rapidly from 28.3% in 1997 to 35.8% in 2005. Transport and storage activity in business areas has been more variable, with 60.6% in 1997, 59.2% in 2001, and 63.5% in 2005. The proportion of wholesale trade in business areas has grown recently,

¹ For a detailed explanation, refer to Business Land Modelling Methodology Paper prepared for ARC, 2006

from 52.0% in 1997 to 54.9% in 2005.

Table 3.4 Shares of Group 1 Employment by FES, 1997, 2001 and 2005

Location	Manufacturing	Construction	Transport & Storage	Wholesale Trade	Total Group 1 Activity
1997					
Centres	23.4%	16.3%	28.4%	28.9%	24.2%
Business Areas	68.9%	28.3%	60.6%	52.0%	57.8%
Non Commercial Areas	7.6%	55.3%	11.0%	19.1%	18.0%
<i>Total</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>
2001					
Centres	23.0%	17.5%	28.3%	28.7%	24.1%
Business Areas	68.5%	30.4%	59.2%	52.0%	56.8%
Non Commercial Areas	8.5%	52.1%	12.5%	19.3%	19.1%
<i>Total</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>
2005					
Centres	21.6%	18.1%	26.3%	28.3%	23.0%
Business Areas	71.4%	35.8%	63.5%	54.9%	60.0%
Non Commercial Areas	7.0%	46.1%	10.2%	16.8%	17.0%
<i>Total</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>

Table 3.5 shows the share of employment growth that has been assumed will be attracted to greenfield areas in the future. These shares are based on the share of Group 1 activity located in business areas in 1997, 2001 and 2005. The remaining employment growth will continue to locate in existing centres, business areas and non commercial areas.

Table 3.5 Assumed Future Shares of Group 1 Employment Growth attracted to Vacant Business Land and Sector Greenfield Areas

Sector	Share of Group 1 Employment in Business Areas			Future Share of Growth to Vacant or Greenfield Areas	Future Share of Growth to Existing Areas
	1997	2001	2005		
Manufacturing	68.9%	68.5%	71.4%	75%	25%
Construction	28.3%	30.4%	35.8%	40%	60%
Wholesale Trade	52.0%	52.0%	54.9%	60%	40%
Transport & Storage	60.6%	59.2%	63.5%	65%	35%

BLEG reviewed this analysis and agreed that the shares are similar to BLS targets for greenfield land take-up. The shares also allow for further intensification in existing centres, business areas and non commercial areas.

Assumption 3

The following shares of Group 1 employment growth will be attracted to greenfield land:

Manufacturing, 75% Construction, 40%
Wholesale Trade, 60% Transport & Storage, 65%

The following shares of Group 1 employment growth will be attracted to existing centres, business areas, and non commercial areas:

Manufacturing, 25% Construction, 60%
Wholesale Trade, 40% Transport & Storage, 35%

3.2.2 Group 1 Employment Demand for Greenfield Land

By applying the shares from Assumption Three to Group 1 sector employment growth, the demand for future greenfield land has been estimated (Table 3.6).

Table 3.6 Group 1 Employment Demand for Greenfield Land (FTEs), 2001-2031

Group 1 Sector	Employment Growth attracted to Greenfield Land			
	2001-2011	2011-2021	2021-2031	2001-2031
Manufacturing	8,530	9,330	10,380	28,240
Construction	2,340	2,000	1,960	6,300
Wholesale Trade	4,500	4,390	4,390	13,280
Transport & Storage	2,310	1,960	2,090	6,360
Total Group 1 Sector Employment	17,680	17,680	18,820	54,180

Between 2001 and 2031, approximately 54,180 Group 1 sector FTEs will require space in greenfield land (Table 3.6). Of these jobs, 52% will be in Manufacturing, with a further 25% in Wholesale Trade, and the remainder in Construction and Transport and Storage (24%).

3.3 Greenfield Land Supply

This assessment uses information about greenfield land from Table 1 (page 13) of the Business Land Strategy, and Capacity for Growth Study (2006) estimates of vacant business land and vacant potential land to estimate available land to cater for future Group 1 employment growth. Where possible, updated information from BLEG representatives has been incorporated. This study makes the assumption that where appropriately zoned, businesses will be able to develop on vacant business land and vacant potential land in the same manner as greenfield land.

Table 3.7 shows the amount and timing of the availability of greenfield land and vacant and vacant potential land.

Table 3.7 Total Vacant Business and Sector Greenfield Land Supply

TA	Area	Business Land Type	Availability - Land Area (Ha)			
			2011	2021	2031	
Rodney District	Silverdale North	Greenfield	60.0	-	-	
	Silverdale South	Greenfield	84.0	-	-	
	Warkworth	Greenfield	21.1	-	22.7	
	Wellsford	Greenfield	24.2	-	-	
	Helensville	Greenfield	11.6	-	-	
	Kumeu/Huapai	Greenfield	13.1	-	-	
	Snells Beach	Greenfield	2.5	-	-	
	Orewa	Greenfield	0.9	-	-	
	Whangaparaoa	Greenfield	14.2	-	-	
	Rodney	Vacant Business	31.7	-	-	
	Rodney	Vacant Potential Business	11.2	-	-	
	Total Available Land			274.5	-	22.7
	North Shore City	North Shore	Vacant Business	112.5	-	-
North Shore		Vacant Potential Business	18.9	-	-	
Total Available Land			131.4	-	-	
Waitakere City	Hobsonville Corridor	Greenfield	33.8	51.2	-	
	Hobsonville Peninsula	Greenfield	30.1	4.5	-	
	Massey North/Westgate	Greenfield	90.3	-	-	
	Waitakere	Vacant Business	58.0	-	-	
	Waitakere	Vacant Potential Business	44.2	-	-	
Total Available Land			256.4	55.8	-	
Auckland City	Auckland	Vacant Business	93.9	-	-	
	Auckland	Vacant Potential Business	37.9	-	-	
	Total Available Land			131.8	-	-
Manukau City	Flat Bush	Greenfield	25.0	-	-	
	Manukau	Vacant Business	246.8	-	-	
	Manukau	Vacant Potential Business	351.8	-	-	
	Total Available Land			623.6	-	-
Papakura District	Takanini	Greenfield	78.0	-	-	
	Hingaia	Greenfield	30.0	-	-	
	Papakura	Vacant Business	-	-	-	
	Total Available Land			108.0	-	-
Franklin District	Franklin	Vacant Business	-	-	-	
Total Auckland Region Available Land			1,526	56	23	

Note Table 3.7 does not include estimates of vacant business or vacant potential land for Papakura District and Franklin District. Franklin District lies outside the scope of the Capacity for Growth, 2006 study area, and the aerial images for Papakura District have been delayed due to weather conditions. This means that any vacant business land and vacant potential land identified in Papakura District that is suitable for Group 1 activity will improve the results of this assessment, by reducing the amount of future greenfield land required for Group 1 industries.

Not all vacant or vacant potential business land or greenfield land will be suitable for Group 1 activities. Representatives from BLEG have analysed the spatial distribution and zoning provisions for available business land and indicated where Group 1 sector activity could be developed. Table 3.8 shows the Regional distribution and timing of land available for Group 1 sector development according to zoning provisions "Theoretical Supply". However representatives of BLEG have indicated that this land may be unsuitable for Group 1 activity in practice, due to the size of land parcels, District Plan development conditions, land value and so forth. Table 3.8 also shows the amount of land available for Group 1 activity in practice "Practical Supply". Appendix 1 documents the justifications provided by each TA when arriving at these figures.

Table 3.8 Vacant Business and Sector Greenfield Land Supply suitable for Group 1 (District Plan zoning) (Ha) “Theoretical Supply”

TA	Area	Business Land Type	"Theoretical Supply"			"Practical Supply"		
			2011	2021	2031	2011	2021	2031
Rodney District	Silverdale North	Greenfield	-	-	-	-	-	-
	Silverdale South	Greenfield	-	-	-	-	-	-
	Warkworth	Greenfield	10.3	-	15.4	10.3	-	15.4
	Wellsford	Greenfield	24.2	-	-	24.2	-	-
	Helensville	Greenfield	11.6	-	-	11.6	-	-
	Kumeu/Huapai	Greenfield	13.1	-	-	13.1	-	-
	Snells Beach	Greenfield	-	-	-	-	-	-
	Orewa	Greenfield	-	-	-	-	-	-
	Whangaparaoa	Greenfield	-	-	-	-	-	-
	Rodney	Vacant Business	30.9	-	-	12.3	-	-
Rodney	Vacant Potential Business	10.7	-	-	9.4	-	-	
Total Available Land			100.8	-	15.4	80.9	-	15.4
North Shore City	North Shore	Vacant Business	112.5	-	-	56.1	-	-
	North Shore	Vacant Potential Business	18.9	-	-	18.0	-	-
	Total Available Land			131.4	-	-	74.0	-
Waitakere City	Hobsonville Corridor	Greenfield	22.7	24.7	-	22.7	24.7	-
	Hobsonville Peninsula	Greenfield	19.5	4.5	-	19.5	4.5	-
	Massey North/Westgate	Greenfield	55.6	-	-	55.6	-	-
	Waitakere	Vacant Business	57.7	-	-	56.4	-	-
	Waitakere	Vacant Potential Business	43.5	-	-	43.1	-	-
Total Available Land			199.1	29.2	-	197.3	29.2	-
Auckland City	Auckland	Vacant Business	64.9	-	-	54.2	-	-
	Auckland	Vacant Potential Business	24.7	-	-	20.7	-	-
	Total Available Land			89.6	-	-	74.9	-
Manukau City	Fiat Bush	Greenfield	25.0	-	-	0.5	-	-
	Manukau	Vacant Business	246.8	-	-	243.3	-	-
	Manukau	Vacant Potential Business	351.8	-	-	347.6	-	-
Total Available Land			623.6	-	-	591.4	-	-
Papakura District	Takanini	Greenfield	-	-	-	-	-	-
	Hingaia	Greenfield	-	-	-	-	-	-
	Papakura	Vacant Business	-	-	-	-	-	-
Total Available Land			-	-	-	-	-	-
Franklin District	Franklin	Vacant Business	-	-	-	-	-	-
Total Auckland Region Available Land			1,144	29	15	1,019	29	15

To estimate the requirements for future greenfield land over and above that already provided, this assessment models both the “theoretical” and “practical” land supply.

- “Theoretical Supply” refers to vacant business, vacant potential and greenfield land that could be developed by Group 1 according to District Plan zoning provisions.
- “Practical Supply” refers to vacant business, vacant potential and greenfield land that is suitable for Group 1 development according to land parcel size, District Plan development conditions, land value and so forth.

In total, there will be 1,189 ha available for Group 1 activity under the “theoretical” scenario, and 1,063 ha available according to the “practical” scenario.

Assumption 4

Group 1 businesses will be able to develop on **vacant** and **vacant potential business land** as well as **greenfield land**. Therefore, a proportion of Group 1 employment growth will be accommodated by vacant and vacant potential business land.

Assumption 5

This assessment models the following two land supply scenarios:

- “Theoretical Supply” – vacant business, vacant potential and greenfield land that could be developed by Group 1 according to District Plan zoning provisions
- “Practical Supply” – vacant business, vacant potential and greenfield land that is suitable for Group 1 development according to land parcel size, District Plan development conditions, land value and so forth.

3.3.1 Greenfield Land Employment Capacity

To understand what quantity of greenfield land will be required in the future, we need to understand how many jobs can be supported in the available business land. There were two steps for this stage of the analysis:

- i. Estimate total employment capacity
- ii. Estimate Group 1 employment capacity.

To estimate the capacity of vacant business land and greenfield areas, BLEG decided to use the average density of all business areas within Auckland Region that had more than 75% of total employment engaged in Group 1 activity in 2001. The average density of these business areas was 38 FTEs/ha (Appendix 2).

Tables 3.9 and 3.10 show the total capacity for the “theoretical” and “practical” scenarios. Under the “theoretical” scenario total employment capacity between 2001 and 2031 will be 45,600 FTEs. Under the “practical” scenario total employment capacity between 2001 and 2031 will be 40,760 FTEs.

Assumption 6

Vacant business, vacant potential and greenfield land will be developed at an average density of **38 FTEs/Ha**

Table 3.9 Total Employment Capacity (FTEs) – Theoretical Supply

TA	Area	Business Land Type	Capacity (FTEs)			
			2011	2021	2031	
Rodney District	Silverdale North	Greenfield	-	-	-	
	Silverdale South	Greenfield	-	-	-	
	Warkworth	Greenfield	390	-	590	
	Wellsford	Greenfield	930	-	-	
	Helensville	Greenfield	440	-	-	
	Kumeu/Huapai	Greenfield	500	-	-	
	Snells Beach	Greenfield	-	-	-	
	Orewa	Greenfield	-	-	-	
	Whangaparaoa	Greenfield	-	-	-	
	Rodney	Vacant Business	1,190	-	-	
	Rodney	Vacant Potential Business	410	-	-	
	Total Available Land			3,860	-	590
	North Shore City	North Shore	Vacant Business	4,310	-	-
North Shore		Vacant Potential Business	730	-	-	
Total Available Land			5,040	-	-	
Waitakere City	Hobsonville Corridor	Greenfield	870	950	-	
	Hobsonville Peninsula	Greenfield	750	170	-	
	Massey North/Westgate	Greenfield	2,130	-	-	
	Waitakere	Vacant Business	2,210	-	-	
	Waitakere	Vacant Potential Business	1,670	-	-	
	Total Available Land			7,630	1,120	-
Auckland City	Auckland	Vacant Business	2,490	-	-	
	Auckland	Vacant Potential Business	950	-	-	
	Total Available Land			3,440	-	-
Manukau City	Flat Bush	Greenfield	960	-	-	
	Manukau	Vacant Business	9,470	-	-	
	Manukau	Vacant Potential Business	13,490	-	-	
	Total Available Land			23,920	-	-
Papakura District	Takanini	Greenfield	-	-	-	
	Hingaia	Greenfield	-	-	-	
	Papakura	Vacant Business	-	-	-	
	Total Available Land			-	-	-
Franklin District	Franklin	Vacant Business	-	-	-	
Total Auckland Region Available Land			43,890	1,120	590	

Table 3.10 Total Employment Capacity (FTEs) – Practical Supply

TA	Area	Business Land Type	Capacity (FTEs)			
			2011	2021	2031	
Rodney District	Silverdale North	Greenfield	-	-	-	
	Silverdale South	Greenfield	-	-	-	
	Warkworth	Greenfield	390	-	590	
	Wellsford	Greenfield	930	-	-	
	Helensville	Greenfield	440	-	-	
	Kumeu/Huapai	Greenfield	500	-	-	
	Snells Beach	Greenfield	-	-	-	
	Orewa	Greenfield	-	-	-	
	Whangaparaoa	Greenfield	-	-	-	
	Rodney	Vacant Business	470	-	-	
	Rodney	Vacant Potential Business	360	-	-	
	Total Available Land			3,090	-	590
	North Shore City	North Shore	Vacant Business	2,150	-	-
North Shore		Vacant Potential Business	690	-	-	
Total Available Land			2,840	-	-	
Waitakere City	Hobsonville Corridor	Greenfield	870	950	-	
	Hobsonville Peninsula	Greenfield	750	170	-	
	Massey North/Westgate	Greenfield	2,130	-	-	
	Waitakere	Vacant Business	2,160	-	-	
	Waitakere	Vacant Potential Business	1,650	-	-	
	Total Available Land			7,560	1,120	-
Auckland City	Auckland	Vacant Business	2,080	-	-	
	Auckland	Vacant Potential Business	800	-	-	
	Total Available Land			2,880	-	-
Manukau City	Flat Bush	Greenfield	20	-	-	
	Manukau	Vacant Business	9,330	-	-	
	Manukau	Vacant Potential Business	13,330	-	-	
	Total Available Land			22,680	-	-
Papakura District	Takanini	Greenfield	-	-	-	
	Hingaia	Greenfield	-	-	-	
	Papakura	Vacant Business	-	-	-	
	Total Available Land			-	-	-
Franklin District	Franklin	Vacant Business	-	-	-	
Total Auckland Region Available Land			39,050	1,120	590	

3.3.2 *Greenfield Land
Group 1
Employment
Capacity*

Not all employment capacity will be available for Group 1 activity, as other business activities will also choose to locate in these areas. To estimate the proportion of Group 1 employment that will be accommodated in vacant business land and greenfield land, we have examined the shares of employment activity in large and medium business areas in 1997, 2001 and 2005 as a proxy for future patterns.

Table 3.11 shows historical shares of employment by industry sector in large and medium business areas. The share of Group 1 activity has been declining steadily, with Group 1 decreasing from 71% in 1997 to 61% in 2005.

Table 3.11 Shares of Employment by Industry Sector in Large and Medium Business Areas, 1997, 2001 and 2005

Industry	Share of Total Employment by Industry		
	1997	2001	2005
Manufacturing	37%	33%	30%
Construction	5%	6%	7%
Wholesale Trade	21%	18%	17%
Transport & Storage	8%	8%	7%
Total Group 1	71%	65%	61%
Other	30%	28%	39%
Total	100%	100%	100%

Based on these trends, BLEG have decided to model two scenarios for the share of Group 1 activity in future greenfield and vacant business land. The first share is based on the historical trend analysis, indicating that 60% is appropriate. The second share is a more aspirational target of 75%, allowing for possible changes to current planning provisions to ensure that ancillary activities are strictly controlled in areas suitable for Group 1 activity.

Table 3.12 shows Group 1 employment capacity for both the “theoretical supply” and “practical supply” scenarios based on achieving a 60% take-up of total employment by Group 1 sectors. This shows that there will be a Group 1 employment capacity of 27,350 FTEs under the “theoretical supply” scenario, and 24,450 FTEs under the “practical supply” scenario.

Table 3.13 shows Group 1 employment capacity for both the “theoretical supply” and “practical supply” scenarios based on achieving a 75% take-up of total employment by Group 1 sectors. This shows that there will be a Group 1 employment capacity of 34,200 FTEs under the “theoretical supply” scenario, and 30,588 FTEs under the “practical supply” scenario.

Table 3.12 Group 1 Employment Capacity (60% Share of Total)

TA	Area	Business Land Type	"Theoretical Supply"			"Practical Supply"		
			2011	2021	2031	2011	2021	2031
Rodney District	Silverdale North	Greenfield	-	-	-	-	-	-
	Silverdale South	Greenfield	-	-	-	-	-	-
	Warkworth	Greenfield	230	-	350	230	-	350
	Wellsford	Greenfield	560	-	-	560	-	-
	Helensville	Greenfield	260	-	-	260	-	-
	Kumeu/Huapai	Greenfield	300	-	-	300	-	-
	Snells Beach	Greenfield	-	-	-	-	-	-
	Orewa	Greenfield	-	-	-	-	-	-
	Whangaparaoa	Greenfield	-	-	-	-	-	-
	Rodney	Vacant Business	710	-	-	280	-	-
Rodney	Vacant Potential Business	250	-	-	220	-	-	
Total Available Land			2,310	-	350	1,850	-	350
North Shore City	North Shore	Vacant Business	2,590	-	-	1,290	-	-
	North Shore	Vacant Potential Business	440	-	-	410	-	-
	Total Available Land			3,030	-	-	1,700	-
Waitakere City	Hobsonville Corridor	Greenfield	520	570	-	520	570	-
	Hobsonville Peninsula	Greenfield	450	100	-	450	100	-
	Massey North/Westgate	Greenfield	1,280	-	-	1,280	-	-
	Waitakere	Vacant Business	1,330	-	-	1,300	-	-
	Waitakere	Vacant Potential Business	1,000	-	-	990	-	-
Total Available Land			4,580	670	-	4,540	670	-
Auckland City	Auckland	Vacant Business	1,490	-	-	1,250	-	-
	Auckland	Vacant Potential Business	570	-	-	480	-	-
	Total Available Land			2,060	-	-	1,730	-
Manukau City	Fiat Bush	Greenfield	580	-	-	10	-	-
	Manukau	Vacant Business	5,680	-	-	5,600	-	-
	Manukau	Vacant Potential Business	8,090	-	-	8,000	-	-
Total Available Land			14,350	-	-	13,610	-	-
Papakura District	Takanini	Greenfield	-	-	-	-	-	-
	Hingaia	Greenfield	-	-	-	-	-	-
	Papakura	Vacant Business	-	-	-	-	-	-
Total Available Land			-	-	-	-	-	-
Franklin District	Franklin	Vacant Business	-	-	-	-	-	-
	Total Auckland Region Available Land			26,330	670	350	23,430	670

Table 3.13 Group 1 Employment Capacity (75% Share of Total)

TA	Area	Business Land Type	"Theoretical Supply"			"Practical Supply"		
			2011	2021	2031	2011	2021	2031
Rodney District	Silverdale North	Greenfield	-	-	-	-	-	-
	Silverdale South	Greenfield	-	-	-	-	-	-
	Warkworth	Greenfield	290	-	440	290	-	440
	Wellsford	Greenfield	700	-	-	700	-	-
	Helensville	Greenfield	330	-	-	330	-	-
	Kumeu/Huapai	Greenfield	380	-	-	380	-	-
	Snells Beach	Greenfield	-	-	-	-	-	-
	Orewa	Greenfield	-	-	-	-	-	-
	Whangaparaoa	Greenfield	-	-	-	-	-	-
	Rodney	Vacant Business	890	-	-	350	-	-
Rodney	Vacant Potential Business	310	-	-	270	-	-	
Total Available Land			2,900	-	440	2,320	-	440
North Shore City	North Shore	Vacant Business	3,230	-	-	1,610	-	-
	North Shore	Vacant Potential Business	560	-	-	520	-	-
	Total Available Land			3,780	-	-	2,130	-
Waitakere City	Hobsonville Corridor	Greenfield	650	710	-	650	710	-
	Hobsonville Peninsula	Greenfield	560	130	-	560	130	-
	Massey North/Westgate	Greenfield	1,600	-	-	1,600	-	-
	Waitakere	Vacant Business	1,660	-	-	1,620	-	-
	Waitakere	Vacant Potential Business	1,250	-	-	1,240	-	-
Total Available Land			5,720	840	-	5,670	840	-
Auckland City	Auckland	Vacant Business	1,870	-	-	1,560	-	-
	Auckland	Vacant Potential Business	710	-	-	600	-	-
	Total Available Land			2,580	-	-	2,160	-
Manukau City	Fiat Bush	Greenfield	720	-	-	20	-	-
	Manukau	Vacant Business	7,100	-	-	7,000	-	-
	Manukau	Vacant Potential Business	10,120	-	-	10,000	-	-
Total Available Land			17,940	-	-	17,020	-	-
Papakura District	Takanini	Greenfield	-	-	-	-	-	-
	Hingaia	Greenfield	-	-	-	-	-	-
	Papakura	Vacant Business	-	-	-	-	-	-
Total Available Land			-	-	-	-	-	-
Franklin District	Franklin	Vacant Business	-	-	-	-	-	-
	Total Auckland Region Available Land			32,920	840	440	29,300	840

Assumption 7

Two scenarios have been employed to account for the share of total employment that Group 1 employment will account for in greenfield and vacant areas:

- Scenario 1: **60%** of greenfield and vacant business and vacant potential employment will be Group 1
- Scenario 2: **75%** of greenfield, vacant business and vacant potential employment will be Group 1.

4 Conclusions

4.1 Introduction

Establishing the quantity of land that will be required to meet Group 1 sector growth is a relatively simple process from this point. This step involves comparing supply with demand. Where there is more demand than supply, a representative employment density is applied to calculate required greenfield land. This section completes the analysis and outlines the range of requirements for future greenfield land.

4.1.1 Future Greenfield Land Employment Density Rates

To calculate the land requirements for Group 1 activity that can not be accommodated in the available vacant business land and sector greenfield areas, we have assumed that the residual activity will develop on land at an average density of 38 FTEs/Ha (the average density of all business areas within Auckland Region that had more than 75% of total employment engaged in Group 1 activity in 2001).

Assumption 8

Residual Group 1 employment demand will require land at an average density of **38 FTEs/Ha**.

4.1.2 Future Greenfield Land Requirements (Ha)

Table 4.1 shows the requirements for additional greenfield land for both the “theoretical supply” and “practical supply” scenarios if Group 1 activity achieves 60% take-up of greenfield employment capacity.

For the “theoretical supply” scenario, Auckland Region will require 700 ha additional greenfield land by 2031, with just under one third (31%, 220 ha) required by 2021. For the “practical supply” scenario, Auckland Region will require 780 ha additional greenfield land by 2031, with approximately 37% (290 ha) required by 2021.

Table 4.1 Greenfield Land Requirements (Ha) – (60% Share of Total)

	"Theoretical Supply"				"Practical Supply"			
	2001	2011	2021	2031	2001	2011	2021	2031
Greenfield* Group 1 Capacity (FTEs)								
Total Group 1 Capacity	-	26,330	27,000	27,350	-	23,430	24,100	24,450
New Group 1 Capacity for 10 year period	-	26,330	670	350	-	23,430	670	350
Greenfield* Group 1 Employment Demand (FTEs)								
Total Group 1 Employment	-	17,680	35,370	54,190	-	17,680	35,370	54,190
New Group 1 Employment for 10 year period	-	17,680	17,690	18,820	-	17,680	17,690	18,820
Greenfield* Capacity versus Demand								
Group 1 Employment met by Capacity	-	17,680	27,000	27,350	-	17,680	24,100	24,450
Group 1 Employment not met by Capacity	-	-	8,370	26,840	-	-	11,270	29,740
Additional Group 1 Land Requirements (Ha)	-	-	220	700	-	-	290	780

Greenfield refers to vacant business, vacant potential and greenfield land*

Table 4.2 shows the requirements for additional greenfield land for both the “theoretical supply” and “practical supply” scenarios if Group 1 activity achieves 75% take-up of greenfield employment capacity.

For the “theoretical supply” scenario, Auckland Region will require 520 ha additional greenfield land by 2031, with approximately 8% (40 ha) required by 2021. For the “practical supply” scenario, Auckland Region will require 620 ha additional greenfield land by 2031, with approximately 22% (140 ha) required by 2021.

Table 4.2 Greenfield Land Requirements (Ha) – (75% Share of Total)

	"Theoretical Supply"				"Practical Supply"			
	2001	2011	2021	2031	2001	2011	2021	2031
Greenfield* Group 1 Capacity (FTEs)								
Total Group 1 Capacity	-	32,920	33,760	34,200	-	29,300	30,140	30,580
New Group 1 Capacity for 10 year period	-	32,920	840	440	-	29,300	840	440
Greenfield* Group 1 Employment Demand (FTEs)								
Total Group 1 Employment	-	17,680	35,370	54,190	-	17,680	35,370	54,190
New Group 1 Employment for 10 year period	-	17,680	17,690	18,820	-	17,680	17,690	18,820
Greenfield* Capacity versus Demand								
Group 1 Employment met by Capacity	-	17,680	33,760	34,200	-	17,680	30,140	30,580
Group 1 Employment not met by Capacity	-	-	1,610	19,990	-	-	5,230	23,610
Additional Group 1 Land Requirements (Ha)	-	-	40	520	-	-	140	620

Greenfield refers to vacant business, vacant potential and greenfield land*

4.1.3 Conclusions

This assessment has shown that Auckland Region will require additional greenfield land in the range of 520-700 ha by 2031, if Group 1 activity is encouraged to locate in the land which is suitable for Group 1 according to zoning provisions (the “theoretical supply” scenario)².

This assessment has also shown that Auckland Region will require additional greenfield land in the range of 620-780 ha by 2031, if Group 1 activity is encouraged to locate in the land which is suitable for Group 1 according to zoning provisions and market indicators (the “practical supply” scenario).

Representatives of BLEG have indicated that future patterns are more likely to reflect the “practical supply” scenario than the “theoretical supply scenario”. Additionally, BLEG have indicated that future employment patterns should reflect the more aspirational target of 75% of activity being Group 1 in Greenfield areas.

² Note: Changes to the supply of vacant business and vacant potential land appropriate for Group 1 activity in Papakura District once Capacity for Growth 2006 figures are finalised, may reduce the amount of land required in future years.

Appendix 1

Rodney District Council Decisions

- Silverdale North (60 ha) and Silverdale South (84 ha) - not suitable for Group 1 activity according to District Plan and Structure Plan zoning.
- Snells Beach (2.4 ha) – not suitable for Group 1 activity according to District Plan.
- Orewa (0.9 ha) – not suitable for Group 1 activity according to District Plan, and also there is a strong likelihood that Future Business zoning will be re-zoned for retail.
- Whangaparaoa (14.2 ha) – not suitable for Group 1 activity according to District Plan.
- Warkworth (43.8 ha) – 25.7ha in the New Business Park suitable for Group 1 activity according to District Plan and Structure Plan.
- Wellsford (24.2 ha) – 100% available for Group 1 activity.
- Helensville (11.6 ha) – 100% available for Group 1 activity.
- Kumeu/Huapai (13.1 ha) - 100% available for Group 1 activity.
- Vacant Business – Any industrial zoned land and only mixed business zoned parcels greater than 1 ha in the Warkworth business park are suitable for Group 1.
- Vacant Potential – Any industrial zoned land and only mixed business zoned parcels greater than 1 ha in the Warkworth business park are suitable for Group 1.

Information provided by Diana Solomon (Rodney District Council) in April 2007 e-mails and phone calls.

North Shore City Council Decisions

- For Vacant Business and Vacant Potential - Business 1, 2, 3, 4, 5, and 11 allow for Group 1 activity but it is unlikely to be taken up by Group 1 activity.
- For Vacant Business and Vacant Potential - Business 6, 7, 8, 9, 10 allow for Group 1 activity and it is likely to be taken up by Group 1 activity.

Information provided by Casandra Smith (North Shore City Council) in January-April 2007 e-mails and phone calls.

*Waitakere City Council
Decisions*

- Hobsonville Corridor - 33.8 ha total available in 2011 and a further 51.2 ha available in 2021, of which 22.7 ha in 2011 and 24.7 ha in 2021 would be suitable for Group 1 activity.
- Massey North/Westgate - 90.3 ha total available in 2011, of which 50.6 ha in 2011 would be suitable for Group 1 activity.
- Hobsonville Peninsula - 30.1 ha total available in 2011 and a further 4.5 ha available in 2021, of which 19.5 ha in 2011 and 4.5 ha in 2021 would be suitable for Group 1 activity.
- For Vacant Business and Vacant Potential - "Working" allows Group 1 activity and is likely to be taken up by Group 1 activity.
- For Vacant Business and Vacant Potential - "Community" allows for Group 1 activity, but it is unlikely to be taken up by Group 1 activity

Information provided by Steve Wilcox, Rose Leonard and Kyle Balderston (Waitakere City Council) in April 2007 e-mails and phone calls.

*Auckland City Council
Decisions*

- For Vacant Business and Vacant Potential - Business 5 and 6 industrial land allows for Group 1 activity and is likely to be taken up by Group 1 activity.
- For Vacant Business and Vacant Potential - Business 4 land in major specialised employment precincts allows Group 1 activity but it is unlikely to be taken up by Group 1 activity.

Information provided by Janet Schofield (Auckland City Council) in March and April 2007 e-mails.

*Manukau City Council
Decisions*

- Flat Bush Town Centre allows for Group 1 activity; however it is unlikely to be taken up by more than 0.5ha for the whole zone, because the main function will be town centre and neighbourhood centre precincts.
- For Vacant Business and Vacant Potential - Business 1, 2, 3, and 4 allows Group 1 activity but it is unlikely to be taken up by Group 1 activity.
- For Vacant Business and Vacant Potential - Business 5 and 6 allows for Group 1 activity and it is likely to be taken up by Group 1 activity.

Information provided by Alia Cederman (Manukau City Council) in March and April 2007 e-mails.

*Papakura District
Council Decisions*

- Hingaia Mixed Use 1 zone (15ha), operative in 2006 - unsuitable for Group 1 activity.
- Takanini Structure Plan Area 6b (30ha) - unsuitable for Group 1 activity.
- Takanini Structure Plan Area 1a (24ha) - unsuitable for Group 1 activity.
- Noted: Papakura has different estimates for Greenfield land than those published in the ARC Business Land Strategy.

Information provided by Joy La Nauze (Papakura District Council) in April 2007 e-mails.

*Auckland Regional
Council Decisions*

- For Papakura District, it was decided to model Greenfield land estimates documented in Table 1 of the Business Land Strategy.

Information provided by Michael Tucker (Auckland Regional Council) in April 2007 e-mails and phone calls.

Appendix 2

Average Density of Business Areas with more than 75% Group 1 Activity (2001)

To estimate the average density of future greenfield areas, an analysis of the 2001 average density of business areas with more than 75% of total employment engaged in Group 1 activity was undertaken. The relevant business areas with associated employment and business are shown in the table below.

Appendix Table 1 Average Density of Business Areas with more than 75% of employment in Group 1, 2001

Business Area	Manufacturing FTEs	Construction FTEs	Wholesale Trade FTEs	Transport & Storage FTEs	Other FTEs	Total FTEs	Group 1 Share of Total FTEs	Business Zoned Land (Ha)	Future (Ha)	Vacant (Ha)	Vacant Potential (Ha)	Business Zoned - Vacant Land (Ha)	2001 FTE Density
Large Business Areas													
Carbine Road	2,870	514	3,016	376	2,064	8,839	77%	177	-	5	9	162	54
East Tamaki	5,736	360	1,551	564	1,638	9,847	83%	436	-	186	34	216	46
Rosebank	3,801	394	1,105	41	834	6,174	86%	156	-	22	6	128	48
Southdown	3,523	517	2,587	779	1,777	9,182	81%	206	-	17	8	181	51
Te Papapa	2,594	492	1,344	549	1,457	6,434	77%	204	-	13	21	170	38
Wiri	4,037	451	1,636	642	1,734	8,500	80%	535	-	105	76	354	24
Medium Business Areas													
Beachlands	1	4	420	137	57	618	91%	3	-	0	-	3	207
Glendene	303	7	45	33	71	458	85%	30	-	2	2	26	18
Mahunga Drive	599	302	169	246	198	1,513	87%	48	31	7	1	40	38
Mangere East	214	40	114	50	101	518	80%	34	-	10	8	16	32
Naval Base	198	-	60	-	2	259	99%	8	-	-	-	8	31
Onewa Road	169	16	17	2	25	228	89%	7	-	0	-	7	32
Otara North	974	123	95	68	213	1,472	86%	101	-	9	8	84	18
Portis	252	7	256	-	73	588	88%	37	-	7	1	29	20
Red Hill	1,210	184	421	1	549	2,365	77%	131	-	21	38	73	33
Taharoto Road	961	116	203	83	323	1,685	81%	15	-	0	5	10	167
Vincent Street	337	27	128	35	7	532	99%	7	-	0	-	6	82
Wairau Valley	2,207	178	309	48	736	3,477	79%	71	-	2	1	69	51
Small Business Areas													
Chelsea Sugar Factory	149	-	0	-	-	150	100%	13	-	-	-	13	11
Helensville	25	11	25	9	1	70	99%	26	-	-	-	26	3
Karaka	94	7	-	-	18	119	85%	-	-	-	-	-	-
Mcleod Road	127	34	5	-	19	184	90%	22	-	4	5	13	14
Minor Business Areas													
Warkworth	200	7	-	-	1	209	99%	23	-	-	-	23	9
Wolverton Street	333	65	205	1	84	688	88%	14	-	-	1	13	52
Total BAs with more than 75% Group 1	30,910	3,852	13,705	3,660	11,978	64,106	81%	2,306	31	411	223	1,671	38