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Capacity for Growth Study 2008 Interim Report

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1 Executive Summary

The Capacity for Growth study monitors and reports on residential, business and rural land availability within the region. The capacity assessment is based on the policies and rules of the region's territorial authority district plans as at March 2006.

The Regional Policy Statement requires that Capacity for Growth surveys be undertaken once every five years for the purposes of managing urban containment (Section 2.6.3.6). The Capacity for Growth study is also required for monitoring the progress and implementation of the Regional Growth Strategy and has been a significant part of the Growing Smarter Evaluation 2007. This is the third study in the series with previous reports prepared and reported to the council in 1998 and 2003.

This is an interim report (May 2008) as it does not include capacity results for the region's rural townships and coastal settlements. The capture of data for these areas is programmed to commence in June 2008. The results will be included in a final Capacity for Growth 2008 report and be available mid to late 2008.

Principal Findings:

Residential Capacity (Metropolitan Area)

- The combined metropolitan area residential capacity available from vacant land, infill-general and the redevelopment of business land is 148,750 dwelling units. When this total is plotted against future household growth projections it is estimated to provide for between 14 and 20 years of supply. If the infill-redevelopment capacity measure is included in the total (rather than infill-general) then potential capacity increases to 193,550 dwelling units. This figure would provide for between 18 and 29 years of supply.
- The Vacant Land study identified capacity for a further 59,000 dwelling units within the Metropolitan Urban Limit (MUL). Based upon past development patterns (i.e. 40% of residential development occurred upon vacant land) and future household projections this land resource is projected to provide capacity for a further 16 to 24 years of residential demand (this range represents the high and low population projections).
- The Infill Land study includes two measures of capacity; infill-general (an additional house to the front or rear of an existing site) and infill-redevelopment (the removal of the existing dwelling and redevelopment to the maximum permitted density). The infill-general measure identified a metropolitan capacity for a further 20,300 dwelling units. This is 41% lower than the 2001 figure. Based on past development patterns (i.e. 32% of residential development occurred on infill land) and future household projections this land resource is projected to provide capacity for this type of residential demand for only a further six to 10 years. Rodney District, North Shore City and Auckland City all have less than five years of infill capacity remaining.
- A small but growing trend has been towards infill-redevelopment. At 65,100 dwelling units the infill-redevelopment measure identifies significantly more

capacity than infill-general. The trend towards infill-redevelopment is likely to increase as traditional infill opportunities tighten, land values increase and the population continues to grow. However, infill-redevelopment, by its nature, has the potential to significantly change the face of existing neighbourhoods.

- The Redevelopment of Business Land study estimates that capacity for up to 69,370 dwelling units could be provided within centres and business areas. Based on past development patterns (i.e. 28% of residential development occurred on business land) and future household projections this resource is projected to provide capacity for a further 26 to 40 years of residential demand.
- Capacity constraints will be reached in different locations and capacity types (vacant, infill, business land redevelopment) at different periods. Where exactly this occurs and how patterns of demand change will ultimately be determined by the market (e.g. as opportunities for infill reduce more opportunities to develop on business land may be sought).

Business Land (Metropolitan Area)

- The Vacant Land study identified a total of 1,554 hectares of vacant business zoned land within the metropolitan area. At the rate of development experienced over the past 10 years (120 ha/annum 1996-2006) this capacity could provide for a further 13 years of development. New to the 2008 study is the identification of 611 hectares brownfield land (existing business land that is not in use or is significantly underutilised and could be redeveloped). Including brownfield land in the final count increases the total business land available for development to 2,096 hectares. This total would provide for 17 years of development (i.e. an additional four years on the vacant land only total).
- The Redevelopment Capacity of Business Zoned Land study identified that there is at least enough capacity to double the amount (i.e. intensity) of existing business activity floor space in the metropolitan area (as at 2006). When this capacity is compared to past rates of development and to future employment projections it is found to be sufficient for beyond 2031.

Rural Land

- The Rural Capacity study identified that there is potential for an additional 20,900 dwellings to be created in the rural area. Of these, 19,800 (95%) were classed as Countryside Living, meaning that the new dwellings could be built on sites that were smaller than 8ha. At current development rates (650 additional dwellings per year) there is enough Countryside Living potential for another 30 years of development.

The results presented in this Capacity for Growth study were recognised in the evaluation of the Regional Growth Strategy in 2007 (Growing Smarter). Historically 40% of residential development has been on vacant land, 32% as infill and 28% on business land. The ARC has maintained a supply of vacant land by extending the Metropolitan Urban Limit (MUL) however this supply is being used up quickly, in part because the period has been one of rapid growth. While the Regional Growth Strategy

anticipated two million people by 2050, updated population projections now suggest that this is more likely by 2035 (15 years earlier).

The capacity for infill-general development is declining. As a result it is possible that infill-redevelopment will become a feature of future growth in some parts of the region. In addition, the overall density being achieved in greenfield areas, while higher than in the past, is still quite low (10 dwellings per hectare in 2001 and 13 dwellings per hectare in 2006).

A significant amount of future capacity in the region is in the centres; where the Regional Growth Strategy seeks more intensive residential and employment development aligned with passenger transport. However, peer reviews and developer surveys have highlighted that there are a range of barriers to this form of development, including the need for site amalgamation for quality comprehensive development. If the region cannot unlock this development potential, and develop the compact quality urban form with strong well connected centres, then there will be increasing pressure to release additional land on the urban periphery (or to consider new settlements in the rural area).

The Capacity for Growth study has also reinforced anecdotal evidence of the strong take-up of vacant business land. Even with the inclusion of brownfield land, overall business land capacity is only just over the target of maintaining 15 years of supply (i.e. 17 years). A significant part of this capacity will be met through intensification and growth in the region's centres. This will meet many of the needs of the office, retail, and service sector. However, additional vacant land may need to be provided to cater for business activities that are unsuitable to locate in the region's centres and corridors (e.g. manufacturing, warehouse and logistics).

The results of the Capacity for Growth study have been made available to central government which has progressed a range of work streams looking at affordable housing, including the adequacy of land supply in the Auckland region. It is anticipated that this work will be available later in the year (2008) and will add to the understanding of the capacity available for development at any point in time, the constraints to development across the region (infrastructure, ownership), the likely timing or sequencing of future development and housing demand (by type and location).

The capacity results are based on the permitted and controlled activities in district plans (and in some cases discretionary activities where these are regularly granted). Any non-complying activities will affect the final outcomes (generally by exceeding identified capacity).

Results:

The residential and business land capacity results are summarised in the following four tables. A complete set of the results are presented in:

Appendix A: Residential, business and rural land capacity results are tabled by territorial authority

Appendix D: Maps of vacant residential and business land and rural capacity.

Table 1 Metropolitan Auckland: Total Dwelling Capacity for Residential Development (Residential Infill-General) 2006 Policy

Territorial Authority	Vacant and Vacant Potential (dwelling units) 2006	Vacant Structure Planned areas within current MUL	Structure Plan area Capacity (dwelling units) 2006	Residential Infill General (dwelling units) 2006	Residential on Business Zoned Land (dwelling units) 2006	Total Household Capacity 2006	Projected years until all Capacity Exhausted (high to low projections)
RDC	2,396	Gulf Harbour Silverdale North Orewa West	1,965 2,137 2,797	349	1,140	10,784	23 to 50
NSCC	9,223	Long Bay	1,600	2,907	10,890	24,620	13 to 21
WCC	6,615	Birdwood Babich	928 1,050	4,260	6,160	19,013	12 to 17
ACC	4,458	Stonefields (Mt Wgt Quarry)	2,600	5,423	44,480	56,961	14 to 20
MCC	4,974	Flat Bush	12,920	6,250	6,140	30,284	10 to 15
PDC	1,132	Hingaia Stage 1 Takanini 1A, 1B, 3	1,966 2,310	1,123	560	7,091	31 to 50
Metropolitan Total	28,798		30,273	20,312	69,370	148,753	14 to 20

1. The Projected Years until all Capacity Exhausted column is a guide only. It will be affected by rate of household growth, the changing size of households, the rate at which dwellings are built, the form of these dwellings as well as changes to Regional and District Plans.
2. It is unlikely that all capacity will be available for development.

Table 2 Metropolitan Auckland: Total Dwelling Capacity for Residential Development (Residential Infill-Redevelopment) 2006 Policy

Territorial Authority	Vacant and Vacant Potential (dwelling units) 2006	Vacant Structure Planned areas within current MUL	Structure Plan area Capacity (dwelling units) 2006	Residential Infill Redevelopment (dwelling units) 2006	Residential on Business Zoned Land (dwelling units) 2006	Total Household Capacity 2006	Projected years until all Capacity Exhausted (high to low projections)
RDC	2,396	Gulf Harbour Silverdale North Orewa West	1,965 2,137 2,797	1,241	1,140	11,676	26 to 50
NSCC	9,223	Long Bay	1,600	12,151	10,890	33,864	19 to 40
WCC	6,615	Birdwood Babich	928 1,050	13,279	6,160	28,032	18 to 31
ACC	4,458	Stonefields (Mt Wgt Quarry)	2,600	18,376	44,480	69,914	18 to 26
MCC	4,974	Flat Bush	12,920	16,991	6,140	41,025	14 to 23
PDC	1,132	Hingaia Stage 1 Takanini 1A, 1B, 3	1,966 2,310	3,069	560	9,037	40+
Metropolitan Total	28,798		30,273	65,107	69,370	193,548	18 to 29

1. The Projected Years until all Capacity Exhausted column is a guide only. It will be affected by rate of household growth, the changing size of households, the rate at which dwellings are built, the form of these dwellings as well as changes to Regional and District Plans.
2. It is unlikely that all capacity will be available for development.

Table 3 Metropolitan Auckland: Vacant Land for Business Development, 2006

Territorial Authority	Business zoned Vacant and Vacant Potential 2006 (ha)	Future Urban areas or Special zoned areas for business use	Area (hectares) 2006	Total Vacant Land (hectares) 2006	Years until Capacity Exhausted
RDC	53	Silverdale North (Special 19)	84	137	50+
NSCC	159	Albany Sub Regional 11 Zone	Active zone	159	6
WCC	102	Cobans Estate Penfolds Harbourview Estate	0 0 Active zone	102	10
ACC	109	Stonefields (Mt Wellington Quarry) Three Kings Quarry	3 Brownfield	146	9
MCC	563	Favona Road FUDZ Flat Bush Town Centre Wiri Quarry Ak Int Airport*	29 25 Brownfield 294	911	16
PDC	61	Hingaia Town Centre Takanini Town Centre	15 24	100	12
Metropolitan Total	1,080		474	1,554	13

1. The Projected Years until Capacity Exhausted column is a guide only. It will be affected by range of factors including the rate of business growth as well as changes to Regional and District Plans.
2. It is unlikely that all capacity will be available for development.

*The 2008 study has included 294 hectares of vacant land within the Auckland International Airport designation. This land was not included in the earlier studies because it was outside the MUL. However, because the land is available for airport related commercial activities under the Airport designation (and is subject to an application to bring the area within the MUL) and because a range of commercial activities have set-up in the area, it has been included in the 2008 study

Table 4 Metropolitan Auckland: Vacant and Brownfield Land for Business Development, 2006

Territorial Authority	Business zoned Vacant and Vacant Potential 2006 (ha) (Brownfield removed)	Brownfield Land 2006	Future Urban areas or Special zoned areas for business use	Area (hectares) 2006	Total Vacant Land (hectares) 2006	Years until Capacity Exhausted
RDC	50	9	Silverdale North (Special 19)	84	143	50+
NSCC	151	19	Albany Sub Regional 11 Zone	Active zone	170	6
WCC	99	29	Cobans Estate Penfolds Harbourview Estate	0 0 Active zone	128	13
ACC	109	294	Stonefields (Mt Wellington Quarry) Three Kings Quarry	3 Brownfield	405	25
MCC	542	217	Favona Road FUDZ Flat Bush Town Centre Wiri Quarry Ak Int Airport*	29 25 Brownfield 294	1,107	20
PDC	61	42	Hingaia Town Centre Takanini Town Centre	15 24	142	16
Metropolitan Total	1,012	611		474	2,096	17

1. The Projected Years until Capacity Exhausted column is a guide only. It will be affected by range of factors including the rate of business growth as well as changes to Regional and District Plans.
2. It is unlikely that all capacity will be available for development.

*The 2008 study has included 294 hectares of vacant land within the Auckland International Airport designation. This land was not included in the earlier studies because it was outside the MUL. However, because the land is available for airport related commercial activities under the Airport designation (and is subject to an application to bring the area within the MUL) and because a range of commercial activities have set-up in the area, it has been included in the 2008 study

2 Introduction

This is an interim report as it does not include a capacity assessment of the region's rural townships and coastal settlements. This assessment will occur in mid to late 2008.

This report presents the principal findings of the capacity for growth monitoring work undertaken by the Auckland Regional Council's Social and Economic Research and Monitoring team.

The findings relate to the amount of residential and business land available in the region for future development and the likely years of demand this capacity will satisfy.

This is the third Capacity for Growth study. Two previous studies have been completed and published, one in 1998 and the second in 2003. The studies are done to coincide with the release of census data.

The study was conducted and managed by the Social and Economic Research and Monitoring team. The process of confirming methodologies and checking results has involved officers from across the region's seven territorial authorities.

Where possible, measures have been kept consistent between studies. However, where measures varied or new measures were added, agreement was reached through a regional working group process (which includes land-use and economic development planners from the territorial authorities).

The 2008 study has been produced as a stand alone technical document, as were the 1998 and 2003 studies. The document includes a summary of the measures and methodologies employed, commentary about the results as well as tables and maps summarising the results at a regional and territorial scale.

It is important to acknowledge that the Capacity for Growth study is a measure of capacity under the policies and rules of the territorial authority district plans as at March 2006. This is the date of the most recent regional aerial imagery which is a necessary component of the capacity assessment. The assessment does not include Regional Growth Strategy (RGS) Sectors Agreement capacity (now included as Schedule 1 in plan change 6 to the Regional Policy Statement) that is outside current district plan policy e.g. land outside of the current Metropolitan Urban Limit (MUL) or intensification of some centres and corridors. In considering the results it is useful to recognise that district plan policies and rules do change over time and therefore total capacity can also change. (Furthermore the granting of non-complying and discretionary activities will add to the total and affect the final outcome).

3 Background

The Regional Growth Strategy (RGS 1999) seeks to focus the majority of future development within the current metropolitan area in sub-regional and town centres aligned with high quality passenger transport. To provide for future growth, as well as housing and lifestyle choice, the RGS also identified future areas for urban expansion and development of rural and coastal settlements. The Capacity for Growth study addresses the need to evaluate the progress and implementation of the RGS and has been a part of the Growing Smarter Evaluation process by monitoring the capacity for growth, changing housing and employment demand, and development trends.

Part of adopting a compact city model of growth management is the need to maintain a 15 year supply of land for residential and business activities across the region. The Capacity for Growth study has been the primary means of monitoring that supply.

The Regional Policy Statement (RPS) requires the regular assessment of development capacity so that this information is available when considering any extension to urban areas (i.e. the MUL or rural and coastal townships).

There has been increasing interest in the supply of land for both housing and economic development. Land supply is an important factor in the rate of housing development and is a major influence on the costs and location of businesses in the region.

4 The Study Measures and Methodology

4.1 Vacant Land Study

The 2008 study is a zero based full assessment of vacant land within both metropolitan Auckland and the region's rural and coastal settlements.

There are two components to the vacant land study:

- Vacant land: is defined as any parcel of land that is zoned for residential or business activities that contains no buildings.
- Vacant potential land:
 - a. Business land: is defined as any parcel of land that has one or more business activity buildings on it and includes a portion of undeveloped or vacant land (i.e. the parcel is partially vacant and therefore underutilised)
 - b. Residential land: is any parcel of land with a site size greater than 2000m² that has one or more residential buildings on it and includes a portion of undeveloped or vacant land (i.e. the parcel is partially vacant and therefore underutilised).

4.1.1 Vacant Land Methodology

The Vacant Land study used a custom built Geographical Information System (GIS) application to identify, assess and capture vacant sites. The following databases were used as part of the assessment:

- 2006 Colour Digital Aerial Photography with a resolution of 0.125m per pixel
- 2006 Digital Cadastral Database (parcel boundaries)
- Digital District Plan zoning from Auckland territorial authorities.

4.1.1.1 Business zoned land

Using the Vacant Land GIS Application every parcel with a business zoning was checked to see if it was vacant or partially vacant (20,000 parcels). For vacant potential parcels the portion of the site that was vacant was recorded. Sites with designations¹ were excluded.

¹ Designation site: a parcel or parcels designated for network utilities under section 166 of the Resource Management Act 1991

The results were checked with each territorial authority to ensure that no capacity was captured that could not be built on e.g. where a reserve had been purchased or vested but the zoning had not yet changed.

Capacity results for vacant business land are reported in total hectares.

4.1.1.2 Residential zoned land

The residential vacant land capture was undertaken in the same way as the business vacant land capture except vacant potential was only assessed where parcels had a land area greater than 2000 m² (sites under 2000 m² are assessed for infill potential see section 4.3).

Again identified parcels were checked with the territorial authorities to ensure that no capacity was captured that could not be built on.

Capacity results for vacant residential land are provided as “total number of dwellings units”. The GIS application calculated the total number of dwelling units for each vacant land parcel. One of three density calculations was applied to a parcel depending upon its land area. For example, for parcels between 0 and 2,000 m² the basic district plan zoning density was applied. For parcels between 2,000 m² and two hectares a factor was removed from the land area to allow for the provision of access, open space and utility reserves (typically 25%). For parcels over two hectares a factor of 13 dwelling units per hectare² was applied.

For zones without an operative residential or business zoning, such as future expansion zones at Long Bay in North Shore City and Hingaia in Papakura, the most recently calculated capacity yields were provided by the relevant territorial authority.

Capacity results for vacant residential land are reported in total residential dwelling units.

4.2 Brownfield Land Study

Brownfield land is defined as “existing business zoned land that has been developed, but is either not in current use, or is significantly under utilised, and could be regenerated or redeveloped for business purposes.” (Urbanista Ltd, August 2007: p.4).

Brownfield land is a new measure in the 2008 study. It was identified as a source of business activity capacity in a report commissioned by the regional Business Land and Economy Group (BLEG) and was initially considered to be a subset of the vacant and vacant potential measures. However, as that project progressed it became apparent

² This factor is based upon case studies of subdivisions within the metropolitan area on residentially zoned parcels over 2ha between 2001 and 2006. The study showed an average density of 13 dwellings per hectare regardless of district plan density provisions. This is an increase from the 2001 assumption of 10 dwellings per hectare.

that brownfield land was a form of urban development in its own right and was therefore integrated into the Capacity for Growth study 2008.

Brownfield land was included in response to the fact that vacant land, although being rapidly taken up, was not the sole source of land for further business development. Historically the redevelopment of previously used sites within the urban area has been part of the city's on-going development and is a reflection of the dynamics operating between the age of the stock, changing business activities and practices, changing locational needs and changing land values amongst other things. Including this measure provides a more comprehensive assessment of the availability of business land for business growth.

The BLEG Brownfield report identified that while some brownfield land could be readily redeveloped, other parcels would face significant obstacles to redevelopment, e.g. potential contamination, existing industrial or commercial activities and site reconfiguration. The availability and certainty of capacity from brownfield sites needs to be considered with these limitations in mind. (Urbanista Ltd, 2007: p3).

The Brownfield study is a zero based full assessment of brownfield land within both metropolitan Auckland and the region's rural and coastal settlements.

The new brownfield land definition did capture some land that had previously been identified as vacant or vacant potential. These areas of overlap have been identified and double counting has been avoided. However, care does need to be taken when referring to these results.

4.2.1 Brownfield Land Methodology³

A set of candidate brownfield parcels were selected using GIS. To be selected, parcels had to meet the following criteria: be business zoned land, parcel size greater than 5000 m² and have an improved value less than 30% of the capital value.

Each of the candidate parcels were then manually assessed on-screen using the 2006 aerial imagery and the following criteria: level of on-site activity, condition of structures and buildings, and formality of use if the parcel was used for storage.

The remaining parcel selection was then checked through with territorial authority officers.

Capacity results for brownfield business land are reported in total hectares.

³ The brownfield land methodology is recorded in detail in the Brownfield Land Identification report prepared by Urbanista Ltd for BLEG. A summary of that methodology is presented in this report.

4.3 Residential Infill (General) and Infill (Redevelopment) Study

Infill housing is the term given to the action of adding dwelling(s) to the front or rear of an existing residentially developed site.

“Infill housing provisions have existed in district plans since the 1970s. These provisions were introduced as a policy response to what was seen as unsustainable levels of suburban fringe development in the Auckland region. By introducing infill-housing provisions it was hoped that this would provide opportunities to intensify existing urban areas of Auckland, which were of a very low density. However, when these provisions were introduced, reliable calculations of how much capacity this would create were not done.” (ARC Capacity for Growth study, 2003: p11).

Infill began in the more central Auckland suburbs and then rapidly spread through most pre-1980 suburbs⁴. The 2001 study identified a variation on the typical infill dwelling to the front or rear of an existing house – the redevelopment of the whole site.

Redevelopment resulted in the removal and replacement of the original house with two, three or more townhouses.

Infill-redevelopment is therefore defined as “the removal of the existing dwelling and redevelopment to the maximum permitted density”.

Redevelopment is not likely to occur uniformly across all of Auckland (in some cases it may not occur at all)⁵. However, it is necessary to know what capacity exists in this form for a number of reasons:

- to understand the implications of the policy,
- to understand what the net impact of a policy change would be,
- to help understand the infrastructure consequences including projecting traffic demand, and
- to know which areas will be affected by down zoning e.g. for heritage protection reasons.

The 2008 study is a zero based full assessment of infill-general and infill-redevelopment opportunities within both metropolitan Auckland and the region’s rural and coastal settlements.

4.3.1 Residential Infill and Redevelopment Study Methodology

The 2003 study established a methodology for assessing each individual residential parcel in the region for infill and redevelopment capacity. This methodology required

⁴ Opportunities for infill are relatively low in post 1980 subdivisions due to the smaller size of the subdivided site and the more central position of the original dwelling.

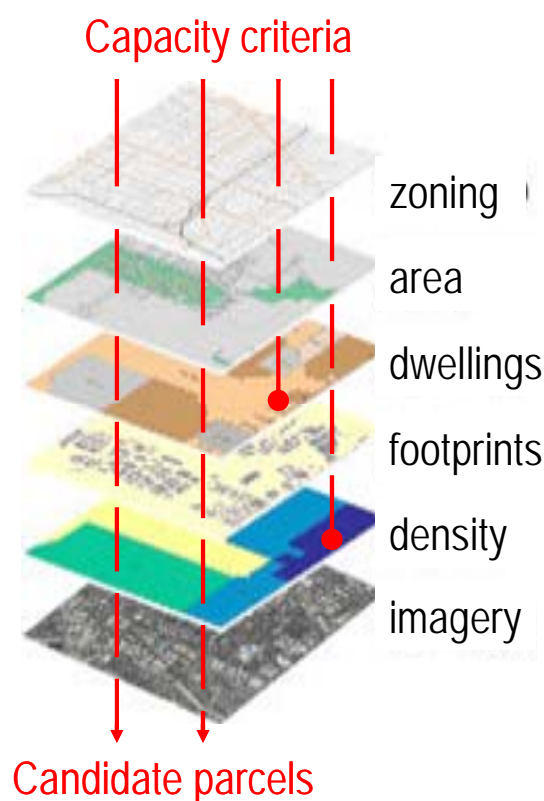
⁵ Redevelopment appears to be influenced by factors such as land values, market pressures and a willingness to sell, hold or redevelop.

the development of a custom Geographic Information Systems (GIS) application. The 2008 study builds on this regionally accepted methodology.

The first step was to load all the necessary databases into the Geographic Information System. These databases included district plan zoning (seven territorial authorities), zoning density assumptions⁶ (checked with territorial authorities), zoning development controls (yards set-backs, access way requirements, bush protection, etc), parcel attributes (DCDB⁷), dwelling data (Quotable Value New Zealand (QVNZ)), building footprints, and 2006 aerial imagery.

From this database a first round of candidate parcels was identified. Identification was completed by running each parcel through the GIS databases and identifying those parcels with theoretical residential infill (Figure 1).

Figure 1 GIS Database Layers Used to Select Candidate Parcels



The candidate parcels were then individually assessed on screen using the GIS application tools. For parcels with digital building footprints available (NSC, WCC, ACC,

⁶ The detail of this data and associated assumptions has not been included in this report. It is available by contacting the ARC Social and Economic Research and Monitoring team directly.

⁷ DCDB: Digital Cadastral Data Base, parcel boundaries and properties.

PDC) the GIS application had already made an assessment of the availability of a building platform and of an access-way⁸. In these cases the assessment involved confirming or amending the on-screen data. In cases where digital footprints were not available the first step of the assessment involved digitising the existing dwelling outline. The GIS application then calculated the building platform and access way areas. The calculations were then confirmed or amended.

In all, over 200,000 parcels were assessed in this manner.

Infill-redevelopment (the removal of the existing dwelling and redevelopment to the maximum permitted density), was calculated automatically by the GIS application. Two counts of infill-redevelopment were recorded: theoretical and modified. The theoretical count simply captured capacity on all parcels where the maximum number of potential dwellings is greater than the existing number. The modified count only records capacity where the maximum number of potential dwellings is at least twice the existing number (i.e. used as a proxy for sufficient incentive to redevelop⁹). Only the modified infill-redevelopment results are reported in this study.

No infill or infill-redevelopment capacity is recorded against parcels that are a part of post-1980 subdivisions. Observations show that the redevelopment of parcels within post 1980 subdivisions is rare¹⁰.

Capacity results for infill are reported in total residential dwelling units.

4.4 Business Land Redevelopment Study

Redevelopment on business zoned land is a measure of the additional capacity available from the intensification of currently developed business areas (e.g. the CBD, town centres such as New Lynn and Manurewa and business areas such as Penrose and Wairau Park).

Business Land Redevelopment capacity is a new measure to the study. The regional Business Land and Economy Group, the Regional Growth Strategy Growing Smarter 2007 evaluation and the Capacity for Growth study Peer Review all identified the need for a measure that provided an understanding of the additional business and residential

⁸ A building platform was assumed to be a minimum of 250 m² made up of dwelling 120 m², private space 100 m² and 30 m² for margin of confidence. An access way is assumed to be 3m in width.

⁹ The modified count is based upon case study examples which indicate that redevelopment occurs generally on sites where the number of dwellings is significantly increased. More research is recommended in this area to understand the factors that influence when and where redevelopment occurs.

¹⁰ This is due to the nature of post-1980 subdivision and development - smaller parcels size and the central location of dwellings on the parcel - and the fact that this dwelling stock is still relatively new.

capacity available in the region's business areas (for example, the replacement of a two storey building with a 10 storey development). It was acknowledged that while vacant and brownfield are useful measures of the gross land area available for development, a measure of the additional capacity available from intensification of sites was necessary.

The methodology for assessing business land redevelopment capacity was developed by a working group of territorial authority officers throughout 2007. The methodology was applied to 136 business areas across the region¹¹. An inventory and maps outlining these business areas by territorial authority are included as Significant Areas List page 83 and Maps 7 to 13 in Appendix D.

The methodology identified the need to assess two capacity scenarios: theoretical redevelopment, (based on district plan development control rules), and a more conservative assessment, modified theoretical redevelopment, (which was based on the contemporary densities of development currently being experienced in the region).

The supply of redevelopment capacity is subject to a number of constraints and significant uncertainty. These constraints will impact upon the timing and extent (if any) of the capacity that is actually taken-up or realised. Constraints include the pattern of existing activities and ownership, infrastructure, accessibility, land banking, owner preference, and the economic viability of redevelopment.

An assessment of the residential redevelopment capacity of business land was made in the 2003 study. The methodology used in that study differs from the methodology used in this 2008 study and as such the results cannot be compared directly.

Capacity results for redevelopment of business land are reported using the following three measures:

- business activity floor space (m²),
- Employment Count¹² (ECs), and
- residential activity (dwelling units).

4.4.1 Business Land Redevelopment Methodology

A detailed explanation of the methodology used to assess business land redevelopment capacity is summarised in the technical report, "Assessing the

¹¹ The business areas selected met the following criteria: be business zoned land, be or expected to become an area of significant employment, be a recognised area of change, be recognised by Territorial Authorities as a discrete business area. All centres in the Regional Policy Statement Schedule 1A were included.

¹² The Employee Count (EC) is a head count of all salary and wage earners used by Statistics New Zealand. For more information on the EC measure refer to <http://www2.stats.govt.nz/domino/external/omni/omni.nsf/23f076d733ded7e74c256570001d92b4/d1b7ded58bafa223cc256fb900146eff?OpenDocument>

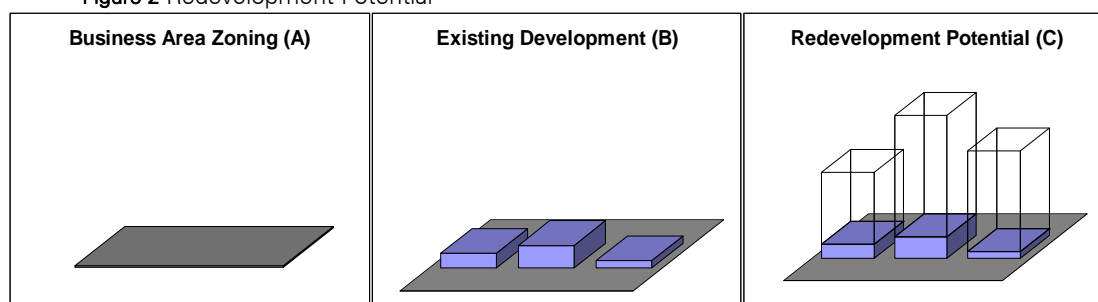
Redevelopment Capacity of the Business Zoned Land in the Auckland Region February 2008". What follows is a brief summary of the methodology from that report.

The methodology developed was based upon the following assumption:

$$\text{Redevelopment Capacity} = \text{Redevelopment Potential} - \text{Existing Development}$$

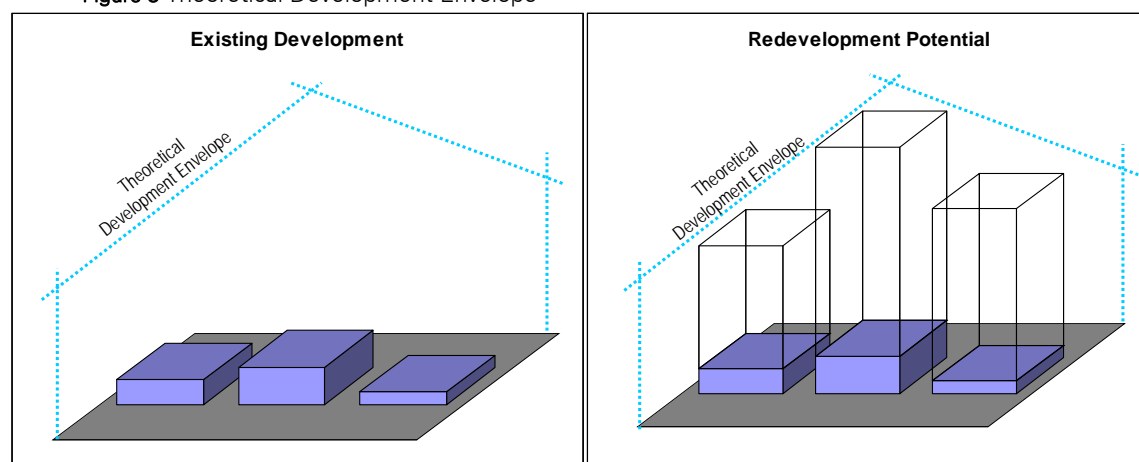
This formula is illustrated in Figure 2 where redevelopment capacity is represented by the non-shaded area in diagram (C).

Figure 2 Redevelopment Potential



The development potential of business areas across the region is set by district plan development control rules for a zone (e.g. height limits, coverage controls etc). These rules effectively define a zone's theoretical development envelope (Figure 3). The development envelopes were then converted into a Floor Area Ratios (FAR) for each zone. (FARs are a convenient method for describing built form and are readily converted into floor space as they describe the ratio of floor space to site area permitted¹³.) The FARs were then applied to each of the business areas to provide a total floor space for that business area.

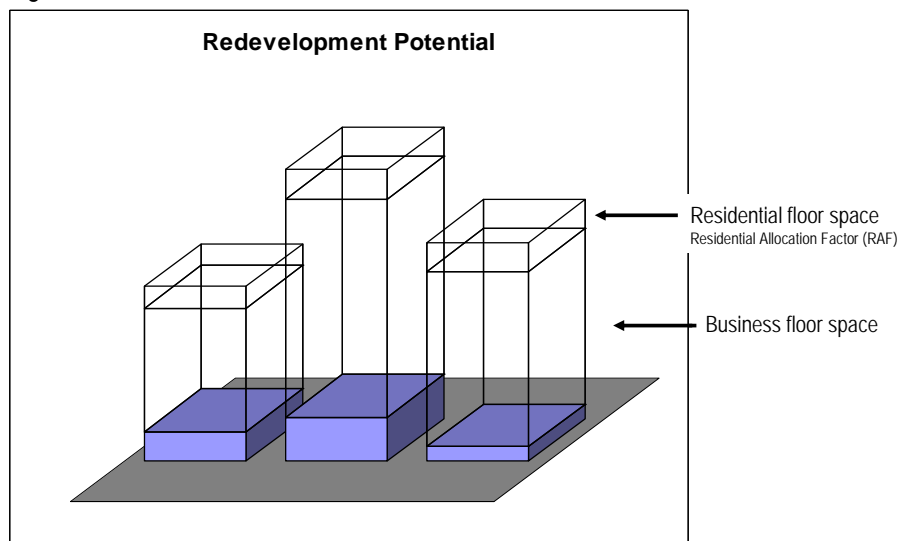
Figure 3 Theoretical Development Envelope



¹³ For example, FAR of 2:1 means that a parcel of 1000 m² can have up to 2000 m² of floor space developed on it. This floor space may be in the form of a two story building that covers the whole site or a four story building that covers 50% of the site.

Some business zones permit residential development (i.e. mixed-use). In such cases a Residential Allocation Factor (RAF) was applied to the total floor area¹⁴ to derive the total floor space available for residential activity (Figure 4). The balance of the floor space was assumed to be available for business activities.

Figure 4 Residential Allocation Factor



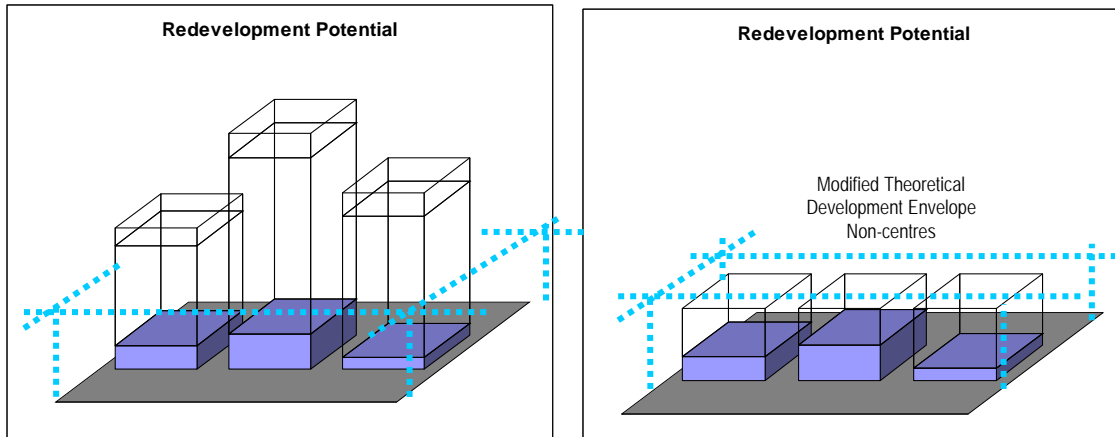
The methodology included two assessments; an entirely theoretical assessment and a modified theoretical assessment. The theoretical assessment was based entirely upon the development envelopes permitted under District Plan rules. The modified theoretical assessment scaled back the theoretical potential in situations where no height limit existed or where unrealistic typologies of development would be required¹⁵. The effect of this modified approach is to reduce the development envelope and therefore the over all redevelopment capacity of these areas¹⁶ (Figure 5).

¹⁴ The majority of District Plans do not include a guide to the final mix of business and residential activity. The RAF was assessed based upon a mix of the following from each territorial authority: strategic objectives and/or expectations, town centre plans, case studies of contemporary development, and officer advice.

¹⁵ Some business zones do not have maximum height limits applying only a height-in-relation to zone boundary control. In some cases this could result in the possibility of 30+ level developments. In industrial areas such a built form typology is not expected and therefore a scale of development based upon contemporary development examples within the region was applied. In centres the development assumptions of similar centres were applied.

¹⁶ Theoretical capacity was calculated (using GIS modelling) and recorded for all zones. Refer to "Assessing the Redevelopment Capacity of the Business Zoned land in the Auckland Region" (ARC 2007).

Figure 5 Modified Theoretical Development Envelope



Finally the total business and residential floor space figures were converted into employment counts (ECs) and residential dwelling units respectively. Business floor space was converted into employment using a set of employee to workspace assumptions¹⁷ (i.e. the average floor space per employee). Residential floor space was converted to dwelling units by applying a 100 m² per dwelling factor¹⁸.

4.5 The Rural Area

The rural capacity study examined the residential development potential of the rural area. The rural area covered by this study can be technically defined by any site that has a rural zoning, but is not in a rural town. In simple terms it includes any farming, forestry or bush covered land outside the MUL.

The Rural Capacity study is the first study of its kind to occur at a regional level. While there have been a number of local studies carried out by territorial authorities, these have not had consistent methodologies, data sources or date stamps. The Rural Capacity study methodology was developed by a working group of territorial authority officers throughout 2007¹⁹.

A key issue in the development of rural areas has been the emergence of countryside living. Countryside living, or lifestyle blocks, are smaller rural properties that are primarily used for residential purposes. Traditional general rural properties typically

¹⁷ Work space ratios (the average floor space occupied by an employee) were used to convert floor space into employment. Workspace ratio assumptions were calculated for each of the 17 ANZSIC level 1 industrial divisions.

¹⁸ 100 m² per dwelling unit was based upon case study examples. It assumes medium to high density multi unit development and includes an area for utilities, parking and entry etc)

¹⁹ The rural capacity figures for Papakura were supplied by Papakura District Council. The Papakura District Rural Capacity study results were used as their methodology was very similar to the ARC methodology, with the same date stamp.

would have two uses: a residential function, and a productive function, such as forestry, dairy farming or market gardening.

While countryside living provides many people with a lifestyle that they enjoy, it can have wider consequences. These include:

- increased traffic demand that is difficult to service properly,
- loss of rural character,
- loss of access to productive land, as countryside living properties are generally not active farms, and
- fragmentation of land, which means that rural areas will be less adaptable to change in the long term.

Countryside living is a difficult issue to quantify. The definition of what constitutes a countryside living title is not simple as there are many anomalies. For example, areas zoned as countryside living do not cover all titles or areas that are used for this purpose, as this type of living may occur on bush lots or other types of land. In addition, a medium size farm can be used for countryside living purposes with little production and income coming from its operation. Conversely, a six hectare lot might be relatively intensively farmed with a small income being generated from it. Unfortunately, data on the productivity of each rural title is not available.

Because of these problems, a proxy for countryside living has been used. For the purposes of this study countryside living was understood to be a subdivision rule that allows sites smaller than eight hectares to be created. If a site is vacant, and is subject to a rule that allows sites smaller than eight hectares, then that site is regarded as countryside living vacant, even if it is larger than eight hectares. The eight hectare cut-off was used for two reasons:

- A site that is smaller than eight hectares is far more likely to be used for non productive purposes than one that is larger
- The eight hectare rule has already been used by the ARC in previous studies and in evidence to the LGAAA hearings.

General rural is defined as a subdivision rule that requires any new site to be eight hectares or larger. If a site is smaller than eight hectares and is vacant, but its subdivision rules are classified as general rural, then it is classified as a countryside living opportunity, and is added to the countryside living total. If it is eight hectares or larger, then it is included as part of the general rural vacant total.

4.5.1 Rural Capacity Study Methodology

The rural capacity study used an automated GIS modelling tool to calculate additional dwelling capacity in the region's rural areas. This tool is based upon the infill and vacant tool. The key difference is that the Infill and Vacant study visually checked sites, while the Rural Capacity study automatically checks titles using GIS datasets.

This methodology was chosen for a variety of reasons. These included:

- the rural area is large, so visually checking is impractical and is likely to be unreliable,
- it will be easy to incorporate new, more accurate datasets,
- regular monitoring is possible using updated dwelling and title information, and
- scenario modelling of alternative rules can be carried out

The key limitation with this approach is that the results are only as good as the data that is available. In addition, each title is not manually checked, so some errors are inevitable. This is most likely to occur with the dwelling data, which is sourced from ARC's rates database. In some cases, the rates database does not record the correct number of dwellings on a property. However, case studies have shown that the total number of dwellings calculated by the model is within 7% of 2006 Census results.

The first step in the application was to load the relevant databases. These databases included title boundaries, number of dwellings per title, vegetation cover, wetland areas, soil types, and wastewater lines.

The rules in each district plan can be categorised into two main categories:

- Density based rules. These zones use a minimum site size as the sole basis for subdivision. These only use title area and the number of dwellings to calculate capacity
- Incentive based rules. These rules reward protection or enhancements of features on titles. These take into account other factors, which are supplied by the various GIS databases such as vegetation cover.

The second step involved running the model, which takes several hours for each territorial authority. The model assesses each title against the rules of the district plans, and produces a subdivision potential for each title. For district plans which allow a number of subdivision variations in each zone, the title was assessed against all the variations, and the highest potential was chosen. This was because it was assumed that landowners would seek to maximise their potential return from their land.

The final step involved summarising the results into categories. Four scenarios are possible for any given title:

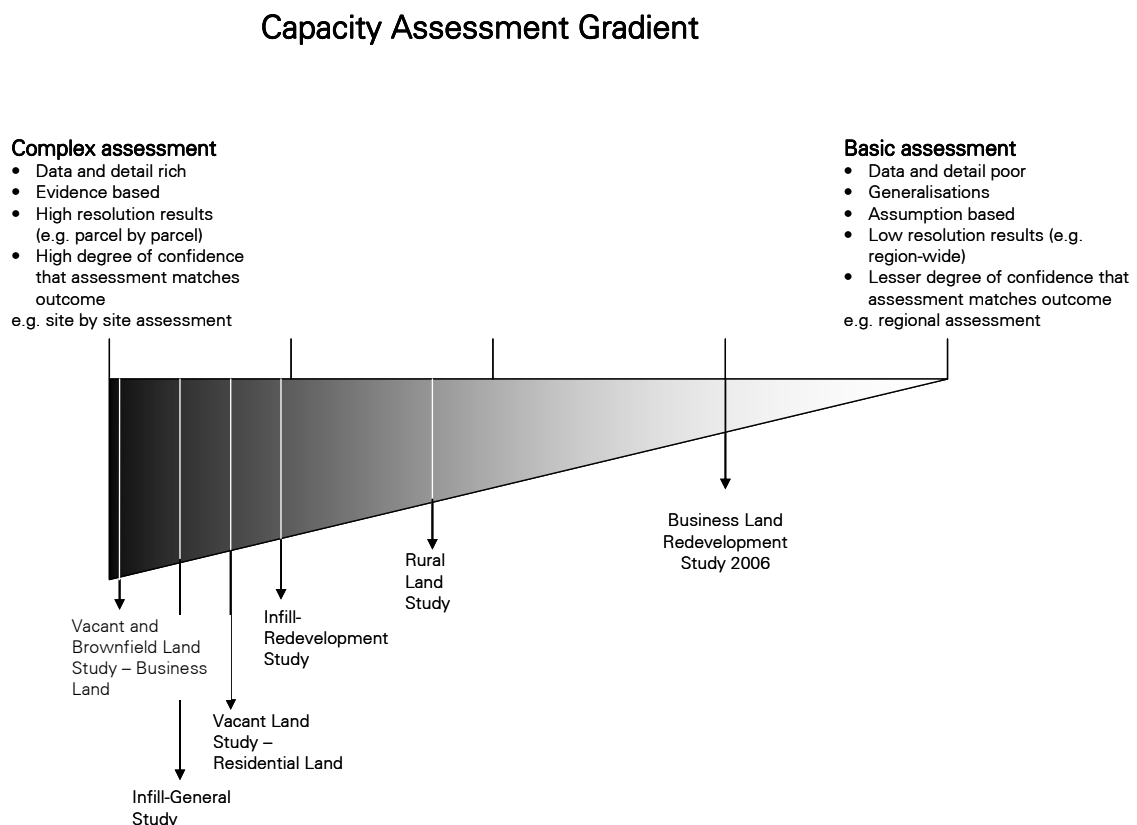
- It can have no potential, and already have a dwelling on it. This title will receive no possible extra dwellings.
- It can have no potential, but be vacant. This title will receive one possible extra dwelling, as a title is automatically allowed to have a dwelling on it.
- It can have potential, and be vacant. The potential number of dwellings is calculated.
- It can have potential, and a dwelling upon it. The potential is taken away from the total number of dwellings on the title.

The rural capacity results are reported in two categories: vacant sites with potential and occupied sites with potential. Vacant sites with potential are made up of scenarios two and three above, while occupied sites with potential are made up scenario four. Any vacant site has to be at least 400m² in size to be included as a vacant site with potential. Any vacant site smaller than this is considered unlikely to be developed in a rural setting²⁰.

4.6 Assessing the Complexity of the Five Capacity Methodologies

Figure 6 attempts to illustrate the varying levels of complexity of the five capacity methodologies employed in the study in terms of their assessment of capacity. The more complex the assessment, the higher the degree of confidence one can have in the outcomes as a measure of development supply. However, confidence in supply should not be confused with take-up. Take-up is a measure of demand. Supply plays a part in take-up but additional issues will also influence actual outcomes e.g. individual property owner/developer decisions and the scale and tempo of the market. Furthermore both these factors, demand and supply, will change over time.

Figure 6 Capacity Assessment Gradient



In the 1998 Capacity for Growth study, infill-general was assessed using a sample based approach. Ten thousand parcels were assessed and the results extrapolated

²⁰ 400m² was also used as a cut off point in the ARC's evidence to the LGAAA Hearings.

across the metropolitan area. As such this methodology would sit somewhere to the right hand side (basic) of the assessment gradient. The 2008 infill-general assessment has examined every residentially zoned parcel in the metropolitan area. As such, this methodology sits much more to the left hand side of the gradient (complex).

The Business Land Redevelopment Methodology is new to the 2008 study. The data and tools available to assess this capacity are limited and its position on the gradient reflects this. However, as more data and improved tools become available, it is expected that this methodology will move towards the more complex end of the gradient.

5 Results

This section summarises the capacity results first by sub-regional areas (i.e. the metropolitan area and the rural area, including rural and coastal townships) and then by the region as a whole.

5.1 The Metropolitan Area

The metropolitan area includes all the residential and business zoned land that falls within the Metropolitan Urban Limits (MUL) as defined by the Regional Policy Statement (as at March 2006).

5.1.1 Residential Land

Three measures are used to record residential land capacity:

- vacant and vacant potential,
- general infill and redevelopment infill, and
- residential development on business land.

5.1.1.1 Vacant Land Study Results

The Vacant Land study identified capacity for a further 59,000 dwelling units within the metropolitan area. This is a net increase in capacity of 268 dwelling units over the 2001 total (see summary Table 5 below).

Based upon past development patterns and future household projections the vacant land resource is projected to provide capacity for 16 to 24 years²¹.

Table 5 Residential Dwelling Unit Capacity on Vacant Land

Residential Land (Residential Dwelling Units)	Vacant Land Capacity 1996	Vacant Land Capacity 2001	Vacant Land Capacity 2006	Change 2001- 2006 (Actual)	Change 2001- 2006 (%)	Years to Exhaustion (as at 2006)
Metropolitan Area	70,686	58,803	59,071	268	+1%	16 to 24

A net increase in vacant land capacity occurs when more capacity is added to the metropolitan total than is consumed in that period. In Auckland, the supply of additional vacant land capacity is through extensions of the Metropolitan Urban Limit

²¹ Development patterns and future household projections are analysed in section 6 Matching Capacity with Demand. Between 2001 and 2006, 40% of all residential development occurred on vacant land.

(MUL), and through the identification of new structure plan areas (i.e. areas of land which are in the process of receiving active residential zonings).

In the 2001 to 2006 period, structure plan areas added a net total of 16,850 dwelling units to the region's vacant land capacity total.

Since the 2003 study, five new structure plan areas have been included in district plans:

- Babich (1,050 dwelling units),
- Flat Bush East (7000 dwelling units),
- Stonefields (Mt Wellington Quarry) (2,600 dwelling units),
- Hingaia Stage 1 (1,966 dwelling units), and
- Takanini Stages 1A,1B and 3 (2,310 dwelling units).

Two of the 2001 Structure Plan areas have had their capacity yield assessments increased:

- Birdwood (increased by 873 dwelling units), and
- Orewa West (increased by 1050 dwelling units).

Two of the 2001 Structure Plan areas have had the original capacity yields reduced:

- Long Bay (reduced by 209 dwelling units), and
- Silverdale North (reduced by 1,243 dwelling units).

Capacity within structure plan areas only becomes available for development once the area receives an operative residential zoning. This can take a number of years.

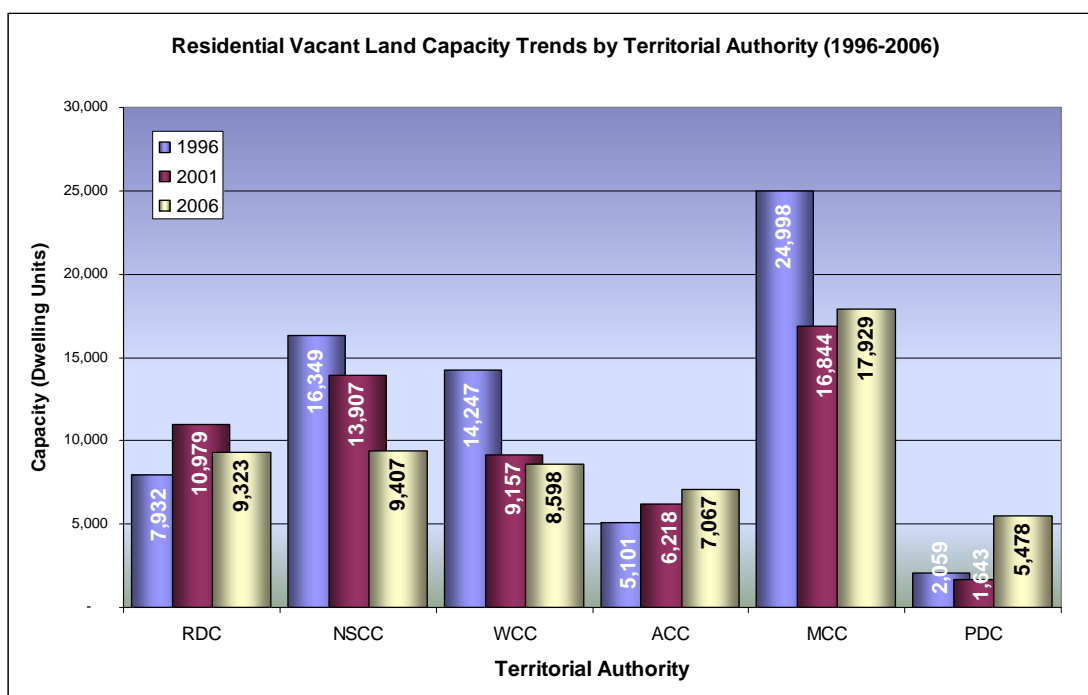
Three structure plan areas became fully operative in the 2001 to 2006 period. (Any capacity in these areas is now recorded under the active zoning area vacant land measure). These areas were:

- Albany (3,275 dwelling units),
- Greenhithe (3,389 dwelling units), and
- Harbourview (500 dwellings units).

The results of the Vacant Land study are shown by territorial authority in Chart 1. Papakura District, with the staged introduction of structure plan areas at Hingaia and Takanini, has more than tripled its vacant land capacity since 2001. Manukau City has increased capacity by 6% and Auckland City by 14%. Manukau with the inclusion of Flat Bush East, previously outside the MUL, and Auckland City with the inclusion of Stonefields (ex Mt Wellington quarry land).

The remaining territorial authorities have all experienced a loss in vacant land capacity; North Shore City has had the greatest decline, down 22%, Rodney District was next, down 15%. Waitakere City decreased by 7% even with the inclusion of the Babich structure plan area (capacity for 1050 dwelling units).

Chart 1 Residential Vacant Land Capacity Trends by Territorial Authority 1996-2006



Overall net capacity available from vacant land within the metropolitan area has remained relatively unchanged between the 2001 and 2006 periods. This compares to an overall decrease of 17% in the previous period, 1996 to 2001.

The Vacant Land study capacity results are summarised by territorial authority against all other sources of capacity in Table 19 and Table 20 in Appendix A. The results are mapped by territorial authority in Map 1 to Map 6 in Appendix D.

5.1.1.2 Residential Infill and Redevelopment Study Results

The 2008 Infill study shows a metropolitan capacity of 20,300 dwelling units. This is 41% lower than the 2001 figure (34,185).

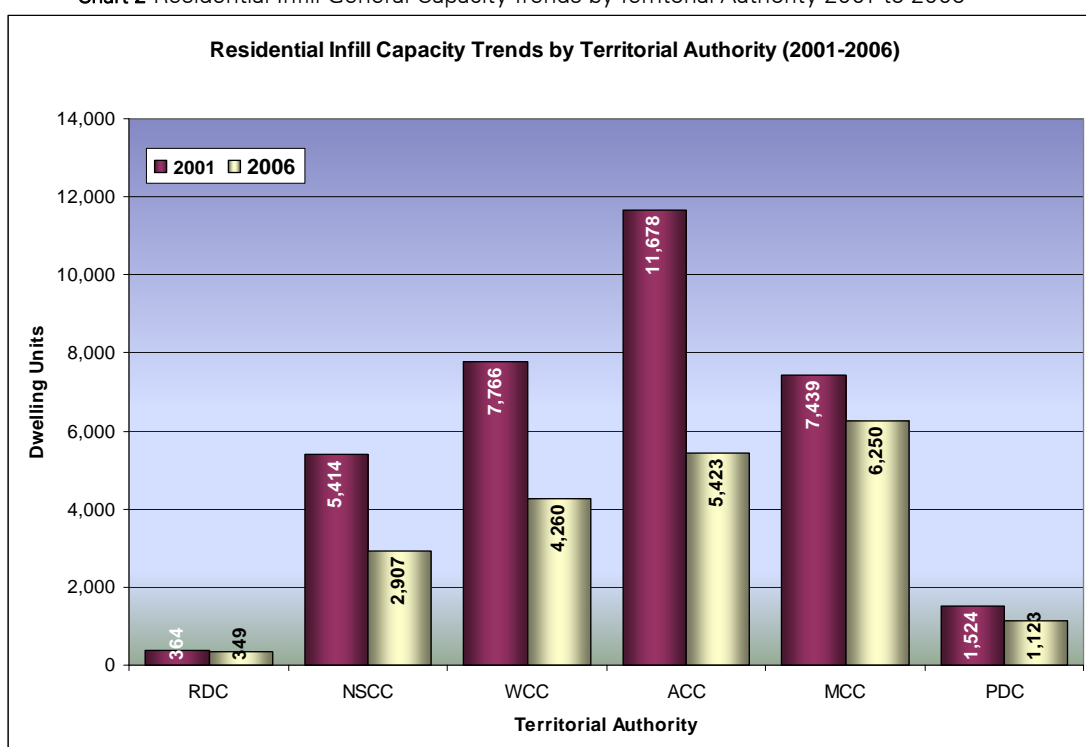
Based upon past development patterns and future household projections the infill land resource is projected to provide capacity for six to 10 years²².

²² Development patterns and future household projections are analysed in section 6 Matching Capacity with Demand. Between 2001 and 2006, 32% of all residential development occurred by way of infill.

Table 6 Residential Dwelling Unit Capacity Infill-General

Residential Land (Residential Dwelling Units)	Residential Infill 1996 (estimate) ²³	Residential Infill 2001	Residential Infill 2006	Change 2001-2006 (Actual)	Change 2001-2006 (%)	Years to Exhaustion (as at 2006)
Metropolitan Area	35,732 (est)	34,185	20,312	(-13,873)	(-41%)	6 to 10

All metropolitan territorial authorities experienced a decrease in infill capacity. However, the larger territorial authorities (NSC, WCC and ACC – but not MCC) experienced very sharp declines; on average between 45-55%. Chart 8 illustrates these territorial authority changes.

Chart 2 Residential Infill-General Capacity Trends by Territorial Authority 2001 to 2006

Auckland City's infill capacity is 5,400. This is a 54% decrease from the 2001 figure (11,700) and is the largest decrease of any territorial authority. North Shore City at 2,900 and Waitakere City at 4,260 experienced decreases in capacity of 46% and 45% respectively.

Net infill capacity in Rodney District (Hibiscus Coast) has remained relatively static between the two study periods (4% decrease). However, this figure has been influenced by a change to the Rodney District Plan which up-zoned areas from medium intensity to high intensity, thereby introducing additional infill capacity.

²³ The 1998 Infill study methodology was sample based and not parcel by parcel (as it was in 2003 and 2008). Therefore care should be taken when comparing results between periods.

Manukau City has a remaining infill capacity of 6,250 dwelling units. This is the highest remaining infill capacity of all the territorial authorities. Manukau City's infill capacity has reduced by 16% in the five years since 2001. This reduction is lower than the metropolitan average and considerably lower than the 45-55% reduction experienced by other similarly sized territorial authorities. This slower rate is likely due to the stormwater servicing limitations which restrict further infill on a large number of sites.

Papakura District has infill capacity of 1,120. This is down 18% from 1,520 in 2001. The take-up of infill capacity within Papakura has slowed markedly from the proceeding period (1996 to 2001). The availability of additional vacant land through the Hingaia and Takanini structure plan areas appears to have been an influence here.

Residential infill continues to be a very popular form of residential development across all territorial authorities. However, under current policies it is now becoming a limited resource, and based upon past development patterns and future household projections, is only expected to be a source of capacity for a further six to 10 years (as at 2006). For areas such as Rodney District (Hibiscus Coast), North Shore City, and Auckland City infill capacity could be exhausted within the next five years. (This assumes future plan changes add no further infill capacity.)

The 2001 study identified redevelopment infill as an emerging trend. Redevelopment was described as the "removal of the existing dwelling and redevelopment to the maximum allowed density". An example of redevelopment is shown in Figure 7. In this Auckland City example, the large older houses have been removed and replaced by a higher density terrace-style development.

Figure 7 Infill Redevelopment, Alpers Ave, Newmarket, ACC 2001 and 2006

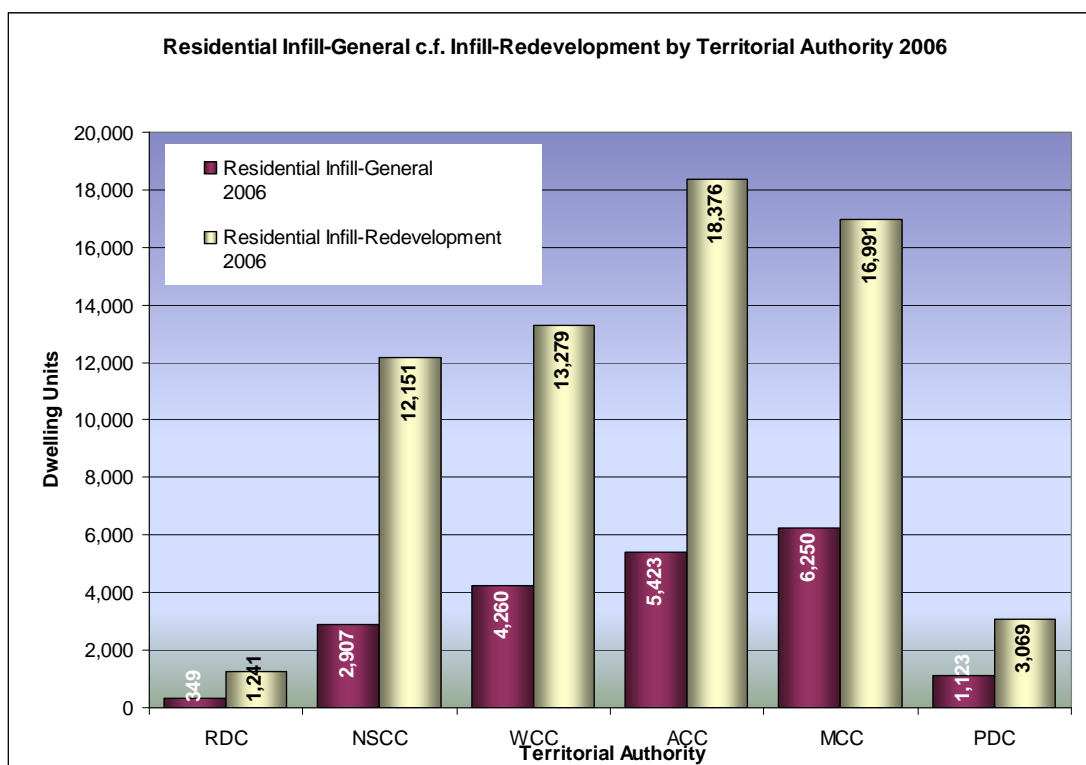


The 2008 Capacity for Growth study has identified that infill-redevelopment continues to be a growing residential development option. In the 2003 study, redevelopment was associated with the higher valued suburbs. In the 2008 study this has been witnessed more widely and is now probably the result of the limited number of traditional infill opportunities remaining, combined with a general increase in land values, population growth and improvements in house relocation methods. (This study recommends that the trends in redevelopment be investigated further, see Section 8 Recommended for further investigation.)

The 2006 Infill-Redevelopment study identified a metropolitan area capacity of 65,100 additional dwelling units. This is more than three times the capacity identified from infill-general.

Not surprisingly, the larger urban territorial authorities dominate the figures; Auckland City has the largest capacity with 18,400, Manukau City 17,000, Waitakere City 13,300, North Shore City 12,150, Papakura 3,000 and Rodney 1,240. (Refer Chart 3 for distribution by territorial authority).

Chart 3 Residential Infill-Redevelopment compared to Infill-General by Territorial Authority



Infill-redevelopment and infill-general are two measures of residential infill capacity from the same land resource. As such, they can be viewed as defining the range of infill outcomes, with infill-general sitting at the lower end of the range and infill-redevelopment at the upper.

Infill-redevelopment, by its nature (i.e. the replacement of the existing dwelling by multiple new dwellings to maximum density), does have the potential to change the face of existing neighbourhoods. In cases where territorial authorities have planned for higher density communities, infill-redevelopment will be supportive in achieving such outcomes (and by contrast, infill-general will compromise this outcome by creating a fragmented pattern of ownership with densities lower than permitted but at a level where redevelopment to the higher density is then no longer financially viable). However, in neighbourhoods where communities expect little change, except for the occasional infill dwelling at the rear of a property, infill-redevelopment could result in significant changes to a neighbourhood (e.g. once the existing dwellings are replaced by townhouses).

The infill-general and infill-redevelopment capacity results are summarised by territorial authority against all other sources of capacity in Table 19 and Table 20 in Appendix A.

The infill-general and infill-redevelopment capacity results are summarised by territorial authority for 2001 and 2006 in Table 31 Appendix B.

5.1.1.3 Residential Redevelopment on Business Zoned Land Results

The Residential Redevelopment study has estimated that there is capacity for a further 69,370 dwelling units on business zoned land within the metropolitan area.

Based upon past development patterns and future household projections, the residential capacity from business land is projected to provide for 21 to 40 years²⁴.

Table 7 Residential Redevelopment on Business Zoned Land (Metropolitan Area)

Business Land (Residential Dwelling Units)	Residential Redevelopment on Business Land 2001	Residential Redevelopment on Business Land 2006	Change 2001-2006 (Actual)	Years to Exhaustion (as at 2006)
Metropolitan Area	45,000	69,370	(results not comparable) ²⁵	21-40

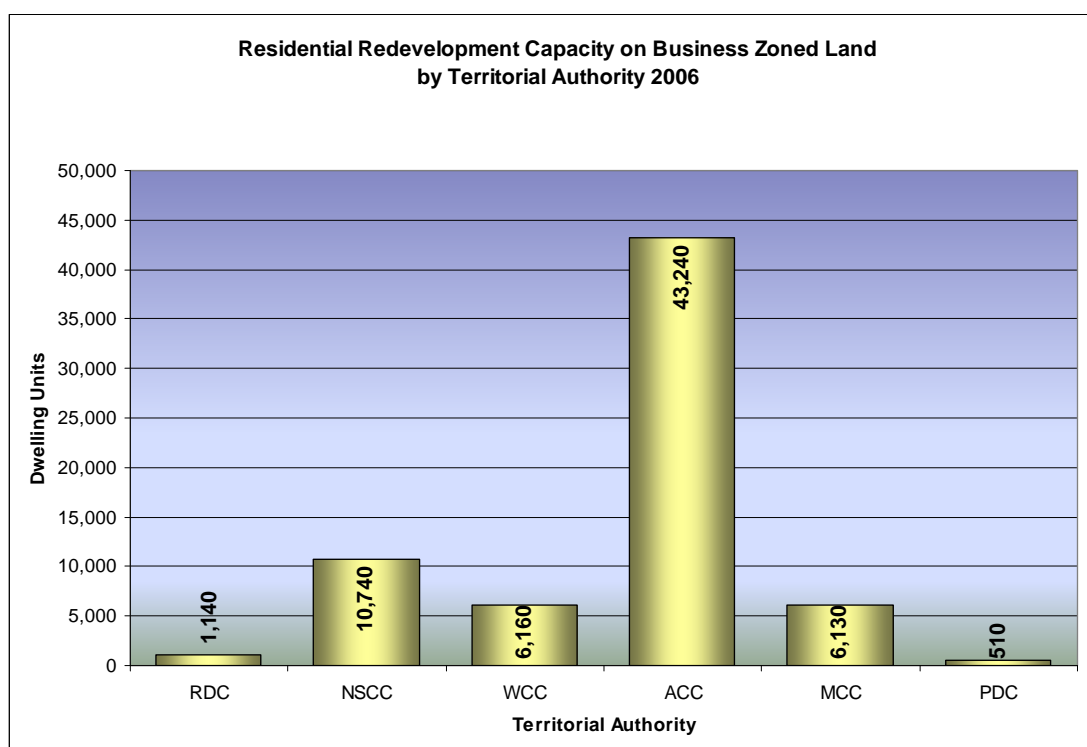
Auckland City has the largest business land residential capacity at 43,240 dwelling units; 21,260 of which are within the CBD. North Shore City has capacity for 10,700, of which 5,000 are located in the Albany Centre and 2,145 in Takapuna. Waitakere and Manukau cities both have capacity for 6,160 (New Lynn 3,100, Henderson 2,000 and Manukau City Centre 2,800). Rodney District (Hibiscus Coast) has capacity for 1,140 and Papakura 510.

For a summary of residential redevelopment totals by territorial authority refer Chart 4 over page.

²⁴ Development patterns and future household projections are analysed in section 6 Matching Capacity with Demand. Between 2001 and 2006, 28% of all residential development occurred on business zoned land.

²⁵ Different methodologies were used to assess residential capacity on business land in 2001 and 2006. Therefore a numerical comparison between the two totals is not valid.

Chart 4 Residential Redevelopment Capacity on Business Zoned Land by Territorial Authority 2006.



Residential redevelopment on business zoned land is currently the largest source of residential capacity by type - 46% of total capacity, compared with 40% vacant land and 14% infill. However, residential development rates between 2001 and 2006 show that as a capacity type, residential redevelopment experienced the slowest rate of take-up (i.e. 28% of all residential development compared to vacant land at 40% and infill 32%). This apparent mismatch will need to be addressed if an efficient and effective supply to demand profile is to be achieved.

Residential development on business zoned land will be of a medium to high density format (i.e. terrace to high rise apartments) which is quite different to the traditional single family dwelling. However, demographic trends suggest that the type of people who are choosing to live in higher density centres at present will become a larger proportion of the population in the future (e.g. singles, empty nesters and retirees i.e. those who are interested in an urban lifestyle, are downsizing to a smaller dwelling, wanting to live close to their place of work and study, or those planning a family before they move into a separate house²⁶).

The 2006 results are higher than those recorded in the 2003 study. This difference is explained by a difference in the methodology used between the two studies. The 2003 study methodology resulted in a best estimate for the demand for residential dwellings on business land. The 2008 study worked to understand what development potential existed on business land under current district plans and then identified the best estimate of residential supply.

²⁶ Profile of Higher Density Living in the Auckland Region. ARC February, 2008.

The residential redevelopment on business land capacity results are summarised by territorial authority against all other sources of capacity in Table 19 Appendix A.

5.1.2 Total Residential Capacity Results

When combined, the total metropolitan capacity available from the residential measures is for a further 147,300 dwelling units.

Based upon future household projections, the capacity from all metropolitan residential sources is projected to provide for 14 to 20 years²⁷.

Table 8 Total Residential Capacity Metropolitan Area

All Sources (Residential Dwelling Units)	Total Household Capacity 2001	Total Household Capacity 2006	Change 2001-2006 (Actual)	Change 2001-2006 (%)	Years to Exhaustion (as at 2006)
Metropolitan Area	137,951	148,753	10,802	+8%	14-20

When the capacity from infill-redevelopment is included in the total, rather than infill general, the total capacity is increased by 44,795 residential dwelling units. This has the effect of extending supply by a further four to 10 years.

Table 9 Total Residential Capacity Metropolitan Area (includes Infill-Redevelopment)

All Sources (Residential Dwelling Units)	Infill-Redevelopment capacity 2006	Total Household Capacity 2006	Years to Exhaustion (as at 2006)
Metropolitan Area	65,107	193,548	18-30

5.1.3 Business Land

Three measures are used to record business land capacity:

- vacant land,
- brownfield land, and
- redevelopment of business land.

Note: The Vacant and Brownfield Land studies assess business zoned land parcels for capacity. Results are recorded in terms of available land area (hectares). The Business Land Redevelopment study assesses the intensification capacity of selected business areas. Results are recorded in terms of floor space and employment by business area (i.e. not parcel by parcel). In some cases the two studies will overlap and provide a range of capacity data for the same area, i.e. where a business area includes areas of vacant or brownfield land and redevelopment capacity.

²⁷ Future household projections are analysed in the section 6 Matching Capacity with Demand.

5.1.3.1 Vacant and Brownfield Land Study Results

The Vacant Land study identified a total of 1,554 hectares of business zoned land within the metropolitan area (Table 10).

At the rate of development experienced over the past 10 years (120 ha/annum 1996-2006) this capacity could provide for a further 13 years of development.

Table 10 Total Vacant Business Land 2006 (Metropolitan area)

Business Land	Vacant 1996	Vacant 2001	Vacant 2008	Change 2001-2006 (Actual)	Change 2001-2006 (%)	Years to Exhaustion (as at 2006)
Metropolitan Area	2,603	1,939	1,554	-385	-20%	13

Between 2001 and 2006, 549 hectares of vacant business land was consumed within the metropolitan area (34% of 2001 total vacant land).

In the same period, 109 hectares of new land has been added by way of MUL extensions (i.e. new structure plan areas at Silverdale North - 70 hectares, Hinigaia - 15 hectares and Takanini - 24 hectares).

The 2008 study has included 294 hectares of vacant land within the Auckland International Airport designation²⁸. This land was not included in the earlier studies because it was outside the MUL. However, because the land is available for airport related commercial activities under the airport designation (which is subject to an application to bring the area within the MUL), and because a range of commercial activities have set up in the area, it has been included in the 2008 study.

When brownfield land (611 hectares) is included in the final count then the total business zoned land available for further development increases to 2,096 hectares (Table 11). This level of capacity could provide for 17 years of business development. In other words, including brownfield land adds a further four years to the region's available business land supply²⁹.

Table 11 Total Vacant and Brownfield Business Land 2006 (Metropolitan area)

Business Land	Vacant 2006	Brownfield 2006	Total Vacant and Brownfield 2006	Years to Exhaustion (as at 2006)
Metropolitan Area	1,554	611 ³⁰	2,096 ³¹	17

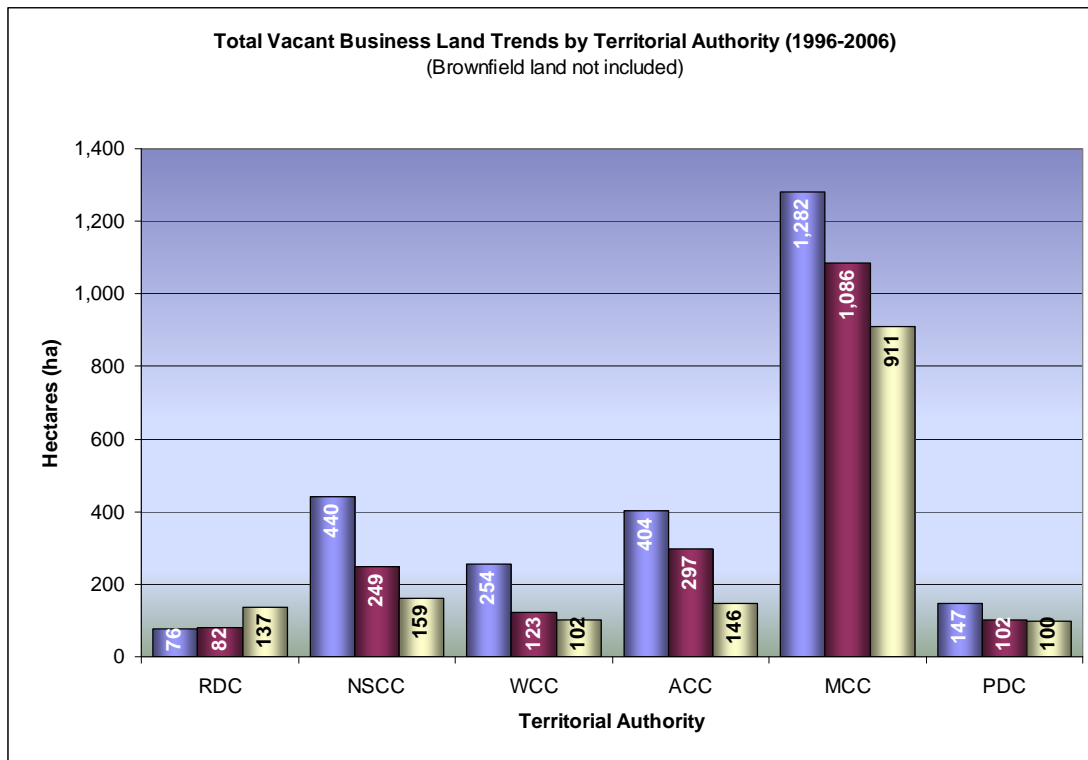
²⁸ The extent of both the airport designation and the vacant land was confirmed with MCC officers (May 2007).

²⁹ Brownfield land is subject to a number of development constraints - see brownfield methodology section for detail.

³⁰ Note: 69 hectares of brownfield land was previously identified as vacant land. For this reason it appears that the total business land figures is not equal to the vacant land area plus brownfield land. However, the numbers can be reconciled once these 69 hectares is taken into account – refer to Table 34 in Appendix C for detail.

Total vacant land trends by territorial authority are shown in Chart 5. (This chart does not include brownfield land).

Chart 5 Total Vacant Business Land Trends by Territorial Authority 1996-2006



Manukau City has 911 ha of vacant business land capacity. At past rates of development, this capacity could provide for a further 16 years of development.

Manukau City is the single largest source of vacant business land in the metropolitan area (59% of the metropolitan total). Refer Chart 6 for territorial authority share (%) of total business land capacity 2008.

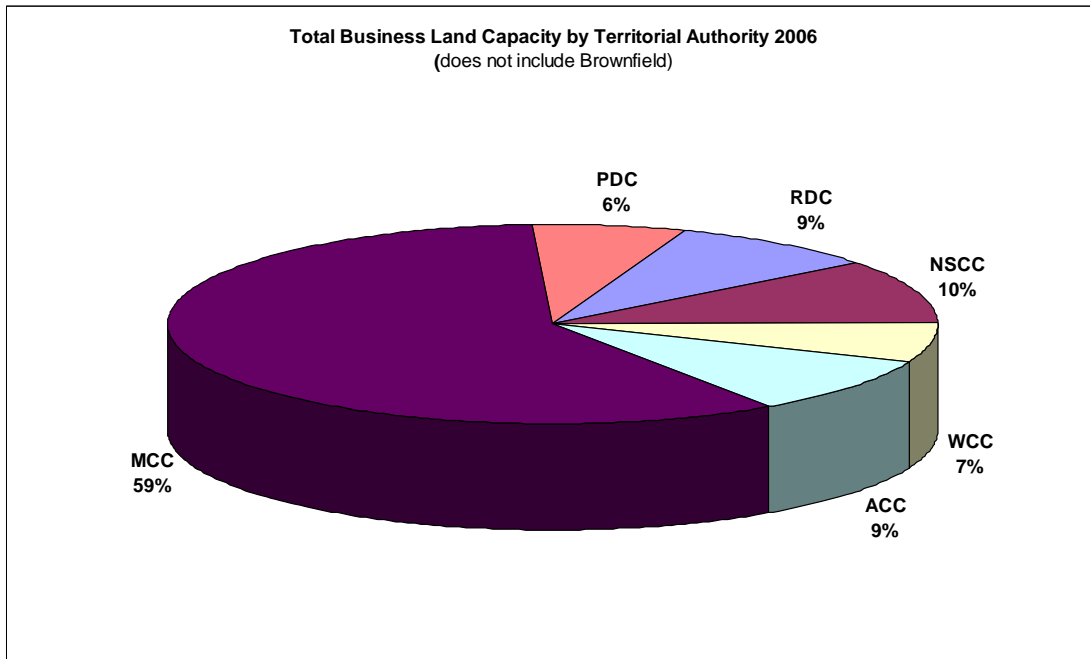
Between 2001 and 2006, 339 ha of vacant business land was consumed (38% of 2001 vacant land). Over the 1996 to 2006 period, Manukau City has experienced the greatest rate of business land consumption within the metropolitan area (56ha/yr). It is the only territorial authority to have experienced an increase in development rates between the 1996 - 2001 and 2001 - 2006 periods.

A significant increase in capacity has resulted from the inclusion of the vacant land at the international airport terminal (294 ha).

Two hundred and seventeen hectares of brownfield land have been identified within Manukau City. Including this land in the final business land capacity total extends capacity by four years i.e. from 16 to 20 years (refer Chart 7).

³¹ Total does not equal brownfield + vacant, as 69 ha of land previously defined as vacant is now defined as brownfield.

Chart 6 Territorial Authority Share (%) of Total Vacant Business Land Capacity 2008



In the 2003 study both North Shore City and Waitakere City were identified as having as little as seven years of capacity remaining, and both were experiencing the highest rates of vacant land loss (48% and 42% respectively). Over the past five years these consumption rates have eased. However, with no further land introduced, both areas continue to have limited capacity remaining.

Waitakere City has 102 hectares of vacant business land capacity remaining. At past rates of development this capacity could provide for a further 10 years of development.

Between 2001 and 2006, 15 hectares of business land was consumed in Waitakere City (13% of 2001 vacant land). This compares to the previous five years where 84 hectares were consumed.

Waitakere City and Papakura District have the least amount of available business land in the metropolitan area. For Waitakere this total is expected to be increased with the extension of the Westgate/Massey North/ Hobsonville area (approximately 70 ha). (This extension is subject to the LGAAA process – Regional Policy Statement Plan Change 6, and was not a part of the district plan zoning at the time of this assessment).

Twenty nine hectares of brownfield land has been identified within Waitakere City. Including this land in the final total would extend capacity by three years, i.e. from 10 to 13 years.

North Shore City has 159 hectares of vacant business land capacity remaining. With continued high consumption rates (27ha/year 1996 to 2006, second only to Manukau City) North Shore City's capacity is projected to provide for only six more years of demand.

Between 2001 and 2006, 80 hectares of vacant business land were consumed (38% of 2001 vacant land). In the 1996 to 2001 period 191 hectares was consumed. In total, between 1996 and 2006, North Shore City's vacant business land has been reduced by 67% (271 ha). This is the highest percentage decrease of any territorial authority area and is second only in actual land area to Manukau City.

There is virtually no opportunity for North Shore to add further vacant business land to its total stock. The intensification of existing business land will have to be considered if further business development opportunities are to be accommodated (see 5.1.3.2 Redevelopment Capacity on Business Zoned Land Results for redevelopment opportunities and capacity).

Nineteen hectares of brownfield land have been identified within North Shore City. Including this land in the final total has the effect of increasing capacity by a matter of months (i.e. less than one year).

Auckland City has 146 hectares of business land capacity remaining. At past rates of development this capacity could provide for a further nine years of development. Between 2001 and 2006, 58 hectares of vacant business land were developed (29% of 2001 vacant land). This is a considerable slow down from the previous period, 1996 to 2001, where 107 hectares were developed. In total, over a 10 year period, over 50% of Auckland City's vacant business land has been developed.

The Mt. Wellington quarry area (98 ha) was identified as special business land in the two previous studies. Development commenced in the 2001 to 2006 period under the Stonefields Development Master Plan. This plan has identified a mainly residential development with three hectares of business land available as a local town centre.

Two hundred and ninety hectares of brownfield land has been identified in Auckland City. This is the largest amount of brownfield land of any territorial authority and is consistent with Auckland being home to some of the older and larger business areas within the metropolitan area (ports, railways, breweries and freezing works etc). Including brownfield land in Auckland City's total increases capacity to 25 years, i.e. an increase of 16 years.

Like North Shore City, Auckland City has a limited ability to grow its vacant business land resource and alternative means of providing development opportunities, such as brownfield redevelopment and intensification, will need to be continually identified.

Rodney District (Hibiscus Coast) has 137 hectares of business land capacity. Historically, business land uptake in Rodney has been low, averaging two to three hectares a year. At these past rates of take-up, current capacity is projected to provide for over 50 years of demand. However, as this area consolidates, the population continues to grow and a wider range of business land becomes available, this growth rate is expected to increase.

Between 2001 and 2006, 15 hectares of vacant business land was consumed in Rodney District (23% of 2001 vacant land total). In the same period, 70 hectares of business land were introduced through the Silverdale Structure Plan area (targeted for knowledge based industries).

Brownfield land adds just nine hectares of land to Rodney District's total, the least of all the territorial authorities.

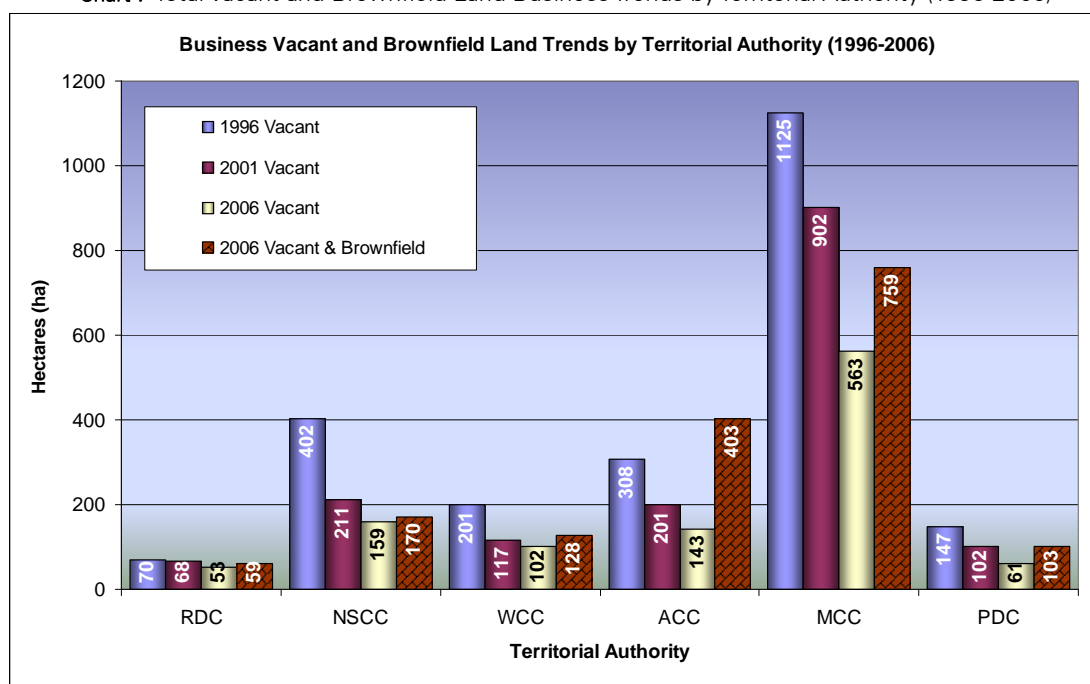
Papakura District has a total of 100 hectares of available business land. At past rates of development this capacity could provide for a further 12 years of development.

Between 2001 and 2006, 41 hectares of vacant business land were consumed in Papakura, 41% of the 2001 vacant land total. This was the highest rate of business land take-up of all the territorial authorities. In the same period 39 hectares of vacant business land was added to the total by way of local business centres within the Hingaia and Takanini structure plan areas (15ha and 24ha respectively).

Forty two hectares of brownfield land has also been identified within Papakura. Including this land in the final total has the effect of increasing capacity by four years (i.e. from 12 to 16 years).

Chart 7 illustrates the effect of including the brownfield land counts for each territorial authority. For 2006 two vacant land totals are shown called vacant, and vacant and brownfield.

Chart 7 Total Vacant and Brownfield Land Business Trends by Territorial Authority (1996-2006)



The following capacity has not been included in this assessment:

- Massey North /Westgate/Hobsonville Peninsula (Waitakere City)

Table 32 in Appendix B summarises vacant business land by territorial authority from 1996-2006. The results are mapped by territorial authority in Map 1 to Map 6 in Appendix D.

Table 33 in Appendix C summarises the business land take-up rates by territorial authority for the period 2001-06.

5.1.3.2 Redevelopment Capacity on Business Zoned Land Results

The Redevelopment Capacity on Business Land study identified that there is capacity for approximately twice the level of business floor space and employment that currently exists (2006) while providing for five times the current number of residential dwelling units.

The capacity results were compared against past rates of development (commercial building consents), and against future employment projections³². Both showed that capacity was sufficient to beyond 2031.

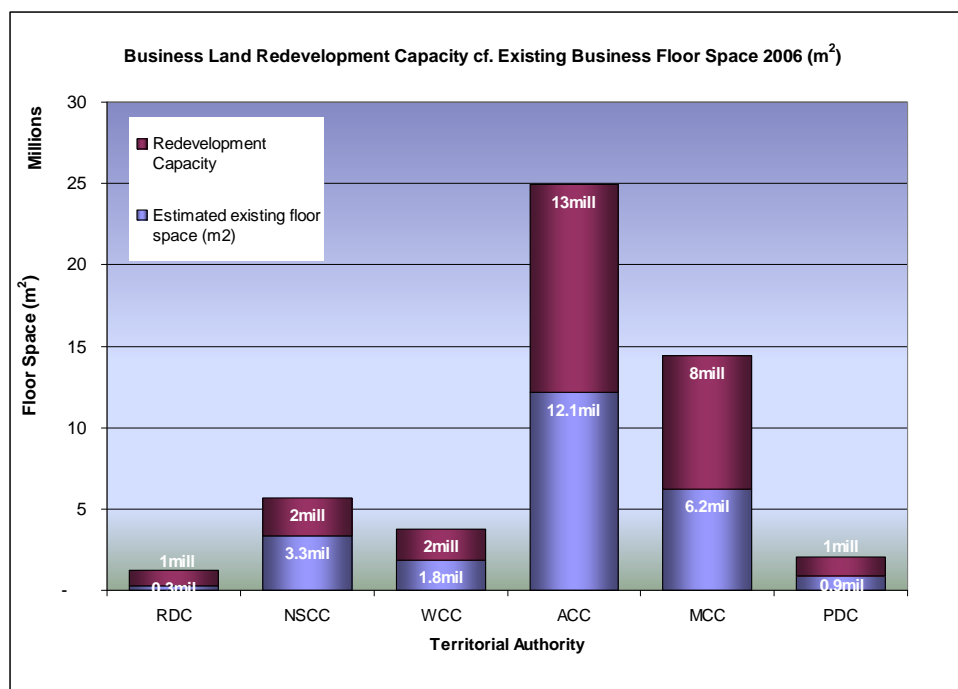
Table 12 Total Redevelopment Capacity on Business Zoned Land (Metropolitan Area)

Business Land	Business Zoned Land (hectares)	Business Activity Floor Space (m ²) Capacity 2006	Employment Capacity (ECs) 2006	Residential Dwelling Unit Capacity 2006	Years to Exhaustion Business Activity Floor Space (as at 2006)
Metropolitan Area	6,223 ha	27,467,800 m ²	511,320	67,370	26 years +

All the territorial authorities, except for North Shore City, have the capacity to at least double current business activity floor space. Auckland City and Manukau City dominate in an absolute sense while Rodney District has redevelopment capacity to increase floor space by more than four fold (refer Chart 8).

³² Economic Futures Mode (EFM) source ARC and Market Economics Ltd; (2008)

Chart 8 Redevelopment Capacity on Business Land 2006



The Redevelopment Capacity study examined the capacity results as they related to centres and non-centre areas³³ (Table 13, Table 14). Results of this analysis indicated that there is considerable potential for additional intensification of business activities in the region's centres. However, there is only limited potential for additional intensification in some of the region's business areas. This has particular implications for the possibilities of growth in manufacturing, storage and logistics type industries (i.e. Group 1 activities³⁴).

Table 13 Total Redevelopment Capacity within Centres (Metropolitan area)

Business Land	Business Zoned Land (hectares)	Business Activity Floor Space (m ²) Capacity 2006	Employment Capacity (ECs) 2006	Residential Dwelling Unit Capacity 2006
Metropolitan Area - Centres	1,055 ha	10,736,200 m ²	249,80	55,910

³³ Centres were selected based upon territorial district plan classifications and included sub-regional, local and neighbourhood centres (mixed-use type zonings). Non-centres were the balance business areas. Non-centres are characterised by industrial, manufacturing or single-use type zonings. Small business zones e.g. local shops are not included in the study

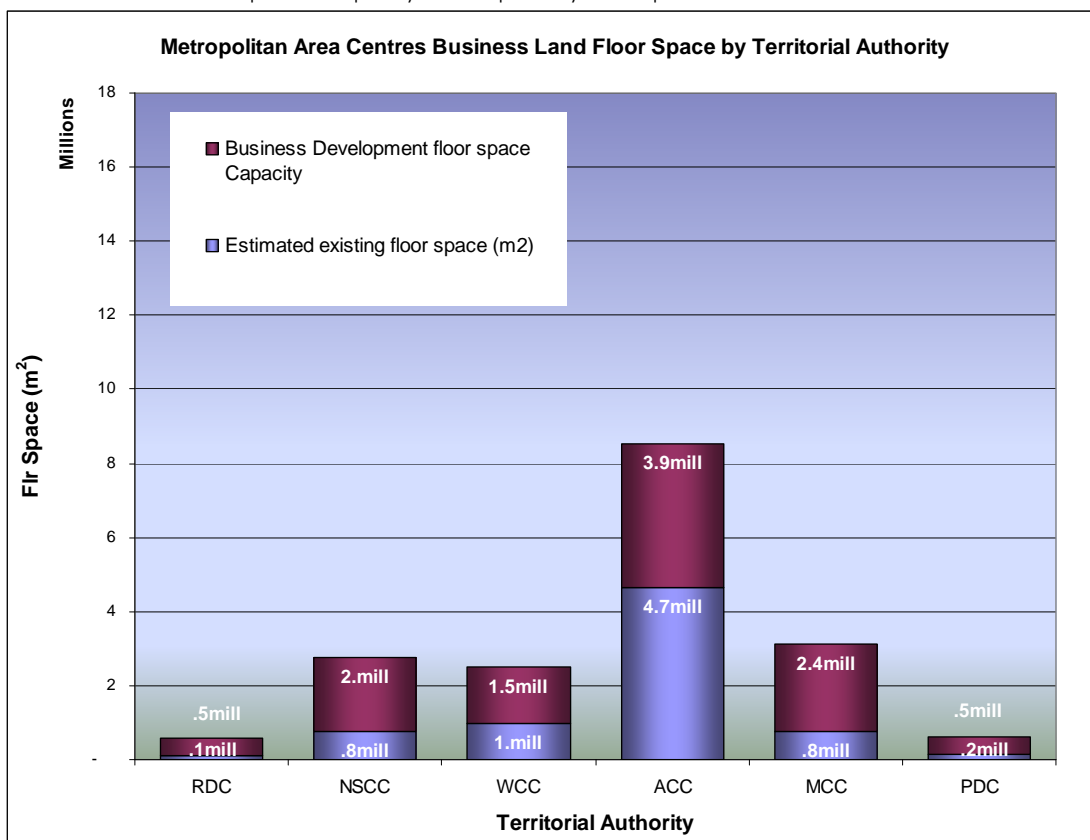
³⁴ The terms Group 1 and Group 2 activities have been identified by the BLEG group as a means of differentiating between low-density land-hungry type activities: Group 1 (e.g. industrial, storage and logistic activities) and more intensive Group 2 activities (e.g. office, retail and service sector).

Table 14 Total Redevelopment Capacity within Non-centres (Metropolitan Area)

Business Land	Business Zoned Land (hectares)	Business Activity Floor Space (m ²) Capacity 2006	Employment Capacity (ECs) 2006	Residential Dwelling Unit Capacity 2006
Metropolitan Area – Non-centres	5,168 ha	16,731,600 m ²	261,500	13,460

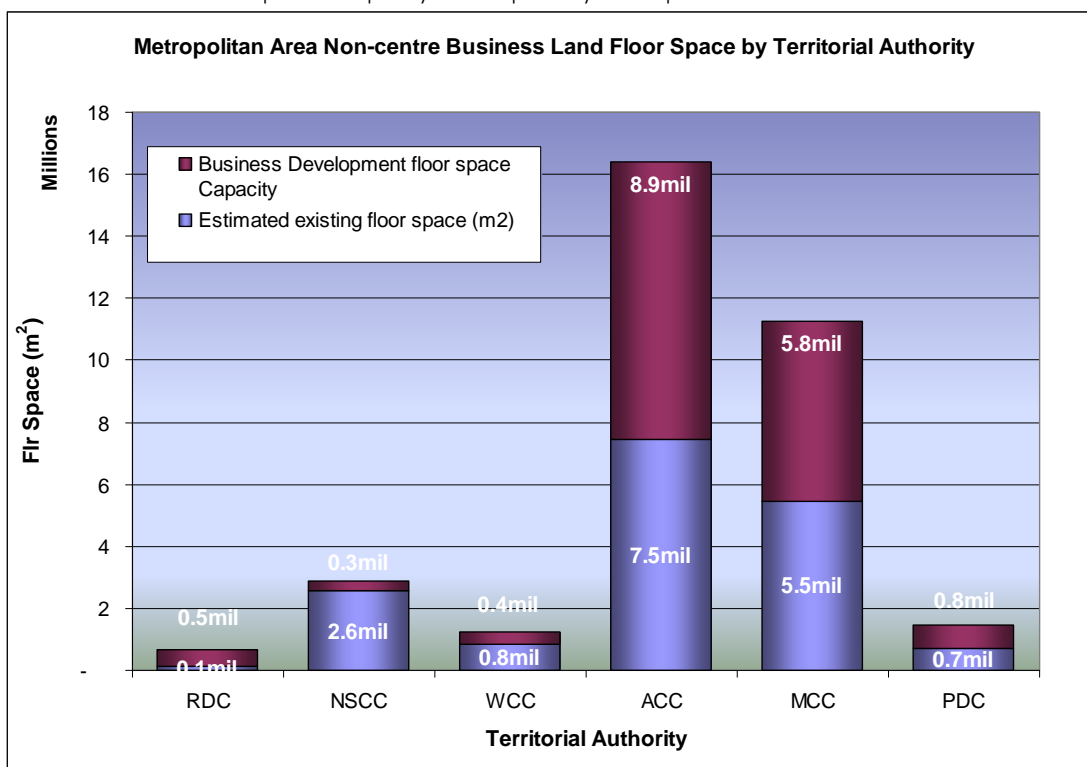
All the territorial authorities, except for Auckland City, have the capacity to at least double the intensity of development within their centres (refer Chart 9)

Chart 9 Redevelopment Capacity Floor Space by Metropolitan Centres



However, within non-centre areas, North Shore City and Waitakere City stand out as areas with limited capacity for development (refer Chart 10).

Chart 10 Redevelopment Capacity Floor Space by Metropolitan Non-centre Areas



The metropolitan area redevelopment capacity results for business floor space and employment are summarised by territorial authority in Table 26 Appendix A.

For a breakdown of residential dwelling unit results on business zoned land see 5.1.1 Residential Land.

5.2 The Rural Area

This is an interim report as it does not include a capacity assessment of the region's rural townships and coastal settlements. This assessment will occur in mid to late 2008 and will include 20 plus of the larger or regionally significant rural townships and coastal settlements)

The rural area is defined as all the land that falls outside of the Metropolitan Urban Limits (MUL) as defined by the Regional Policy Statement (as at March 2006). It includes rural zoned land, countryside living areas, and rural townships and coastal settlements.

Residential capacity results are provided for the rural and countryside living areas.

5.2.1 Rural Townships and Coastal Settlements

[completion of this section is awaiting data capture – due mid to late 2008]

5.2.2 Rural Land Capacity

The Rural Capacity study has estimated that there is capacity for a further 20,887 dwelling units on rural land in the Auckland region³⁵ (Table 15). The vast majority (95%) of capacity is classified as countryside living. Based on current trends this capacity is likely to provide for more than 30 years of development³⁶. There is a rough 40:60 split between capacity on vacant sites and on occupied sites.

³⁵ The Papakura District results are taken from the Papakura District Rural Capacity study. This study, commissioned by PDC, used a similar methodology and date stamp.

³⁶ It is worth noting that Franklin District is likely to have much more capacity than is shown in this study. The operative plan at the time of the data capture contained rules that were unable to be successfully modelled, which resulted in a lower capacity that is likely to be allowed.

Table 15 Total Residential Capacity Rural Area

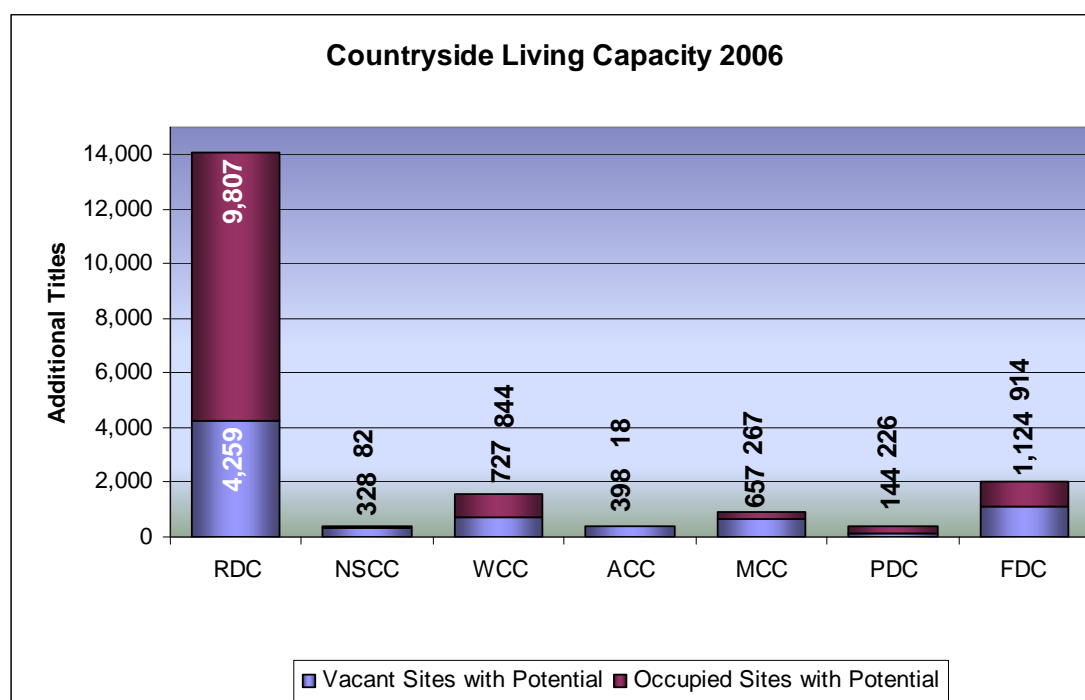
	Countryside Living		General Rural		
	Vacant Sites with Potential	Occupied Sites with Potential	Vacant Sites with Potential	Occupied Sites with Potential	Total
Total Rural Area	7,637	12,158	475	607	
	19,795		1,082		20,877

5.2.2.1 Countryside Living

Countryside living capacity makes up 95% of total rural capacity³⁷. The vast majority (71%) of the countryside living capacity is located in Rodney District, with potential for an additional 14,066 dwellings. There are smaller but significant reserves in Waitakere (1,571 additional dwellings), Manukau (924 additional dwellings) and Franklin (2,038 additional dwellings). In three territorial authorities, Rodney District, North Shore City and Waitakere City, all capacity is classed as countryside living. This is because all their subdivision rules allow developments that create sites smaller than eight hectares, and are therefore classified as countryside living. These results can be seen in Chart 11.

³⁷ While most of the region's rural capacity is classified as countryside living, this does not mean that if all countryside living subdivision opportunities were taken up, all rural sites would be smaller than eight hectares in size. In most cases, large properties would be subdivided into several small titles, and one large parent property.

Chart 11 Countryside Living Capacity Chart 2006

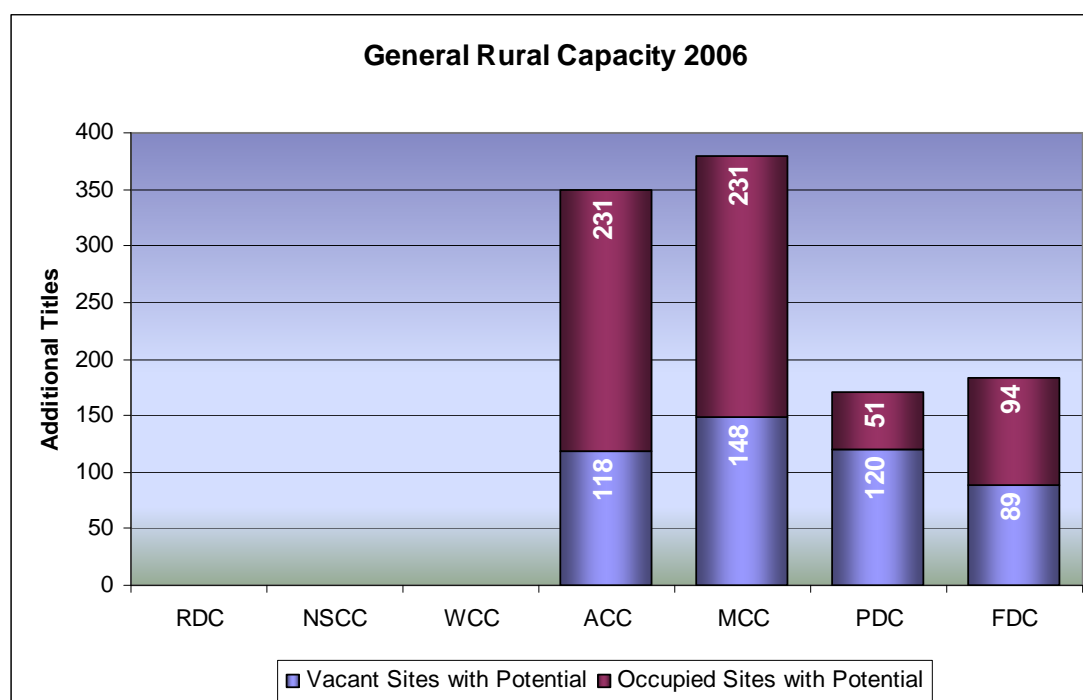


5.2.2.2 General Rural

Only five per cent of future subdivision capacity in the Auckland region is classified as general rural. Forty four percent of this is situated on vacant titles, with the remainder on titles with dwellings already built. Subdivision rules that are classified as general rural only exist in Manukau City, Papakura District, Franklin District and the Gulf Islands in Auckland City. Because of this, general rural capacity is only shown for these four territorial authorities. Of these the majority of the capacity is in Auckland City (349 additional dwellings) and Manukau City (379 additional dwellings). These results can be seen in Chart 12.

The rural land capacity results are summarised by territorial authority in Table 29 in Appendix A. The results are mapped by territorial authority in Map 14 to Map 20 in Appendix D.

Chart 12 General Rural Zones Chart 2006



5.3 Region Results

The following section provides a summary of the residential and business land capacity results for the region as a whole.

[Rural and coastal township capacity data is not included as capture is not scheduled until June 2008].

Table 16 Auckland region: Total Household Capacity Under Current Policy, 2006

Dwelling Number		Capacity Source
Subtotal:	59,070	Vacant Metropolitan Land within current urban limits
	20,312 to 65,100	Metropolitan Infill (General and Redevelopment)
	69,370	Potential Redevelopment on Business Land
	(not yet assessed)	Rural Towns (est. as not available till mid 2008)
	21,970	Rural Residential
	-	Total additional household capacity
Total:	437,988	Existing Households (Census 2006)
	-	Total capacity (equivalent to approx. XX million people)

6 Matching Capacity with Demand

The purpose of matching capacity (supply) to demand is to provide a sense of whether capacity is sufficient or not to meet future demand i.e. to answer the question: How many years of demand could the identified capacity (supply) provide for?

The following sections summarise the demand assumptions that have been used in this report to illustrate this relationship.

Capacity constraints will be reached in different locations and sectors at different periods. Where exactly this occurs and in what sectors will ultimately be determined by the market.

6.1 Metropolitan Area Residential Dwelling Units

Years to exhaustion measures have been estimated in two ways:

- total residential capacity, and
- residential capacity by capacity type (vacant land, infill and residential on business land).

The following sections explain both the methodologies applied.

6.1.1 Total Residential Capacity - Supply and Demand

The Capacity for Growth study uses the Statistics New Zealand and the Auckland Regional Council Household Projection series³⁸ as a proxy for future housing demand.

The Household Projection series is available at regional and territorial authority resolution and includes high, medium and low growth scenarios³⁹.

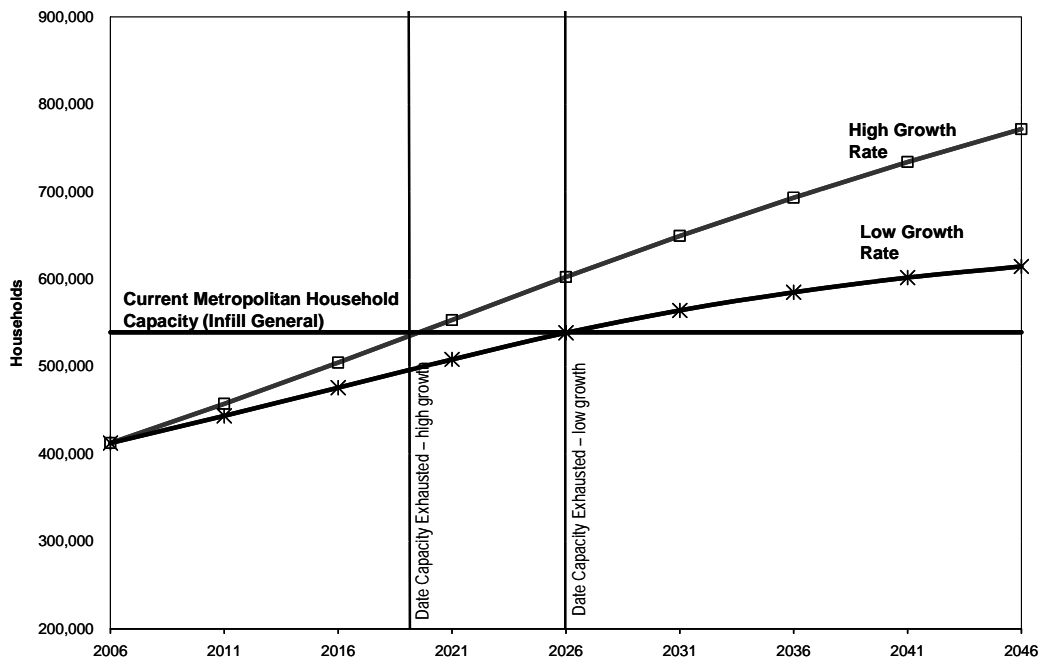
³⁸ Statistics New Zealand and the Auckland Regional Council prepare a series of population and household projections based upon census and population estimates once every three to five years. The method used to project future populations is the cohort component model. This method involves the calculation of the likely future size of population cohorts (5 yearly and by sex) based upon the effects of migration, fertility and mortality.

³⁹ Statistics New Zealand will be releasing the Census 2006 based household projection series in mid 2009. In the interim the Capacity for Growth Study 2008 will continue to use the Census 2001 based household projection series, rebased with the Census 2006 number of residential dwellings. (Note: Statistics New Zealand recently released its Census 2006 based population projection series. This series projects a faster rate of population growth than the 2001 series. Therefore it is likely that the 2006 household projection series will, similarly, be higher than the 2001 series. As such the estimated years of supply stated in this report may be understated).

Residential capacity is then mapped against these projections⁴⁰.

The Infill study identified two measures of infill: infill-general and infill redevelopment. The infill-general results are mapped in Chart 13. The intersection of the capacity line by the high and low projections provides an estimate of when capacity constraints could occur (i.e. in this case, between 14-20 years).

Chart 13 Projected Years until 2006 Residential Capacity Exhausted (includes Infill-General), Metropolitan Auckland

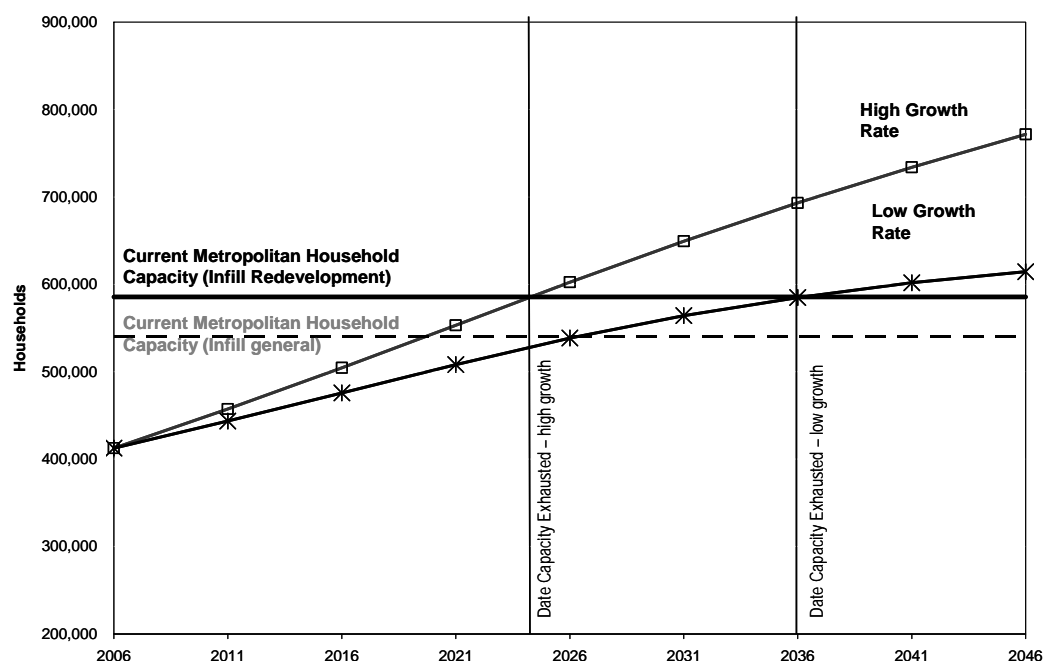


Source: Statistics New Zealand and ARC.

Infill-redevelopment identified the capacity for an additional 44,795 dwelling units. This additional capacity is mapped on Chart 14. Including infill-redevelopment extends the supply of capacity by four to 10 years depending on the growth rate.

⁴⁰ Total metropolitan residential capacity equals the Census number of dwellings as at 2006 (412,542) plus capacity at 2006.

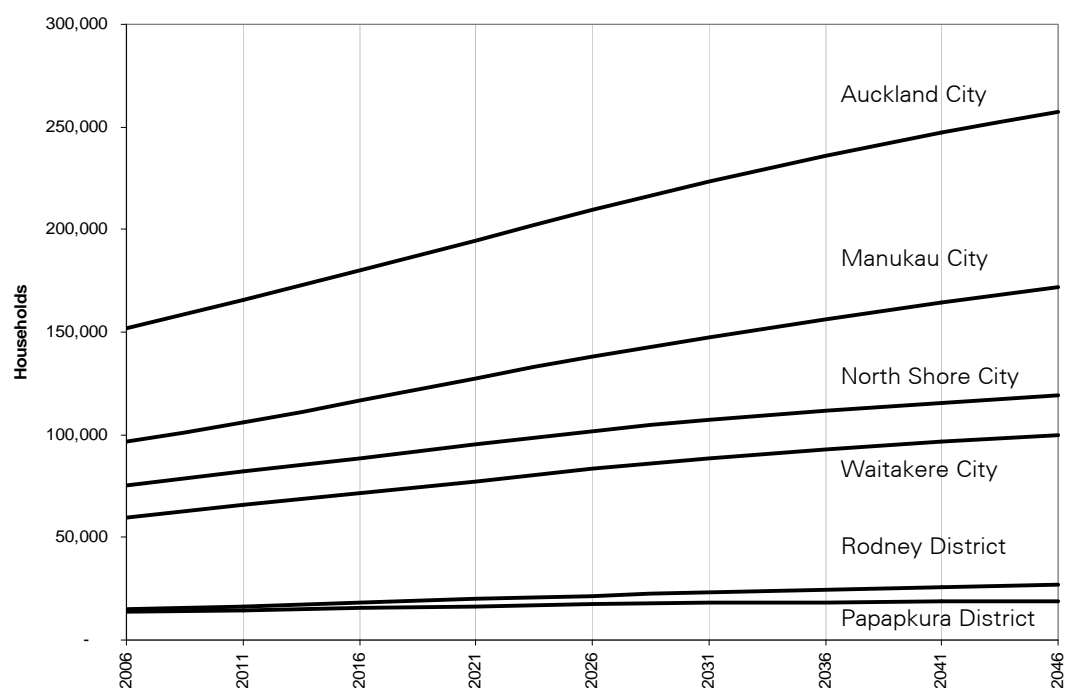
Chart 14 Projected Years until 2006 Residential Capacity is Exhausted (includes Infill Redevelopment), Metropolitan Auckland



Source: Statistics New Zealand and ARC.

The projections series show that the territorial authority areas do not grow at the same rate, due to differing local population age structure and rates of migration (Chart 15).

Chart 15 Household Projection Series (Medium) 2006 to 2046 by Territorial Authority



Source: Statistics New Zealand and ARC.

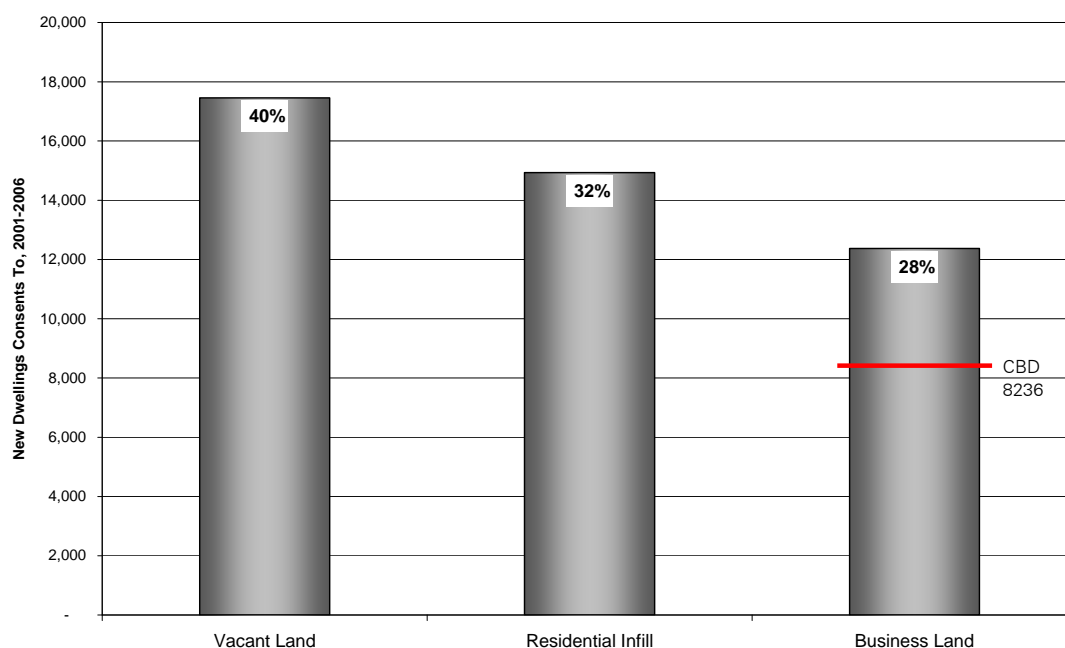
Each territorial authority's years to exhaustion has been estimated using these local projection assumptions.

6.1.2 Residential Capacity Supply and Demand by Capacity Type.

An assessment of the number of years of supply by capacity type, i.e. vacant, infill or residential on business land has been made in this report. This has been done by applying past development trends to future residential demand (household projections). This approach does not take into account the effects a reduction in the supply of one capacity-type will have on the demand, and therefore the rate of take-up in other capacity types (e.g. as infill opportunities reduce more opportunities to develop on business land may be sought).

Analysis of past residential building consents (2001-06) reveals that 40% of all residential development has occurred on vacant land, 32% on infill land and 28% on business land (80% of this within the CBD). (Refer Chart 16 and Table 35 at Appendix C)

Chart 16 Location of New Residential Units Consented to, 2001 to 2006 Metropolitan Auckland



By applying these past development trends to the take-up of current capacity (e.g. 40% of all future residential dwelling units will be on vacant land, 32% on infill and 28% on business land) an estimate of the years to exhaustion can be made. Take-up is based upon the high and low household projection series.

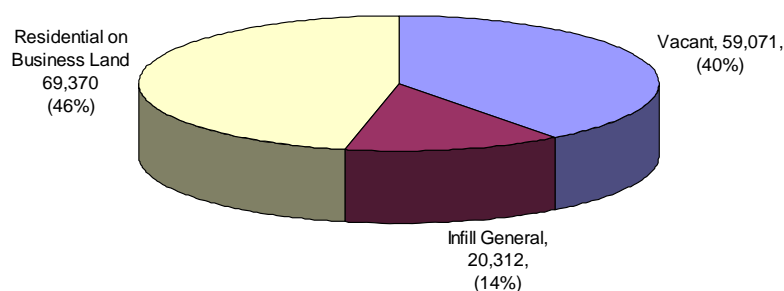
Table 17 shows the expected years to exhaustion by capacity type.

Table 17 Residential Capacity Supply by Capacity Type, Metropolitan Auckland

Capacity Type	Estimated Extra Dwelling Unit Capacity	Supply (years) High to Low Growth Rate 2006
Vacant Land	59,071	16 to 24
Infill-General Housing	20,312	6 to 10
Residential redevelopment in Business Zones	69,320	21 to 40
Total (with infill-general)	148,703	14 to 20
Infill-Redevelopment Housing	65,107	20 to 35
Total (with infill-redevelopment)	193,548	18 to 30

Chart 17 shows the distribution of residential capacity by capacity type based upon current planning policy (2006).

Chart 17 Residential Dwelling Unit Capacity by Capacity Type 2006



6.2 Metropolitan Business land

Years to exhaustion measures have been estimated for vacant business land and for the redevelopment of business land (i.e. business floor space and employment). The following sections explain the methodologies applied.

6.2.1 Business vacant land supply and demand

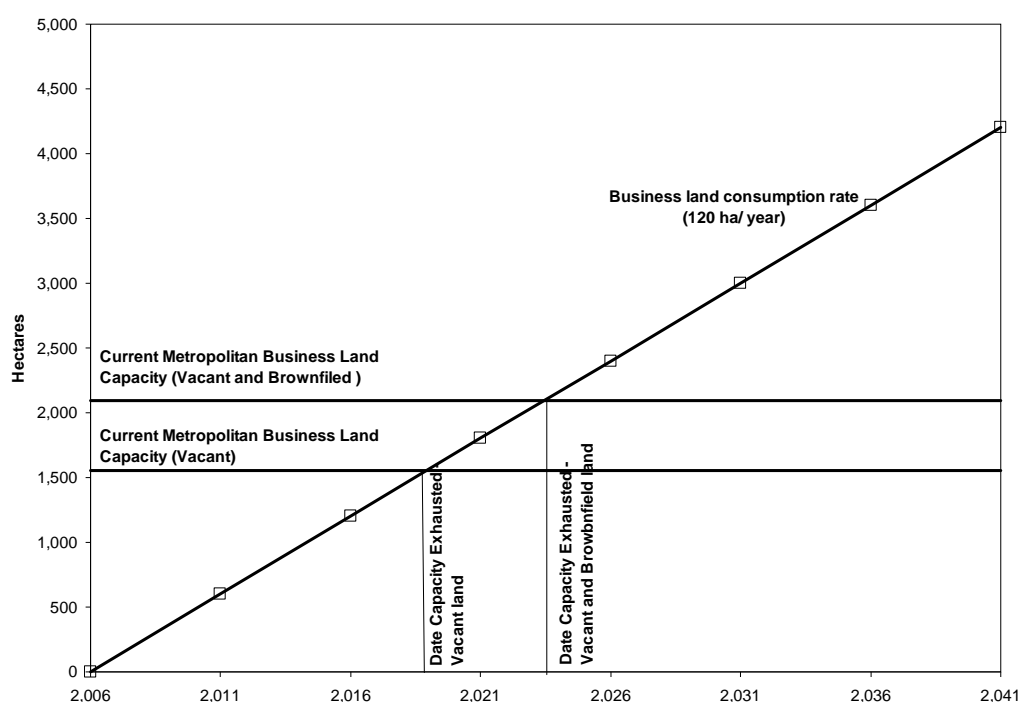
The years to exhaustion for vacant business land is approximated by comparing available land to the past rates of business land take-up (i.e. by dividing total available land by past rates of development).

Past rates of business land take-up were calculated by comparing vacant land totals between the Capacity for Growth studies i.e. 1996, 2001 and 2006. Rates of

consumption were based upon the 10 year average and calculated for each territorial authority individually to reflect local trends. Results of this analysis, by territorial authority, are recorded in Table 33 in Appendix C.

Years to exhaustion were then calculated for vacant business land and vacant business land plus Brownfield land. (Brownfield land is a new measure in the 2008 study. Its inclusion increases the business land capacity total. Brownfield land is subject to a number of development constraints. These constraints are described in section 4 The Study Measures and Methodology). Both measures of capacity are shown on Chart 18 below. Together these measures indicate a land supply of between 13 to 17 years.

Chart 18 Projected Years until all 2006 Business Land Capacity is Potentially Exhausted, Metropolitan Auckland (Vacant and Vacant and Brownfield)



Source: ARC

6.2.2 Business floor space and employment

Two basic comparisons were undertaken as part of the redevelopment of business land study. The following is an extract from that study:

Past Commercial Floor Area Building Consents as a Proxy for Future Demand:

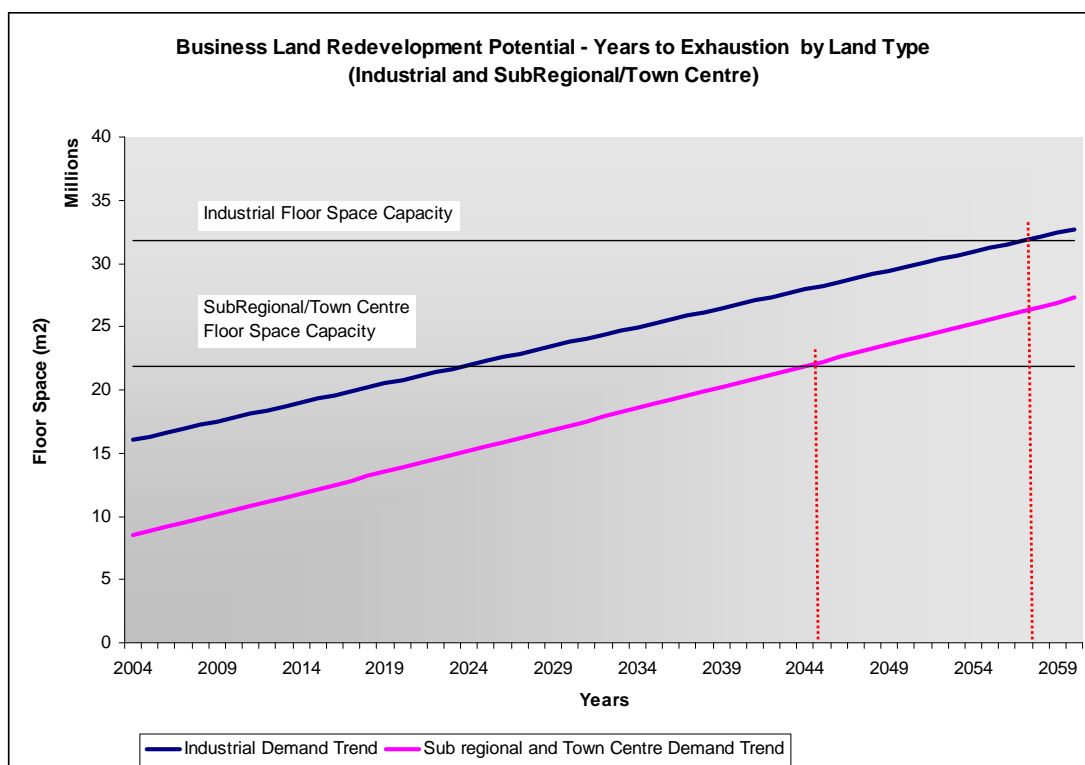
The approach has been to look at the past supply of commercial floor area and use this as a proxy for future demand. The annual rate of supply is then compared to the potential floor area available thus providing an estimate of years to exhaustion. This approach has been applied only to the modified theoretical scenario. The outputs are shown in Table 18 and Chart 19.

Table 18 Projected Years to Exhaustion by Business Land Category (Modified Theoretical Scenario)

Business Land Category Type	Redevelopment Capacity	Annual average commercial floor space consented to 1996-2006*	Projected years to all Redevelopment Capacity exhausted
Sub regional and Town Centre	13,091,000m ²	335,700m ² /yr	39 years
Industrial	15,496,000m ²	298,400m ² /yr	52 years
All Areas	28,588,000m ²	634,100m ² /yr	45 years

Source: ARC Building Consent Database

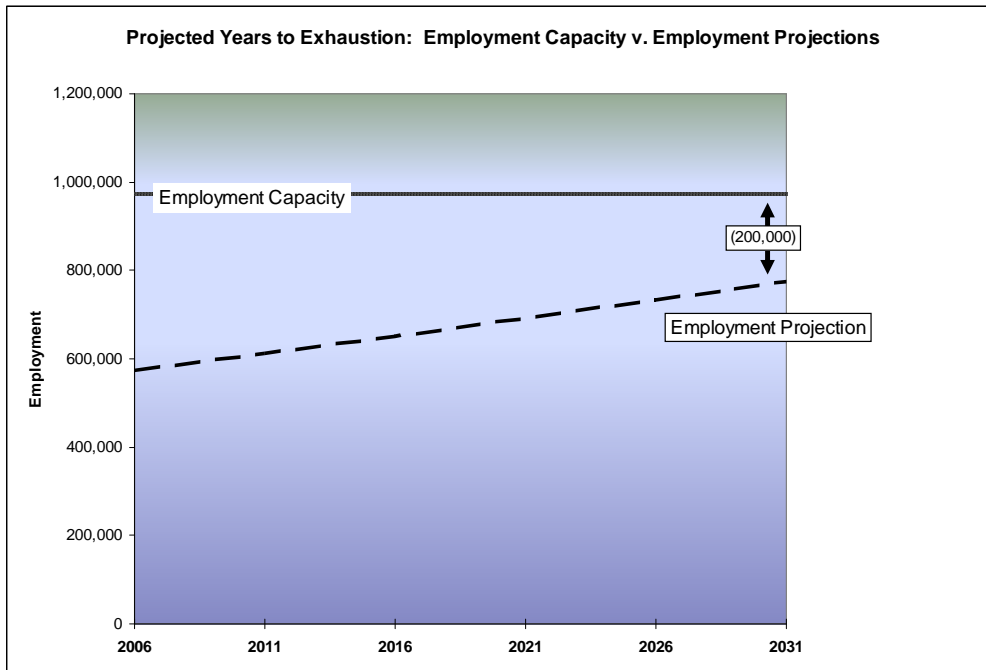
Chart 19 Projected Years to Exhaustion: Business Floor Space



Source: Statistics New Zealand and ARC

This approach is very basic and should be treated with caution. It assumes that all existing business zoned land will be redeveloped. It assumes that past rates of development will continue on into the future.

Chart 20 Projected Years to Exhaustion: Employment



Source: ARC

Chart 20 compares the employment projections sourced from the Economic Futures Model (EFM)⁴¹ against the employment capacity identified in this report. The EFM projects an employment population of 774,000 FTEs by 2031. This is an increase of 201,500 FTEs from the 2006 figure of 572,444 FTEs. When compared to an estimated capacity of 970,700 ECs the chart shows clearly that unutilised capacity of 196,000 FTEs remains. It is acknowledged that FTEs and ECs are not the same measure and cannot be reliably compared. However, in this circumstance, EC capacity is twice that of the FTE demand so a reasonable but very general assumption would be that sufficient capacity exists within current district plans.

Modelling Business Futures

As indicated, a more sophisticated approach to projecting the future demand for business land and floor space will be available through the Auckland Strategic Planning model (ASP)⁴². The business land and employment capacity results from this report may feed into that model as basic supply side inputs.

In conclusion, this report has looked at two very simple means of comparing estimated capacity against possible future demand (in order to establish whether the business land market is or could come under stress). Both of the indicators used suggest sufficient capacity is available under current district plans for future demand.

⁴¹ The Economic Futures Model prepared for the ARC by Gary McDonald at Market Economics.

⁴² Auckland Strategic Planning Model: A strategic land use model for medium and long term planning, scenario development and evaluation. Part of the Auckland Transport Model (ATM2) currently being prepared for the ARC and due for delivery mid 2008.

6.3 Rural and Countryside Living

Matching supply with demand in the rural area is a problematic exercise. The 2006 Rural Capacity study was the first of its kind in the Auckland region, which means that there is no trend data to rely on. In addition, population projection figures cannot be used as the Census Area Unit based projections include rural towns, which are part of a separate study. Therefore, the two most obvious ways of placing the rural area's capacity in context are ruled out.

As a proxy, work done for the ARC's submission to the LGAAA on countryside living was used⁴³. This found that approximately 650 building consents were issued on countryside living sites every year. The capacity study found that there is potential for an additional 19,795 titles on countryside living sites. It is assumed that a single dwelling would be built on each title. At this rate, there is capacity for over 30 years supply of countryside living.

As mentioned in section 4.3.1 Residential Infill and Redevelopment Study Methodology, the 2006 Rural Capacity study significantly underestimates capacity in FDC, due to the way in which the FDC District Plan rules are structured. Subsequently, the years to exhaustion figures cited here should be treated as very conservative, given the likely substantial amount of additional capacity in FDC.

⁴³ Evidence from David Lindsey in the matter of Plan Changes to the District Plans- Countryside Living, 2007.

7 Concluding Comments

An early draft of the Capacity for Growth study has been reviewed by Jones Lang LaSalle Limited (JLL)⁴⁴, a commercial real estate firm that provides research and advice to a range of property development clients. Generally, JLL reported that the capacity measures and methodologies used were sound. However, they did identify potential gaps between the capacity identified and actual take-up. Take-up, or realised capacity, will be constrained by market demand, owner preferences to sell or hold land, infrastructure and other factors that are often immeasurable. Furthermore, these factors are not static and change over time. Therefore, regular and consistent monitoring will be required to identify actual trends and shifts.

The results presented in this interim Capacity for Growth study were recognised in the evaluation of the Regional Growth Strategy in 2007 (Growing Smarter). Historically 40% of development has been on vacant land and a third as infill. The ARC has maintained a supply of vacant land by extending the MUL, however this supply is being used up quickly, in part because the period has been one of rapid growth. While the RGS anticipated two million people by 2050, updated population projections now suggest that this is more likely by 2035 (15 years earlier).

The capacity for infill-general development is declining. As a result it is possible that infill-redevelopment will become a feature of future growth in some parts of the region. In addition, the overall density being achieved in greenfield areas, while higher than in the past, is still quite low (10 dwellings per hectare in 2001 and 13 dwellings per hectare in 2006).

A significant amount of future capacity in the region is in the centres where the RGS seeks more intensive residential and employment development aligned with passenger transport. However, both Jones Lang LaSalle Limited peer review and developer surveys⁴⁵ have highlighted that there is a range of barriers to this form of development including the need for site amalgamation for quality comprehensive development, the long and complex planning and consent processes, and significant infrastructure constraints. If the region cannot unlock this development potential to develop the compact quality urban form with strong well connected centres, (which is a goal of the Auckland Sustainability Framework 2007), then there might be a need to release additional land on the urban periphery (or to consider new settlements in the rural area).

The Capacity for Growth study has also reinforced anecdotal evidence of the strong take-up of vacant business land. Even with the addition of brownfield land, a shortage of business land capacity is possible. A significant part of this capacity can be met through intensification and growth in the region's centres. This will meet many of the needs of Group 2 business activities (office retail, service sector). However, additional

⁴⁴ Auckland Region Land Supply Capacity Review, (Jones Lang LaSalle 2007)

⁴⁵ Developer survey: Intensification in Auckland. ARC; December 2006

vacant land may need to be provided to cater for Group 1 business activities that are unsuitable to locate in the region's centres and corridors.

The results of the Capacity for Growth study have been made available to central government which has progressed a range of work streams looking at affordable housing, including the adequacy of land supply in the Auckland region. It is anticipated that this work will be available later in the year (2008), and will add to the understanding of the realisable capacity for development, the constraints to development across the region (infrastructure, ownership), the likely timing or sequencing of future development and the housing demand (by type and location).

8 Recommended for Further Investigation

Outlined below is a list of actions recommended for further investigation. These actions are drawn from the Capacity for Growth Report 2008 and from the capacity data collection process. They are covered in sections 8.1 Monitoring and 8.2 Research.

8.1 Monitoring

- Explore a real-time capacity monitoring process (with a five yearly comprehensive review)
- On-going monitoring and a comparison of residential yields from vacant land (Greenfield and Structure Plan area) to assumed yields.

8.2 Research

8.2.1 Residential Land

- Site amalgamation. Identify and develop a methodology for assessing likely capacity in zones where higher density is encouraged through site amalgamation (e.g. NSC Residential 6 zones)
- Capacity by residential type. Examine the categorisation of remaining residential land into broad categories of residential types: single family detached units, terraced housing, medium to high density-family units etc
- Infill redevelopment. Identify the trends, drivers, and impacts of infill-redevelopment. Analyse split between infill-general and infill-redevelopment
- Vacant land. Identify any long-term vacant land (i.e. five years plus) and examine the constraints affecting this land coming to the development market
- Development densities. Identify where development densities are under or over achieved. Analyse trends, drivers and constraints.
- Strategic land holdings. Identify large strategic land holdings that have likely short to medium terms redevelopment potential. Examine the possible uses and capacity potential of these holdings

8.2.2 Business Land

- Vacant land: Identify any long term vacant land (i.e. five years plus) and examine the constraints affecting this land coming to the development market

- Business land. Examine business land in terms of availability to Group 1 and Group 2 activities. This includes; more detail at the availability of business land to the following sectors office, industrial and retail, characterisation by location and parcel size (as per Jones Lang LaSalle report⁴⁶)
- Strategic land holdings. Identify large strategic land-holdings that have likely short to medium terms redevelopment potential. Examine the possible uses and capacity potential of these holdings

8.2.3 General

- Realisable capacity. Examine the trends and drivers of site redevelopment (residential and business land) in order to estimate the probability of land redevelopment occurring over time.
- Infrastructure. Identify any current infrastructure limitations to the supply of available vacant land and consider a categorisation of this land (i.e. available short, medium or long term). Track major infrastructure projects and their projected impact on future land supply.
- Rating, title, building consent and dwelling data. Advocate and work to improve the quality and linkages between these key property databases. Improving these databases will allow better monitoring to occur, and improve the reliability of the capacity studies that draw heavily on them, such as the Rural Capacity study or the Infill and Redevelopment study.

⁴⁶ (Jones Lang LaSalle 2007)

9 References

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