



Capacity for Growth Study 2012: Results

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Capacity for Growth Study 2012: Results

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Technical Report, April 2013

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Also thanks to the Geospatial teams here at Auckland Council who ably assisted us with data supply, our many questions about said data and the collection/update of the building footprint records.



The Capacity for Growth Study 2012 was recipient of the GIS Project of the Year (2013) from the Association of Local Government Information Management (ALGIM).

Disclaimer

Every care has been taken to ensure that the outputs of the Capacity for Growth Study 2012 study are accurate.

The purpose of this study is to determine the capability of Auckland to accommodate additional growth, (including dwellings) based on a subset of selected rules from the operative district planning provisions that were in place as at May 2012.

This has been undertaken through a computer based geospatial desktop modelling exercise, carried out at parcel or title level. This process necessarily involves the simplification, modification, or omission of some planning provisions that may impact on the real world ability to consent and/or realise capacity identified. It should also be noted that all subdivision is subject to individual consent assessment on a case by case basis on its merits. Accordingly the outputs of this modelling exercise and subsequent reported results of this study in no way imply that subdivision, or the subsequent construction of a dwelling or structure may take place on a parcel or title without fulfilling all of the necessary requirements of the relevant district plan(s) applying at the time of application.

The results of this study are designed to be reported at a large-scale level and while the results of the study are presented in parts of this report at the level they were modelled, the use of study outputs at an individual parcel or title scale is not recommended.

As the assessment is current plan and cadastre based it does not account for the many applications for non-compliant activities that council receives daily, nor for future changes to planning provisions. The study does not assess the potential for site amalgamations or multi-parcel applications, all of which would potentially increase yields indicated. The study is a measure of current plan enabled capacity, not a prediction of future growth.

For more information on study outputs, results, possible future updates and improvements, or further advice on how the results can be used or analysed, please contact the Research Investigations and Monitoring Unit at the Auckland Council.

Executive Summary

The Capacity for Growth Study monitors and reports on residential, business and rural land availability in Auckland. Residential and business zoned parcels and rural zoned titles have been assessed for their capacity to accommodate additional development (expressed either as additional dwellings or hectares of land) under the current operative district planning rules (as at May 2012). This technical report reports the results from the study, and should be read in conjunction with *Capacity for Growth Study 2012: Methodology and Assumptions* technical report (TR2013/009), which documents the processes and methods employed in the research as well as the assumptions used in the study.

For residential capacity across the whole of Auckland; including the urban area, rural towns and the rural area, the study finds that:

- There are 6476 vacant residential zoned parcels within the urban area and rural towns that have potential capacity for an additional 22,188 dwellings based on operative district plan rules.
- There are 22,024 residential zoned parcels within the urban area and rural towns with potential capacity for an additional 40,606 dwellings through infill (incl. vacant potential¹) if they were developed.
- If all residentially zoned parcels within the urban area and rural towns were redeveloped to their maximum capacity, they would yield an additional 115,965 dwellings (in addition to the more than 460,000 dwellings already in Auckland).
- There is potential capacity for an additional 103,930 dwellings in business areas and centres² in the urban area and rural towns.
- There is potential capacity for an additional 24,974 dwellings from 13,750 rural residential titles located in Auckland's rural area
- Pipeline capacity (from structure plan and special areas, which are underway or expected to come online before 2023) provide capacity for an additional 49,769 dwellings.

Residential capacity results have been analysed and reported in section 6.0, including further details on results for the whole of Auckland (page 15) and for the urban area (page 24), rural towns (page 28) and the rural area (page 31). Additional analysis of the Capacity for Growth Study results include the production of various fact sheets³, including on the topics of greenfield and brownfield land supply.

Post-study analysis on specific “ready-to-go” greenfield areas (areas with an operative zoning and bulk infrastructure in place, refer section 10.0) found that:

- There is capacity for approximately 15,000 dwellings in “ready-to-go” greenfield areas.

The results from this study will be used to refine and improve the “ready-to-go” analysis, which will be included in subsequent Auckland Plan updates.

¹ Vacant potential is defined on page 17 of the Capacity for Growth Study 2012: Methodology and Assumptions Technical Report.

² Under a modified theoretical scenario, as described on page 39 of the Capacity for Growth Study 2012: Methodology and Assumptions technical report.

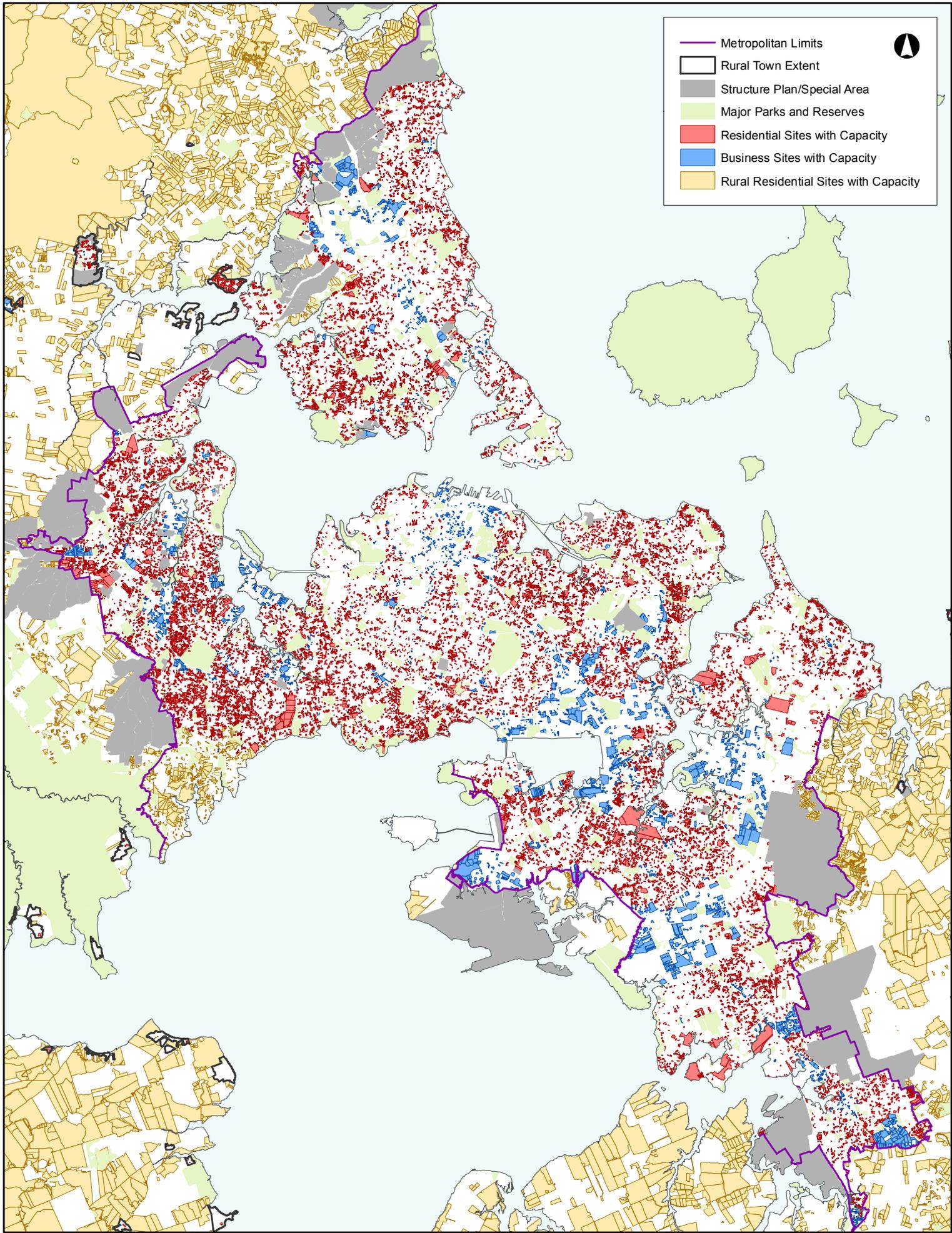
³ Further reporting through the production of fact sheets is currently being undertaken by the Spatial and Infrastructure Strategy Unit.

For business capacity across the whole of Auckland; including the urban area and rural towns, the study finds that:

- There are 3005 parcels within the urban area and rural towns that were zoned business and were vacant that total 716 hectares.
- There are 1757 parcels within the urban area and rural towns are zoned business and have some vacant potential. The vacant potential of these parcels totals 1262 hectares.
- Pipeline capacity (from structure plan and special areas, which are underway or expected to come online before 2023 will provide an additional 1255 hectares of business land

Business capacity results have been analysed and reported in section 8.0, including further details on results for the whole of Auckland (page 36) and for the urban area (page 38) and rural towns (page 41). Additional analysis of the Capacity for Growth results will include the production of a business land report⁴.

⁴ Further reporting is being proposed to be undertaken by the Research Investigations and Monitoring Unit and the Economic Development Unit.



Craig F. 25/07/2013 U:\CPO\ASR\Research Investigations and Monitoring\Land Use Research\Capacity for Growth 2011 Mapping\Report Maps\MXDs\Exec Sum - All Sites with Capacity (Urban Core).mxd

Executive summary:
 Sites identified as having capacity (Auckland urban core)

Capacity for Growth Study 2012



Produced by Research, Investigations & Monitoring

Contents

Acknowledgements.....	i
Disclaimer.....	ii
Executive Summary.....	iii
Contents.....	1
1.0 Introduction.....	3
2.0 Background.....	4
2.1 Why did we undertake the study?.....	4
2.2 What will study results be used for?.....	5
3.0 Assessing capacity.....	6
4.0 Assumptions and limitations.....	9
5.0 Components of capacity.....	12
6.0 Residential capacity results.....	14
6.1 Auckland wide.....	15
6.2 Urban area.....	24
6.3 Rural towns.....	28
6.4 Rural residential.....	31
7.0 Business land capacity results.....	36
7.1 Auckland wide.....	36
7.2 Urban area.....	38
7.3 Rural towns.....	41
8.0 Business redevelopment capacity results.....	44
8.1 Business activity.....	45
8.2 Residential activity (in business areas and centres).....	48
9.0 Comparing residential results to The Auckland Plan Development Strategy ...	55
10.0 Assessing capacity in “ready to go” structure plan areas.....	57
11.0 Concluding comments.....	59
12.0 Recommendations for further work.....	60
13.0 Glossary.....	62
14.0 References.....	64
15.0 Appendices.....	65
Appendix A: Results by local board area.....	66
Residential capacity – urban area.....	67
Residential capacity – rural towns.....	68
Residential capacity – rural area.....	69

Business land capacity - urban area	70
Business land capacity - rural towns.....	70
Total capacity	71
Business redevelopment capacity.....	72
Appendix B: Results by district plan area	73
Residential capacity – urban area.....	74
Residential capacity – rural towns.....	74
Residential capacity – rural area.....	75
Business land capacity – urban area	75
Business land capacity – rural towns	75
Total capacity	76
Business redevelopment capacity.....	76
Appendix C: Maps of results	77
Map series 1: Overview of results (residential and business).....	77
Map series 2: Results by local board area	77
Map series 3: Residential capacity - yields	78
Map series 4: Rural residential – yields and type	78
Map series 5: Business - yields	78
Appendix D: Capacity results compared to The Auckland Plan Development Strategy anticipated dwelling growth (high projection, 70:40)	117
Appendix E: Pipeline capacity (structure plan) identified for the Capacity for Growth Study 2012.....	119

1.0 Introduction

The Capacity for Growth Study assesses the ability of residential and business land within Auckland to accommodate growth. The capacity assessment undertaken in this study is based on geo-spatial data sets and the operative planning rules (as at May 2012) and determines the amount of possible development on every parcel/title in Auckland.

This report presents the results of study in three parts; residential capacity, business land capacity and business redevelopment capacity. Capacity is broken down by type (e.g. residential vacant, business vacant, residential redevelopment etc.⁵), as well as geographic area. The purpose of this technical report is to provide a summary and overview of the capacity available, discussing location/distribution and some of the attributes and nature of the capacity identified. Not all capacity types by all geographic areas are addressed in this report. The examples presented are given in order to give a sense of the possibilities available for analysis. The appendices include tables of the capacity results broken down by local board area and district plan area (former city and district council areas). The appendices include a number of maps illustrating the results of the modelling processes undertaken as part of the study.

The Capacity for Growth Study is a quantitative plan enabled assessment of capacity at a point in time. It measures whether each site has the potential for more development under a selected set of operative rules (specifically subdivision, and some bulk and location provisions) – essentially providing a ‘census’ or a ‘stock take’ of the land and its potential development capacity, across all of Auckland. This study only identifies capacity and does not examine the likelihood or feasibility of its uptake.

The outputs from the Capacity for Growth Study creates a base from which further work can, and will be undertaken to try and help answer many of the pressing questions facing Auckland relating to land supply. Further work using this study as a base is already underway, some of which is detailed at the end of this document in section 12.0: Recommendations for further work.

This report is to be read in conjunction with *Capacity for Growth Study 2012: Methodology and Assumptions (TR2013/009)*, which presents the processes and methods undertaken to calculate results as well as the assumptions used in the study.

⁵ A full list of the capacity types assessed as part of the study are listed in section 5.0: Components of capacity.

2.0 Background

The Capacity for Growth Study is an integral part of the Research Investigations and Monitoring Unit's Land Use Monitoring Programme. The study provides a "point in time" snapshot of the district plan capacity for the region (as at May 2012), revealing the opportunities for growth and/or development under the operative planning system. The primary objective of the Capacity for Growth Study 2012 is to determine:

- How much capacity the region has for accommodating residential and business growth (under current operative district plan rules)?

The study is a quantitative assessment of plan enabled capacity. It measures whether each site has the potential for more development under a selected set of operative rules (specifically subdivision, and some bulk and location provisions).

It should be noted that this report does not examine the likelihood or feasibility of the uptake of the capacity identified. Factors affecting the likelihood of development, such as a property owner's willingness to develop, the physical limitations of a site (parcel or title) or infrastructure constraints have not been considered.

2.1 Why did we undertake the study?

This study measures the potential capacity enabled by current operative district plan rules. With the new Auckland Unitary Plan currently in development there is still a need to undertake assessment of the legacy planning system. Some of the reasons why this study is relevant, required and is useful include:

- A baseline is required against which the change engendered by the new Unitary Plan provisions can be compared to the change provided by the 'old' plans – this will allow for a greater level of understanding in discussions with the public and politicians as well as improve the application and analysis of the Unitary Plan against a range of objectives including targets published in *The Auckland Plan*.
- Timing – even with the government's fast track process for the *Auckland Unitary Plan* it is expected that the provisions in the Plan will not have full effect for a number of years, meaning the provisions in the legacy plans may be with us for some time yet.
- This is the first Capacity for Growth Study undertaken by the new Auckland Council – with six years between this and the last iteration of the study and the significant change in local government since the last study was undertaken, capabilities and knowledge needed to be rebuilt from scratch. With improvements to technology and data availability, we have also been able to develop a process, model and methodology that should be easily transferable to modelling the Unitary Plan when it is in a state suitable for such analysis.

The region's legacy district plans are in effect now – they control what can happen today, and will continue to impact on future development potential. The process undertaken to date to model them provides both an excellent baseline for comparing change, but is also enabling us to build a model and a process that will be better and faster at interpreting the Unitary Plan.

The 2012 iteration of the study will be the fourth; with previous studies being undertaken in 1996, 2001 and 2006. Many aspects of the study have been undertaken to preserve characteristics of the series, allowing some longitudinal comparisons to be made⁶.

⁶ We have cautioned against making direct comparisons of the high-level results in the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report. Although this may be the case, some comparisons can be made with further analysis

2.2 What will study results be used for?

The study analyses the capacity of every parcel and title across the Auckland region. The results of this analysis will be used for:

- The Auckland Residential Futures Model Growth Model and the Auckland Strategic Planning Model (ASP). The results will act as the baseline land supply for model operations.
- *Auckland Plan* implementation monitoring. *The Auckland Plan* requires that land and dwelling supply be monitored – “...ensure that there is at all times 20 years’ forward supply of development capacity, and an average of seven years (with a minimum of five and maximum of 10 years) of unconstrained, ‘ready to go’ land supply”.
- Monitoring the provisions in the *Auckland Regional Policy Statement (ARPS)* and the provisions enabled through Change 6 (refer Policies 2.6.3 Methods - Urban Containment and 2.6.18 Methods - Rural Areas) (Auckland Council 2012c). The ARPS requires that Auckland Council undertakes surveys every five years to determine the provision and uptake of residential and business urban development opportunities, as well as the provision and uptake of countryside living opportunities available in rural areas.
- The new *Draft Auckland Unitary Plan*, Part 2 Regional Policy Statement, Section 2.2 Enabling quality urban growth, Sub-section 2.2.3 Supply of urban land, states that council will “ensure that there is 20 years’ planned forward supply of urban development capacity at all times”.
- Comparing the development capacity created by existing and enabled zoning provisions with that envisaged by the Auckland Unitary Plan.

3.0 Assessing capacity

This section provides a concise overview of the processes that were undertaken to calculate the capacity results presented in this report.

As this study is a quantitative assessment of plan enabled capacity, understanding and interpreting the rules and provisions governing subdivision (and some bulk and location requirements) of Auckland's district plans was the first step undertaken. In order to correctly interpret the rules, we engaged with council's Operative Plan teams.

The study primarily used a software programme called FME⁷ to undertake the modelling process required to calculate capacity. For the purposes of calculating capacity, the study was broken down into five components: residential, business, rural residential, business redevelopment and structure plan and special areas.

Each of these five components utilised different methods (outlined in the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report). By constructing a series of geo-spatial queries and assessments (known collectively as a 'model') for each of the capacity types, using the rules outlined in the district plans we were able to calculate the potential capacity of Auckland to accommodate growth. The 'model' used to calculate capacity is not a truly integrated single model, but rather a set of sub-models which each undertakes calculations relating to each capacity type. All capacity calculations, (except the business redevelopment capacity assessment and the structure planned and special areas assessment), were undertaken using FME.

The business redevelopment capacity assessment uses results from the FME spatial assessments as inputs into a one-dimensional model, which was constructed in Microsoft Excel. The special area and structure plan capacity assessment uses a similar Excel based approach except that the data is manually sourced and captured from various structure plan documents (and any updates provided to us by council's Operative Plans teams). Special areas and structure plans have not been assessed by the model and information provided to us about these areas has been used on an 'as is' basis.

While the outputs from many of the modelling processes are at the parcel or title level, some are not. For example the business redevelopment component and the structure plan and special areas assessments are generated for an entire business area or structure plan. As such we have chosen to report the results of the study at regional, local board and district plan level.

For analysis and reporting purposes, this study breaks the region into five distinct location types. These are outlined below in Table 1, which describes the location types, the method used to calculate capacity and the geographic unit of analysis; the geographic extents of these location types are shown in Figure 1.

Important assumptions and limitations relevant to understanding and interpreting both the calculation method and the results of this study are detailed in section 4.0 of this report. As stated, the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report (the companion to this report) presents in depth documentation of the processes and methods undertaken to calculate the capacity results reported in this document, as well as the assumptions used in the study and should be read in conjunction with this report.

⁷ FME is a an integrated collection of tools for spatial data transformation and data translation produced by Safe Software Inc. of Surrey, British Columbia, Canada. FME is considered to be a GIS (Geographic Information Systems) utility that enables conversion between data formats and processes and is able to manipulate and generate data geometry and attributes. ESRI ArcGIS remains the primary display and map generation tool for the study.

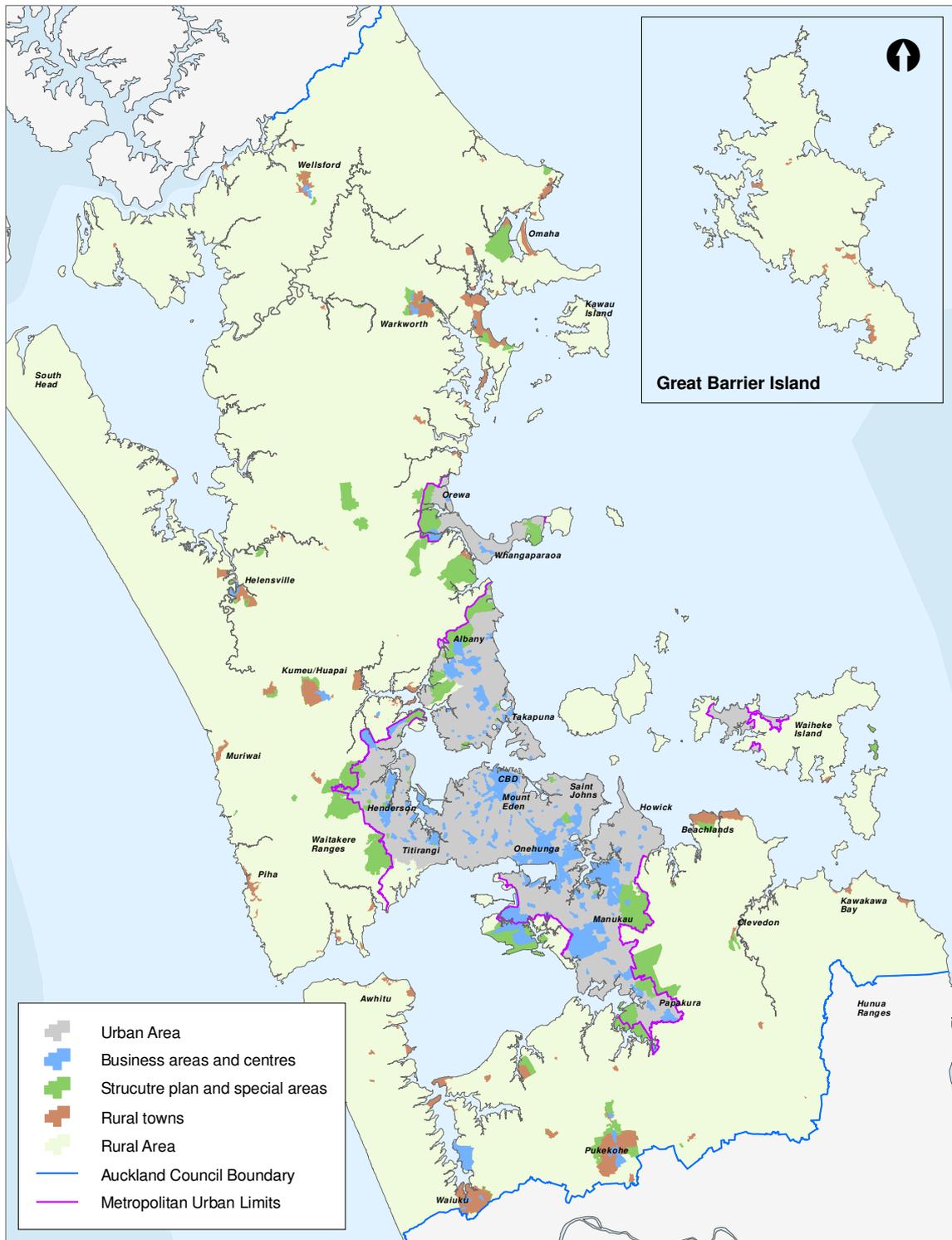
Table 1: Geographic location types used in study and their corresponding capacity calculation method

Location Type	Description	Method	Smallest geographic unit analysed
Urban area	All of the properties within the Metropolitan Urban Limits (MUL) (at the time of the study) that do not have a rural zoning/are not in the rural area (see Figure 1). Includes both residential and business areas.	Residential: application of district plan subdivision and bulk and location rules via FME spatial model.	Parcel
		Business: assessment of vacancy or potential vacancy via FME spatial model.	
Rural towns	Clusters of 'urban' type zoning (including residential and business zones) that occur outside of the Metropolitan Urban Area.	Residential and business, as per urban area.	Parcel
Business areas and centres	The large contiguous areas of business zoning that have a similar typology and are considered to be significant areas of employment ⁸ , including urban and rural centres, as described in the technical papers written to inform <i>The Auckland Plan</i> . The geographic limits of these areas are defined by present zoning ⁹ . These areas are a subset of the urban area and rural towns.	Business redevelopment component – a spreadsheet based model utilising some parcel analysis and assumptions, to identify vacant and potentially vacant land within a business area. All business areas and centres fall within the urban area or rural towns.	Overall assessment at business area (i.e. multiple parcels analysed as one geography) Note: inputs used in this model can be collected and applied at a smaller level i.e. parcel or meshblock.
Rural area	Properties with a rural zoning that are outside of the Metropolitan Urban Area and those properties that are within the Metropolitan Urban Area that are zoned for rural use, excluding areas that have been identified as forming part of a rural town.	Rural residential component – titles analysed for subdivision potential to derive a net dwelling potential.	Title
Structure plan and special areas (SPSA)	Areas spread across the locations above that are not suitable for analysis by the other methods. In many cases these are structure plans, where an overall yield figure is provided for the structure plan area based on published information.	Spreadsheet to aggregate information gathered from published sources and subject-matter experts. Note: no additional analysis has been undertaken in these areas other than calculation of a net yield (i.e. maximum expected total from SPSA less current take up).	Structure plan or special area extent

⁸ Note that these business areas do not include small areas of business zoning like those that contain small shops etc, generally in predominantly residential areas.

⁹ Present business zoning is used to define the extent of 'centres' in this study. It should be noted that these are not the same as centres defined for other purposes.

Figure 1: Extents of geographic location types uses in study



4.0 Assumptions and limitations

This report contains only a brief summary of the major assumptions and limitations of the study. Major study wide assumptions are listed below¹⁰ and component specific assumptions can be found in their relevant section or sub-section of the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report.

- The provisions in the following district plans have formed the basis for this study:
 - Auckland City District Plan
 - Central Area Section 2005
 - Proposed Hauraki Gulf Islands Section (Decision Version) 2009
 - Isthmus Section 1999
 - Franklin District Plan 2000
 - Manukau City District Plan 2002
 - North Shore City District Plan 2002
 - Papakura District Plan 1999
 - Rodney District Plan 2011
 - Waitakere City District Plan 2003.
- The capacity results are a measure of plan enabled capacity. Capacity is reported in terms of net opportunities for additional dwellings, hectares of land or additional floor space, by geographic area and type.
- Capacity is calculated under current (May 2012) operative planning provisions, which were agreed upon and approved by the Auckland Council's Operative Plans teams. In most cases, the analysis applied the lowest consent category specified in the plan for residential subdivision and development. However the study utilised the next highest activity threshold in cases where territorial authority experience shows that these consents are regularly granted, and the relevant district plan provides clear parameters for modelling.
- The 2012 study is a 'zero-based' full assessment. Zero-based means this study is not limited to assessing those parcels identified in previous studies as having capacity. A zero based approach was taken as district plan rules can change over time and because the subdivision of parcels can lead to capacity being created.
- The 'strike date' for this study is May 2012. District planning rules that were in place at this time were used as a basis for this study and the data used to undertake the modelling was extracted from its sources.
- Each zone in the region was classified as either being residential, business, rural, special or other. This classification was based on an objective assessment based on the modelling approaches used and does not infer any classification for planning purposes.
- Capacity for residential dwellings and business land in special areas and structure plans (pipeline capacity) was identified from information on planned outcomes in published structure plan material.
- The number and extent of structure plans has been limited to those identified as having an assumed start date prior to 2023.

¹⁰ Some processes and data manipulation undertaken to generate useable base datasets for modelling have not been included as part of this methodological documentation for brevity.

- The data used for the analysis of capacity is sourced from council's corporate geospatial database. These include, but are not limited to, building footprints, property boundaries and zoning information. A list of the residential zones and assumptions can be found in the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report.
- Where capacity has been assessed at the parcel/title level (refer Table 1) no accounting has been made for the potential of amalgamations of the parcels/titles assessed.
- District plan designations – parcels or titles identified as having a district plan designation¹¹ on them that would severely restrict or prevent development of the parcel or title have been excluded from assessment for potential capacity. A map showing the location of district plan designations that were used can be found in the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report.
- Parcels or titles that fall within identified structure plans or special areas have been excluded from site-by-site assessment, with potential and capacity reported for the entire structure plans or special areas (refer to the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report).
- Dwelling counts used in the study were provided by PropertyIQ Ltd. and are sourced from the 2011 property valuations. The dwelling counts were provided per valuation assessment which was then translated to parcel/title level using an allocation method. A schematic of this method can be found in the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report.
- Building footprint capture from the 2010 aerial imagery was completed by Auckland Council's Geospatial Service Delivery teams in October 2012¹², and has been used as the base data for the modelling process.
- Capacity for minor residential units¹³ was not assessed as part of this study.
- Urban capacity has been assessed at the parcel level. Rural residential capacity has been assessed at the title level. A significant amount of data has been used which is provided at the rates assessment level. Other data is only available at larger geographies such as meshblock, local board or region. Accounting for these varying geographies means that care should be taken utilising 'property' level results, and figures are generally provided at an aggregated level.
- All reported yields are rounded down to the nearest whole integer, for example if capacity for a parcel or title is calculated at 1.01 or 1.99 dwellings, then both would be reported as a potential yield of one (1).
- There are significant changes to rural capacity expected to be made operative through district plan changes after the date of this study. These plan amendments include Plan Change 22 in the former Franklin District and Plan Change 13 in former Papakura District. As these plan changes were not operative at the time of the study, outcomes from these provisions have not been included.

¹¹ District plan designations are granted under section 166 of the Resource Management Act 1991.

¹² At the time of the release of the preliminary results through the Capacity for Growth Study 2012 Working Report, these updated footprints were not available for all areas

¹³ A 'Minor Residential Unit' (MHU) is a residential unit on a site in addition to another larger residential unit on the same site. Typically a minor residential unit cannot be disposed of separately to the main house (i.e. it cannot be given a separate title) and usually includes a maximum floor space limit. A minor residential unit is sometimes referred to as a "granny flat". MHUs could potentially provide a significant capacity resource for smaller households, but most sites would lose the potential for a MHU if infill is undertaken. A proportion of sites that do not otherwise qualify for infill may have potential for MHUs, but it is rare that an urban site subdivision under the minimum lot size provisions would allow for a MHU on the resulting sites in addition to an existing dwelling.

Note: Comparisons between the reported results of this study and previous iterations of the study should be undertaken carefully as differing geographies, modelling techniques and assumptions employed in each individual study make comparisons problematic. Contact the Research, Investigations and Monitoring Unit for assistance and information on comparing results.

5.0 Components of capacity

This report calculates and reports capacity as being in either one of two categories; residential or business. Each of these categories is divided further in order to calculate and report capacity across Auckland.

Residential capacity measures the number of additional dwellings units that could be built under operative planning rules whereas business land capacity is measured by area of land (usually hectares). Floor space and dwellings are also reported in other study components (see below for business redevelopment). A list of these capacity types and a description is found below in Table 2.

Table 2: Types of capacity

Capacity type	Definition of capacity type
Residential vacant	Capacity for dwelling units on residential zoned parcels that are currently vacant (no dwellings or buildings).
Residential infill (incl. vacant potential) ¹⁴	Capacity for additional dwelling units on residential zoned parcels that are partially vacant and have subdivision potential (based on the lowest modelled consent category from district planning rules).
Residential redevelopment	Capacity for additional dwellings on residential zoned parcels presuming that all dwellings/structures are removed and the sites are redeveloped to yield the maximum number of dwellings permitted (based on the lowest modelled consent category from district planning rules).
Residential rural residential	Capacity for additional dwelling units on rural zoned titles, either through titles being currently vacant or through subdivision (based on the lowest modelled consent category from district planning rules).
Dwellings in Business Areas and Centres (Business Redevelopment)	Capacity for additional dwellings provided by development and/or redevelopment of parcels in business areas and centres. Capacity in this category is calculated as part of the business redevelopment component.
Business vacant	Capacity (in hectares) of business zoned parcels that are currently vacant (no buildings/structures).
Business vacant potential	Capacity (in hectares) of the vacant portion of selected partially vacant business zoned parcels that are currently partially occupied by existing buildings/structures. ¹⁵
Total business land	Total area of business zoned land.
Business redevelopment capacity	Capacity generated from the redevelopment of business land. Sub-types of capacity are outlined in Table 3.

¹⁴ In previous iterations of the Capacity for Growth Study, capacity for dwellings on sites that were not wholly vacant were split into two types; infill (sites that were less than 2000 square metres) and vacant potential (sites equal to or greater than 2000 m²). Since both categories reported on the same type of capacity, and feedback showed there was confusion about the difference, it was decided to report these together as 'infill (incl. vacant potential)' in the 2012 study. These two categories remain separate in the results tables located in the appendices of this report for series comparability as sites larger than 2000 square metres often have special rules applying to them or have greater potential for variation from the base zone rules.

¹⁵ It should be noted that almost all business zoned sites have a portion of the site which is not covered by building/structure. Our modelling and methodological approach takes this into account and reports vacant potential capacity based on a site's size and the proportion of site that is vacant (within a population of sites within the district plan area). Full details on this are included in the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report.

Capacity type	Definition of capacity type
Pipeline capacity (special and structure plan areas)	Capacity that was in the planning process and/or reasonably anticipated to become available or be developed prior to 2023, at the time of the study (May 2012) but not in district plans. Examples include capacity in the proposed district plan changes or strategic growth management documents. Counted for both residential and business categories.

The business redevelopment component of this study estimates the likely total floor space area of a business area or centre. Total floor space area is determined and subsequently apportioned to business and residential purposes, from which potential employees and dwellings are calculated. The business redevelopment component capacity types are described in Table 3.

Table 3: Types of business redevelopment capacity

Business redevelopment capacity type	Definition of capacity type
Total floor space	Total amount of floor space (square meters) possible in a business area or centre calculated using floor area ratio (FAR) assumptions.
Business (non-residential) floor space	Amount of business (non-residential) floor space (square meters) likely to be yielded from a business area or centre.
Residential floor space	Amount of residential floor space (square meters) likely to be yielded from a business area or centre.
Estimated employees	Estimated number of employees likely to be accommodated in a centre or business area, based on the amount of business (non-residential) floor space yielded and a floor area per employee ratio.
Estimated dwellings	Estimated number of dwellings likely to be accommodated in a centre or business area, based on the amount of residential floor space yielded and a floor area per dwelling ratio.

A complete methodological outline as well as a full list of assumptions used for calculating each of the capacity types is included in the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report.

6.0 Residential capacity results

This section of the report summarises the residential results from the 2012 study. The results section have been broken down and reported by geographical area: the urban area, rural towns and the rural area. Results by local board and district plan area (former city and district council areas) can be found in Appendix A: Results by local board area and Appendix B: Results by district plan area at the end of this document. The residential capacity results are also presented in several series of maps in Appendix C: Maps of results.

Residential capacity results are reported as two separate figures. The first total represents the capacity utilising infill opportunities and the second, total capacity utilising redevelopment opportunities. These totals cannot be added together as each represents a different capacity yield from the same properties; parcels can have additional dwellings added to them (infill), or the existing dwelling can be removed and the site redeveloped to its maximum potential at the lowest consent category (redevelopment). Because the uptake of these opportunities will be a varied mixture of both infill and redevelopment over time, and location, the results are reported as a range. Table 4 shows the constituent capacity types that make up each of these totals, noting that both of these totals include pipeline (structure plan) capacity.

This section reports the residential capacity results from the study, firstly for the entire Auckland region, then broken down by urban area, rural towns the lastly the rural area (rural residential capacity). As well as reporting the results for each of these areas we expand on the nature of the capacity including some of the attributes of the parcels or titles that yield capacity. These are provided for context, but also as an example of the information and analysis that can be undertaken with outputs from the study.

Table 4: Constituents of residential capacity totals

Capacity constituents	Auckland wide		Urban area or rural towns		Rural area	
	Utilising infill	Utilising redevelopment	Utilising infill	Utilising redevelopment	Utilising infill	Utilising redevelopment
Vacant capacity	✓	✓	✓	✓		
Vacant potential capacity	✓	✓	✓	✓		
<u>Infill capacity</u>	✓		✓			
<u>Redevelopment capacity</u>		✓		✓		
Residential on business zoned land (business redevelopment)	✓	✓	✓	✓		
Rural residential capacity	✓	✓			✓	✓
Pipeline (structure plan) capacity	✓	✓	✓	✓	✓	✓

6.1 Auckland wide

Across Auckland, there is capacity under current planning provisions for between 250,463 additional dwellings (utilising infill) to 345,176 additional dwellings (utilising redevelopment).

Table 5: Auckland residential capacity summary (in dwellings)¹⁶

Existing dwellings (2011)	485,013
Urban area capacity	188,164 to 272,150
Rural towns capacity	36,197 to 46,924
Rural area capacity	26,102
Total residential capacity	250,463 to 345,176

Across Auckland, potential capacity for additional dwellings comes from many sources, including:

- 6476 parcels, that are zoned residential and are vacant, have potential capacity for an additional 22,188 dwellings
- There is potential capacity for 49,145 additional dwellings from 22,773 parcels that are zoned residential and can accommodate infill (incl. vacant potential) development
- If all residential zoned parcels across Auckland were redeveloped to their maximum capacity, this could yield an additional 115,965 dwellings
- There is potential capacity for an additional 24,974 dwellings from 13,750 titles located in Auckland's rural area
- There is potential capacity for an additional 103,930 dwellings in business areas and centres¹⁷
- Pipeline capacity (from structure plan and special areas, which are underway or expected to come online before 2023) provides potential for an additional 49,769 dwellings.

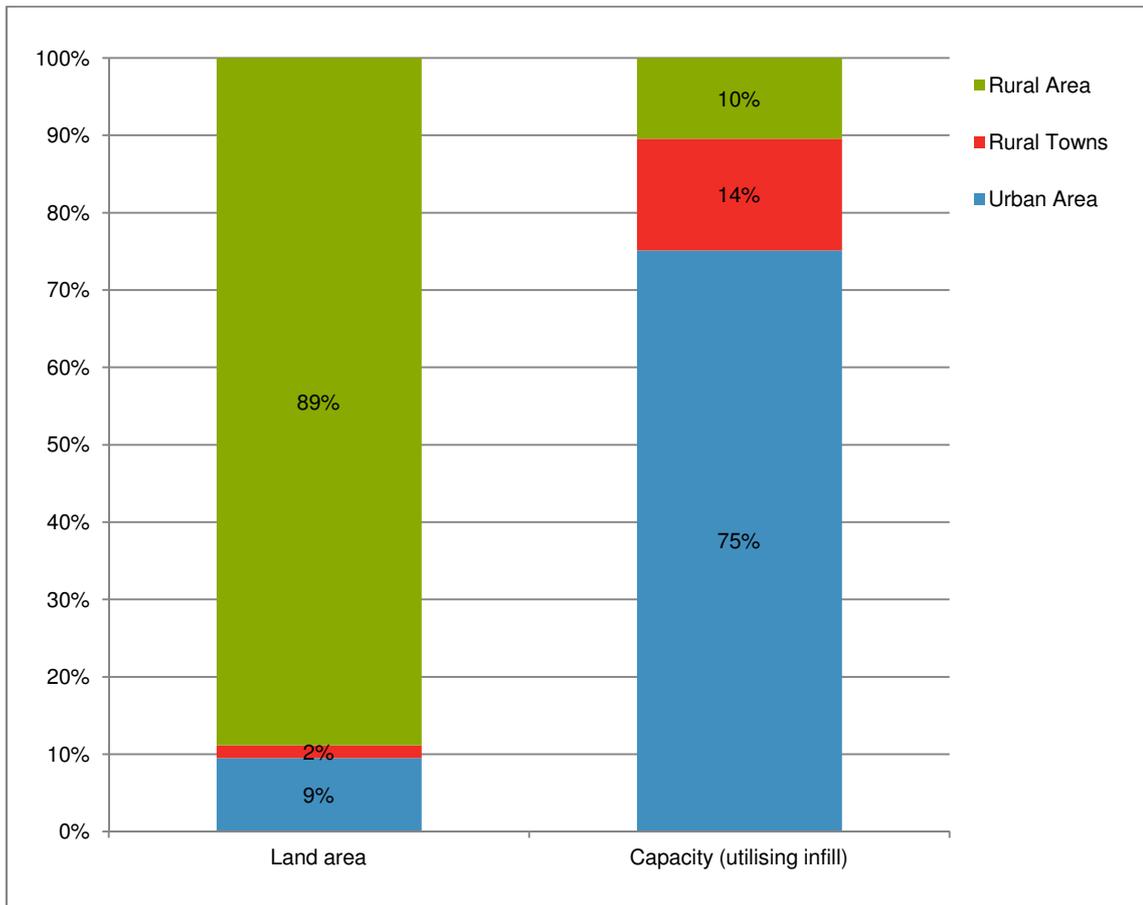
¹⁶ Totals in this table include pipeline capacity.

¹⁷ Under a modified theoretical scenario of the business redevelopment capacity assessment, refer *Capacity for Growth Study 2012: Methodology and Assumptions* technical report)

Auckland has been growing as a city ever since it was first settled. Historical and current development has seen the urban area of the region spread across the Auckland Isthmus and beyond. Despite this the rural area of Auckland still makes up close to 90% of its total land area (see Figure 2).

The vast majority, three-quarters (75%) of the residential capacity identified (when utilising infill)¹⁸ by the study is located in the urban area (see Figure 2).

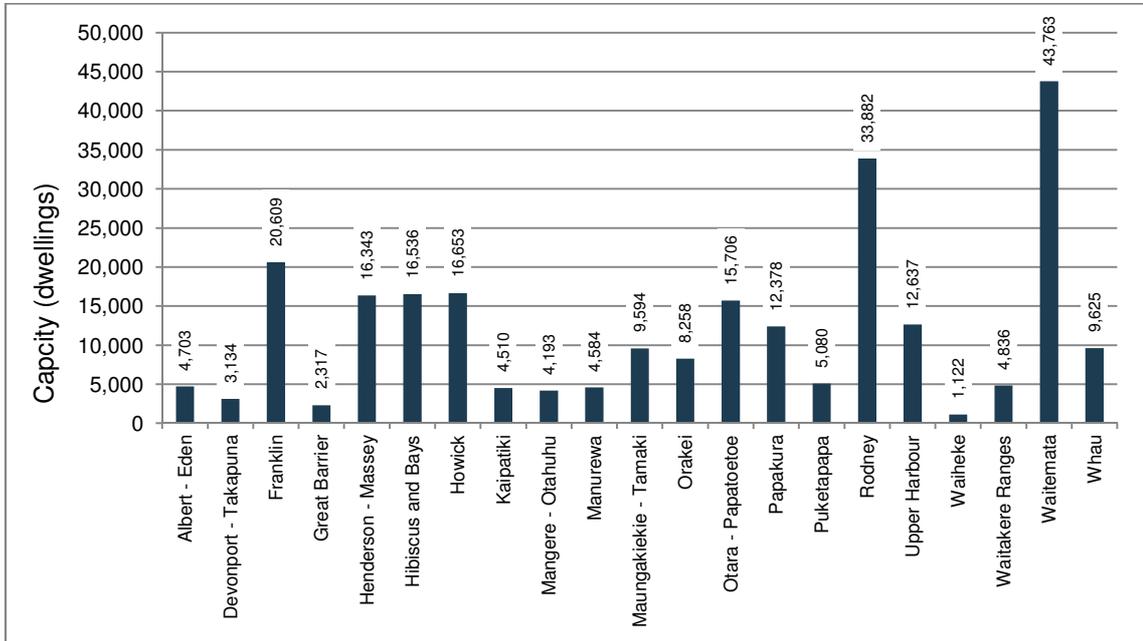
Figure 2: Proportions of land area and residential capacity (utilising infill) by location



¹⁸ The proportion of residential capacity (utilising redevelopment) located in the urban area is 80%.

Residential capacity identified in this study is not evenly spread. When looking at the study results by local board area (refer Figure 3) it is clear that some areas have more capacity than others. Over half (53%) of the residential capacity total (when utilising infill) lays within just five of the 21 local board areas (Franklin, Howick, Hibiscus and Bays, Rodney and Waitemata).

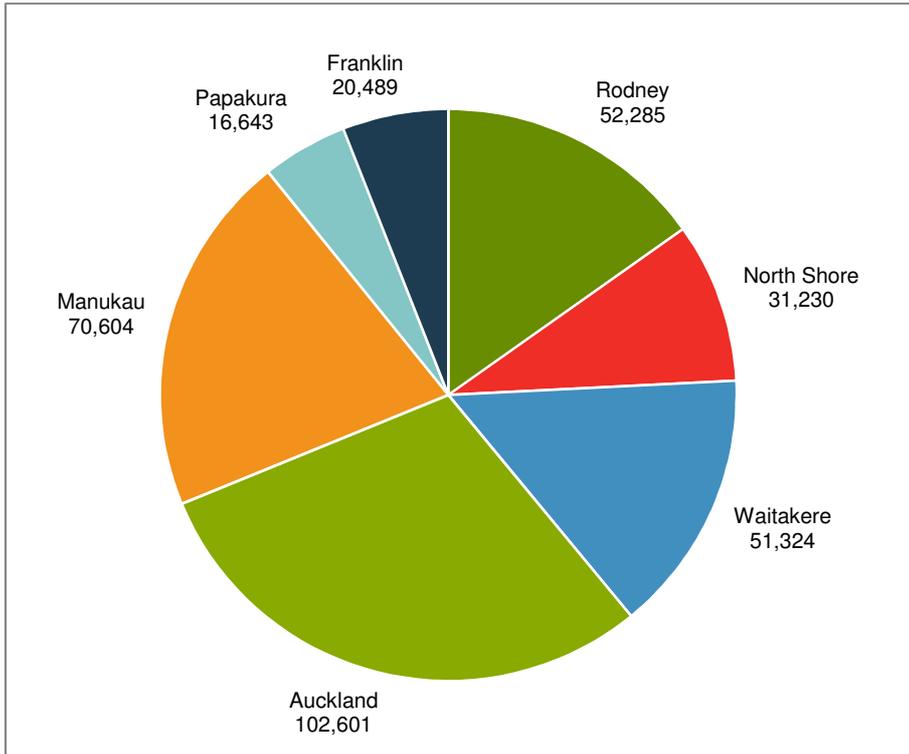
Figure 3: Residential capacity (utilising infill) by local board area (dwellings)



The Waitemata Local Board, while encompassing some of the oldest parts of the city, also includes the central business district (CBD). The CBD has the potential to accommodate large numbers of new dwellings through the increase of high-density residential and mixed-use developments on business zoned land. It is for this reason that the Waitemata Local board area contains 17% of the residential capacity (when utilising infill). The Rodney Local Board also contains a sizable amount of residential capacity (14% of Auckland's total). Unlike other local boards, almost all of this residential capacity comes from the rural area through potential subdivision, under provisions in the Rodney District Proposed District Plan 2000.

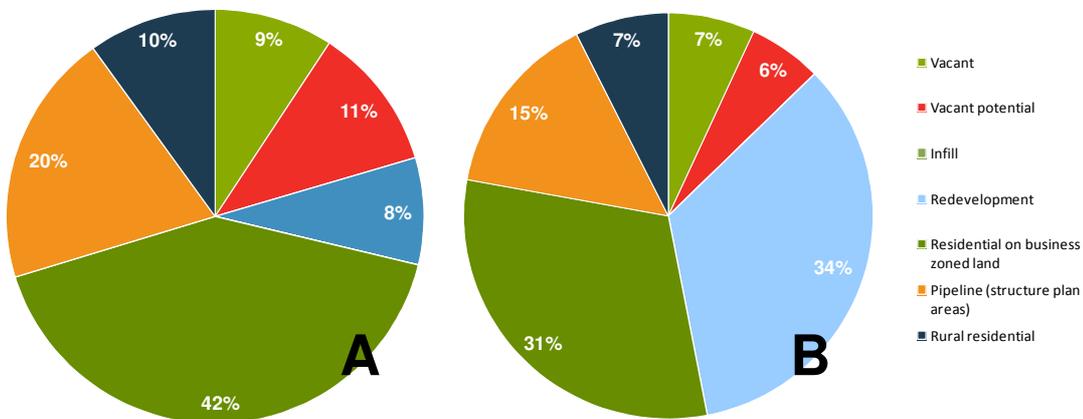
Another example of differences in the spatial distribution of residential capacity (this time using residential capacity utilising redevelopment) can be seen when comparing district plan areas (as seen in Figure 4). This graph shows that the former Auckland and Manukau cities have the largest proportion, together making up half (50%) of the residential capacity (when utilising redevelopment). While some of the capacity in the former Manukau City comes from pipeline/structure plan developments (including Flat Bush), the majority in both Manukau and Auckland City comes from the potential capacity in town centres. Both the former cities have number of metropolitan centres located in them, with these centres having a large amount of residential development potential.

Figure 4: Residential capacity (utilising redevelopment) by district plan area (dwellings)



As shown previously in Table 4, residential capacity in Auckland is made up from many capacity sub-types. Figure 5 shows the proportions to which each of the capacity sub-types contributes to the over all residential capacity total for all of Auckland.

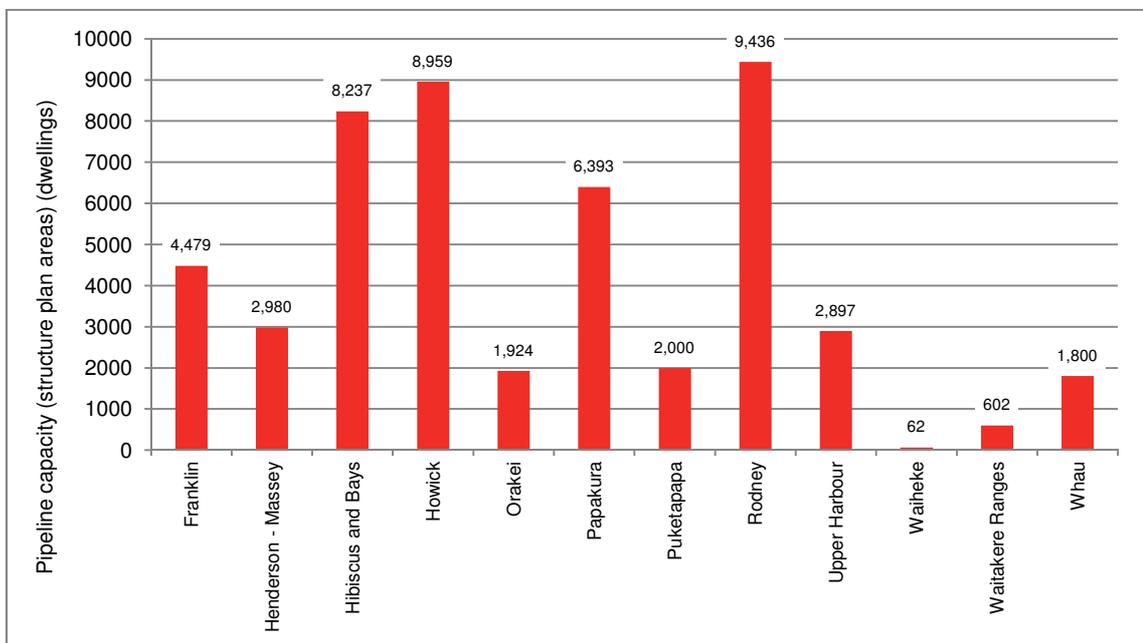
Figure 5: Residential capacity in Auckland by capacity type for A) capacity utilising infill or B) capacity utilising redevelopment



A large portion of the residential capacity calculated as part of this study comes from residential development on business zoned land (in business areas and centres). This capacity forms an important and major part of the residential capacity available in Auckland. Currently the business areas and centres contain 7% of Auckland's existing dwellings, but with *The Auckland Plan* aiming to accommodate 70% of future growth within the MUL (as at 2010) (Auckland Council 2012a: 48) these areas and their residentially zoned periphery will become an increasingly important location for residential development. The study has identified that business areas and centres provide between 32% (capacity utilising redevelopment) to 44% (capacity utilising infill)¹⁹ of that total residential dwelling capacity in Auckland. More information on residential in business areas can be found in section 8.0: Business redevelopment capacity results.

Auckland is a growing city, with new suburban areas being almost constantly rezoned, and providing an on-going supply of residential capacity. This study assessed the amount of pipeline capacity (from structure plans) that Auckland has available. Most of this development happens at the edge of our current urban area but can also occur in rural areas where opportunities for countryside living are being developed. Due the nature of this type of capacity, the spatial distribution of this capacity type is not as spread across the local boards as the other capacity types. Only twelve of the 21 local boards had some sort of pipeline capacity identified in them as part of this study. Figure 6 shows how this capacity is distributed amongst the local board areas. Rodney Local Board, which has the most pipeline capacity of all the local board areas has no part of it fall within the urban area. Almost all of this capacity is from proposed development in and around the many rural towns, including by not limited to Warkworth, Kumeu-Huapai, Snells Beach and Algies Bay. Pipeline capacity located in the Howick Local Board area is primarily from the extensive Flat Bush development, while new suburbs on the west of Orewa and north of Silverdale contribute to the Hibiscus and Bays Local Board pipeline capacity total. In the Waitakere Ranges Local Board all of the pipeline capacity is from rural structure plans.

Figure 6: Distribution of pipeline residential capacity (from structure plan areas) in Auckland, by local board area



The 'Greenfield Areas of Investigation' as indicated in *The Auckland Plan* Development Strategy (Auckland Council 2012a: 54-55) are not included in this study other than by way of

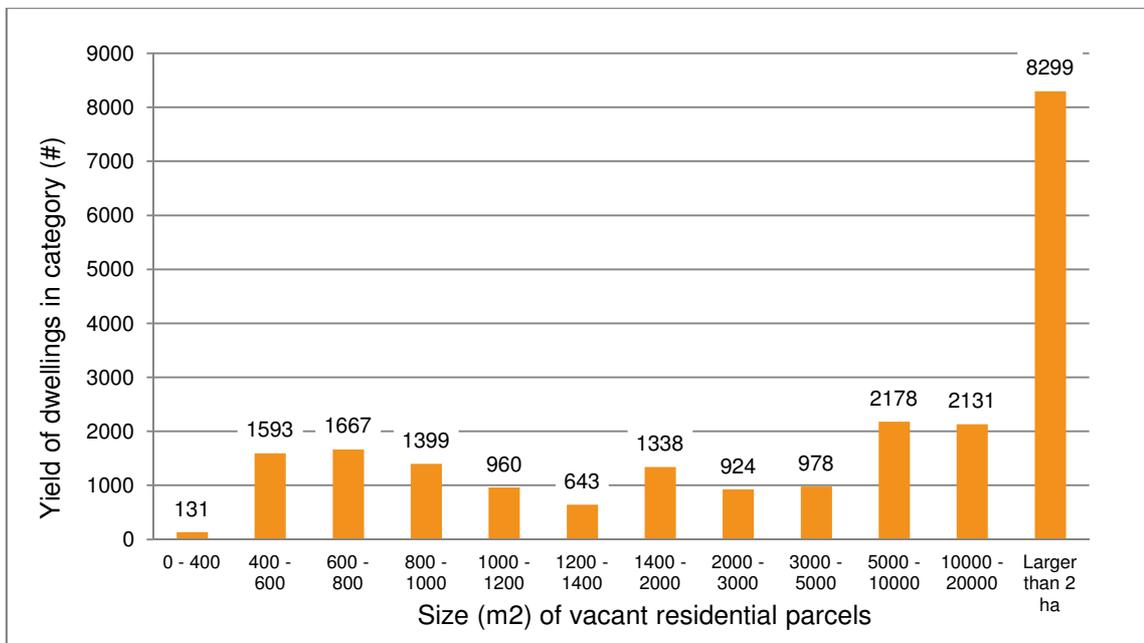
¹⁹ Remembering that residential capacity is expressed as a range, hence the proportion of additional dwellings that could be yielded from business areas and centres falls between 32% and 45%.

current underlying rural zoning. These are located in the Franklin and Rodney local board areas.

While information of the distribution of residential capacity is informative, statistics illustrating the attributes of the capacity itself is just as crucial. Where capacity has been assessed at the parcel or title level large amounts of data have been collected, much of which is not reported on in this publication. In order to provide context and an example of what can be produced from the results, the following examples are provided. Other examples are also provided later in the residential section (in the urban, rural town and rural residential sub-sections) and also in the business section of this report. Examples included are generally used to illustrate an interesting attribute of the data or a topical issue. We have not attempted to pre-empt any and all future uses of the data.

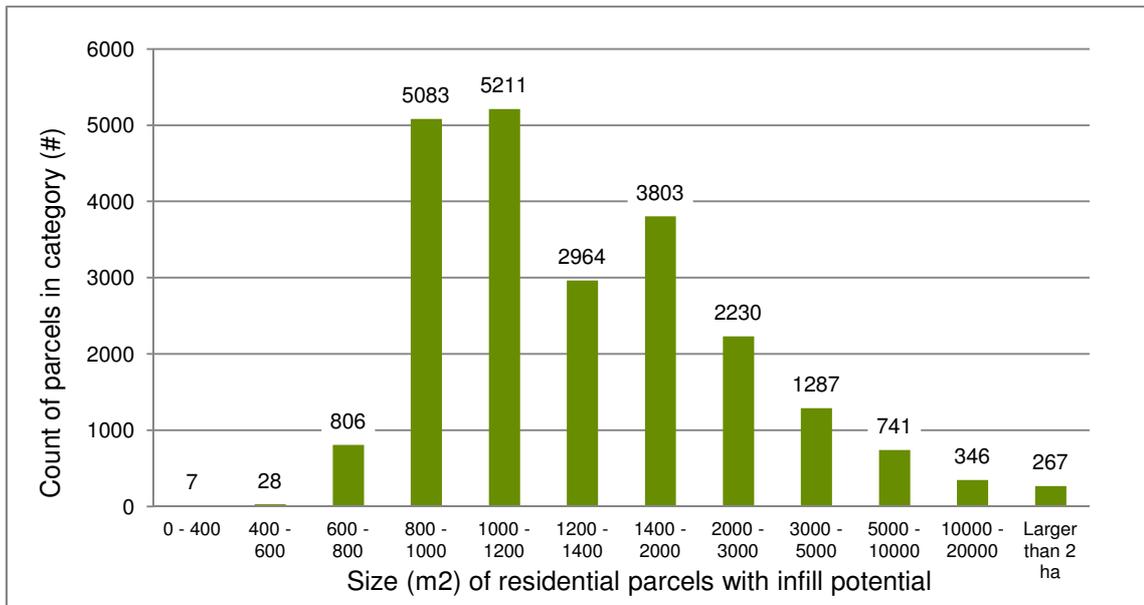
The study identified that there were 6476 vacant residential zoned parcels in Auckland, which could yield an additional 22,241 dwellings. Figure 7 shows the number of potential dwellings (the capacity) that can be yielded from residential parcels of different sizes. As the graph clearly illustrates, the largest proportion (37%) of capacity is yielded from parcels that are larger than two hectares in size.

Figure 7: Yield of dwellings from vacant residential parcels, by parcel size in Auckland (count of dwellings)



The potential for additional dwellings from infill (incl. vacant potential) development across Auckland contributes 20% of the total dwelling capacity (when utilising infill). Much of this capacity comes from large residential zoned parcels, which due to their size can provide a high number of opportunities for additional dwellings. This is shown in Figure 8. There are 22,033 residential parcels that have infill (incl. vacant potential) potential, with only 346 (or less than 3%) of these parcels being larger than two hectares in size. Although small in number, these larger vacant parcels account for over 34% of the capacity yielded through infill (incl. vacant potential)

Figure 8: Size distribution of residential parcels with infill potential, in Auckland (count of parcels)



The rules that apply to general infill subdivision are strongly linked to existing parcel size. These provisions are predominantly designed to maintain the character of an area within the relevant zone. Figure 9 shows the proportion of occupied residential zoned parcels in Auckland that are subdividable under the current district plan provisions (that is, they have infill (incl. vacant potential) potential). Residential parcels that are smaller than 3000 square metres have a low likelihood of being subdivisible under operative planning provisions, compared to parcels that are larger. Less than one in 20 parcels that are smaller than 800 square metres have infill potential, but more than one in every three sites larger than 3000 square metres, could accommodate some form of complying infill development under current operative rules.

Figure 9: Proportion of total residential zoned parcels in Auckland that have infill potential, by parcel size.

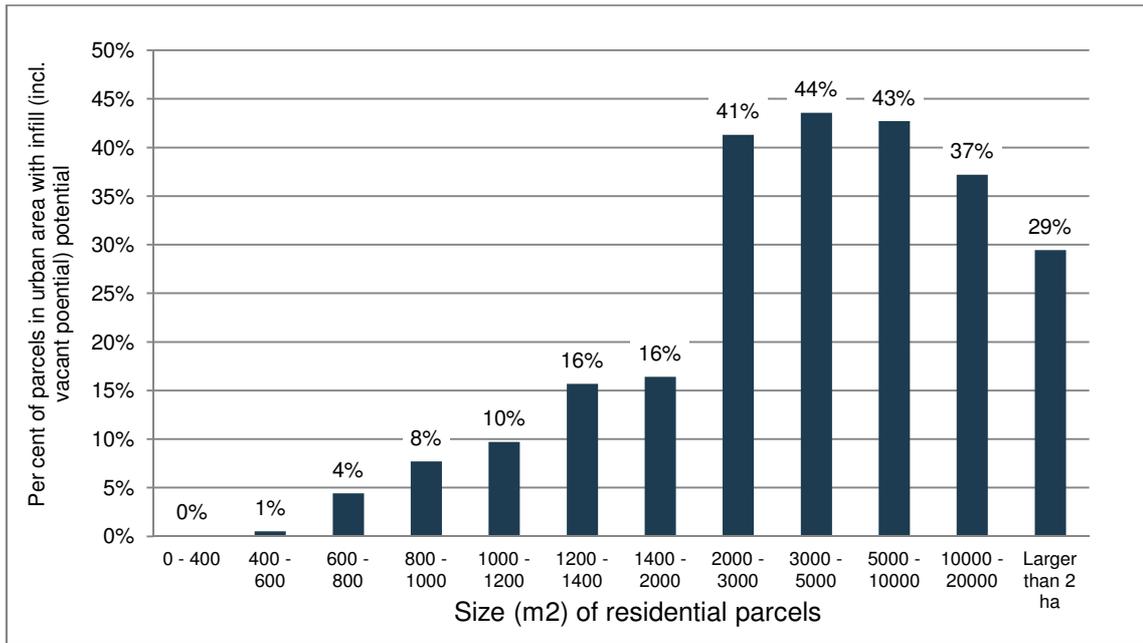
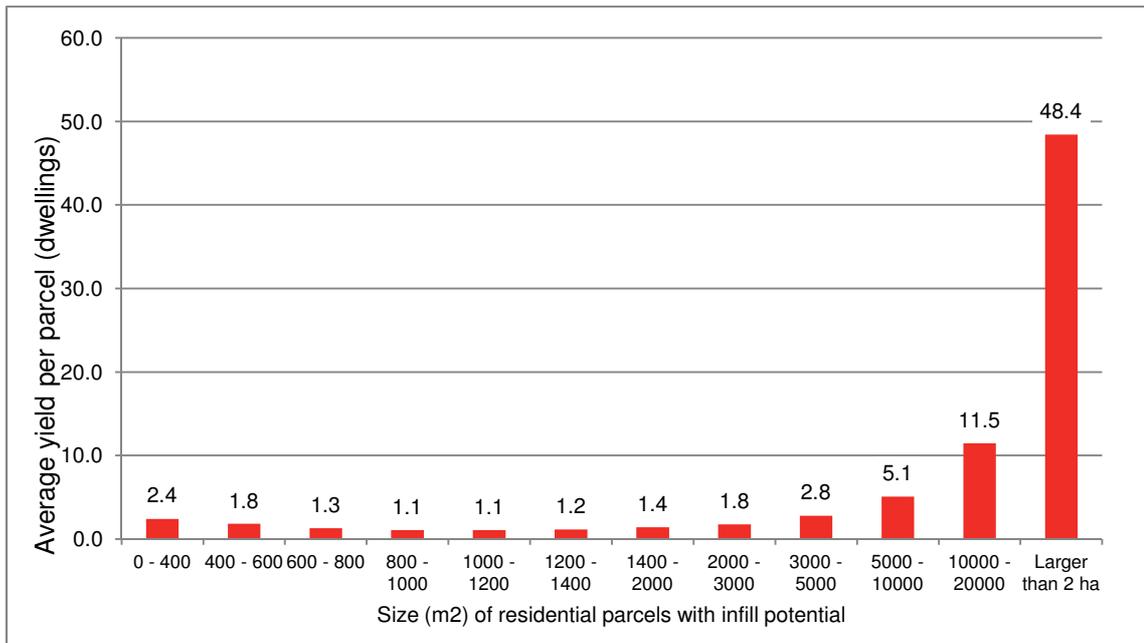


Figure 10 shows the average number of dwellings yielded from residential parcels by size. From this we can see that the average of 48.4 dwellings yielded from sites larger than two hectares is considerably greater than that seen in all of the other categories. These average yields are to a large degree a function of the planning system – despite a wide range of parcel sizes, most parcels yield only one or two additional dwellings, irrespective of size. This is because parcel size can not be viewed in isolation from the subdivision rules. These rules are written in many cases to maintain character, which in many areas around Auckland include a large residential parcel size.

Figure 10: Average yield of additional dwellings from parcels with infill potential in Auckland (count of dwellings)



6.2 Urban area

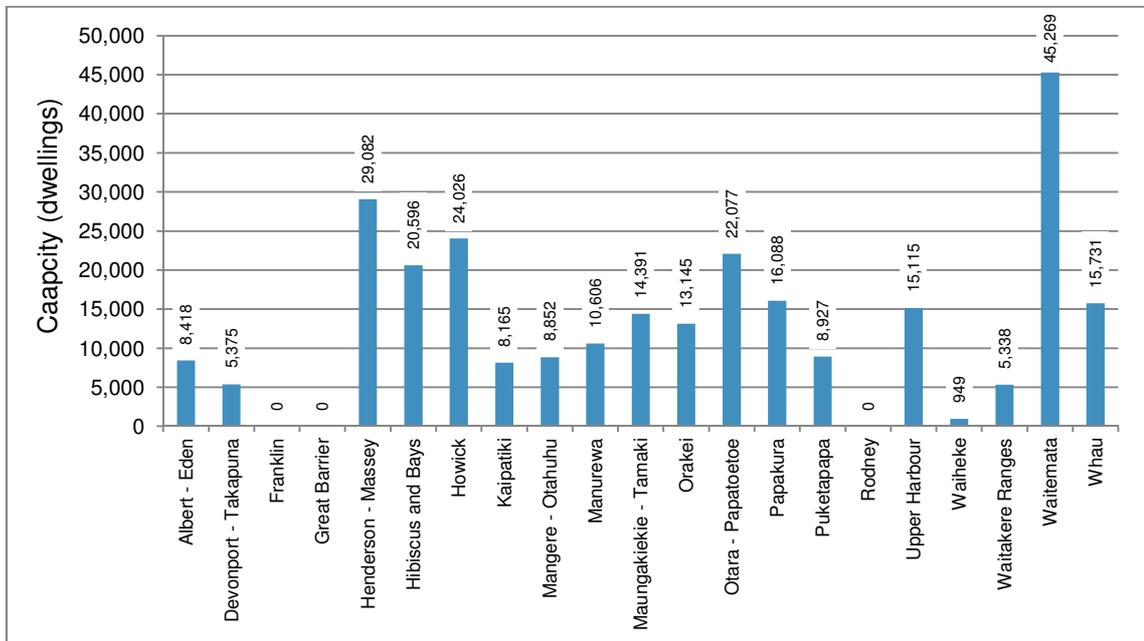
Auckland's urban area has capacity under current planning provisions as modelled for an additional 189,059 dwellings (utilising infill) to 273,045 dwellings (utilising redevelopment).

Within Auckland's urban area, potential capacity for additional dwellings comes from many sources, including:

- 5007 parcels, that are zoned residential and are vacant have potential capacity for an 15,701 additional dwellings
- There is potential capacity for further 38,714 additional dwellings (on 20,778 parcels) on sites that are suitable for infill (incl. vacant potential)
- If all 254,337 residential zoned parcels within the urban area were redeveloped to their maximum capacity, this could yield an additional 103,930 dwellings
- There is potential capacity for an additional 98,782 dwellings in business areas and centres²⁰
- Pipeline capacity (from structure plan and special areas, which are underway or expected to come online before 2023) provides potential for an additional 34,697 dwellings.

Residential capacity results by local board area for the urban area are very similar to those identified for the entire region, with Waitemata Local Board containing the most capacity – due to it containing the CBD. Figure 11 shows this distribution using the residential capacity (utilising redevelopment). Note that the Rodney, Franklin and Great Barrier local boards do not contain any land that is classified as urban in this study.

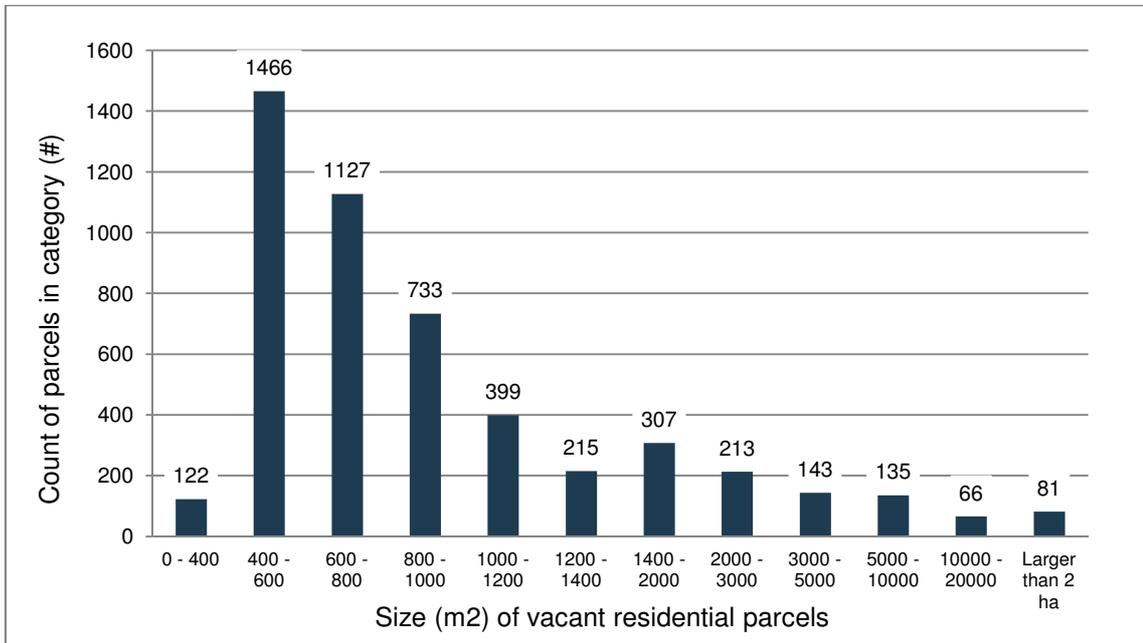
Figure 11: Distribution of residential capacity in the urban area (utilising redevelopment) by local board area



²⁰ Under a modified theoretical scenario, refer *Capacity for Growth Study 2012: Methodology and Assumptions* technical report

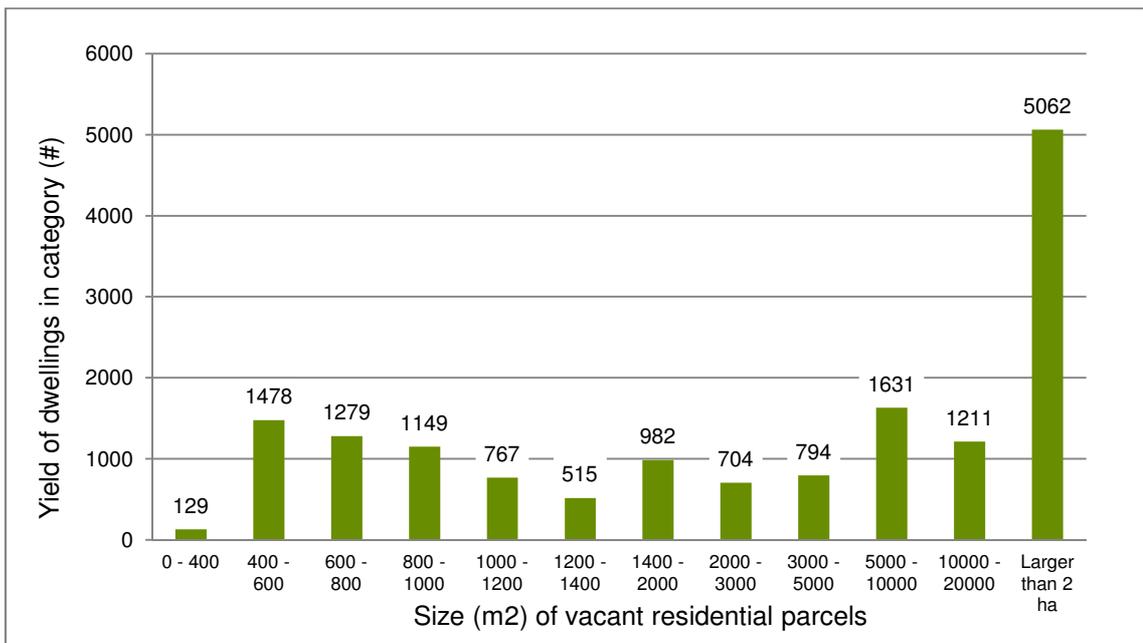
A third (32%) of the vacant residential parcels in the urban area are 600 square metres or smaller, with over half (54%) being smaller than 800 square metres (see Figure 12). A small proportion (2%) of the vacant residential parcels in the urban area could be considered large in size, being larger than one hectare.

Figure 12: Size distribution of vacant residential parcels in the urban area (count of parcels)



Despite their small number (147), the parcels that are one hectare or larger contribute to just over one-third (40%) of the capacity that can be yielded from vacant residential parcels in the urban area (refer Figure 13).

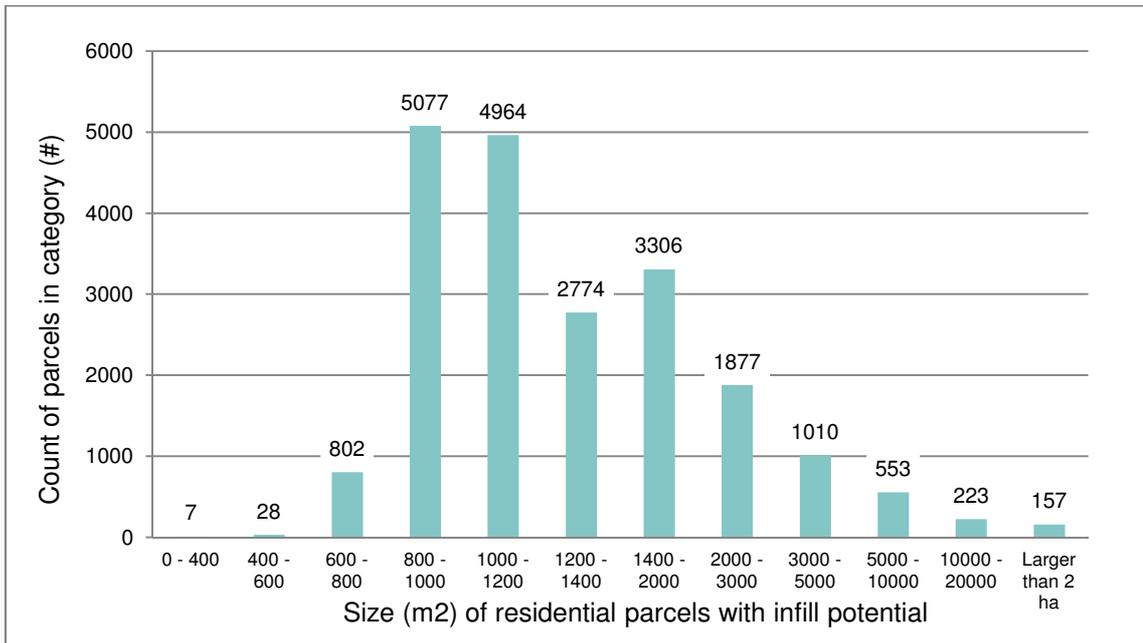
Figure 13: Yield of dwellings from vacant residential parcels, by parcel size in the urban area (count of dwellings)



Residential capacity from parcels that have infill potential makes up 20% of the total residential capacity (when utilising infill) in the urban area. In order to undertake infill development, parcels must in most cases be at least double the minimum site size requirements for the district plan zone they fall in, as such the likelihood of small residential parcels having infill potential are lower. Figure 14 illustrates this, showing that very few parcels with infill potential are smaller than 800 square metres in size.

These results are also an indication that the majority of the infill provisions in the modelled residential zones require a minimum site size of greater than 400 square metres, which is also apparent from the planning requirements used as inputs to the model. Residential development of less than 400m² in net site area also implies a built form or typology which is more likely to be attached, which is generally only modelled as the lowest consent category in centres (business areas) rather than in the general residential zones.

Figure 14: Size distribution of residential parcels with infill potential, in the urban area (count of parcels)

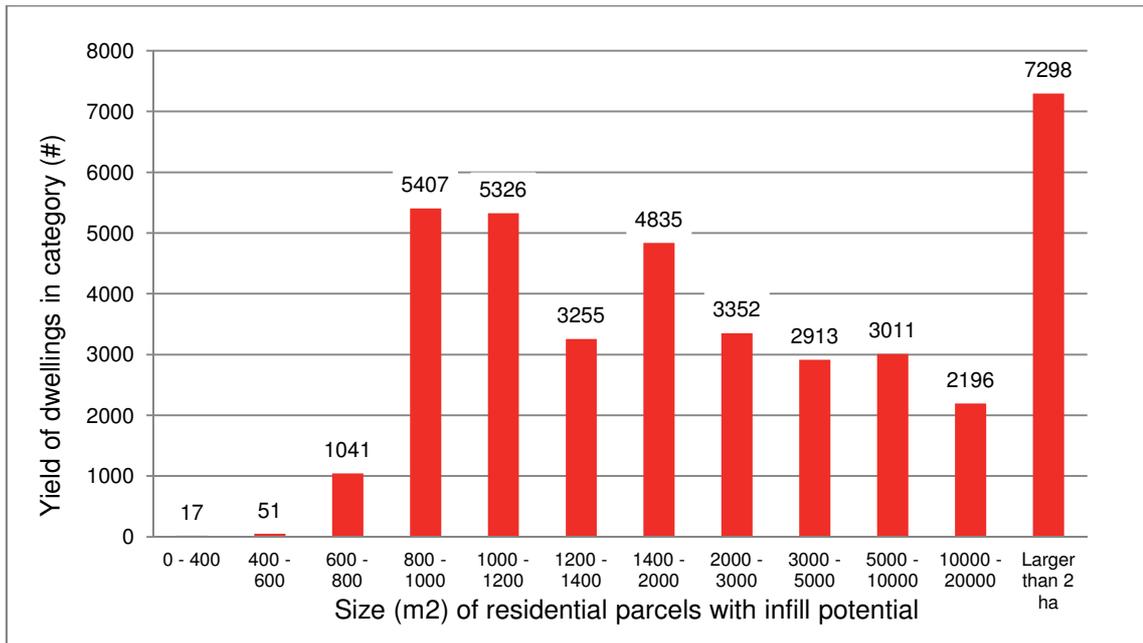


Similar to the pattern seen on the yield graph for vacant residential parcels, much of the capacity for additional dwellings on parcels with infill potential come from large sites. This can be seen in Figure 15.

The main difference between these two capacity types (infill cf. vacant) is that the dwelling yield derived from infill parcels that are larger than two hectares in size, is almost matched by the dwelling yield from vacant residential parcels that are between 1000 and 1200 square metres alone.

Vacant land development represents a very significant source of latent capacity so ensuring it is developed as efficiently as possible, and/or understanding why it is not developed, or not developed in the manner anticipated is an important policy issue.

Figure 15: Yield of dwellings from residential parcels with infill potential in the urban area (count of dwellings)



Pipeline capacity (from structure plan and special areas that are due to come online before 2023) contributes between 13% (if redevelopment is utilised) and 19% (if infill is utilised) of the total residential capacity of the urban area.

Twenty six per cent of the entire urban area’s pipeline capacity comes from Flat Bush, which is located in the Howick Local Board area, with the combined Flat Bush future urban area’s expected to provide a further 8959 additional dwellings when built out. The Hibiscus and Bays Local Board also provides a large portion of the urban area’s pipeline capacity (22%) with a further 7687 additional dwellings likely to be yielded from various structure plan areas including significant developments at Orewa West and Silverdale North. Papakura in the south is expected to provide 18% of the pipeline capacity with 6393 additional dwellings coming from the likes of the Addison subdivision (Takanini – various stages) and Karaka (Hingaia States 1A and 1B).

For more information on the complete set of structure plan and special areas and their capacity refer to Table 33 in Appendix E: Pipeline capacity (structure plan) identified for the Capacity for Growth Study 2012.

6.3 Rural towns

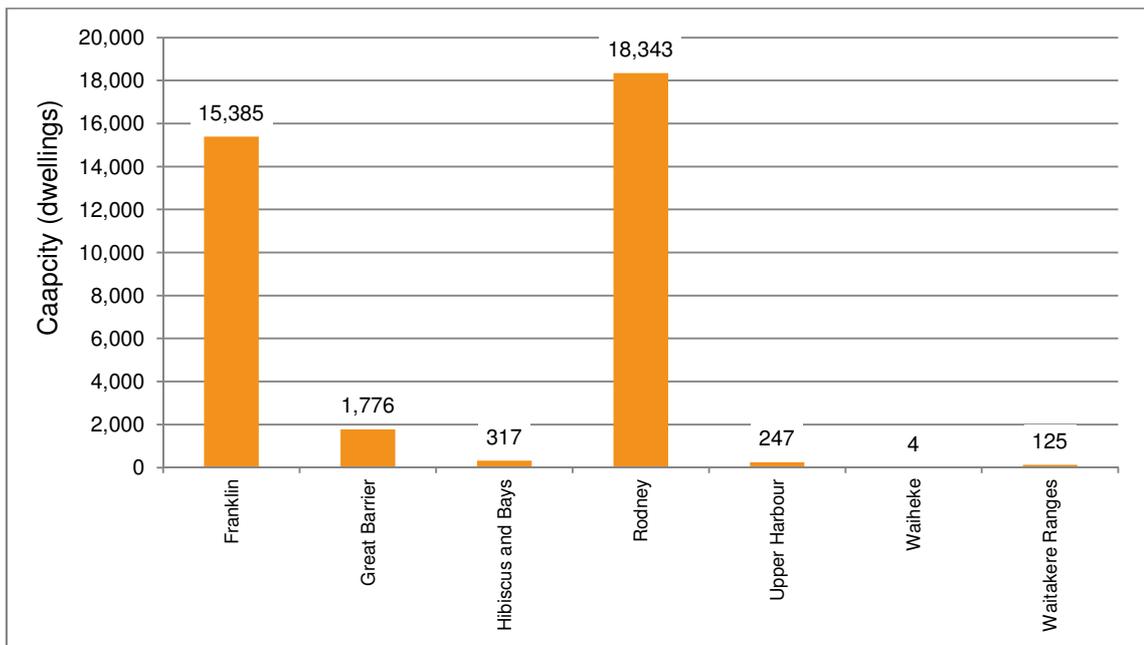
Across the 84 rural towns²¹ that were assessed for capacity we found that there was potential capacity for an additional 36,279 dwellings (utilising infill) to 47,006 dwellings (utilising redevelopment).

Within the rural towns, potential capacity for additional dwellings comes from many sources, including:

- In rural towns there are 1469 residential zoned parcels that are vacant and which have potential capacity for an additional 6487 dwellings
- In rural towns there is potential capacity for 10,431 additional dwellings on 1995 parcel that are suitable for infill (incl. vacant potential) development
- If all 17,050 residential zoned parcels within the rural towns were redeveloped to their maximum capacity, this could yield an additional 11,765 dwellings
- There is potential capacity for an additional 5,605 dwellings in business areas and centres in rural towns
- Pipeline capacity (from structure plan and special areas which are underway or expected to come online before 2023) provides potential capacity for an additional 13,674 dwellings.

Just seven of Auckland’s 21 local boards have rural areas or contain rural towns. Figure 11 shows the distribution of residential capacity (utilising infill) in rural towns, by local board. As can be seen, most of this capacity falls within the largest of the rural based local boards, Franklin and Rodney. The other local boards shown have large rural areas, but few rural towns, as such show only small amounts of capacity. It should be noted that most the ‘urbanised’ area on Waiheke Island falls within the 2010 MUL, and has therefore been reported under the urban area section.

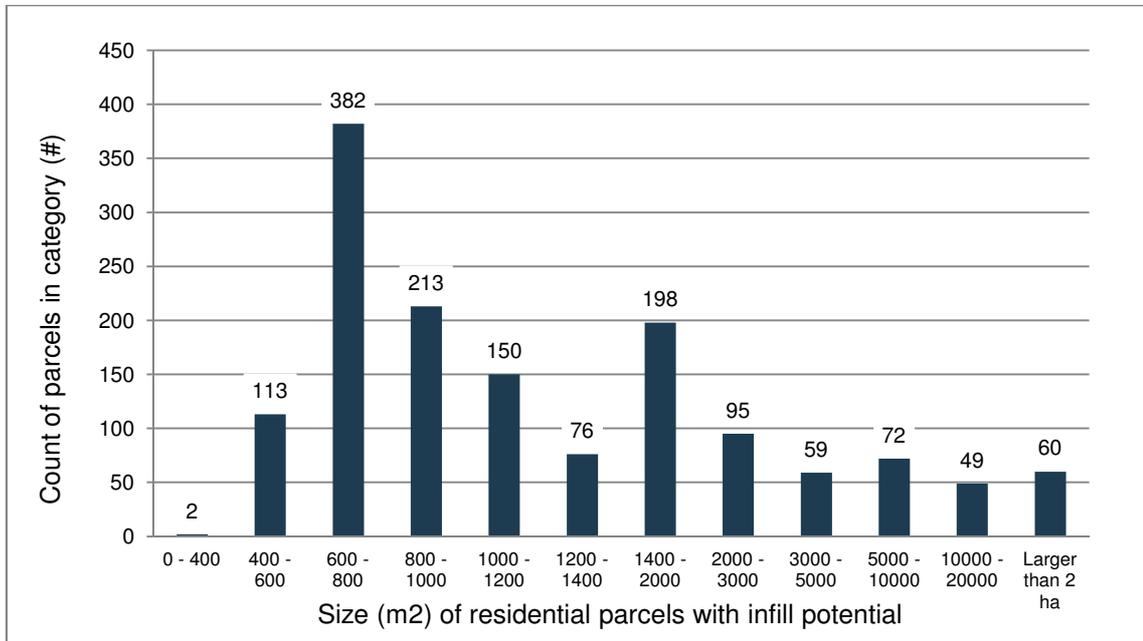
Figure 16: Distribution of residential capacity (utilising infill) in rural towns by local board area



²¹ A definition of rural towns used in this study is found in Table 1 and the geographic extents of the modelled rural towns shown in Figure 1. It should be noted that the spatial definition of rural towns used in this study may differ to definitions used for other purposes.

Just under half (48%) of the vacant residential parcels in Auckland’s rural towns are smaller than 1000 square metres (see Figure 17). Only 109 of the vacant parcels are larger than one hectare in size, but these parcels could yield an additional 4157 dwellings, 64% of the total capacity yielded from vacant parcels in rural towns.

Figure 17: Size distribution of vacant residential parcels in rural towns in the urban area (count of parcels)

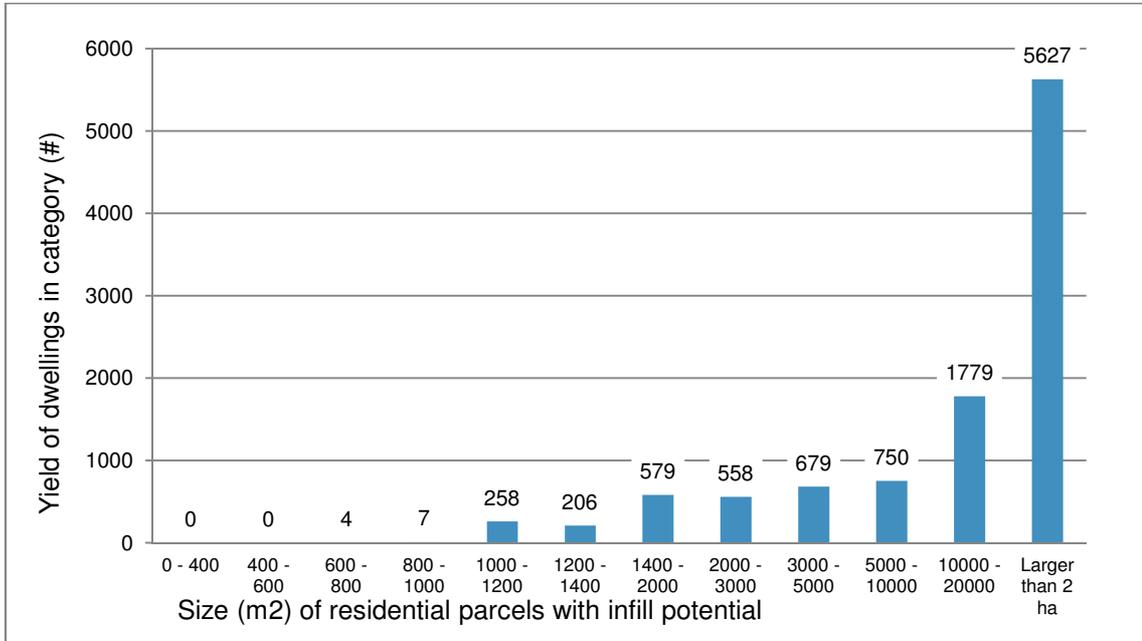


There are relatively few residential zoned parcels less than 800 square metres in rural towns with capacity for additional development.

The average residential parcel size in rural towns is also larger than the average residential parcels size within the urban area – a reflection of the planning framework applying, reflecting the fact that most of the operative planning provisions applying in rural towns require these larger site sizes, usually to maintain character, but also in order to limit impacts on current infrastructure such as sewerage, stormwater or transport systems. Where infrastructure can cope with higher densities or gross numbers, or the rural town is of a certain scale more ‘urban’ rules can often be found.

There is potential for infill development on 1995 parcels in rural towns, with one-quarter of these being smaller than 1400 square metres in size and 11% being larger than one hectare in size. Despite the parcels one hectare in size only numbering 233, these parcels contribute 70% of the total potential yield for this capacity type in rural towns. As in the urban area, larger parcels provide a disproportionate level of development potential relative to the number of them. Potential yield from parcels with infill potential, by size can be seen in Figure 18.

Figure 18: Yield of dwellings from residential parcels with infill potential in the urban area (count of dwellings)



All the pipeline residential capacity in rural towns (13,674 dwellings) is located in two of the local board areas; Rodney and Franklin. The Rodney Local Board area, like the former Rodney District which it is a subset of, has 67% of the rural town pipeline capacity, while Franklin Local Board (a subset of the former Franklin District) has the remaining 33%. The largest proportion of this pipeline capacity in the Rodney Local Board comes from the proposed Point Wells/Omaha Flats development (also known as Special Area 22), with further pipeline residential capacity coming from future developments around Huapai and Snells Beach and Algies Bay. More information on pipeline capacity from structure plan and special areas can be found in Appendix E: Pipeline capacity (structure plan) identified for the Capacity for Growth Study 2012.

6.4 Rural residential

The rural area of Auckland is expansive, making up approximately 90% of Auckland's land area; stretching from Pakiri and Wellsford in the north to Waiuku and Pukekohe in the south, and including the many and varied Hauraki Gulf Islands.

In the rural area, capacity comes from 13,089 titles, providing potential capacity for 24,974 additional dwellings. We have also identified the possibility for 1128 additional dwellings through pipeline capacity (structure plan and special areas), making a total potential rural residential capacity of 26,102 dwellings.

Table 6: Rural residential capacity summary (in dwellings)

Existing dwellings (2011)	27,574
Capacity from vacant titles (dwellings)	16,409
Capacity from occupied titles (dwellings)	8,565
Pipeline/structure plan area capacity (dwellings)	1,128
Rural residential capacity (dwellings)	26,102

The largest proportion of capacity in the rural areas comes from titles that are currently vacant (62%). These 9830 vacant titles have the potential capacity for 16,409 additional dwellings. Vacant titles that have capacity can be broken into two distinct categories, those with subdivision potential, and those without:

- There are 8126 currently vacant titles that have no subdivision potential under the modelled consent category (83% of vacant rural residential titles), these are assumed to have potential for a single dwelling erected on them 'as of right'²², providing a potential capacity of 8126 dwellings.
- The remaining 1704 titles can undergo some sort of subdivision under the modelled consent categories, providing a potential capacity of 8283 additional dwellings.

District planning rules provide provisions for titles in many areas to be subdivided, regardless of whether the titles are occupied by a dwelling or not. At the time of this study there were:

- 3259 occupied titles in the rural area with potential capacity for an additional 8868 dwellings.

6.4.1 Potential variability to rural residential capacity results

Rural residential capacity calculations are considered conservative, particularly for the former Rodney and Franklin districts. Capacity measured in other legacy TA areas is also subject to considerable variability. Reasons for this include:

- Franklin District – Rural Plan Change 14 has been in the development process for several years and proposes to provide for a significantly different approach to subdivision than modelled in the former Franklin District, mainly by allowing for incentive based transfer from donor areas to defined receiving zones in return for environmental enhancement. Other options in the proposed text include the ability to transfer existing lots/subdivision potential from high class soils to sites with a lower quality soil resource. The plan change is largely operative except for the subdivision provisions, which at the time of the undertaking of this study was before

²² This category will include a wide range of properties, from recently created rural titles with specified building platforms through to 'paper towns' in isolated rural areas. The term 'as of right' is used to refer to the right for a private property (as defined by a title) to be occupied. Some of the titles in this category will be subject to constraints on the location, design or scale of a proposed dwelling imposed by the current planning system, but the underlying 'right to occupy' ones property is not considered to be extinguished.

the Environment Court. Accordingly we have not modelled this plan change, as it is not clear what the provisions will end up being, and we did not want to prejudice or prejudge the process.

- Rodney District – the plan enables multiple subdivision methods depending on the zone, also with the option of ‘cascading’²³ provided for specifically in the Rodney District Plan as a Discretionary Activity. Some of the higher yielding approaches, while modelled, have not been included in the results as they require a higher level of consent than the lowest consent category available on the site, as does the ‘cascading’ option. Capacity is potentially therefore significantly higher than reported. See also Section 8.3 in the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report for a discussion of the potential capacity differential under the cascading/higher consent categories approach.
- Hauraki Gulf Islands (Auckland City) – The decisions version of the Hauraki Gulf Islands Section of the Auckland City District Plan has been used as the basis of assessment. Some aspects of this plan are under appeal, but are not expected to vary overall modelled yields significantly overall (some sites may vary). The plan also contains both a Minimum Site Area (MSA) approach in all zones and a Significant Environmental Feature (SEF) approach in some landforms. As the SEF approach requires a higher level of consent than the MSA this has not been reported. Capacity is potentially therefore significantly higher than reported, particularly in areas with the required landforms and SEF features.
- Papakura District – Plan Change 13 – Similar to Franklin District’s Plan Change 14, this plan change proposes to significantly vary the approach to subdivision in the Papakura rural area, from the modelled provisions, towards an incentive based approach in return for environmental protection and enhancement. Significant portions of the plan change remained subject to appeal at the time of the study and accordingly it has not been modelled. The Resource Management Act s.32 analysis prepared as part of the initial plan change suggested *overall yield* would remain more or less similar to the pre-plan change, but with significant variation in the *distribution* of sites with potential, as the plan moved from an area based to environmental protection based approach, the sites with potential will also shift. Due to the nature of the appeals still to be resolved, it is not clear to what degree the original s32 analysis remains a valid assumption.
- All areas - As for all other zones and locations, no accounting is made for non-complying activities, future plan changes, site amalgamation or law changes, which may increase or decrease capacity, or influence the uptake of identified capacity. Note that as this study assumes compliance with the rules modelled, potential capacity will be higher in ALL zones and locations under non-compliant application assumptions. Unfortunately the quantum of difference between what has been modelled within plan defined parameters and ‘what is potentially possible by pushing the boundaries’ cannot be objectively modelled due to the inherent subjectivity embedded in the assumptions required to do so.

Further discussion of these issues is included in the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report.

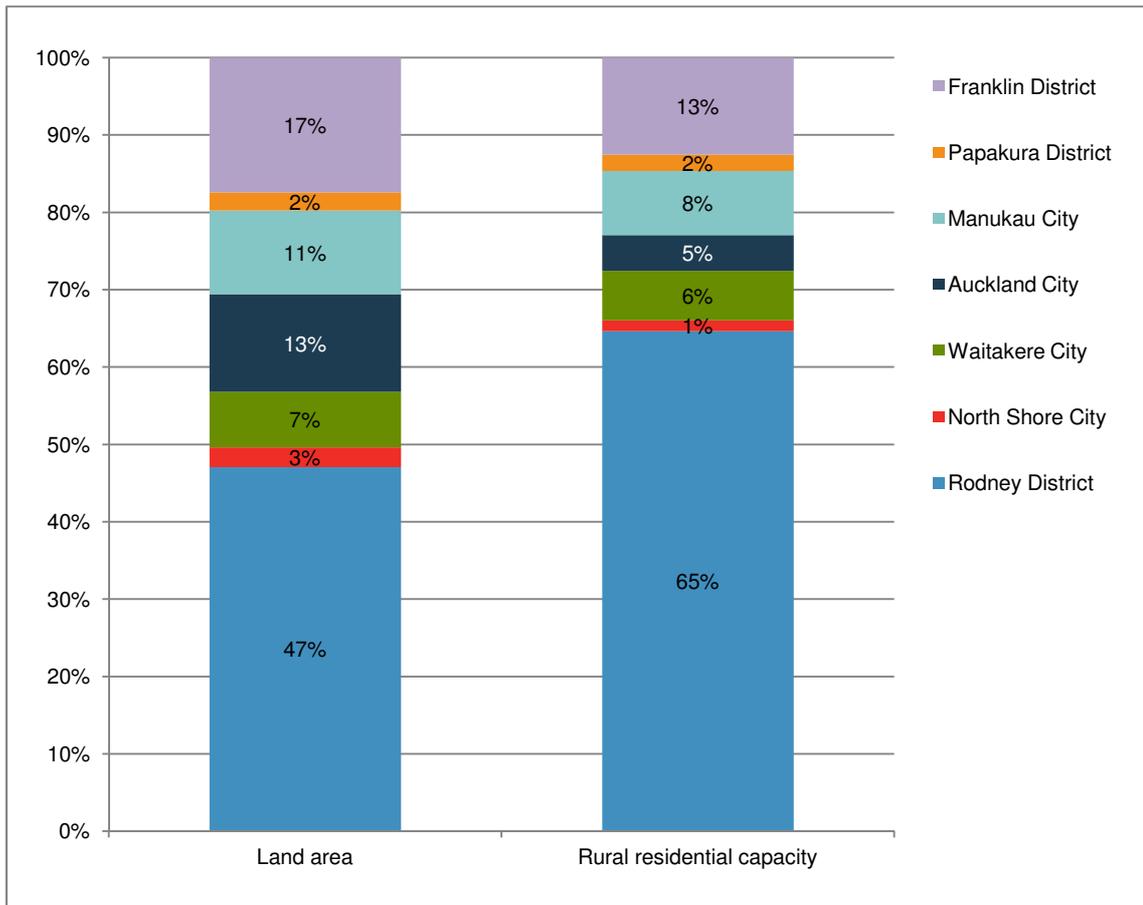
²³ ‘Cascading is where a balance area after one subdivision may be further subdivided if it complies with relevant rules. This contrasts with the majority of other rural subdivision approaches across Auckland, which operate as a ‘one time only’ approach, either explicitly through a date requirement on the age of the title to qualify for subdivision, or by specific covenant requirements imposed at time of subdivision, or implicitly in the relevant plans’ objectives and policies.

6.4.2 Analysis of rural residential results

Most of the rural residential capacity (65%) is located in the former Rodney District (16,865 potential dwellings) with the former Franklin District having 13%. Figure 19 illustrates the distribution of the total rural residential capacity by district plan area (former council areas), comparing it to land area of each of the district plan areas.

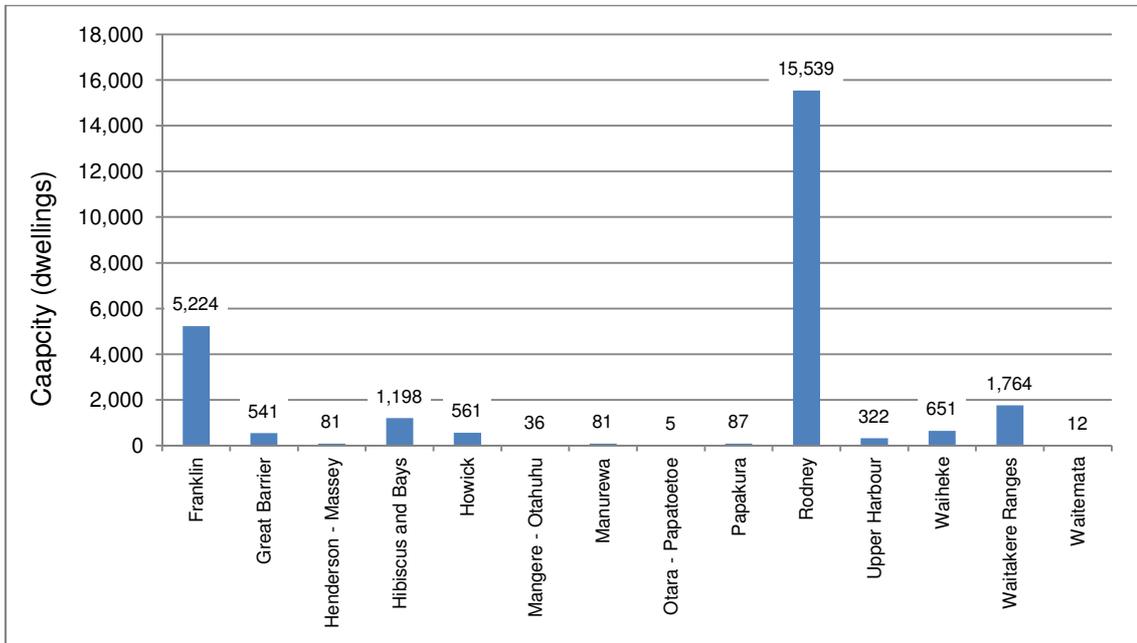
Comparison of the graphs shows that Rodney District enabled much more rural residential capacity on an averaged 'new rural sites per rural hectare' basis than the other TA's, where as Auckland City was perhaps the most stringent in limiting development.

Figure 19: Proportions of land area and rural residential capacity by district plan area (former city and district councils)



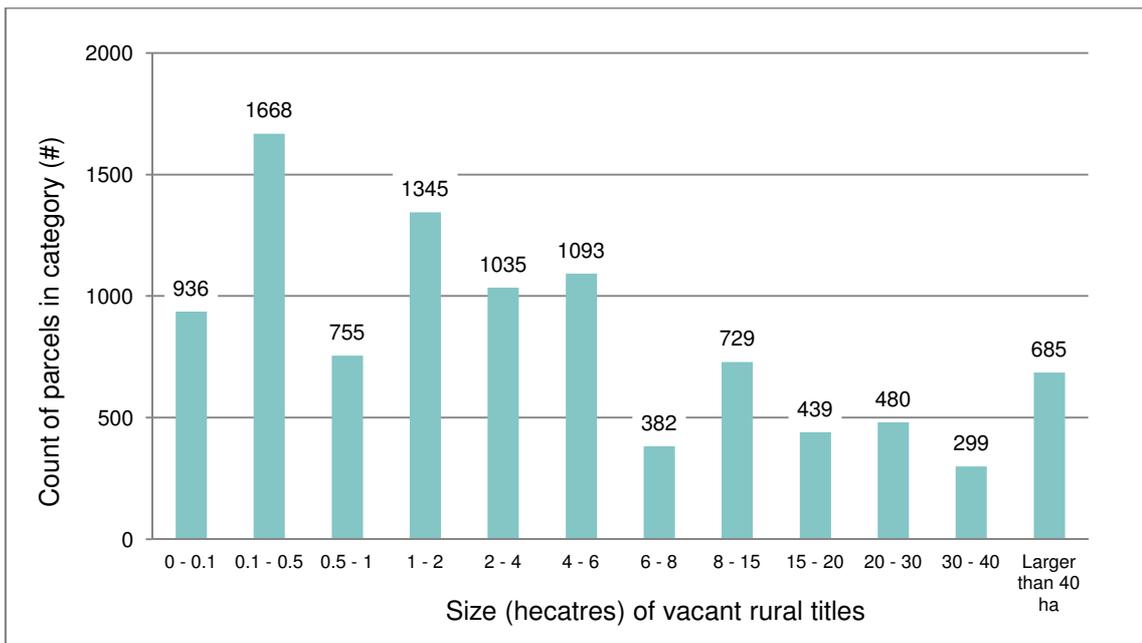
The Rodney local board area has 60% of the rural residential capacity with capacity for over 15,000 additional dwellings while Franklin local board area has the next largest proportion with 20% of the rural residential capacity (Figure 20). This is largely a function of the rural land area falling within each Local Board, further modified by the district plan and zone applying to that land.

Figure 20: Distribution of rural residential capacity by local board area (dwellings)



Just under half (48%) of the 8126 vacant titles in the rural area of Auckland are smaller than two hectares, while 15% of the vacant titles are larger than 20 hectares. Despite vacant rural titles greater than or equal to 40 hectares in size being only 7% of the total number of parcels, they make up half (49%) of the vacant land area. Figure 21 shows the distribution of vacant titles, by size.

Figure 21: Size distribution of vacant rural titles in Auckland's rural area



It is important to note that all rural zoned vacant titles in the rural area have an underlying basic property right to be occupied that is only moderated by planning rules, but not extinguished, and they make up a significant source of latent potential for at least one dwelling per title even if no further subdivision was enabled.

Many vacant titles will only be temporarily vacant (we happened to capture them between the issue of title from recent subdivision, and the establishment of a dwelling) but many are the result of historic subdivision processes (such as so called 'Wakefield' planning, or 'paper towns' that never eventuated), where the establishment of a dwelling(s) could lead to significant adverse impacts in some instances.

Residential capacity results reported can be found in Appendix A: Results by local board area and Appendix B: Results by district plan area at the end of this report. Maps illustrating the results for residential capacity are presented in Appendix C: Maps of results.

7.0 Business land capacity results

This section of the report summarises the business land results. The results presented in this section have been broken down and reported by geographical area: Auckland wide, the urban area and rural towns. Results can be found in Appendix A: Results by local board area and Appendix B: Results by district plan area at the end of this document.

Business capacity results are reported in hectares and are made up capacity that comes from:

- Business zoned parcels that are wholly vacant
- The vacant portion of occupied parcels (vacant potential) and
- From pipeline capacity (structure plan areas).

Other measures of business capacity including employment and floor space are measured as part of the business redevelopment component of the study and are reported in section 8.0: Business redevelopment capacity results.

This section reports the business land capacity results from the study, firstly for the entire Auckland region, then broken down by urban area and then rural towns. As well as reporting the results for each of these areas we expand on the nature of the capacity including some of the attributes of the parcels or titles that yield business land capacity. These are provided for context, but also as an example of the information and analysis that can be undertaken with outputs from the study in the future. The business land capacity results are also presented in several series of maps in Appendix C: Maps of results.

7.1 Auckland wide

In total there are 7122 hectares of zoned business land across Auckland. Of this total, 716 hectares (10% of the current total business zoned land) was from business zoned parcels that were wholly vacant at the time of the study. A further 1262 hectares (18% of the current total business zoned land) was judged to have been partially vacant, with enough room for possible further development (i.e. a portion of the site was assessed as 'vacant potential').

Table 7: Auckland business capacity summary (in hectares)²⁴

Current zoned business land	7,122
Urban area business land capacity	2,607
Rural towns business land capacity	626
Total business land capacity	3,233

Across Auckland, the Capacity for Growth Study found that:

- There was 716 hectares of business zoned land located on 3005 parcels that were vacant in Auckland. Vacant business land constitutes 22% of the region's business land capacity
- There was a further 1262 hectares of business zoned land that was considered to have vacant potential (39% of business land capacity) – this is from 1757 parcels

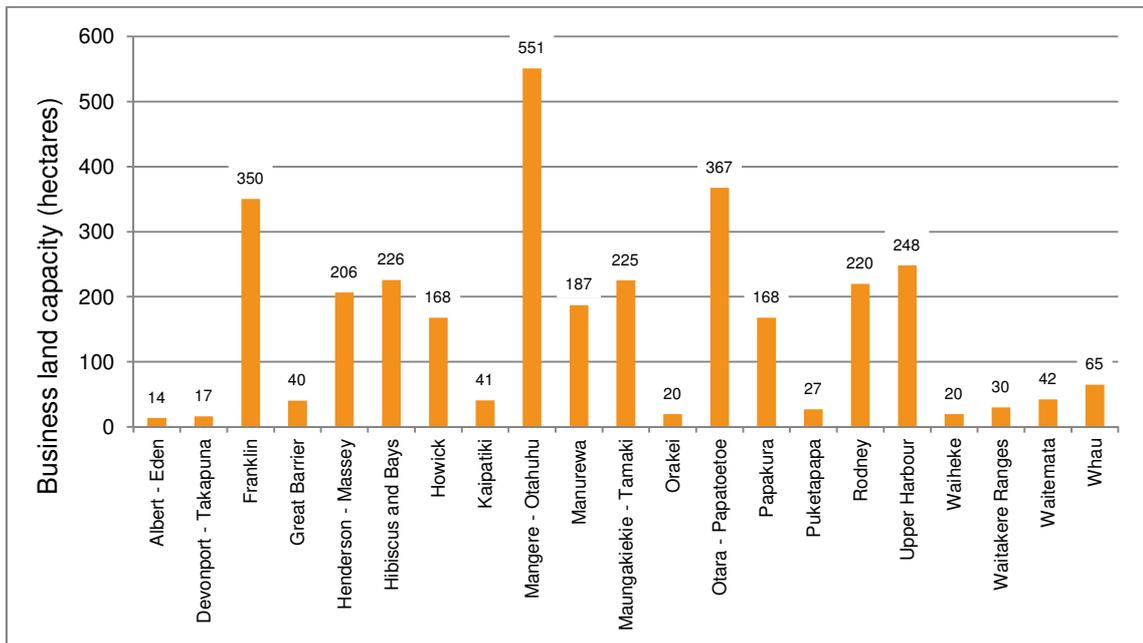
²⁴ Totals in this table include pipeline capacity.

that were occupied in some manner, but had a noteworthy²⁵ portion of the parcel that was vacant and had enough room for possible further development.

- Pipeline or future business land capacity (from structure plan and special areas that are due to come online before 2023) will provide an additional 1255 hectares of business land - 39% of Auckland's total business land capacity.

Distribution by Auckland Council local board area shows an uneven dispersal of business land capacity; this can be seen in Figure 22. The Mangere-Otahuhu local board area has the largest proportion of business land capacity with 17%, followed by Otara-Papatoetoe and Franklin local board areas with 11% each. The Albert-Eden local board area has the least with only 14 hectares of capacity measured, due to this local board area being predominately residential.

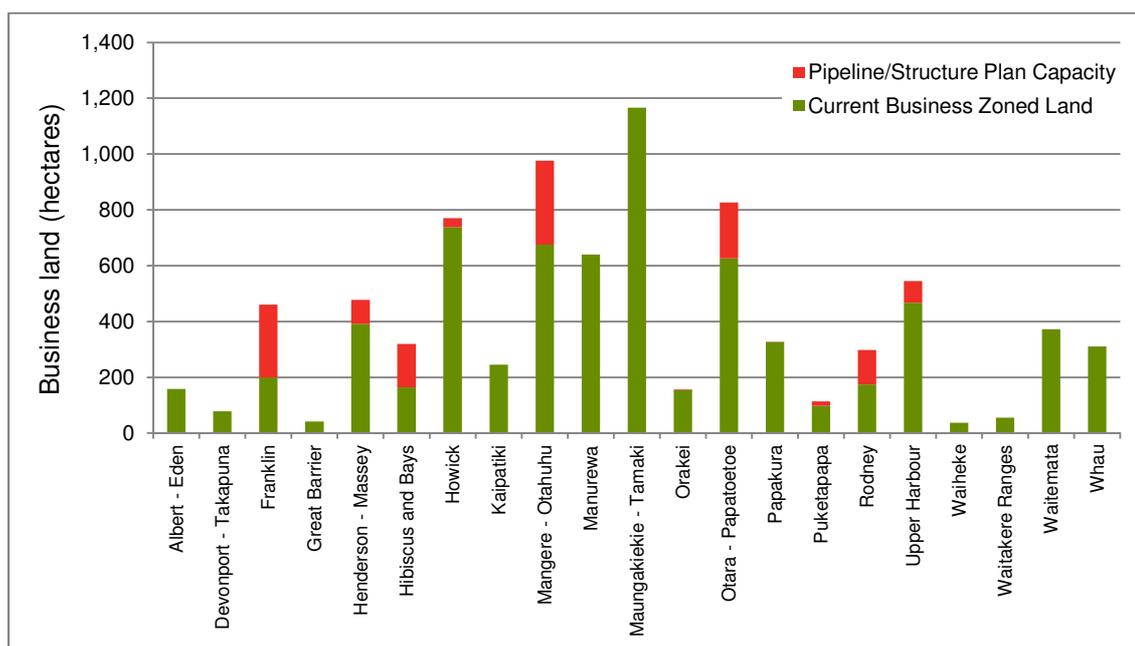
Figure 22: Distribution of business land capacity in Auckland, by local board area (area in hectares)



²⁵ See Section 6.4 of the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report for a discussion of how 'noteworthy' has been calculated and defined.

Future business land capacity (pipeline from structure plan and special areas) which will add to the total business zoned land area is spread across the local board areas unevenly, reflecting the geographic location of pipeline capacity in relation to local boards: nearly all of the structure plan and special areas being at the edge of the urban area. Mangere-Otahuhu Local Board which has 24% of the total pipeline business land capacity, all of which comes from the planned 'Mangere Gateway Heritage Area', with the largest part adjacent to the Auckland International Airport. Proposed new business developments in and around Pukekohe, including Paerata, and adjacent to Waiuku – both in the Franklin Local Board contribute to it having 21% of Auckland's total pipeline business land capacity. Overall the zoned business land across Auckland is expected to increase by 1255 hectares, a growth of 18% on the current 7122 hectares.

Figure 23: Current business zoned land and pipeline business land capacity (structure plan and special areas) by local board (area in hectares) in Auckland



7.2 Urban area

The urban area of Auckland contains the vast majority of the region's business zoned land (94%) and a significant, but reduced proportion of the region's business land capacity (81%).

In Auckland's urban area, the Capacity for Growth Study found that:

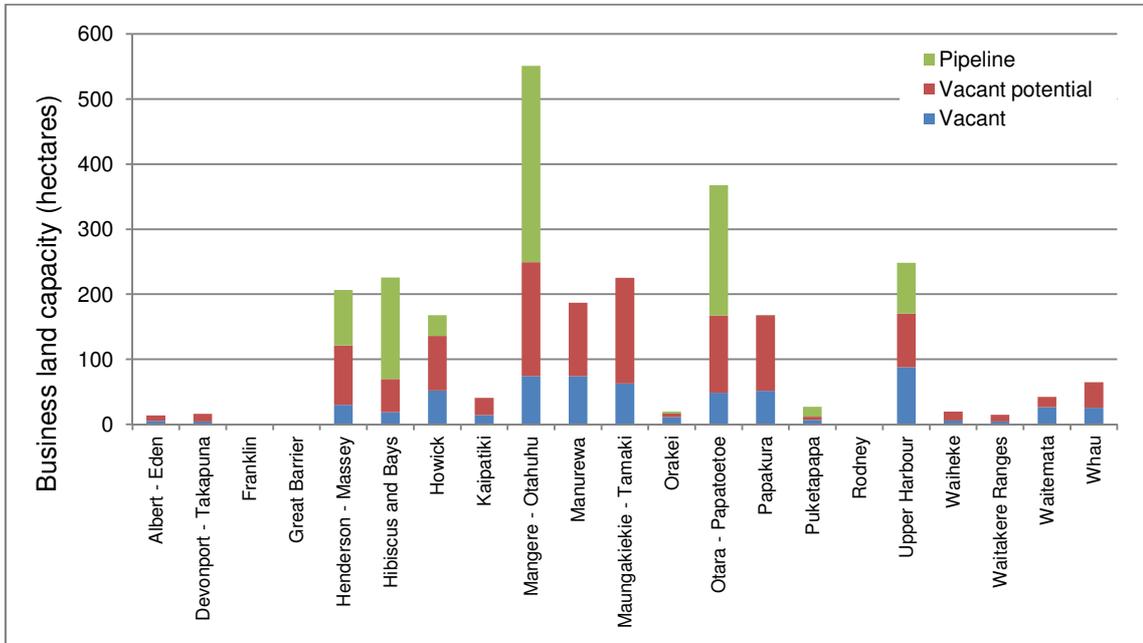
- There was 607 hectares of business zoned land located on 2417 parcels that were vacant.
- There was a further 1130 hectares of business zoned land that was considered to have vacant potential – this is from 1434 parcels that were occupied in some manner, but had a noteworthy portion of the parcel that was vacant and had enough room for possible further development.
- Pipeline or future business land capacity (from structure plan and special areas that are due to come online before 2023) will provide an additional 870 hectares of business land.

The proportion of business land capacity that each of the components contribute to the urban area total is very similar to that seen for the region wide assessment, with 23% coming from vacant land, 43% from vacant potential land with the remaining 33% being supplied from pipeline/structure plans.

Distribution at the local board level is disparate, with Mangere-Otahuhu Local Board having by far the most business land capacity with 21% of the urban area's total (refer Figure 24).

Vacant business zoned land totals 607 hectares in the urban area, with the largest proportion (14%) being located in Upper Harbour Local board (Figure 24) with Mangere-Otahuhu and Manurewa Local Boards each having 74 hectares, or 12% each.

Figure 24: Distribution of business land capacity by type in Auckland's urban area, by local board area (area in hectares)



Mangere–Otahuhu local board area has the most vacant potential land of any of the areas with 16% of the urban area's total (175 hectares). The local board also has the largest amount of pipeline capacity with 35% of the urban area total (301 hectares). This is primarily from the 'Mangere Gateway Heritage Area' which has seen the extension of the MUL to accommodate this structure plan area, much of which is adjacent to the Auckland International Airport. Silverdale North (Special 19), in the Hibiscus and Bays Local Board will provide 103 hectares of business land to the supply.

Close to 60% of vacant business parcels in the urban area are less than 1000 square metres in size. Figure 25 illustrates the distribution of the number of vacant business parcels by their sizes. This figure shows that the numerical distribution of parcels is heavily weighted towards smaller parcels, confirming that Auckland does have relatively few larger vacant business parcels.

Figure 25: Size distribution of vacant business parcels in Auckland's area

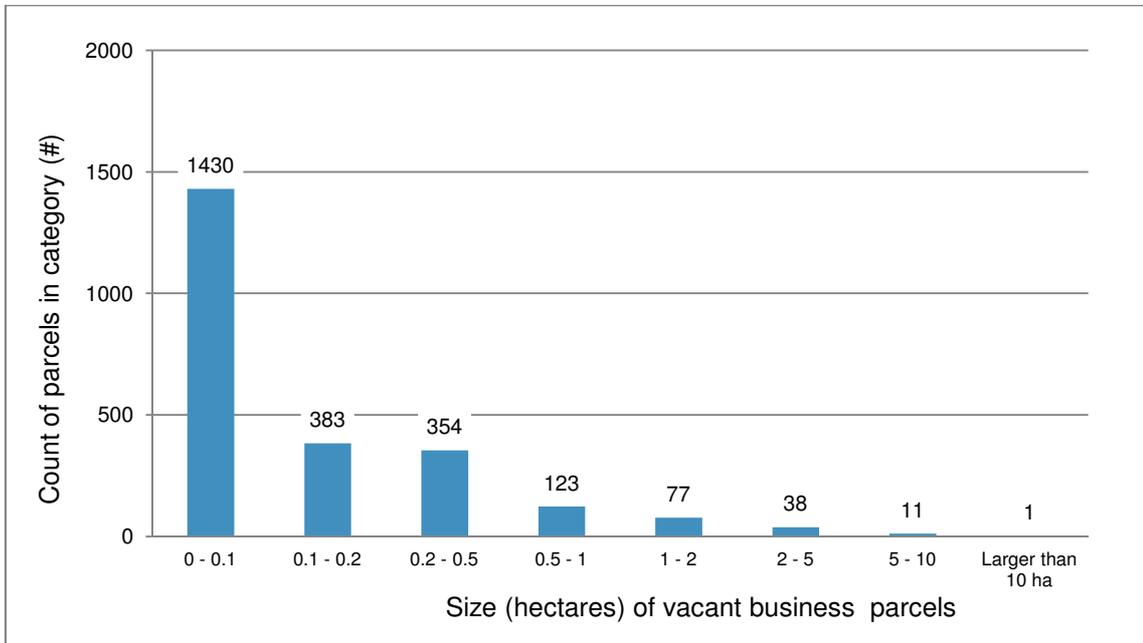
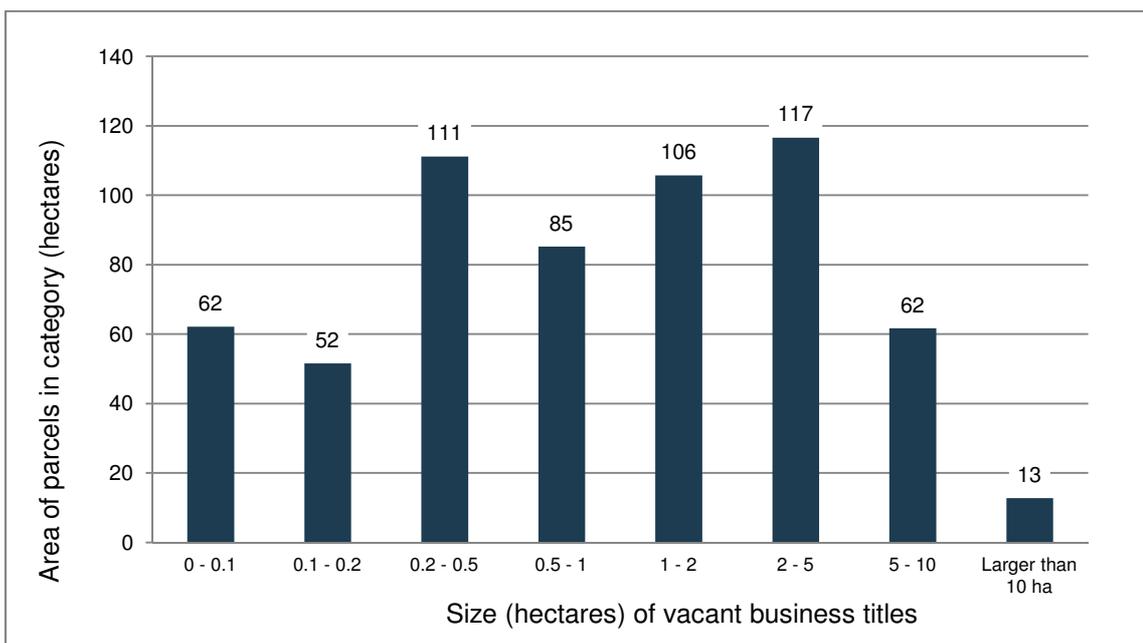


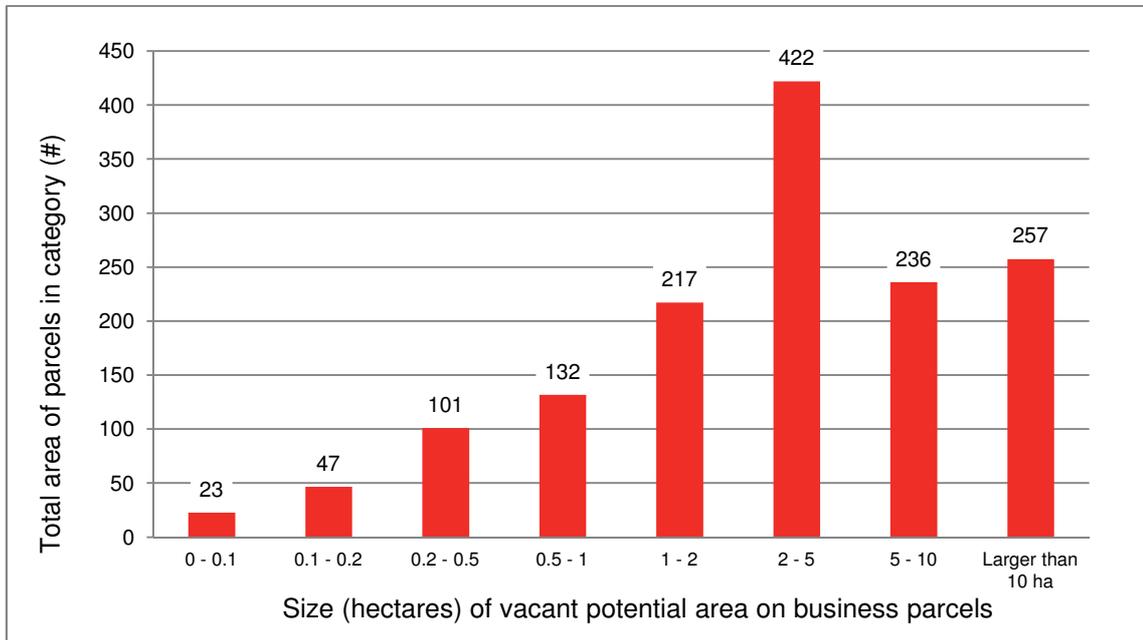
Figure 26 gives some context to the land resource each parcel area category contains, which is much more evenly distributed, with the fewer larger parcels containing a proportionately large land area. The extent to which an available parcel size meets a given business' needs is a much more nuanced issue that depends on the location of the parcel, the business in question, and the intended strategic future of the wider business area. It is hoped the data and outputs from this study will be of use in investigating these questions in more detail.

Figure 26: Combined area (hectares) of vacant business parcels, by size of parcels in Auckland's urban area



Vacant potential business land; being the vacant portion of sites that are already occupied, contribute a large portion of business land capacity (39%). Figure 29 exhibits that nearly two-thirds (63%) of vacant potential land is of a size greater than two hectares²⁶.

Figure 27: Size of vacant potential area of business parcels, in the urban area by size



7.3 Rural towns

Only a small proportion (6%) of Auckland's total zoned business land lies in and around the rural towns, totalling 432 hectares. Despite this small proportion, business land capacity in the rural towns represents 19% of the region's business land capacity.

In Auckland's rural towns the Capacity for Growth Study found that:

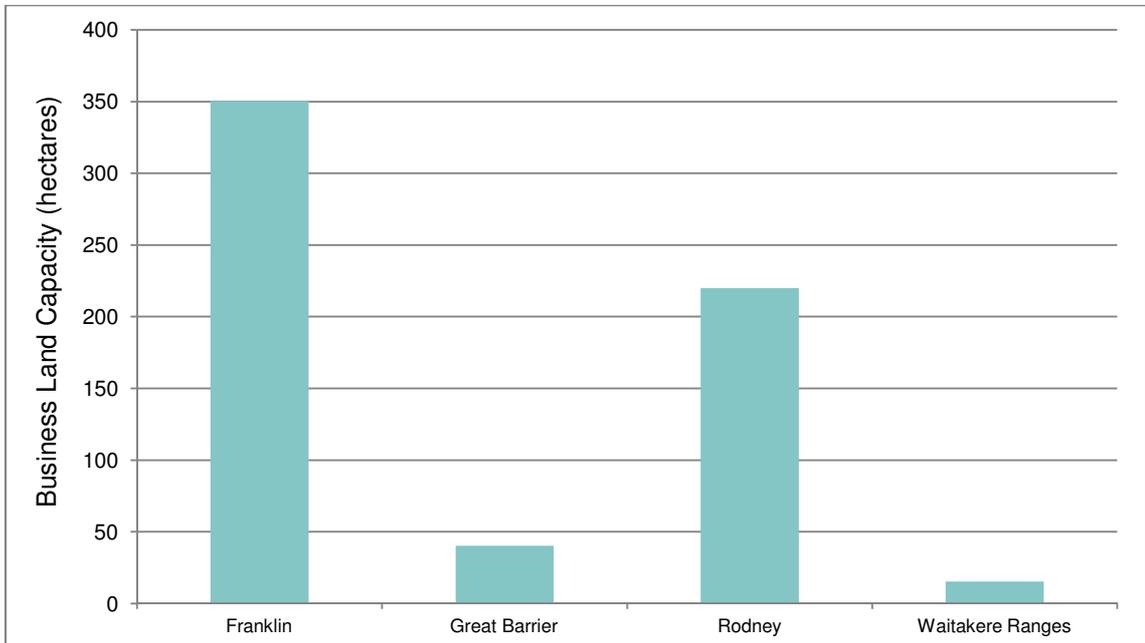
- There was 109 hectares of business zoned land located on 373 parcels that were vacant in Auckland.
- There was a further 132 hectares of business zoned land that was considered to have vacant potential – this is from 268 parcels that were occupied in some manner, but had a noteworthy portion of the parcel that was vacant and had enough room for possible further development.
- Pipeline or future business land capacity (from structure plan and special areas that are due to come online before 2023) will provide an additional 385 hectares of business land.

Much of the total business land capacity in rural towns comes from pipeline (structure plans) (61%) with vacant and vacant potential accounting for the remaining 38%.

²⁶ Note this statement and the graph below refers to the portion of the site that is considered potentially vacant, not the size of the source parcel, though they are quite closely correlated – vacant potential area must be less than (but never equal to) the area of the parcel. Sites where the potentially vacant area is equal to the area of the parcel are Vacant.

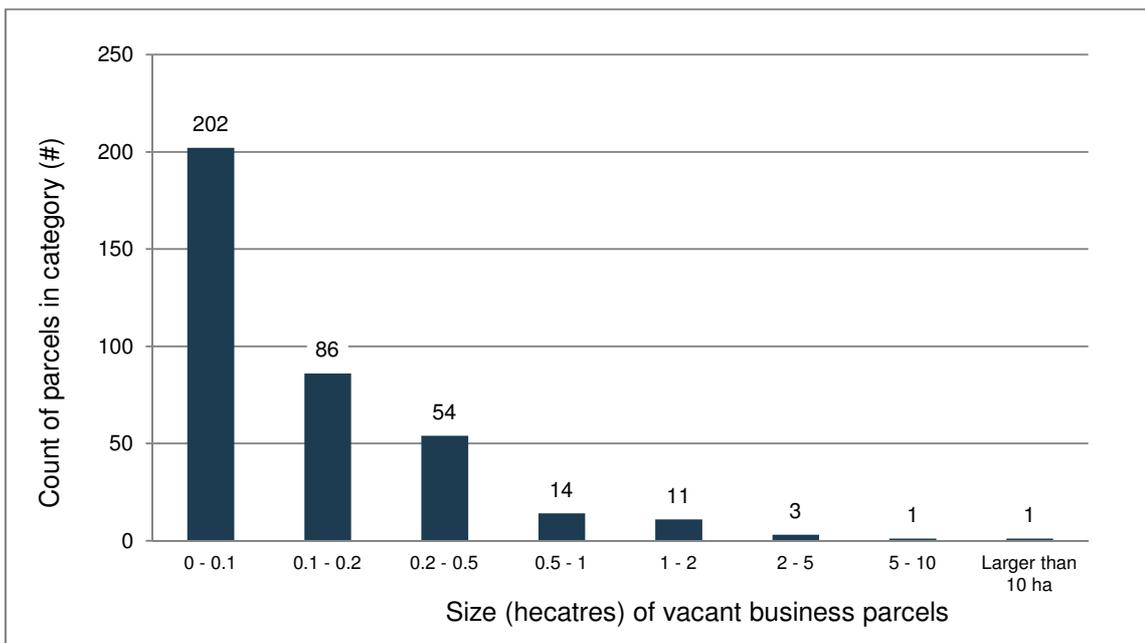
Due to the location of rural towns within only a small number of the local boards, the business land capacity distribution is limited (only four local boards have capacity, see Figure 28). Over half (56%) of the business land capacity in rural towns is in the Franklin Local Board, with the Rodney Local Board having over a third (35%).

Figure 28: Distribution of business land capacity in rural towns, by local board (area in hectares)



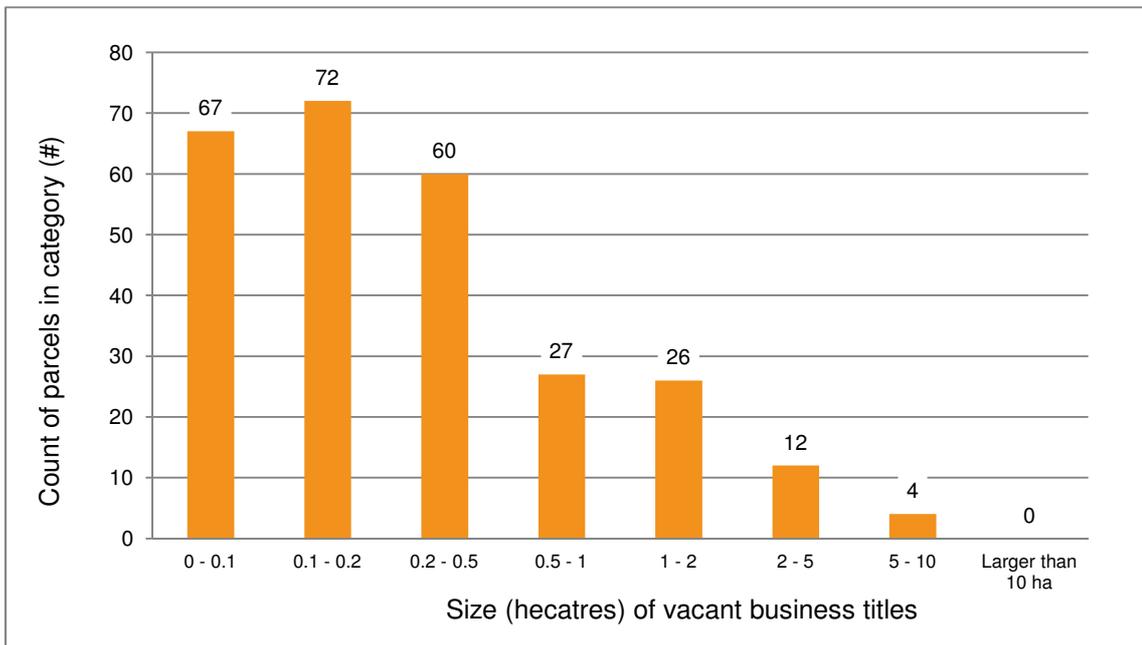
Vacant parcels in rural towns are mostly less than one hectare in size, with only 16 of the 372 vacant business parcels in rural towns being larger. The size frequency distribution follows a similar curve to the urban area results (Figure 25). This can be seen in Figure 29.

Figure 29: Size distribution of vacant business parcels in rural towns



Most of the vacant potential business land in rural towns is of a small size, with 84% being smaller than one hectare (refer Figure 30).

Figure 30: Size distribution of vacant potential area of business parcels in rural towns



It should be noted that the single site that has the largest amount of business vacant potential (6.4 hectares) in rural towns is located in Kumeu-Huapai, and has already been earmarked as the site for a future supermarket development. Demolition of the existing buildings is currently underway.

Planned future business land capacity (pipeline/structure plan) in rural towns is confined to two local boards with over two-thirds (68%) being in Franklin Local Board. Over 100 hectares of business land will be added from the Waiuku Plan Change 14 and a further 70 hectares from the Paerata structure plan areas. The remaining 32% of pipeline business land capacity is located in the Rodney Local Board and will come from the Huapai South structure plan (53 hectares) and Wellsford South (21 hectares).

As noted at the start of this report, the Capacity for Growth Study 2012 has not assessed the 'Greenfield Areas of Investigation' which are indicated in *The Auckland Plan* (Auckland Council 2012a: 54-55). The Franklin and Rodney local boards will contain 100% of these investigation areas, which it has been indicated will contain additional business land, which in time will add significant capacity to these areas. Land within these areas is captured in this study under the current operative zonings, generally being rural.

Tables detailing the full business land capacity results can be found in Appendix A: Results by local board area and Appendix B: Results by district plan area at the end of this report. Maps illustrating the results for business land capacity are presented in Appendix C: Maps of results.

8.0 Business redevelopment capacity results

Redevelopment on business zoned land (this also includes mixed use zones that occur in and around town centres) is a measure of the additional capacity that could be made available from intensification of currently developed areas.

Business Redevelopment is a 'volumetric' assessment of development potential reflecting the multilevel development opportunities available in business areas, compared to the primarily 'land area driven' assessments and development used in other sections of this study. It is primarily for this reason that 'business areas' generally, but centres in particular, contribute disproportionately (compared to land area) to dwelling capacity across the region – because they are almost the only locations where multilevel development has been enabled by the operative planning system (at a low level consent category), and therefore modelled.

The business redevelopment capacity results reported in this publication are for a 'modified theoretical' scenario. This scenario is considered a 'reasonable', yet aspirational scenario, which in most cases is scaled back significantly from the 'maximum theoretical' allowed under current district planning rules. For descriptions and information on the business development capacity scenarios, including results for the 'contemporary' scenario (where vacant and potentially vacant land is developed to the surrounding areas' average FAR), refer to the *Capacity for Growth Study 2012: Methodology and Assumptions* technical report.

Due to the application and use of a number of assumptions derived from 'non-district plan based' sources in this portion of the study, (primarily to derive more 'realistic and feasible' outputs than the almost infinite capacity delivered by applying the maximum theoretical plan based limits) results are more indicative of long term strategic intentions as indicated by the Auckland Plan than the other measures of capacity which are strictly current district plan rule enabled²⁷ as reported elsewhere in this report.

At the time of the 2012 study there was 6,294 hectares of business zoned land in business areas and centres (as defined for this study) that were assessed.

Modified Theoretical based modelling showed that there is capacity for an additional 44,989,578 square meters of floor space in business areas – an 82% increase from the current total.

Table 8: Existing and business redevelopment capacity for Auckland

	Existing	Capacity for additional
Total floor space (m ²)	27,343,023	44,989,578
Business (non-residential) floor space (m ²)	25,022,252	33,928,044
Estimated employees	463,596	652,473
Residential floor space (m ²)	2,320,771	11,564,987
Total dwellings	33,535	104,387

A breakdown of capacity by type (business and residential) is outlined in the following sections, providing highlights from the results. A more detailed breakdown of the business

²⁷ the definitive measure of 'plan enabled capacity' is the Maximum Theoretical measure, but as it is considered to generate unrealistic outcomes, the moderated scenarios are used for result reporting.

redevelopment capacity results either by local board or district plan area is available in the appendices at the end of this report.

8.1 Business activity

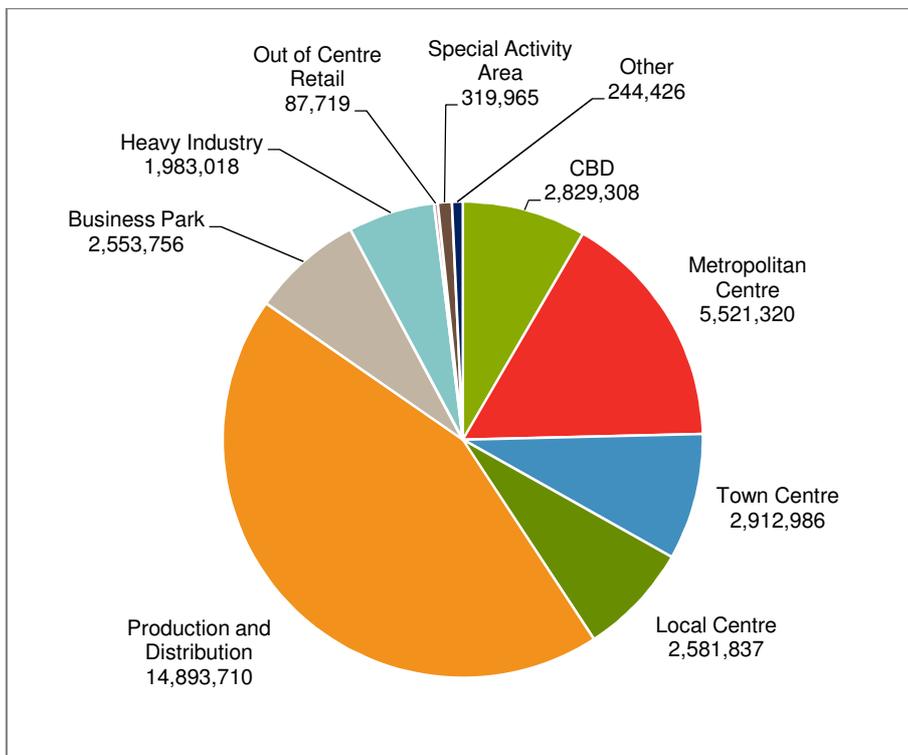
Results from the modified theoretical scenario for business redevelopment capacity show that:

- There is estimated capacity for an additional 33,928,044 square meters of business (non-residential) floor space.
- The additional business (non-residential) floor space is estimated to accommodate up to an additional 625,473 employees - an increase of over 140% on current business area and centres employment.
- The central business district (CBD) could have capacity for an additional 5,860,914 square meters of floor space with 2,829,308 being for business (non-residential) use.

For the purposes of this study, each business area or centre was assigned a typology. Centres were assigned their typology based their “strategic classification” as published in *The Auckland Plan* (refer table 10.1 of *The Auckland Plan*) (Auckland Council 2012a: 261). The typology of business areas was based on those assigned to them in *the Business Land and Employment Growth* technical paper (prepared as part of the evidence base for *The Auckland Plan*).

Close to 15 million square metres of business (non-residential) floor space capacity is located in business areas classified as being Production and Distribution – representing 45% of the regional total of 34 million square metres of floor space (refer Figure 31).

Figure 31: Capacity for additional business (non-residential) floor space in business areas and centres, by business area type (floor area in metres)



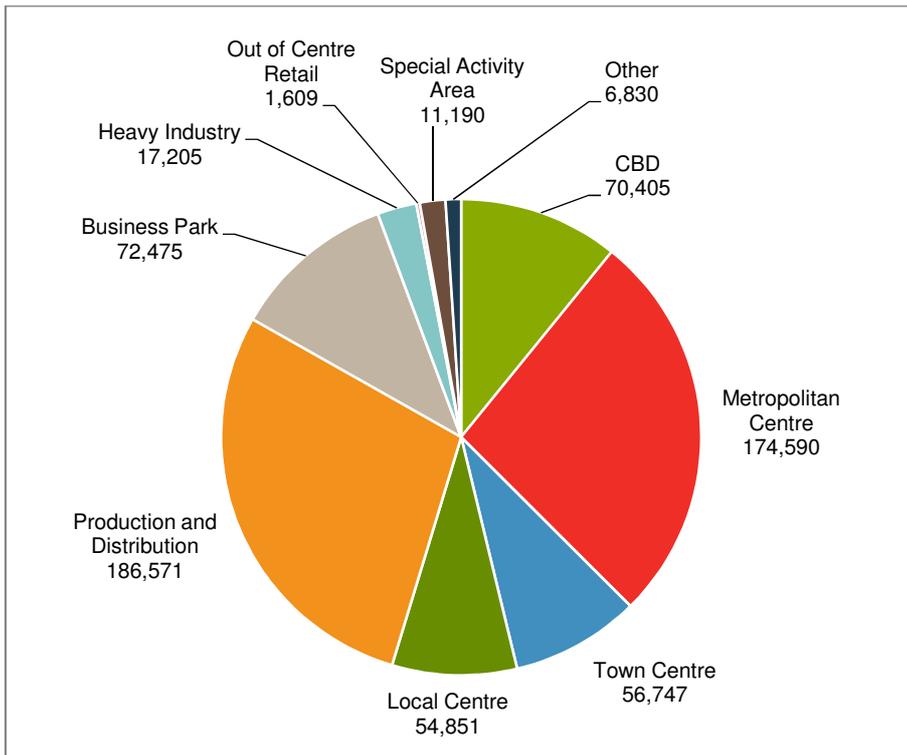
Business area that have been classed as Production and Distribution are generally large, and contain businesses that have land extensive activities i.e. they need a lot of room to operate. These areas also currently have a lot of vacant and vacant potential land in them, offering a large quantity of potential for development and therefore additional floor space. The production

and distribution areas also have only 2% (averaged) of their modelled floor space capacity allocated for future residential use. This assumption reflects a strategic desire to maintain these locations primarily for Production and Distribution business purposes and may not reflect the relative ease by which current planning provisions may enable residential use in some of these areas. It is for these reasons that this business area type has such a large volume and proportion of the regional total business (non-residential) floor space.

The CBD and metropolitan centres combined have 25% of the additional floor space capacity, with 'air space' for over eight million square metres. Both the CBD and the metropolitan centres have height limits which are greater than many of the other business areas and centres, allowing for more potential floor space through building up, by way of multi-level buildings including office towers and apartment blocks.

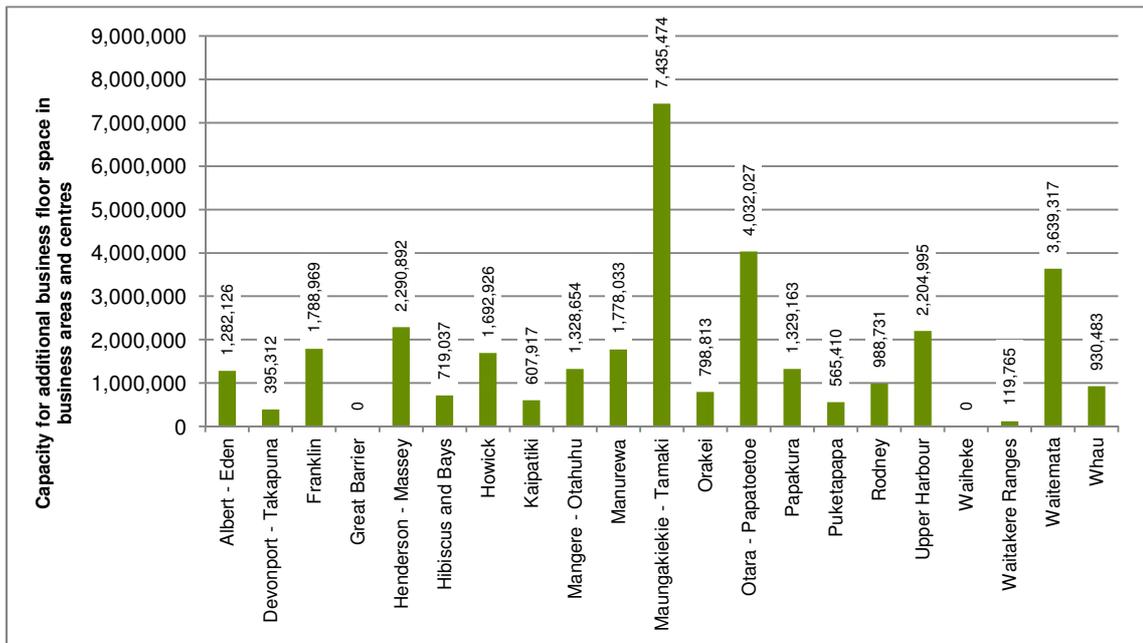
Production and distribution has the largest proportion of potential employees (see Figure 32), though the difference between this area type and the next largest (metropolitan centres) is smaller than that seen in for business (non-residential) floor space – this is due to the fact that generally speaking the floor space per employee required for business activity in this production and distribution business areas is much larger than would be required for other area types (for more information refer to the *Capacity for Growth Study 2012 Assumptions and Methodology* technical report). Just as Production and Distribution is considered a 'land extensive' business use, it is also 'floor space per employee' extensive as well.

Figure 32: Capacity for additional employees in business areas and centres, by business area type (count of employees)



The location of business areas and centres around Auckland is not even, reflecting the geographic advantages of certain localities for business activities, and historic decision making processes. When viewed by local board geography, some areas have much larger tracts of business land and many more centres than others; distribution of additional business (non-residential) floor space by local board area is shown in Figure 33 as an example of this. Maungakiekie-Tamaki Local Board had the largest amount of potential business (non-residential) floor space, with 22% of the total.

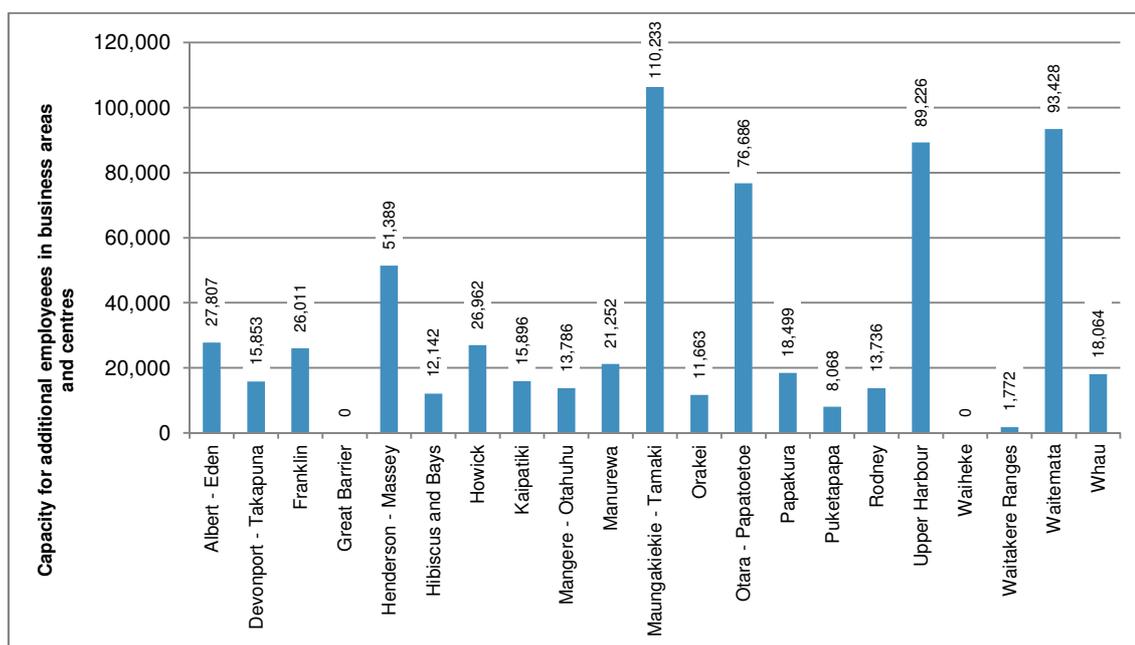
Figure 33: Capacity for additional business (non-residential) floor space in business areas and centres, by local board area (floor area in square metres)



The pattern of floor space distribution is not mirrored by the employment potential. This reflects the different floor space requirements of employees in different business area locations and types, which reflect the dominant built form and activity, the business area typology applied, and the varying mixes and location of these areas throughout Auckland.

A good example of this, is the difference between Maungakeikei-Tamaki and Waitemata Local Boards: Maungakeikei-Tamaki Local Board has 22% of business floor space capacity, but as a large proportion of the business floor space in is derived from production and distribution business areas, it only has 17% of the potential employees (Figure 34). In contrast the Waitemata Local Board, home to the CBD, has 11% of the regions floor space capacity but has 14% of employees when that floor area is converted. Floor space in the CBD (on average) is used more intensively than elsewhere in the region.

Figure 34: Capacity for additional employees in business areas and centres, by local board area (employees)



8.2 Residential activity (in business areas and centres)

Results from the modified theoretical scenario for business redevelopment capacity show that in business areas and centres:

- There was potential for 11,564,987 square metres of floor space for residential use.
- This potential floor space for residential use provides potential capacity for up to 104,387 additional dwelling units— a potential increase of 311% on the current business areas and centres dwelling numbers²⁸.
- Modelled Residential development in centres and business areas would be expected to be largely of an attached typology; whereas the rest of the urban area, rural town and rural residential modelling parameters would typically result in a detached typology. (Current planning provisions in centres enable residential development to be much more intensive than in other locations).
- The large potential for increase in residential floor space (498% over current figures), is a reflection of the current plan enabled potential of high-density housing

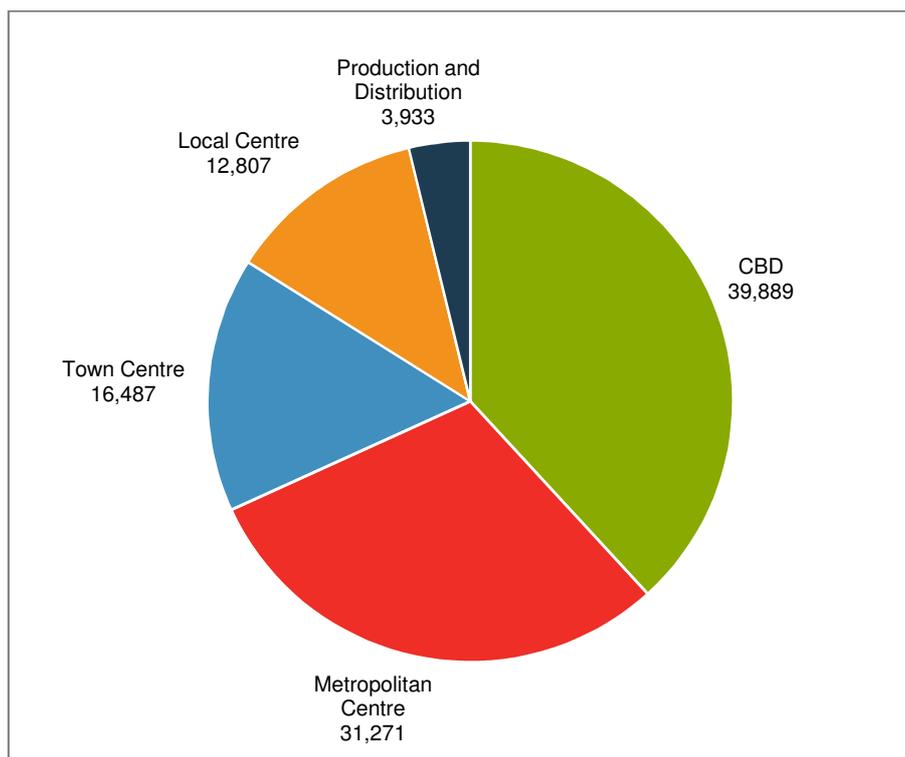
²⁸ Note: This residential on business land figure is included in the total residential capacity results reported in the residential capacity section of this report.

development, such as apartments in and around Auckland's town centres and in and around the CBD in particular.

- Overall residential capacity yielded from business areas and centres is estimated to make up 43% (utilising infill) or 39% (utilising redevelopment) of the total dwelling capacity, a very important portion of residential capacity supply.
- This significant potential for residential floor space development is in addition to the non-residential floor space development reported in other sections of this report (i.e. they are not mutually exclusive).

Auckland's CBD, currently has 20,984 existing dwellings on business land and has 38% of the potential additional dwellings from business areas and centres (see Figure 35), by far the most significant geographic area with potential. The modelling undertaken as part of this study estimates there is potential for an additional 3,031,606 square metres residential floor space in the CBD. This floor space could provide the potential for at least 39,889 additional dwellings. It should be noted that *City Centre Masterplan 2012* (Auckland Council 2012b: 23) states that the population of the CBD is expected to increase to over 45,000 residents by 2032. The capacity identified as part of this study does not reflect any aspirational targets set out by Auckland Council for the CBD, but can be used as an indication as to how well we are moving towards accommodating this projected growth. These figures do however suggest that there is not a current plan enabled capacity limitation to achieving the City Centre Masterplan's growth aims (the modelled planning system may enable the target to be achieved with some headroom).

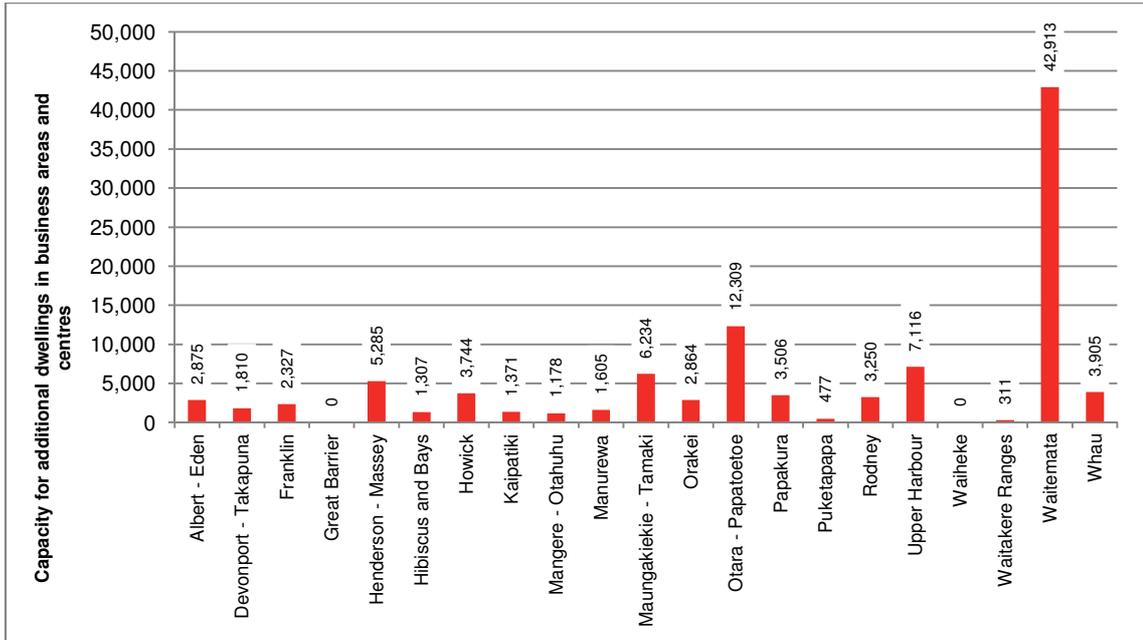
Figure 35: Capacity for additional dwellings in business areas and centres, by business area type (number of dwellings)



Metropolitan centres also provide a wide range of opportunities for residential development. There is potential for an additional 31,271 dwellings, or 30% of the regional business area total, spread across the 10 metropolitan centres.

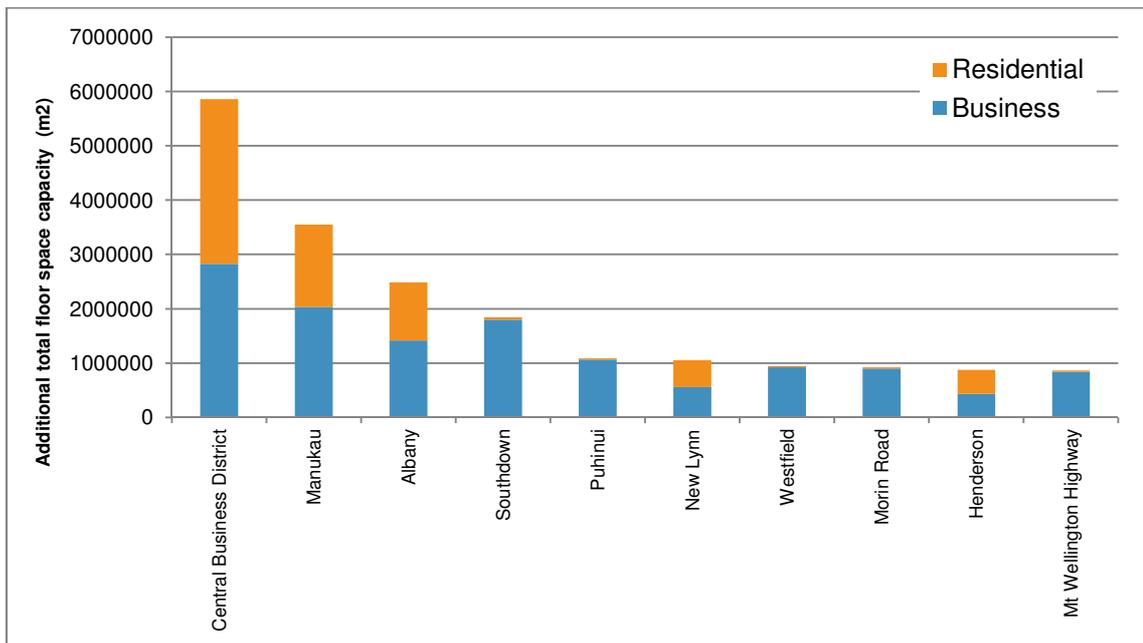
The large potential for additional dwellings in the CBD (and to a lesser degree the metropolitan centres) sees the largest proportion of potential dwellings in business areas and centres located in the Waitemata Local Board area. Figure 36 shows that 41% of Auckland's business areas residential capacity lies in this local board.

Figure 36: Capacity for additional dwellings in business areas and centres, by local board area (number of dwellings)



As well as comparing the location of capacity by local board area, we are able to compare modelling results at the business area and centre level. Figure 37 shows the 10 business areas and centres that had the largest amount of total potential floor space. It is quite clear, that again the CBD is a major contributor to the regional total, yielding a potential of 5,860,914 square metres of floor space. Manukau and Albany centres, two of the region's metropolitan centres also show large amounts of total floor space potential. Interestingly, Southdown, a large industrial area in the former Auckland City also exhibits a large amount of potential floor space. Note that Southdown business area is not a centre (nor are Puhinui, Westfield, Morin Road, or Mt Wellington Highway) and is classified as production and distribution²⁹ area and accordingly a very small proportion of the very large floor space potential is allocated to future residential use. However, this small proportion is still a large area which in turn generates some additional dwellings in these locations.

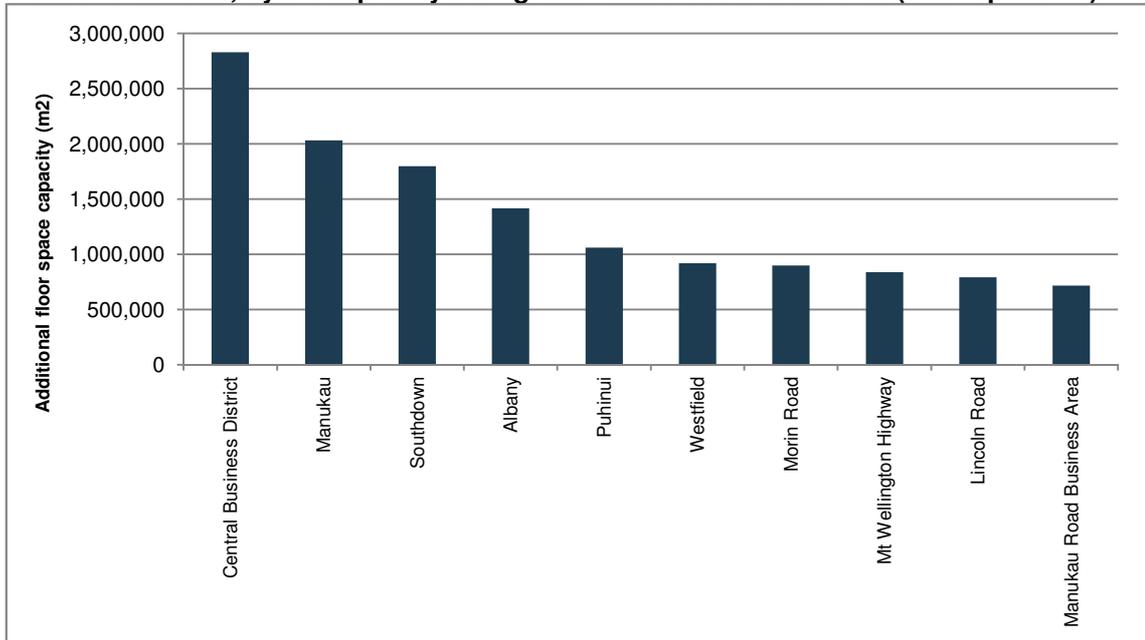
Figure 37: Capacity for additional total floor space (by floor space type) in business areas and centres, by the top ten yielding business areas and centres (floor space m²)



²⁹ Production and distribution areas have a lower 'floor area ratio' utilised in the modelling process to estimate potential floor space than centre and other types of business areas. For more information on the assumptions used in the study, refer to *Capacity for Growth Study 2012 Assumptions and Methodology* technical report.

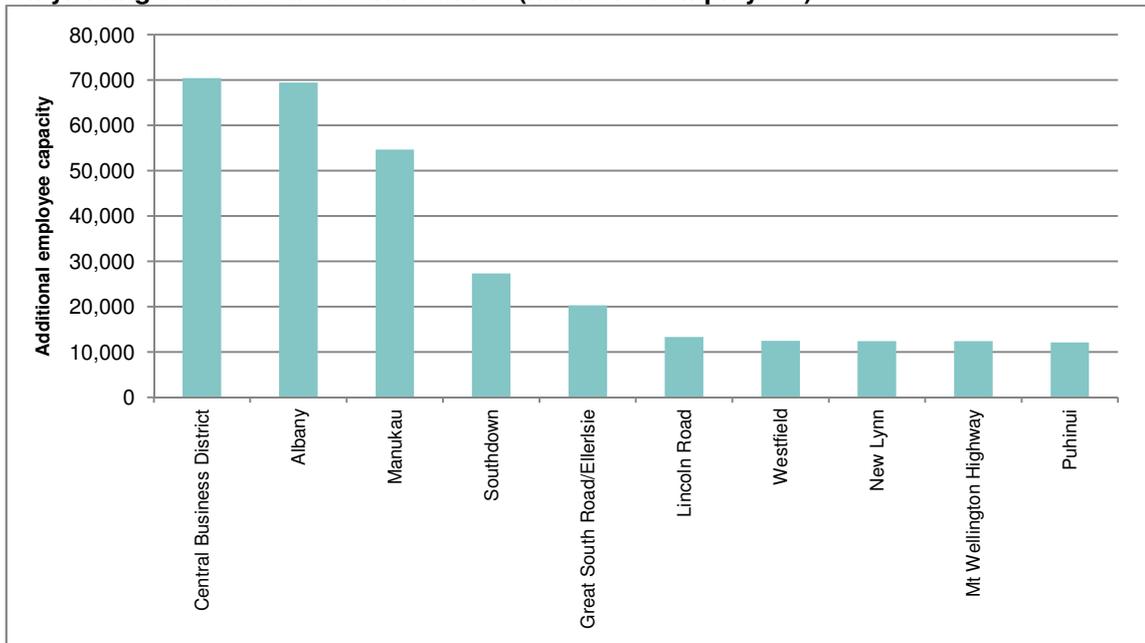
The following figure (Figure 38) shows the business areas and centres that had the highest amount of business (non-residential) floor space. Much like the results for total floor space (of which business floor space is a sub-section) the CBD, Manukau, Albany and Southdown again all rank in the first four.

Figure 38: Capacity for additional business (non-residential) floor space in business areas and centres, by the top ten yielding business areas and centres (floor space m²)



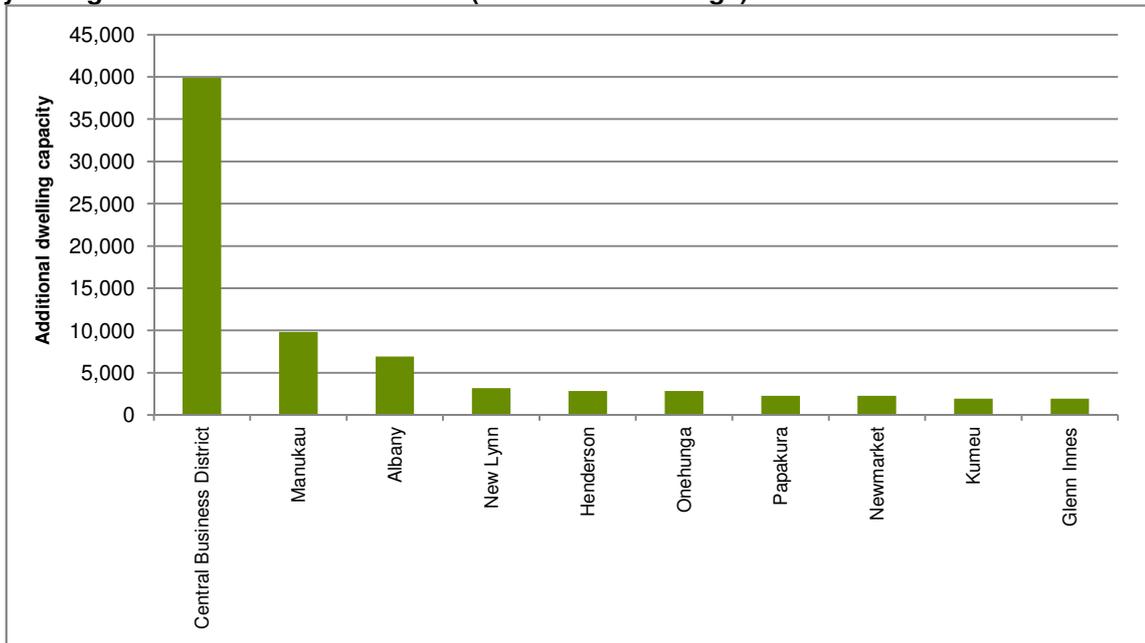
When looking at the 10 business areas and centres with the highest greatest amount of capacity for additional employees (Figure 39), it is interesting to see that the Albany centre has nearly the same amount of potential capacity as the CBD (just under 70,000 employees). Albany was envisaged by the former North Shore City as being the new business and commercial hub of the North Shore, as such has generous provisions for its future intensive development. Because the development of the Albany centre is still ongoing, much of the potential for the area is yet to be realised and much of the envisioned development can occur on more or less greenfield land, Albany Centre being a 'new' greenfields location 20 years ago.

Figure 39: Capacity for additional employees in business areas and centres, by the top ten yielding business areas and centres (number of employees)



When comparing the capacity for additional dwellings in the top 10 business areas and centres it is not unexpected to again see the CBD rank the highest, followed albeit with considerably less capacity by Manukau and Albany (Figure 40).

Figure 40: Capacity for additional dwellings in business areas and centres, by the top ten yielding business areas and centres (number of dwellings)



Tables detailing the full results for the business redevelopment component of the study can be found in Appendix A: Results by local board area and Appendix B: Results by district plan area at the end of this report.

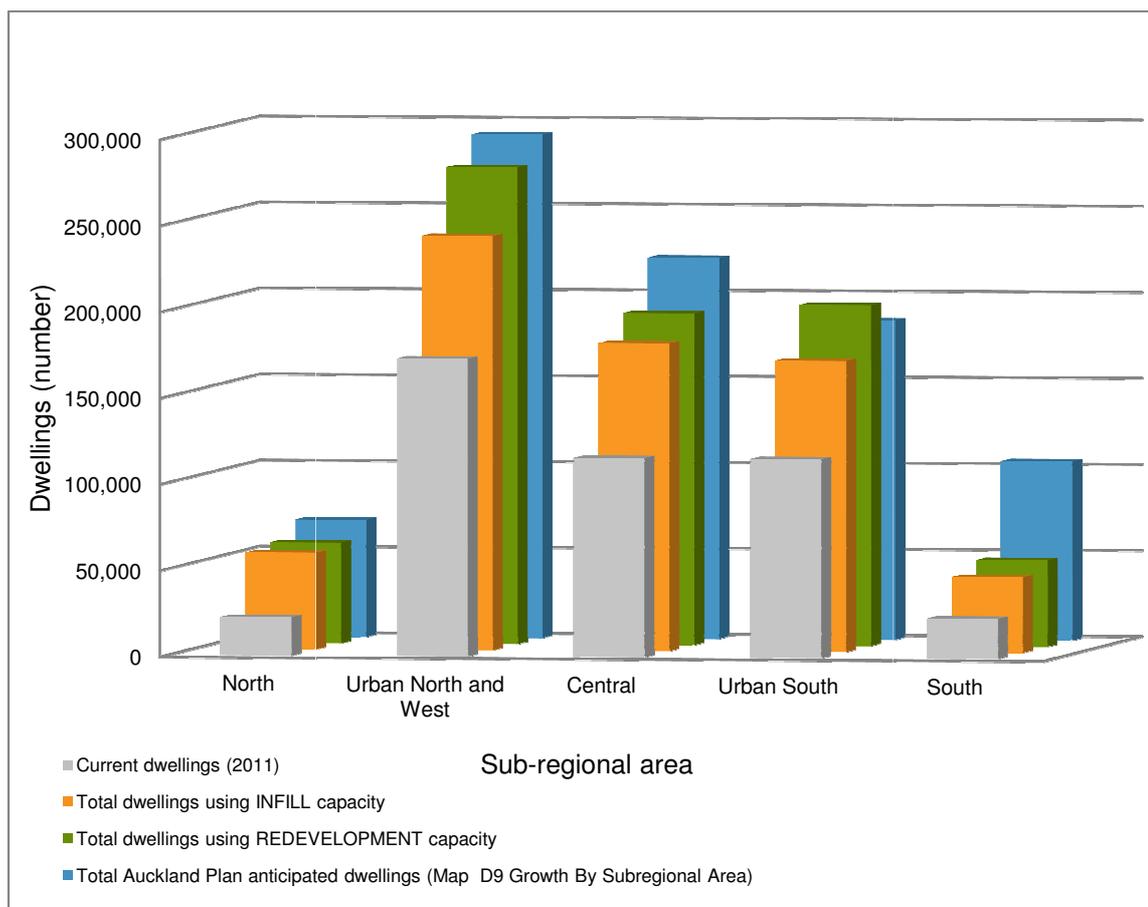
9.0 Comparing residential results to *The Auckland Plan* Development Strategy

The Auckland Plan, Section D: Auckland's High-Level Development Strategy, sets out how much residential growth is expected to occur in different areas over the 30-year planning horizon of the plan (Auckland Council 2012: 56). The anticipated growth outlined in the Development Strategy utilises the regional high projection series from Statistics New Zealand's population projections for Auckland, and it proposes to distribute this regional growth in what is referred to as a 70:40 split³⁰ of growth between inside and outside the MUL (at 2010).

By using the data we have collected as part of the study and aggregating it to sub-regional (including local board) areas we can compare how current plan-enabled capacity relates to the expected growth. This allows us to establish the amount of change that will be required to facilitate the accommodation of this growth through the proposed Unitary Plan.

In order to illustrate what this comparison may look like we have grouped both the residential capacity results and the Development Strategy anticipated dwelling numbers by sub-regional area as shown in *The Auckland Plan* (2012: 61). This can be seen in Figure 41.

Figure 41: Residential capacity compared to *The Auckland Plan* anticipated dwellings, by sub-regional area



³⁰ The Auckland Plan indicates that council will provide for 60% to 70% of growth (additional dwellings) within the MUL (as at 2010) and 30% to 40% outside of the MUL (Auckland Council 2012: 48), thus creating a planning framework that will provide a possible 70:40 split (or 110% of growth). This ensures that the 70:40 figures represent the highest anticipated growth for any given location under the specified range of outcomes.

It is important to clarify what the above graph shows; in this figure the grey bars show the current (2011) number of dwellings, the blue bars the total number of anticipated dwellings (from *The Auckland Plan*) plus current dwellings. The difference between the tops of these two bars is the number of new dwellings that will need to be constructed in order to accommodate the population growth indicated. The green and orange coloured bars on the graph show the two residential capacity results for each area, the orange being the capacity results utilising infill and the green bar being the capacity results utilising redevelopment plus current dwellings. These bars indicate the capacity that is possible under current planning rules; both are shown as the potential capacity from the plans is a range and falls somewhere between the two. The difference between the top of these orange and green bars and the top of the blue bar is the additional capacity (over and above that currently provided) that will have to be enabled by the new Unitary Plan in order to accommodate the anticipated sub-regional growth (as indicated in *The Auckland Plan* Figure D.9). Effectively the graphs indicate the relative quantum of 'up zoning' required (assuming 100% uptake of enabled opportunities).

From this figure we can see that in all cases there is gap between the residential capacity figures from the study (utilising either infill or redevelopment) and the number of anticipated dwellings expected to be provided for in the sub-regional areas to accommodate Auckland Plan projected growth over the next 30 years. This also shows that the legacy district plans currently in place do not provide sufficient capacity for the Auckland Plan's anticipated growth over the next 30 years³¹. As such, the residential capacity yielded from zoning in the sub-regional areas will need to be increased over time, starting with the provisions of the new Unitary Plan.

In order to assess whether or not the provisions of the new Unitary Plan will match or exceed the anticipated dwellings outlined in *The Auckland Plan*, the Research Investigations and Monitoring Unit is already undertaking a new Capacity for Growth Study (Phase 2 of the Capacity for Growth Study Project). This new study will be based on the rules and provisions in the *Draft Unitary Plan*, allowing us again to make the same comparisons and help those writing the plan to understand whether the new plan "reaches the mark", not only with these high level requirements but also with respect to more local issues.

The existence of unused capacity, as evidenced in this report, shows that not all opportunities enabled by the district plans is realised, particularly in the short term. As such, in order for Auckland to accommodate anticipated dwelling growth, the new Unitary Plan will need to 'over-provide' capacity to ensure sufficient 'realisable' opportunities are enabled over the 10 year time frame of the Unitary Plan.

Comparisons between the study results and the anticipated growth outlined in *The Auckland Plan*, by local board area can be found in Appendix D: Capacity results compared to *The Auckland Plan* Development Strategy anticipated dwelling growth (high projection, 70:40).

³¹ The legacy plans were designed to accommodate a Medium population growth rate as required by the Auckland Regional Growth Strategy. The RGS has been superseded by the Auckland Plan which assumes a High growth rate.

10.0 Assessing capacity in “ready to go” structure plan areas

In order to better understand the capacity that is available from selected structure plan areas (also known as greenfields areas) that are currently being developed and providing potential capacity at the moment, some post-study analysis has been undertaken.

The “ready to go” analysis is based on a selection of areas and a method provided by the Spatial and Infrastructure Strategy Unit of Auckland Council. The method to calculate the dwelling yield from “ready to go” structure plan areas are as follows:

- i. Take the “expected dwelling yield from structure plan” capacity figures for each of the chosen structure plan areas (sourced from structure plan documentation or feedback provided by members of Auckland Council’s Operative Plan teams³²).
- ii. Assign the proportion of the total structure plan capacity that is considered to fall within “ready to go” section of the each of the chosen structure plan areas; this is 100% for all areas except; Long Bay, Massey North and Silverdale North, for which it is 50%.
- iii. Subtract the number of dwellings that have been built or have been consented in each of the chosen structure plan areas (this data is from property valuation data and building consent information³³).
- iv. The remaining figure is ‘Dwelling yield from “ready to go” structure plan areas’.

The results of these calculations are presented in Table 9 below:

Table 9: Dwelling yields from “ready to go” structure plan areas (at November 2012)

Structure Plan or Special Area	Dwelling yield from “ready to go” structure plan areas
Babich ³⁴	658
Birdwood Urban Concept Plan Area ³⁵	387
Flat Bush (Stage 1)	2,828
Hatfields Beach	60
Hingaia (Stage 1A)	1,007
Hobsonville Peninsula	2,201
Hobsonville Peninsula Future Development Special Area	440

³² This data is presented in Table 33 of Appendix E: Pipeline capacity (structure plan) identified for the Capacity for Growth Study 2012, and is ‘as at May 2012’.

³³ Property valuation data sourced from PropertyIQ and Auckland Council (based on July 2011 valuation updated to June 2012); Building consent data sourced from Statistics New Zealand and Auckland Council (from 1 July 2011 to 30 November 2012).

³⁴ The Babich Urban Concept Plan Area (UCP) was not included as a structure plan area in the Capacity for Growth Study 2012 as it was able to be modelled. Data is sourced by querying model output results (Vacant, Vacant Potential and Infill) for undesignated residential zoned parcels falling within the UCP area, and updated with Building consent data sourced from Statistics New Zealand and Auckland Council (from 1 July 2011 to 30 November 2012).

³⁵ The Birdwood Urban Concept Plan Area (UCP) is not included as a structure plan area in the Capacity for Growth Study 2012. It should be noted that this area is different to the Birdwood Structure Plan area, which is rural. Data is sourced by querying model output results (vacant and infill (incl. vacant potential)) for the residential zoned parcels falling within the UCP area including those subject to designation and updated with building consent data sourced from Statistics New Zealand and Auckland Council (from 1 July 2011 to 30 November 2012).

Structure Plan or Special Area	Dwelling yield from “ready to go” structure plan areas
Long Bay*	985
Massey North*	1,480
Silverdale North (Special 19)*	874
Stonefields (Mt Wellington Quarry)	1,618
Takanini (Stages 1A & 1B)	1,321
Takanini (Stage 2A)	775
Takanini (Stage 2B)	469
Takanini (Stage 2C)	86
Takanini (Stage 3)	440
Total for listed areas	15,629

11.0 Concluding comments

The Capacity for Growth Study 2012 has been a significant research undertaking and it is hoped that the results and outputs generated from this study, in particular the Capacity for Growth Study Model, will help to better inform land supply strategy, policy and actions in Auckland and provide a quality, wide-ranging set of base information that can be used effectively in further research, study and analysis, helping us to all better understand the dynamic city-region that is Auckland.

Interpreting and modelling the provisions of the over 500 zones of Auckland's nine district plans has proved to be both challenging and rewarding. The calculation of capacity (both residential and business) is complex, especially as district plans have provisions for a number of outcomes in many cases, and the assumptions and limitations used to undertake the study must be considered by readers of this report and users of other study outputs (refer to *Capacity for Growth Study 2012: Methodology and Assumptions* technical report), and be relatively comparable to previous studies.

This study found that there was residential capacity for between 250,463 (utilising infill) and 345,176 (utilising redevelopment) additional dwellings across Auckland. Capacity on vacant residential sites provides a potential for an additional 22,188 dwellings, while capacity through infill development could provide an additional 49,145 dwellings. If all residential zoned parcels across Auckland were redeveloped to their maximum capacity, this could yield an additional 115,965 dwellings. There is potential capacity for an additional 24,974 dwellings from titles located in the rural area. There is potential capacity for an additional 103,930 dwellings in business areas and centres³⁶ and lastly, that there was pipeline capacity expected to become available over the next 10 years, that could provide potential for an additional 49,769 dwellings.

This study found that there was business land capacity of 3,233 hectares. This capacity is made up of 716 hectares of business zoned land located on parcels that were wholly vacant. There was a further 1262 hectares of business zoned land that was considered to have vacant potential and lastly pipeline business land capacity (from structure plan and special areas that are due to come online before 2023) will provide an additional 1,255 hectares of business land.

The detailed findings of the study's raw outputs are listed within each relevant section.

As discussed, the outputs from this study will form the basis of much more research, study and analysis, including informing and providing evidence for the new Auckland Unitary Plan.

The figures and geographic locations used in this report are primarily based on the outputs of Run 1.1.2 of the Capacity for Growth Study Model. This Phase 1 model is the primary output of the study and its outputs can be queried in different ways, probably most usefully by different geographies of interest, but additionally its inputs (input development parameter assumptions, zoning extents and parcel arrangements) can be varied to provide 'what if' analysis, track changes over time and better inform many aspects of Council business.

We are now moving onto Phase 2 which is to develop a similar Model based on the draft Unitary Plan that can be iteratively developed as the plan moves through the consultation process.

Some proposed research and further work based on this study is outlined in section 12.0: Recommendations for further work.

³⁶ Under a modified theoretical scenario, refer *Capacity for Growth Study 2012: Methodology and Assumptions* technical report)

12.0 Recommendations for further work

This section of the report outlines concepts and ideas for further work based on the output data produced as part of this study. During the modelling processes undertaken we have created large tracts of information than can be harnessed with further research to help answer many questions that have been, and have not yet been raised, helping to better shape both local and regional strategy and policy.

Residential

- Vacant residential land – long term vacancy. Identify residential land that has been vacant long term, and examine the reasons and constraints affecting this land being developed. Investigation into this research sphere has already been initiated by the Research Investigations and Monitoring Unit.

Business

- In-depth business land supply and demand assessment. The results from this study will help inform those planning for current and future business activity in Auckland. It is proposed that a more in-depth assessment and reporting of both the supply and demands for business land in Auckland be undertaken. An investigation into this research has already been initiated between the Research Investigations and Monitoring Unit and Economic Development.
- Vacant business land – long term vacancy. Identify any business land that has been vacant long term, and examine the reasons and constraints affecting this land being developed. Investigation into this research sphere has already been initiated by the Research Investigations and Monitoring Unit.
- Brownfield/redevelopment opportunities. Identify business zoned land that has redevelopment potential and explore the factors that could lead to, or prevent its redevelopment.

Rural

- Vacant titles analysis. Undertake a more in-depth analysis on the location and nature of the vacant rural titles across Auckland. This will become more pertinent with the possible introduction of wide ranging title transfer provisions in the Auckland Unitary Plan and the rules surrounding the use and amalgamation of vacant titles.

Business redevelopment

- Review of the process undertaken to calculate potential business redevelopment capacity. It has been indicated the Draft Auckland Unitary Plan will include provisions for business zoned land that will mean that modelling and analysis could be undertaken on a site-by-site basis. It is recommended that once these rules have been confirmed, that investigation takes place into whether such work is practicable.

Monitoring

- Ongoing monitoring of supply and uptake of capacity identified in the study through monitoring; using building consent data, parcel and title boundary shifts/changes. Create a 'real time' update of capacity that can be used for ongoing monitoring purposes.

General

- Site amalgamation. Research and understand the likelihood and obstacles to the amalgamation of parcels for redevelopment purposes (residential and business). Once this research is completed there is the opportunity to use the findings of any studies in further modelling undertakings. Investigation into this research sphere has already been initiated by the Research Investigations and Monitoring Unit.
- Infill vs. redevelopment. Look at what leads to the development choice of one type of development over the other, and how such decisions effect capacity and uptake both now and into the future.
- Modified capacity. Develop and create a modified capacity assessment that takes into account constraints that would prevent capacity being realised. This could include looking both physical constraints (infrastructure, natural and physical heritage, environmental etc.) and economic restrictions.
- Further analysis to inform monitoring of actions in The Auckland Plan, including the High-Level Development Strategy.

It is important to note that the outputs of this study will form an important part in the evidence base for the new *Auckland Unitary Plan*. Auckland Council's research unit is already in the process of undertaking a new Capacity for Growth Study based on the provisions outlined in the soon to be released *Draft Unitary Plan*. Once this new study is completed the results from the two studies can be contrasted and compared, providing politicians, strategists, planners and policy makers an understanding of the differences between the existing plans and the new plan in terms of growth, character protection, avoiding unintended outcomes, community engagement and infrastructure planning, just to name a few.

13.0 Glossary

Business Areas and Centres: The large contiguous areas of business zoning that have a similar typology and are considered to be significant areas of employment, including urban and rural centres, as described in the technical papers written to inform *The Auckland Plan*. The geographic limits of these areas are defined by present zoning. These areas are a subset of the urban area and rural towns.

Infill (residential): The process, by which an additional dwelling or dwellings are added to either the front or the back of a residentially zoned parcel, which is already occupied by a dwelling.

Metropolitan Urban Limits (MUL): The extent to which the urban area of Auckland can develop, as defined by the Auckland Regional Policy Statement. Note that the MUL used in this study is based on the extents of the MUL at the time of the last change prior to this study (2010).

Parcel: A cadastral polygon with a legal description (can also be known as a property, section or lot). This geographic area is used to undertake capacity assessment within residential and business zones that are in the urban area.

Rural residential: Additional dwelling units on rural zoned titles, either through titles being currently vacant or through subdivision (based on the modelled consent category from district planning rules).

Redevelopment (business): The redevelopment of business land.

Redevelopment (residential): The removal of dwellings from a residential zoned parcel and the rebuilding up to the maximum number of dwellings allowed under the district planning rules.

Rural area: Properties with a rural zoning that are outside of the Metropolitan Urban Limits (MUL) (2010) and land that is within the MUL that is zoned for rural use, excluding areas that have been identified as forming part of a rural town.

Rural Towns: Clusters of 'urban' type zoning (including residential and business zones) that occur outside of the Metropolitan Urban Area.

Structure plan and special areas (SPSA): Areas that due to their land use planning nature or timing are not modelled. Figures for these areas are taken from available planning documentation and feedback from council planners and are variable in its quality and certainty.

Title: The land contained on a registered Certificate of Title. This geographic area is used to undertake capacity assessment within rural areas. Note that a title may contain one, or many parcels.

Total business land: Total area of business zoned land in a given area.

Urban area: All of the properties within the Metropolitan Urban Limits (MUL) (2010) that do not have a rural zoning/are not in the rural area (see Figure 1). This includes both residential and business zones.

Vacant (business): Capacity (in hectares) of business zoned parcels that are currently wholly vacant (no buildings/structures).

Vacant (residential): Capacity for dwelling units on residential zoned parcels that are currently wholly vacant (no dwellings or buildings), either via subdivision or a dwelling as a right.

Vacant potential (business): Vacant potential is the measure of the vacant portion of parcel that is currently zoned for business use and is not already occupied in some way by a building. Generally this portion of the site is unoccupied and could be used for further development.

14.0 References

Auckland Council. 2012a. *The Auckland Plan*. Auckland: Auckland Council.

Auckland Council. 2012b. *City Centre Masterplan 2012*. Auckland: Auckland Council.

Auckland Council. 2012c. *Auckland Regional Policy Statement: Change 6*. Auckland: Auckland Council.