Ministry for the Environment
Manatū Mō Te Taiao

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

National Policy Statement on Urban Development Capacity:

Guide on Evidence and Monitoring

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MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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Part one: Introduction

This part introduces the guidance on the evidence and monitoring policies of the National Policy Statement on Urban Development Capacity (NPS-UDC). It:

- **explains the intent of the policies**
- **identifies the affected local authorities and time frames by which the requirements must be met**
- **makes overall recommendations about the process for preparing evidence and undertaking monitoring, and about its quality.**

1 Purpose and scope of this guide and supporting tools

1.1 Purpose

This guide recommends methods for giving effect to NPS-UDC **evidence** and **monitoring requirements (policies PB1 – PB7 and PD1)**.

These policies require high and medium growth local authorities to:

- prepare housing and business development capacity assessments on at least a three-yearly basis which forecast demand and "feasible" development capacity, and the likely take-up of capacity (*Policies PB1 to PB5*)
- undertake quarterly monitoring of market indicators, and use indicators of price efficiency (*Policies PB6 and PB7*).

Policy PD1 also strongly encourages local authorities that share jurisdiction over a high or medium growth urban area, to cooperate and agree on a joint housing and business development capacity assessment.

The affected local authorities and timeframes for meeting policies PB1-PB7 are identified in Table 1. Specific policies are listed in full in parts two to five of this guide.

The guide is consistent with, and expands on, the policy intent behind the National Policy Statement. It is not part of the NPS-UDC, and is not legal advice. It should be read alongside the NPS-UDC, the *Introduction to the National Policy Statement on Urban Development Capacity* and other related information available on the Ministry for the Environment's website. The guide can be used in conjunction with the development feasibility model and the dashboard of market and price efficiency indicators available on the Ministry of Business, Innovation and Employment's website.

1.2 Scope

This guide has six parts:

1. **Introduction**
2. **Housing demand and development capacity**
3. **Business demand and development capacity**
4. **Business and housing Interactions**
5. **Monitoring market indicators**
6. **Using price efficiency indicators**

The guide focuses on matters that local authority officers have said they need the most help with. For example, the guide on assessing capacity for housing focuses on development feasibility and take-up. It does not cover the assessment of plan-enabled capacity for housing, given this is an already established and well-defined process that local authorities undertake

on a regular basis. Where existing practice is working well it should continue and be developed further to include the requirements of the NPS-UDC.

Alongside this guide, the Ministry for the Environment and Ministry for Business, Innovation and Employment have provided local authorities with a simple spreadsheet model for estimating development feasibility, and an interactive online dashboard of charts and data. The dashboard should assist with monitoring the market indicators specified in NPS-UDC Policy PB6 and using price efficiency indicators as required by policy PB7. Further information about these resources is outlined in relevant other parts of this guide.

The policies considered in this guide apply to all local authorities that have part, or all, of either a medium-growth urban area or high-growth urban area within their district or region. The table below lists these local authorities as defined in September 2017, along with the deadlines by which they should implement policies. It includes local authorities that were defined as high or medium growth when the NPS-UDC was released in November 2016, and those that were newly defined as high or medium-growth when Statistics New Zealand revised its population projections for urban areas in 2017.

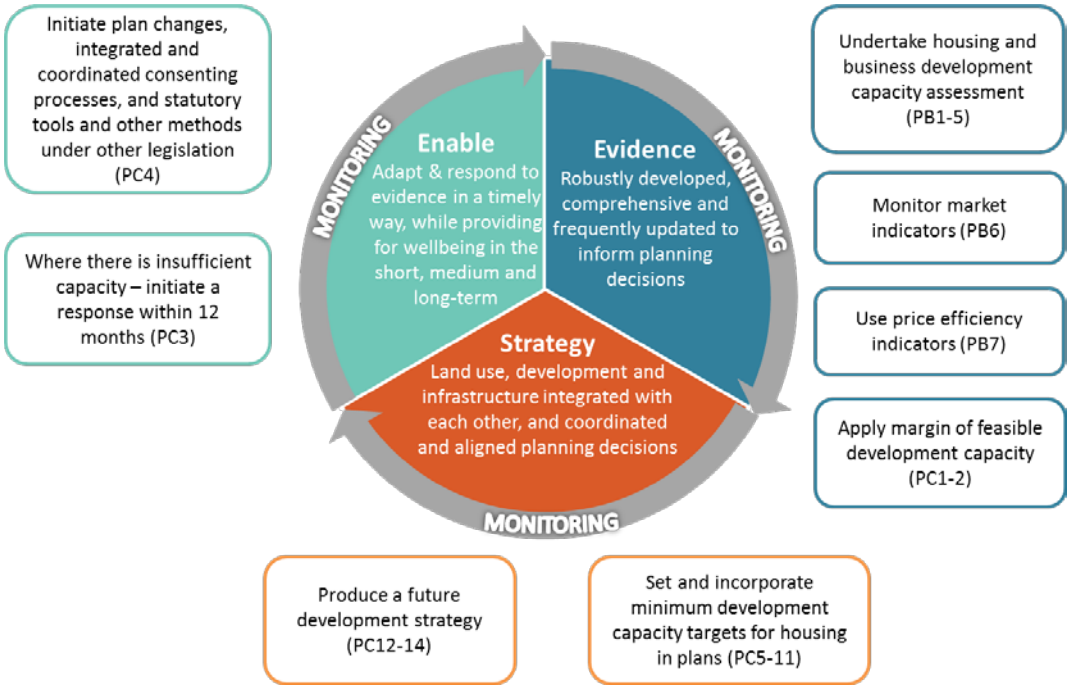
Table 1: Local authority deadlines for implementing NPS-UDC evidence and monitoring policies

URBAN AREAS (As defined 1 June 2017)	LOCAL AUTHORITIES	POLICIES	DEADLINES
HIGH GROWTH			
Auckland	Auckland Council		
Hamilton	Waikato Region, Hamilton City, Waikato District, Waipa District	PB6	1 June 2017
Tauranga	Bay of Plenty Region, Tauranga City, Western Bay of Plenty District	PB7	31 Dec 2017
Christchurch	Canterbury Region, Christchurch City, Selwyn District, Waimakariri District	PB1-PB5	31 Dec 2017
Queenstown	Otago Region, Queenstown-Lakes District		
NEWLY DEFINED AS HIGH GROWTH			
Whangarei	Northland Region, Whangarei District	PB6	1 June 2017
New Plymouth	Taranaki Region, New Plymouth District	PB7	31 Dec 2017
		PB1-PB5	30 June 2018
MEDIUM GROWTH			
Palmerston North	Horizons Region, Palmerston North City	PB6	1 June 2017
Kapiti	Greater Wellington Region, Kapiti Coast District	PB7	31 Dec 2017
Wellington	Greater Wellington Region, Wellington City, Porirua City, Lower Hutt City, Upper Hutt City	PB1-PB5	31 Dec 2018
Nelson	Nelson City, Tasman District		
NEWLY DEFINED AS MEDIUM GROWTH			
Rotorua	Bay of Plenty Region, Rotorua District		
Napier-Hastings	Hawkes Bay Region, Napier City, Hastings District	PB6	31 March 2018
Gisborne	Gisborne District	PB7	31 March 2018
Blenheim	Marlborough District	PB1-PB5	31 Dec 2018
Dunedin	Otago Region, Dunedin City		

2 Intent of the evidence and monitoring policies

Figure 1 provides a high level summary of all the NPS-UDC policies. The evidence and monitoring policies are designed to interact with the other policies for *responsive planning* and *coordinated processes.* For example, housing and business development capacity assessments should be developed in coordination with other local authorities, infrastructure providers and local expert stakeholders. The assessments should also inform planning decisions, including minimum development capacity targets for housing and 30-year future development strategies required of high growth urban areas. Quarterly monitoring of market indicators, and the use of price efficiency indicators, should complement other information in the three-yearly housing and business development capacity assessments and keep information up to date.

Figure 1: Summary of NPS Policies



The purpose of the evidence and monitoring policies is to ensure that planning decisions are well informed. It is important for planning decisions to be made on the basis of a clear understanding of how land and development markets work and interact with planning. This information should supplement information about environmental impacts and community views.

The NPS-UDC encourages local authorities to build on information that they already gather about markets for housing and business space, both independently and in conjunction with other authorities. Research undertaken for the NPS-UDC found that many local authorities could improve their information about demand by location, type and price point; development feasibility and take-up; and business land.[1] Research also demonstrated that

[1] This information is evaluated in a report prepared for the NPS-UDC: *How councils estimate demand and supply of development capacity for housing and business* (Ministry for the Environment, 2016). The report identifies good practice and also some gaps.

all local authorities need to establish systematic processes for monitoring and reporting on market indicators.

The requirements of the NPS-UDC and the information outlined in this guide are focused on improving evidence and monitoring processes and addressing any gaps in current practice. The overall intention of these NPS-UDC policies is that local authorities will both:

(a) produce more realistic evidence-based forecasts and projections of demand and the feasible development capacity that plans need to enable, and

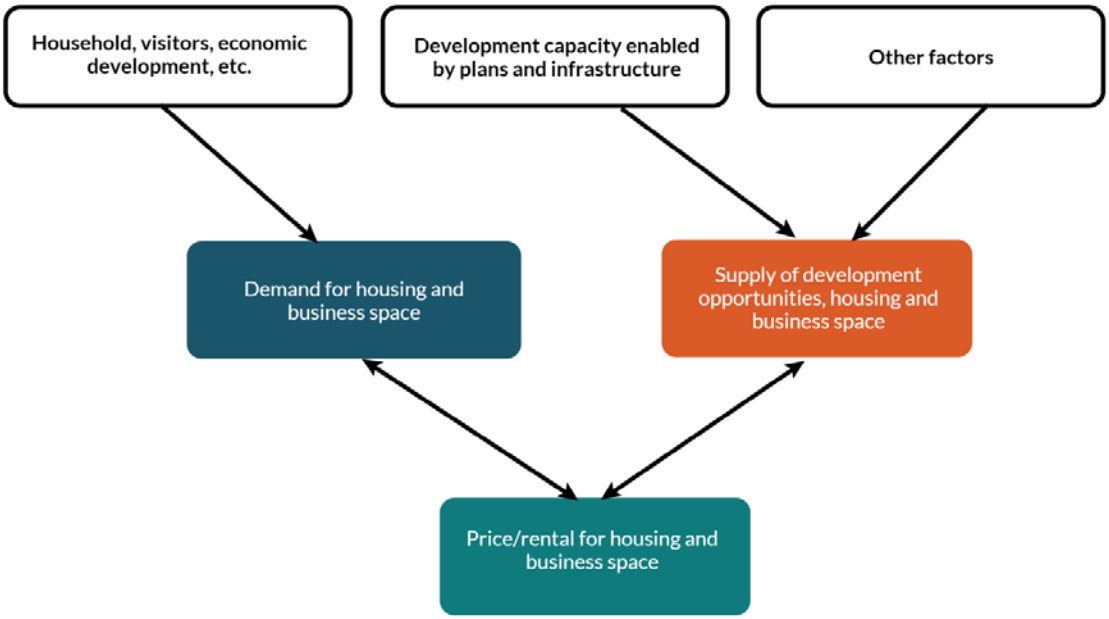
(b) understand the key drivers of demand, supply and prices of housing and business development capacity, to be well placed to adapt to changes in these.

The NPS-UDC encourages local authorities that share jurisdiction over an urban area to work together in preparing their housing and business development capacity assessments, because housing and business markets often cross over local authority boundaries. The NPS-UDC also requires local authorities to seek and use the input of particular local groups with relevant expertise. This should help develop a high quality evidence base and achieve stakeholder buy-in.

3 Content of the evidence and monitoring

The assessments and monitoring undertaken for the NPS-UDC should provide information about demand, supply and prices for housing and business space, and the interactions with planning regulations and infrastructure provision. The relationships between these things are summarised in Figure 2.

Figure 2: Demand, supply and price of housing and business space



Demand and supply both interact with price: all else being equal, as prices rise, demand should fall and supply should increase. However, demand and supply are also affected by external factors such as population growth and planning regulations, and these indirectly drive changes in prices. The guide provides methods for understanding these relationships when preparing housing and business development capacity assessments and monitoring market indicators.

3.1 Demand

Part two of this guide recommends that assessments of housing demand start with projections of local households and visitor growth, as these are the key non-price drivers of demand for additional dwellings in local areas. Part two also suggests a range of methods for understanding patterns of demand by type, location and price. It distinguishes between methods that map current consumption, those that investigate latent demand, and those which project the future. Part three sets out how growth in particular local economic sectors can drive demand for particular types of business space in local areas.[2] Parts five and six discuss how prices and rents can provide information about demand for different locations.

[2] Interest rates also affect demand for housing and business space, but because interest rates do not vary between local areas the guide does not focus on this driver.

3.2 Supply

This guide deals with supply for both housing in part two and business space in part three, by focusing on the feasible ***capacity*** for development enabled by resource management plans and infrastructure. This can constrain the quantity, location and type of housing and business space that can be developed. It is also the primary focus of the NPS-UDC.

The guide and supporting development feasibility model also provide a method for assessing the feasibility (to a developer) of developing this capacity. This highlights the impact on supply, of prices for houses and land, and the costs of subdivision, construction, finance and other factors.

Other factors impacting development include land owner intentions, very concentrated or very fragmented land ownership, covenants and the capabilities of developers. This guide discusses how these may affect the take-up of development capacity.

3.3 Prices

Parts two and three of this guide discuss the use of price information alongside other methods for quantifying demand and supply, to prepare housing and business development capacity assessments. Part five discusses in more depth how to use information about prices and triangulate it with other market indicators of demand and supply as part of a monitoring programme.

Part six outlines how to use price efficiency indicators to assess the efficiency of local markets and how land use regulations may be affecting this.

The guidance complements the following indicators on the dashboard on the Ministry of Business, Innovation and Employment's website.

Market indicators

- Prices and rents for homes
- Residential building consents compared to growth in household numbers
- Housing affordability

Price efficiency indicators

- Price-cost ratios for homes
- Land ownership concentration indicators
- Rural-urban land value differentials
- Industrial zone differentials.

4 Quality of evidence and monitoring

Local authorities have existing processes and information that meet some of the NPS-UDC evidence and monitoring policies already. Some have undertaken considerable joint work with neighbouring local authorities, and this provides a strong base on which to build. However, it is likely local authorities will need to further invest resources in evidence gathering and monitoring to meet the requirements of the NPS-UDC.

4.1 Housing and business development capacity assessments

The first housing and business development capacity assessments for the high growth urban areas are due by the end of 2017, while medium growth local authorities must produce theirs by the end of 2018, and they must be developed at least three-yearly. It is expected these first assessments will be a building block for improved practice over time. All assessments must meet the requirements in Policies PB1-PB5. An appropriate assessment would:

- cover the **whole urban housing and business market** (which may cross local authority boundaries) and constituent territorial authority parts
- provide information about the **range of business uses and dwelling types** in the assessment area
- provide evidence-based estimates of demand and feasible capacity, and identify key drivers that underpin these
- be pitched at a level of detail and sophistication commensurate with the size, complexity and growth rate of the urban market
- provide a **narrative of the findings** to help convey key messages to decision-makers.

The assessments should help local authorities to quantify in broad terms how much development capacity should be provided in resource management plans and supported with development infrastructure, to enable the supply of housing and business space that meets demand. Policy PB3 requires that this assessment include how much capacity is "feasible" to develop in the current market and expected to be taken up over time. The use of some kind of feasibility model and rigorous inputs and assumptions is recommended. In addition, the calculation of total feasible capacity required needs to include margins over and above projected demand, to inform policies PC1 and PC2.[3]

The assessments should also include information about the interactions between housing and business activities, such as:

- whether the location of activities provides for accessibility and the efficient use of land and infrastructure
- how urban environments are developing and changing over time.

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[3] To factor in the proportion of feasible development capacity that may not be developed, these policies require local authorities to provide an additional margin of feasible development capacity over and above projected demand of at least:

- 20% in the short and medium term, and 15% in the long term; or
- If information in the assessment about take-up suggests a higher margin is appropriate, this higher margin should be used.

Differences in local markets may require some local authorities to put emphasis on particular issues. There is also scope for local authorities to choose between different methods for meeting the NPS-UDC requirements.

While some local authorities might commission consultants to undertake some of the work, it is important that they also develop internal capability.

The assessment should inform planning and provide a basis for establishing minimum development capacity targets for housing, and the future development strategy.

4.2 Monitoring market indicators and using price efficiency indicators

Frequent monitoring of housing affordability, building consents, prices and other market indicators will complement the three-yearly assessments, by providing a time series and an "early warning" of trends that may affect the sufficiency of development capacity. This would invite further investigation to inform a planning response (similar to the way that local authorities monitor air quality or other matters). The results of monitoring market indicators should be reported to local authority decision-makers via a systematic quarterly reporting process.[4]

Some of the market indicators should provide key inputs for the housing and business development capacity assessments. Monitoring will also update some of the information in the assessments over time, given factors such as growth, prices and affordability are likely to change over the three years in between when assessments are undertaken. It is recommended that local authorities use the charts, maps and data on the dashboard of market indicators, and complement these with their own data and with other sources (such as the business property statistics published by private providers).

The price efficiency indicators could also provide a cross-check of the quantitative forecasting undertaken for the assessments. If price differentials between zones are significant, this may indicate that there is either not enough development capacity in plans, or that other factors are creating inefficiencies.

NPS-UDC policies PB2c) and PB3e) require local authorities to include information from market and price efficiency indicators in their housing and business development capacity assessments. The assessments should explicitly discuss these indicators and how they can be interpreted alongside the other information.

[4] Quarterly reports would include quarterly indicators and updates of other indicators available less frequently.

5 Recommended first steps

The recommended first steps that local authorities should take when embarking on work to prepare their housing and business development capacity assessments include:

- participate in conversations between the relevant regional council and territorial authorities about preparing a joint housing and business development capacity assessment
- agree on the geographic area of focus
- seek and use the input of stakeholders with particular expertise (specified in policy PB5)
- identify what to do to build on the existing evidence base.

5.1 Preparing a joint housing and business development capacity assessment

The NPS-UDC (Policy PD1 a) strongly encourages local authorities that share jurisdiction over a Statistics New Zealand urban area to work together on a joint housing and business development capacity assessment. This includes regional, city and district local authorities as identified in Table 1.

A joint housing and business development capacity assessment is necessary to understand a housing and business market that operates across local authority boundaries. This would provide a picture of the demand and capacity requirements across the full market. A joint assessment would also support alignment of decision-making between the local authorities, toward efficient use of land and infrastructure funding. Another benefit of preparing joint assessments is that local authorities can share expertise and resources.

Local authorities can also share resources to monitor market indicators for the assessment area and constituent territorial authorities.

5.2 Agreeing the geographic area of focus for evidence and monitoring

The NPS-UDC uses Statistics New Zealand's urban areas to target policies to particular local authorities and to encourage them to work together. However, the NPS-UDC also states that "*The application of these policies is not restricted to the boundaries of the urban area*". Statistics New Zealand is currently reviewing the boundaries of its urban areas, which may not perfectly reflect the bounds of growing urban housing and business markets. Local authorities may have better information about where settlement has been occurring and where it is likely in future.

The NPS-UDC allows local authorities to decide for themselves the geographic area of focus for evidence and monitoring. Some local authorities have asked for guidance on this. It is recommended that geographic areas of focus reflect:

- **The functional market**: The NPS-UDC is focused on improving the performance of growing urban housing and business markets. Such markets can be defined by:

- the spatial closeness of residential and business settlement
- where a significant proportion of journeys to work occur
- areas within which residents predominantly move house.

Functional markets also include nearby space for future urban expansion.

- **Coordination arrangements**: Some local authorities have already invested in coordinated strategic and political arrangements to address cross-boundary issues between high growth parts of regions. The NPS-UDC encourages this.
- **The application of planning decisions:** The NPS-UDC imposes legal obligations on each individual council, so the administrative boundaries of these local authorities remain important.

Applying these principles, local authorities that share jurisdiction over an urban area could choose between the following areas of focus for their housing and business development capacity assessments:

a) **The collective area of the territorial authorities**. This could, for example, be the combined areas of Nelson City and Tasman District local authorities. It could also be the combined local authority areas of Wellington, Hutt, Upper Hutt and Porirua City local authorities plus the Kapiti Coast District, which cover two nearby urban areas.

OR

b) **A shared area that they all agree on**. That is, an agreed subset of the combined territorial authority areas. For example, local authorities could use a growth management area such as the Greater Christchurch Urban Development Strategy. It would be desirable to consider whether the boundaries of such an area adequately encompass areas for future urban development.

Either of these options would require an assessment of where demand is likely to be concentrated, within the shared geographic area. This includes understanding how demand is likely to be distributed between territorial authority areas. This information is necessary for planning decisions (including the agreement of minimum development capacity targets for housing, required for high-growth urban areas under NPS-UDC policies PC5-PC11).

5.3 Using the input of local experts

Policy PB5, which requires local authorities to "seek and use the input of" local stakeholders, is not intended to be a consultation requirement. It directs local authorities to use the expertise of representatives within specific groups, to help inform the assessments.[5] For example, local authorities should seek advice on feasibility assessment from their local property development community. The New Zealand Property Council has offered to put local authorities in touch with local expertise to help with modelling commercial feasibility.

It is recommended local authorities engage with local stakeholders from the beginning of the evidence-building process.

[5] By contrast, NPS-UDC policy PC14 a) requires local authorities to undertake a consultation process in preparing a future development strategy.

5.4 Building on existing evidence

The work that local authorities need to add to existing evidence, to meet NPS-UDC evidence and monitoring requirements, depends on what new information is required to make planning decisions consistent with the NPS-UDC. The outputs of the evidence and monitoring processes should inform:

- planners' reports on significant non-complying or discretionary activity applications
- plan changes and Regional Policy Statement and District Plan reviews
- the agreement and setting of minimum targets for housing development capacity within the Regional Policy Statements and District Plans of high-growth urban areas, required under NPS-UDC policies PC5 to PC11
- the future development strategy requirement under NPS-UDC policies PC12 to PC14.

Evidence and monitoring prepared under the NPS-UDC could also inform Infrastructure Strategies and Long Term Plans under the Local Government Act 2002.

Those undertaking the evidence and monitoring processes should talk to their local authority planners and infrastructure providers, and their colleagues in neighbouring local authorities. The discussion should include questions to help build on existing evidence bases, such as:

- What do you already know?
- What needs to be updated?
- Where are the gaps?
- What are the key questions that need to be answered?

Part two: Housing demand and development capacity

This part of the guide recommends methods for assessing the demand and capacity for housing to meet the requirements of policies PB1 – PB5.

The capacity section focuses on feasibility and take-up and includes information about the development feasibility model available on the Ministry of Business, Innovation and Employment's website for local authorities to use.

1 Overview

1.1 Relevant policies

This part of the guide focuses on the ways medium and high growth areas can meet the following parts of policies PB1 – PB5 (paraphrased below):

> PB1: Local authorities shall, on at least a three-yearly basis, carry out a housing and business development capacity assessment that:
>
> a) Estimates the demand for dwellings, including the demand for different types of dwellings, locations and price points, and the supply of development capacity to meet that demand, in the short, medium and long-terms
>
> PB2: The assessment … shall use information about demand including:
>
> a) Demographic change using, as a starting point, the most recent Statistics New Zealand population projections
>
> PB3: The assessment… shall estimate the sufficiency of development capacity provided by the relevant [regulatory and infrastructure plans] including…
>
> c) current feasibility of development
>
> d) rate of take-up observed over the last 10 years and estimated for future
>
> PB4: The assessment shall estimate additional development capacity [if] needed
>
> PB5: local authorities shall seek and use the input of… iwi authorities, the property development sector, significant land owners, social housing providers [etc.]

1.2 Intent

The NPS-UDC policies aim to address issues identified in a report commissioned by the Ministry for the Environment and Ministry of Business, Innovation and Employment: *How local authorities estimate demand for and supply of development capacity for housing and business* (2016). The report identifies good practice and also some gaps.

The intent underpinning the policies is that local authorities both:

a) produce more realistic evidence-based forecasts and projections of demand and the feasible development capacity that plans need to enable, and

b) understand the key drivers of demand and capacity for housing to be well placed to adapt to changes in these.

Better information should help inform planning decisions to provide sufficient capacity for development, enabling the supply of housing choices that better meet demand and improve affordability. This will contribute to well-functioning towns and cities where people are able to access jobs and housing to meet their needs.

1.3 Recommended quality and detail

Most local authorities need to improve their current evidence on, and understanding of, housing demand and capacity to meet the NPS-UDC requirements. Local authorities will probably need to improve their understanding of:

- the key drivers of demand for housing, in order to produce a projected total number of new homes required in future (plus alternative scenarios or sensitivity testing)
- the composition of demand (by type, location and price point)
- the feasibility and take-up of development capacity.

The housing and business development capacity assessment should present information at a level of detail that informs local authority planning decisions. For example, it should provide estimates for the total number of dwellings for the assessment study area and its constituent local authority areas. This will inform all local authority district plans, and provide a basis for minimum development capacity targets for housing, as required under policies PC5 – PC11.

A good assessment would also explore the composition of demand and feasibility of capacity at a level of detail that informs zoning and regulations (and infrastructure planning) affecting development typologies and location. It would also include information about different groups in the community to understand who might be affected by planning regulations that constrain development capacity, and to what extent. This information would inform the analysis required under Section 32 of the Resource Management Act.

Some local areas will need to place particular emphasis on assessing select aspects of demand and/or capacity. More complex analysis will likely be required for large, diverse and rapidly growing communities. However, it is not expected that local authorities attempt to predict demand in fine detail or use this information as a basis for providing precise amounts of capacity at specific locations. Rather, assessments need to provide **broad brush** information for planning that enables development of a range of dwelling types, price points and locations.

The assessments might usefully present information about demand and capacity for:

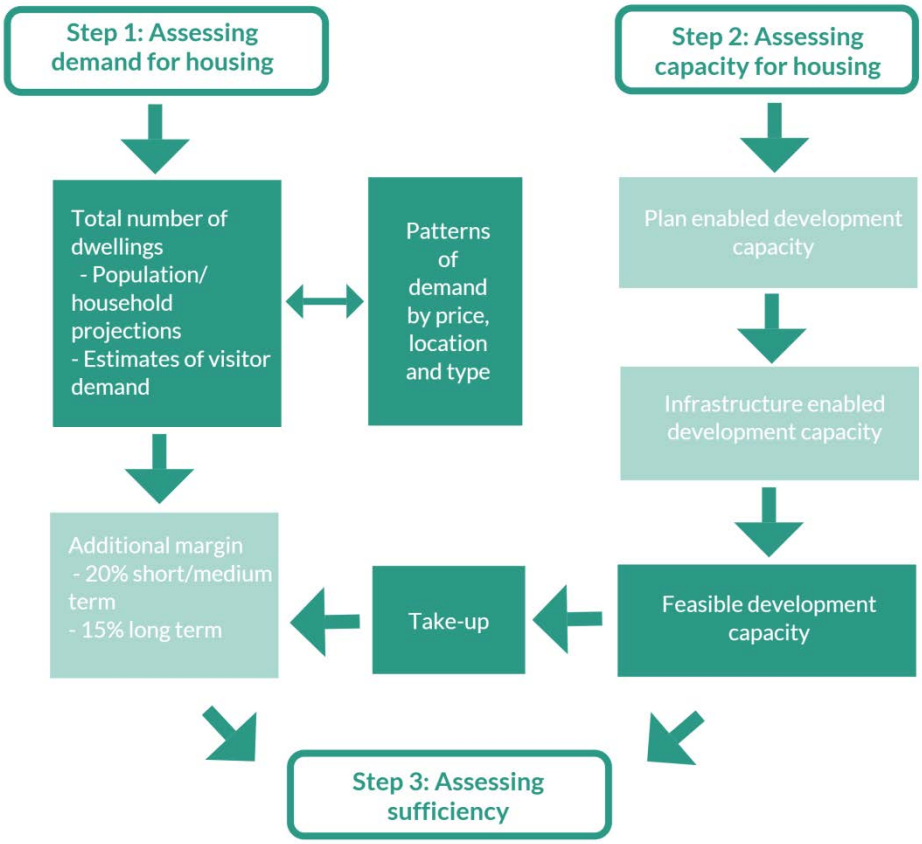
- two or three relevant housing typologies (eg, stand-alone houses; townhouses/duplexes/low rise apartments; and high rise apartments)
- broad locations (eg, CBD, suburbs, lifestyle areas and/or North, South, East, West)
- a few price and rent bands that make sense for the local area
- broad population groups (by ethnicity, age, and income, and their specific housing needs)
- key consumer groups (eg, renters, first home buyers, movers and investors).

The assessment should also explicitly discuss what price efficiency indicators suggest about the sufficiency of development capacity (see part six).

1.4 Overview of assessment methodology

The key steps for assessing demand and capacity for housing are shown in the following diagram. This guide focuses on the steps in the solid-green boxes.

Figure 3: Housing assessment methodology overview flow chart



2 Assessing demand for housing

The NPS-UDC defines demand (for housing) as follows:

> Demand means:
>
> In relation to housing, the demand for dwellings in an urban environment in the short, medium and long-term, including:
>
> a) the total number of dwellings required to meet projected household growth and projected visitor accommodation growth;
>
> b) demand for different types of dwellings;
>
> c) the demand for different locations within the urban environment; and
>
> d) the demand for different price points
>
> recognising that people will trade off (b), (c) and (d) to meet their own needs and preferences.

2.1 Assessing total number of additional homes required

The key driver of demand for additional homes is growth in the number of new households: roughly speaking, in most local areas one additional household represents demand for one additional dwelling. Household growth is a function of population growth and household size. These vary between local areas and over time with demography, and in response to house prices and other factors such as employment opportunities and global trends.

In some areas there are significant additional sources of demand for housing not included in population and household projections. These include visitors (who rent or purchase holiday homes) and migrant workers in the local area for less than a year.[6] Assessments for these areas should estimate the number of dwellings required to meet these demands.

Both resident and visitor demand for houses are also a function of price. If prices and rents in an area are very high relative to incomes, or rapidly increasing relative to other areas, this will tend to result in crowding, out-migration and investment elsewhere (ie, latent or unmet demand). In this situation, household and visitor projections may understate potential future demand that would be induced if changes in the market caused prices to normalise. Assessments for areas with high relative prices and poor housing affordability should desirably estimate the number of dwellings required to meet this latent demand.

The assessment should produce a projected number of dwellings required in the short, medium and long term for the study area and constituent territorial authorities. A good assessment would also provide estimates either side of this projection, with discussion of the key drivers of these estimates. These might simply draw on Statistics New Zealand's high and low population or household projections, or local authorities might construct their own forecasts explicitly based on assumptions about locally important drivers.

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[6] Subnational population estimates and projections include students in the place they live in during the study term.

Statistics NZ projections of population and households

Statistics NZ regularly publishes free of charge a set of population projections for local authorities, urban areas and area units; and of households at territorial authority level. Projections of population and households at territorial authority level generally span 25 years and comprise projected family and household numbers at five-year intervals. Each Census provides a new benchmark and is traditionally the main source of data on population, dwelling and household stocks. Data on births, deaths and international migration is supplemented, for sub-national projections, with data on domestic migration flows. Statistics NZ also receives input from local authority planners about local policies and expectations about the distribution of population growth within their districts and the timing, pace and scale of that growth. High, medium and low projections are constructed using different assumptions about future fertility, mortality and migration patterns of the population.

A household is defined as either one person usually living alone, or two or more people usually living together and sharing facilities in a private dwelling. Projections of households are derived from the sub-national population projections that Statistics NZ produces at territorial authority level. Household projections draw on analysis of living arrangements and demographic data to allocate project population to types of households.

In general, households are becoming smaller over time, due to changes in demographics and household formation – this means that the number of households may be increasing slightly faster than population in some areas. Average household size varies between territorial authorities: for example, the average household is 3.0 people in Auckland and 2.4 in Tauranga City, compared to the national average of 2.7.

Statistics NZ updates its projections at sub-national level typically twice within a five-year period. The household projections follow the population projections. After the 2013 Census, population projections (2013 base) for local authority areas were released in February 2015 and corresponding household projections in December 2015. Local authority population projections (2013 base) were updated in December 2016.[7] Updated household projections are scheduled for release in December 2017.

The projected population for regional council, territorial authority, and Auckland local board areas within New Zealand is available here: http://www.stats.govt.nz/ browse_for_stats/population/estimates_and_projections.aspx

The most recent sub-national projections for families and households, the Subnational Family and Household Projections: 2013(base)–2038 (released 8 December 2015) are available here: http://www.stats.govt.nz/ browse_for_stats/people_and_communities/ Families/SubnationalFamilyandHouseholdProjections_HOTP13-38.aspx

Statistics NZ also offers NZ.Stat, a free web tool for creating, finding, customising, and downloading datasets. This provides more detailed information about the assumptions underlying the subnational and area unit projections, as well as tables..

Statistics NZ can also produce customised projections. This customisation can, for example, take the form of a longer projection timeframe, a different geographic area, or use different assumptions about the level of inward migration to an area.

[7] Updated projections for urban areas will progressively be released by September 2017.

2.1.1 Using Statistics NZ or alternative sources of population and household projections

In assessing demand for housing, Policy PB2 a) requires assessments to use, as a starting point, the most recent Statistics New Zealand population projections. Consistent with this:

- Assessments for high growth urban areas, due at the end of 2017, could estimate growth in the total number of households, by applying the ratios between the previous set of population and household projections (both published in 2015), for each 5-year period, to the most recent Statistics New Zealand's population projections.
- Assessments for medium growth urban areas, due at the end of 2018, could use Statistics New Zealand household estimates to be published in December 2017.

There are several advantages to using Statistics NZ's projections:

- The projection methodology is applied consistently across territorial authority areas.
- Projections are regularly reproduced over time using consistent and internationally-accepted methods, rather than on an ad hoc basis.
- The projections are produced by an independent agency with access to the most comprehensive data inputs.

In some cases, a local authority may want to commission its own bespoke projections from another provider. The rationale for choosing to augment, or depart from, the Statistics NZ projections should be explained in the assessment in a way that can be traced and audited.

Local authorities that jointly produce a housing and business development capacity assessment need to agree on the source, methodology and assumptions for the projections used for the study area and constituent territorial authorities. These would desirably also be consistent with the projections that they use in their long term plans and infrastructure strategies prepared under the Local Government Act 2002.

2.1.2 Dealing with uncertainty

The future is inherently uncertain and impossible to accurately predict, especially over the long term. This uncertainty can impact different parties in different ways. Overall, the implications for individuals and the community of an under-supply of capacity for housing are much more severe than those of an "over-supply" of capacity.

Local authorities will be concerned that oversupplying capacity will require unnecessary infrastructure expenditure – there is a significant public cost and risk for local authorities with existing financing constraints. NPS-UDC policy PA1 provides some scope for managing this risk, by requiring infrastructure only to be in place in the short term, to have funding identified in the medium term and to be included in an Infrastructure Strategy in the long term.

On the other hand, undersupplying development capacity will constrain housing supply and thus erode housing affordability and living standards, contributing to over-crowding, extended commuting distances and out-migration. If significant, escalating house prices will increase social housing costs and inflate interest rates and the exchange rate, therefore impacting on the national economy.

A good housing and business development capacity assessment will provide information that helps local authorities to manage uncertainty by:

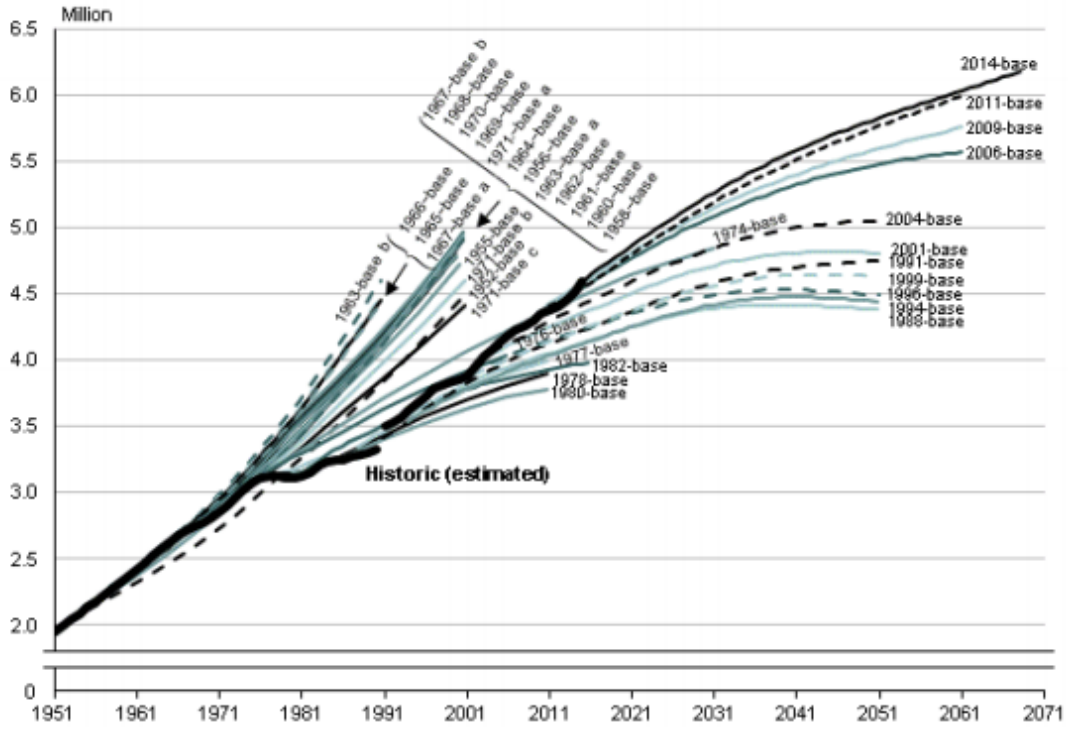
- drawing on up-to-date and robust projection or forecasting methodologies that address the key drivers of uncertainty
- presenting ranges or the results of sensitivity testing, as well as a chosen projection
- frequently updating information.

Short term changes in population may vary considerably from medium and long term rates of change, reflecting economic and property cycles rather than structural trends. It is the medium-term trends that are important for the housing and business development capacity assessment.

There is a difference between a projection and a forecast of the future. A projection shows future changes if the stated fertility, mortality and migration assumptions hold over the projection period. Projections are based on policy settings at the time and do not try to anticipate policy changes. A forecast is an expectation of the future that may be based on changes in the economy and policy.

Statistics New Zealand has recently published an evaluation of the accuracy of its population projections.[8] This evaluation found that at a national level, population projections during the 1960's and 1970's tended to overestimate population growth, while projections undertaken in the 1990's tended to underestimate growth (see figure 4). These estimation errors were addressed in revisions of the projections.

Figure 4: Projected New Zealand population, mid-range projection, 1952-base to 2014-base



Source: Statistics New Zealand

Previous subnational population projections have tended to overestimate growth for small territorial authorities: and have underestimated population growth in Tauranga City and Queenstown-Lakes and Waikato Districts.

[8] Statistics New Zealand (2016), *How accurate are population estimates and projections? An evaluation of Statistics New Zealand population estimates and projections, 1996–2013*.

Fertility and mortality are relatively stable components of population change, whereas migration flows (international and domestic) can be volatile and can have large impacts on population change. Given this, there will be more uncertainty associated with projections in local areas that have significant flows of migrants relative to the resident population.

One way that Statistics NZ addresses uncertainty is to provide three projection scenarios – **low, medium and high growth** – for each geographic area to illustrate a range of possible scenarios. At the time of release, Statistics New Zealand considers the medium projection the most suitable for assessing future population and household changes. The medium series is consistent with the median projection (50th percentile) of the national population projections.

Should a local authority wish to depart from using a medium projection, the rationale should be explained in the assessment in a way that can be traced and audited.

Regular updates of the projections also mitigate the effects of uncertainty, enabling the incorporation of new information about demographic trends and developments in methods. The updates also ensure consistency across the different projections (eg, across national and sub-national population, ethnic population, family and household projections).

Statistics NZ is also investigating a Bayesian modelling approach[9] to producing "stochastic" (probabilistic) sub-national population projections.[10] Stochastic national projections are already produced by Statistics NZ. Depending on this development, Statistics NZ could produce stochastic sub-national projections from 2019, after 2018 Census data is available. Projections could also be updated more quickly and frequently. These projections could be used for the next round of housing development capacity assessments.

A good assessment would explore more than one estimate of future population and household numbers, with discussion of the key drivers of these estimates. These might simply draw on Statistics New Zealand's high, medium and low projections. Alternatively, local authorities might construct their own estimates explicitly based on assumptions about locally important drivers.

2.1.3 Visitor demand for housing

Some local authorities face considerable demand for housing from people who are not usually resident (ie, visitors from within or from outside of New Zealand). International visitors are defined as those in New Zealand for less than 12 months and could be travelling on visitor, working-holiday or student visas, or could be New Zealand and Australian citizens who usually live overseas. Increasingly, a share of international and domestic visitors chooses to stay in houses (ie, using online matching services such as Airbnb).

A small proportion of these visitors buy holiday homes – they may be rented to other visitors (rather than local residents), but they often stand empty for much of the year.

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[9] Bijak, J. and J. Bryant. 2016. "Bayesian Demography 250 Years after Bayes." *Population Studies* 70: 1–19. Doi: http://dx.doi.org/10.1080/00324728.2015.1122826.

[10] Stochastic population projections provide a means of quantifying demographic uncertainty, although it is important to note that the estimates of uncertainty are themselves uncertain. By modelling uncertainty in the projection assumptions and deriving simulations, estimates of probability and uncertainty are available for each projection result. No simulation is more likely, or more unlikely, than any other. However, the simulations provide a probability distribution which can be summarised using percentiles, with the 50th percentile equal to the median.

Visitors can be numerically and proportionally significant in some local areas but are not part of the sub-national household projections, which focus on the usually resident population. Assessments for these areas should augment household projections with an estimate of visitor demand for housing.

Key sources of information to do this include:

- **Census counts of dwellings and households**. A ratio of these counts for a local area can be compared to the national ratio to establish the significance of holiday homes and migrant worker accommodation. On Census night 2013, there were 1.13 dwellings for every household in New Zealand; in Queenstown-Lakes District there were 1.47 dwellings for every household.
- A related indicator is **the proportion of dwellings unoccupied on Census night**, recognising that some are temporarily unoccupied because the residents are away. Nationally, around 11% of dwellings were unoccupied at Census 2013, but in the Queenstown-Lakes District almost 28% of housing was unoccupied. The data can be disaggregated into 'residents away' and 'empty dwelling' categories.[11]
- The classification of home buyers may provide insight into the extent to which second homes are being purchased by people from other districts. This commercially-available analysis (eg, by suppliers such as CoreLogic NZ or Valocity) draws on sales data and LINZ title information to identify if a home buyer owns other properties and where the majority of their properties are located.[12]
- The Ministry of Business, Innovation and Employment provides a range of tourism-related data on expenditure and guest nights, which can be used to develop projections of potential visitor demand for housing:
  - The online interactive New Zealand Tourism Dashboard brings together a range of tourism datasets produced by The Ministry of Business, Innovation and Employment and Statistics NZ. This includes visitor nights, tourism spend and tourism product for regions and regional tourism organisation areas (eg, Queenstown).[13]
  - The Commercial Accommodation Monitor offers monthly data for regions and regional tourism organisation areas on capacity, occupancy rates and guest nights.[14] Its focus is on hotels, motels, backpackers and holiday parks. However, it could provide an indicator of peak season and overall growth in visitor demand for private housing.
  - The Ministry of Business, Innovation and Employment is also working with an online matching platform to determine if administrative data can be used to estimate the demand for accommodation in private housing, including holiday homes.
- Qrious is a company that provides insights into tourism activity, such as visitor movements and guest nights, by combining mobile device location data (a feed of anonymised network usage data from Spark network) with other datasets. It produces commercially-available products, already used by some Regional Tourism Organisations.

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[11] http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-housing.aspx

[12] An example of this analysis is available at http://www.corelogic.co.nz/news-research/item/how-wide-spread-is-the-auckland-money-influence/. See also https://valocity.co.nz/solutions/#who-is-valocity

[13] https://mbienz.shinyapps.io/tourism_dashboard_prod/

[14] http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/commercial-accommodation-monitor

2.2 Assessing patterns of demand by dwelling types, locations and price

Local authorities are required to go beyond an assessment of total demand for housing. The assessment should also explore the likely range of demands for different types of housing, locations and price points (recognising that people make trade-offs between these).

This information should help local authorities to make planning decisions that:

- enable development that can meet a range of needs and preferences of all groups in the community, and to keep abreast of changes in these preferences over time
- enable development capacity in locations for which there is most demand

Housing and business development capacity assessments would desirably provide information about the demands of different groups in the community that require housing, matched to different housing types, locations and price points

A good assessment would start with an analysis of current and recent past patterns of consumption for housing, (the "revealed preferences" of existing households within the current market). A picture of future demands could be developed by applying projections of households (by type, ethnicity and income) to the analysis of current consumption patterns. This could be augmented with information about unmet demand for particular types of housing, and changing preferences.

The level of detail in this part of the assessment should be commensurate with the diversity of current demands and change evident in the local area.

2.2.1 Assessing current patterns of demand

A first step in undertaking an analysis of current consumption patterns is to analyse how different types of households are distributed across different types of dwellings at different locations. This household-to-dwelling analysis can then be supplemented with data on housing prices to build a picture of current patterns of revealed preference. This would essentially comprise a stocktake of the trade-offs that different groups of consumers make between prices and other attributes, in the current market.

These consumers might make different choices in a market that offered a different stock of housing and prices (addressed in section 2.2.4 Assessing latent demand).

2.2.2 A household-to-dwelling model

Census data can be used to build a model of the current likelihood of different types of households to reside in different types of dwellings in different locations within a local authority area. The Census of Population and Dwellings provides information about housing tenure, household types and housing, and people by age, ethnicity and income groups. These statistics provide useful information about different consumer groups and how patterns of demand change over a life-cycle.

The following steps illustrate an approach to looking at these patterns of demand, while recognising that variations on this approach may be desirable for a local authority. The necessary dataset may need to be specified to Statistics NZ and then created as a bespoke commissioned product.

- **Household types** – households can be disaggregated into sub-groups using a range of variables that are captured in Census data, including family type, age group, income band, ethnic group and tenure. One approach is to focus on the household life cycle, using data on family type and age. This could result, for example, in a focus on sub-groups of 'younger singles and couples', 'families with children' and 'older singles and couples' (such as empty nesters and retirees). These sub-groups could be further disaggregated by other variables, for example, differentiating by low and high income bands is likely to be useful. Each local authority is best placed to determine their sub-groups of interest and level of detail, taking into account their local issues.
- **Dwelling types** – these household sub-groups can be analysed to provide an understanding of their current propensity to reside in a given type of dwelling. A simple dwelling typology could comprise separate houses, joined units or town houses and apartments. Adding this data shows the revealed preferences of these household sub-groups for different types of dwellings, under current market conditions.
- **Dwelling locations** – the data can be disaggregated into detailed geographic units such as area units. To ensure the analysis remains manageable, it may make sense to aggregate area units into a more general classification of locations, for example, central business district, inner city suburbs, peripheral suburbs and areas with high amenity (such as beachside property). These general categories may be more useful than individual suburbs, given that households are mobile within urban areas and will accept trade-offs between similar types of suburbs. This will show the revealed preferences of these household sub-groups for different types of housing at different types of locations (such as inner city suburbs or peripheral suburbs), given current market conditions.

2.2.3 Matching with price data

Data on the prices of different types of housing in different locations is not captured in Census data. However, house prices, valuation and lodged rents data isavailable at statistical area unit level, on the Ministry of Business, Innovation and Employment's dashboard of market indicators for the NPS-UDC.

Some straightforward analysis of this price data can be undertaken:

- Prices, rents and values will provide information about the relative attractiveness of (and demand for) different locations and dwelling typologies.
- This price information can also be compared with the profile of households by income. This can provide insights into the attributes of the existing dwelling stock that is potentially affordable for low-income households.

This price data may also be matched to the household-to-dwelling model. Linking price data to individual households in Census data is not possible, for confidentiality reasons, but average prices could be applied at statistical area unit level or broader. Taken together, the addition of dwelling price data to a household-to-dwelling model is likely to provide a flexible tool for undertaking analysis of patterns of demand.

A next level of sophistication would be to develop a hedonic pricing model. Hedonic pricing identifies and quantifies the factors affecting price, including both the attributes of the housing product, and external factors (such as the broader physical environment). This can be used to assess the impact of changes in these factors on price. Auckland Council is developing such a model to assess demand.

2.2.4 Assessing latent demand for different types of housing

A focus on current patterns of demand may be a weaker predictor of future demand if there are imbalances in the housing market that mean revealed household preferences are not well aligned with actual preferences of a material number of households.

There are several ways that local authorities can, and already do, obtain information to assess unmet demand, including:

- monitoring indicators of housing affordability, home ownership, crowding or bedroom under-utilisation, and houses purchased by movers from another district (see Part 5: Monitoring Market Indicators)
- informal discussions with groups of informed stakeholders, such as developers, valuers, and real estate agents, Housing New Zealand Corporation, Ministry of Social Development, community housing providers, iwi, Grey Power, etc.
- structured surveys of households. A good example of this is presented in *The Housing that we'd choose: A study of housing preferences, choices and trade-offs in Auckland*. The survey collected the views of more than 1,400 Aucklanders about housing that they would choose to rent or buy if it were available within their current income constraints. They were asked to choose between type, size and location. This information drew conclusions about the extent of mismatch between housing stock and choice. (Note that a complete picture of this mismatch would need to test what would be required for developers to supply different housing choices).

An assessment of the evidence obtained via these methods can help local authorities to determine whether the analysis of current patterns of demand needs to be adjusted to account for latent demand.

2.2.5 Assessing future patterns of demand

The analysis of preferences of different household types or population groups for different dwelling types, locations and price points can be mapped to Statistics NZ's household type or demographic projections. These projections could be disaggregated into broad locations (ie, CBD, suburbs or more peripheral areas).

This would assess the impact of demographic change on future patterns of consumption. It could be augmented with information about latent demand discussed above.

Local authorities may also wish to consider the possibility that the preferences of particular households or population groups may change with prices or as cities grow and change. Research on the evolution of housing preferences in larger cities in New Zealand or Australia may shed some light on how demand might change in other growing urban areas.

Projections of future patterns of demand would usefully be directional rather than precise.

2.3 Reporting the results

The assessment of demand for housing is expected to produce:

- a projected number of dwellings required in the short, medium and long term for the study area and constituent local authorities
- estimates either side of this projection, with discussion of the key drivers of these estimates

- a quantitative documentation of the current consumption patterns of different household and/or population groups with respect to dwelling type, location and price
- information and analysis about potential unmet demands in the current housing market
- information and analysis about potential future broad demand patterns of different household and/or population groups with respect to dwelling type, location and price
- a description of the methods and data used to derive these assessments and the limits of these.

3 Assessing capacity for housing

This part of the guide recommends methods for assessing capacity for housing as required by Policy PB3, in particular:

- the feasibility of development capacity for housing
- the likely take-up of that development capacity
- the sufficiency of that development capacity relative to projected demand.

This part of the guide can be used alongside the development feasibility model that Government has made available to help local authorities to assess feasibility of development capacity.

The guide does not discuss methods for assessing the amount of development capacity enabled by planning regulations and infrastructure. It is assumed that local authorities are already undertaking these prerequisite steps. However, the guide does discuss the relationships between planned-enabled development capacity, infrastructure, feasibility and take-up.

3.1 Development capacity

The NPS-UDC defines "development capacity" as follows:

> Development capacity in relation to housing and business land, the capacity of land intended for urban development based on:
>
> a) The zoning, objectives, policies, rules and overlays that apply to the land, in the relevant proposed and operative regional policy statements, regional plans and district plans; and
>
> b) The provision of adequate development infrastructure to support the development of the land.

The NPS-UDC defines "Development infrastructure" as follows:

> Development infrastructure means network infrastructure for water supply, wastewater, stormwater and land transport as defined in the Land Transport Management Act 2003, to the extent that it is controlled by local authorities.

The NPS-UDC defines "Feasible" as follows:

> Feasible means that development is commercially viable, taking into account the current likely costs, revenue and yield of developing; and feasibility has a corresponding meaning.

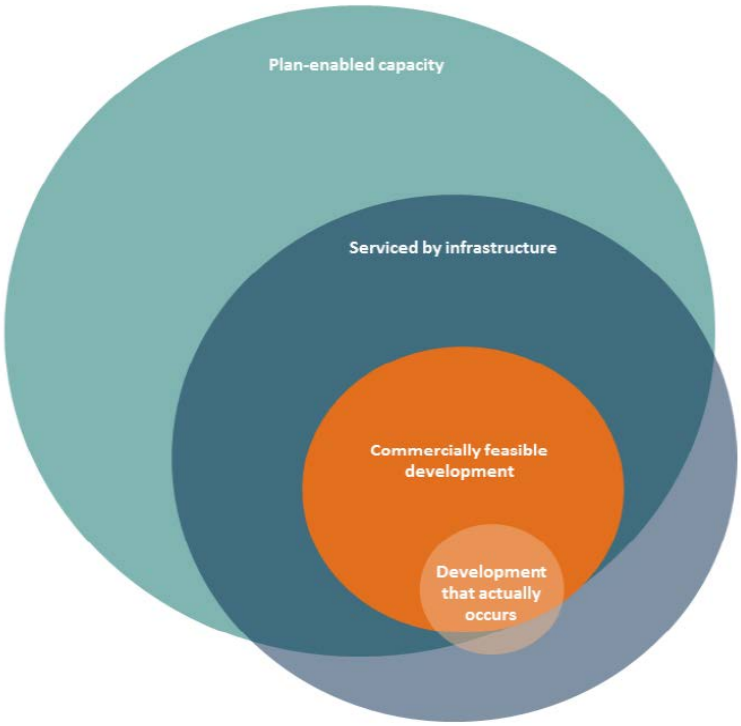
The intent of this definition is that local authorities assess whether development capacity is feasible *to a developer*. The definition refers to the costs and revenue that would be faced by a developer to develop capacity that is enabled by a plan and supported by public infrastructure. These costs may include physical feasibility, where the cost to the developer of overcoming physical constraints on a site can be identified. They also include the costs of making development contributions to infrastructure funding.

However, "feasible" does not include the cost to the local authority of providing infrastructure. Local authorities will need to separately assess this to inform their long term plans.

"Take-up" is referred to but not defined in the NPS. The term "take-up" is intended to mean the number of dwellings actually developed over a period of time, relative to the amount of capacity enabled by the plan. Take-up is discussed later in this guide.

The relationships between these concepts are shown in figure 5 below. Note the diagram is not to scale and is used only to illustrate how these concepts relate.

Figure 5: Dimensions of development capacity



- "Plan-enabled development capacity" is development that Resource Management plans enable, including that which may not yet be serviced by infrastructure. In order for this to be considered "development capacity", as defined by the NPS-UDC, funding for infrastructure to support it should be identified in a council's long-term plan, or it should be included in the council's infrastructure strategy.
- In some parts of an urban area infrastructure may have spare capacity that could support more development than the plan allows (ie, greater densities).
- It is unlikely that all plan-enabled development capacity would be assessed as feasible to a developer, for example, some capacity might be in locations where prices do not support re-development to the extent allowed. Thus the "commercially feasible" circle is a subset of, and is smaller than, the "plan-enabled" one.

- Development that actually occurs is likely to be less than what is assessed to be commercially feasible (ie, take-up of feasible development capacity is expected to be less than 100%). This is despite the possibility that some actual development may fall outside areas enabled by the District Plan (ie, resulting from a private plan change or non-complying or discretionary consent).

3.2 Assessing the feasibility of development capacity

The NPS-UDC policy PA1 requires local authorities to provide in their plans and infrastructure, sufficient *feasible* development capacity. Policy PB3 c) requires assessments to estimate how much development capacity is feasible.

Estimating feasibility will help local authorities to be realistic about how much and where development capacity needs to be provided in plans, in order to meet projected demand. Feasibility assessments were critical to the Auckland Council and Independent Hearings Panel in determining the amount of development capacity that should be provided in the Auckland Unitary Plan. Feasibility assessments have also been important to Tauranga City Council in prioritising infrastructure investment for greenfield development areas. This guide aims to draw lessons from such examples that can be applied by other high or medium growth local authorities.

Feasibility assessments for the NPS-UDC would desirably imitate the feasibility calculations a typical developer might undertake when choosing whether to proceed with a development, but at a city-wide level.

A development feasibility model has been made available on the Ministry of Business, Innovation and Employment's website to help local authorities do this. It is an open source spreadsheet model that users can customise, by adding rows and columns or adjusting the data inputs and assumptions.

3.2.1 Feasibility calculations

There are two ways of calculating feasibility that reflect the way in which developers typically consider the feasibility of a development proposal (summarised in Table 2).

The first is a **gross profit analysis**, which focuses on the rate of financial return to the developer. This is calculated as gross profit, which is the expected revenue from sales less the total cost of the development, inclusive of land, as a proportion of the total cost to undertake the development. The development project is assessed to be feasible where this rate of return on total costs meets or exceeds a target return (ie, a 20% return, however, in practice this rate of return may vary according to the perceived risks of the project).

The second is **residual value analysis**, which compares the expected revenue from sales (or estimated market value upon completion), less all the development costs of a project (inclusive of a profit margin, but not including the cost of the land). If the estimated residual value exceeds the cost of the land then the project is assessed to be feasible.[15]

[15] Thompson and Trigg, p.14.

Table 2: Methods of feasibility assessment

Gross profit analysis	Residual value analysis
Gross profit (GP) equals: • the expected revenue (R) from sales • less the total cost (TC), inclusive of land, ie, gross profit • as a proportion of the total cost (TC). A development project is feasible where gross profit (GP) meets or exceeds a target return (GP t).	**Residual value** (RV) equals: • the expected revenue (R) from sales • less development costs (DC), inclusive of a profit margin (Rt) but not land costs (L). A development project is feasible where the residual land value (RV) meets or exceeds the cost of the land (L).
GP = (R – TC) /TC Is feasible where GP ≥ GP t	**RV = R – DC** Is feasible where RV **≥ L**

Either of these methods could be used but it is important that they are driven by likely revenue rather than a "cost-plus" approach. The model available on The Ministry of Business Innovation and Employment's website uses the residual value analysis method.

3.2.2 Inputs to the calculations

These two methods of feasibility assessment are based on similar 'building blocks' which comprise estimated costs, revenue from sales (or market value on completion) and target financial returns to the developer. Table 3 summarises some of the common elements:

Table 3: Elements in a feasibility calculation

Category	Sub-category	Description
Cost	Site acquisition cost	Cost of purchasing the land
	Civil works	Site preparation, including earthworks, landscaping
	Construction costs	Materials and labour for building the housing(s)
	Infrastructure connection fees	Water, sewerage, stormwater, electricity, and gas connection fees
	Development fees	Development contributions and resource consent fees
	Finance costs	Interest costs on debt
	Professional fees	Design, legal, project management, sales and marketing
Revenue		Expected revenue from sales, or the estimated market value upon completion (if not sold) – net of GST. *Note, expected revenue is based on a market assessment of achievable prices, as opposed to being derived from the costs of any particular development.*
Net financial return		Financial return to the developer

The costs to developers for infrastructure are included in the feasibility assessments, but not the wider costs to the local authority of providing this infrastructure. It is expected that those costs will be considered in the local authority budgeting processes.

The model on the Ministry of Business, Innovation and Employment's website uses as a starting point, real estate agency sales price data for new dwellings, and Quantity Surveyor cost data. Users can adjust these data inputs to reflect up-to-date local realities. The New Zealand Property Council has offered to assist local authorities with this.

3.2.3 Modelling approaches to assess feasibility

A few local authorities have already developed modelling approaches to assess feasibility within their jurisdictions. Alongside this guide, the Ministry of Business, Innovation and Employment and The Ministry for the Environment have also developed a model for other local authorities to use, or to inform the development of their own more sophisticated model (See Section 3.2.6 below).

These models can be categorised in terms of:

a) The extent to which they are based on **representative sites** versus **every individual parcel**. The representative sites approach undertakes analysis for a single site (or several different sites) that can represent other sites. It is often used for greenfield areas (where there is little variation in site characteristics and no existing built environment). The other model of *every individual parcel* examines all land parcels in an area. This is often used for existing urban areas (where there are large variations in site characteristics and development typologies and an existing built environment to work with – ie, brownfields).

b) The extent to which the model is **integrated** with other assessment methods (such as a GIS model that examines plan-enabled capacity), versus a **stand-alone** model that only assesses feasibility and sits alongside other assessments which provide information on the site capacity.

Table 4 illustrates these different modelling approaches and provides some examples of existing local authority models.

Table 4: Feasibility modelling approaches

Relationship to plan-enabled & other GIS model	Focus of model	
	Representative sites	Every individual parcel
Stand-alone model (manual)	Tauranga City Council development feasibility model MBIE development feasibility model	
Integrated model (automated)		Auckland Council ACDC Model Wellington City Council Development Capacity Model

3.2.4 Modelling representative sites versus every individual parcel

Table 5 describes the main differences between modelling representative sites and every individual parcel, and their advantages and disadvantages.

Table 5: Representative sites versus every individual parcel

Representative sites approach	Every individual parcel approach
• Quick and easy approach that is well suited to a simpler area of relatively homogenous land parcels, or only a few bundles of parcels and zones that are distinct. • Proposed development typically does not involve a complex or varied buildings or other built environment constraints.	• Significantly more detailed approach suited to a complex area with diverse land parcels that vary in terms of physical characteristics (eg, size, shape) and planning rules. • Land parcels may be interspersed through existing development, ie, brownfield site.

Representative sites approach	Every individual parcel approach
• Similar land parcels can be grouped and treated with similar cost assumptions, even when they are not contiguous. • **Advantage:** can allow for assumptions about costs/sale price/yield to be generalised across a bundle of land parcels, being an efficient way to determine feasibility of development for the land parcels in this area as a whole. • **Disadvantage:** may not adequately take account of relevant differences within the area, thereby raising the risk of missing parcel-specific issues that may impact on feasibility.	• Significant redevelopment possibilities, increasing the cost of development and potentially adding complexity to feasibility assessment. • Similar land parcels can be grouped and treated with similar cost assumptions, even when they are not contiguous. • **Advantage**: allows for parcel-specific differences in costs, sale prices and planning rules to be identified and assessed (thereby supporting accuracy). • **Disadvantage**: can be resource intensive and time consuming to obtain, input and analyse data. Automation with GIS data resolves this.

3.2.5 Integrated versus stand-alone models

Integrated models are very powerful because they are able to run and re-run scenarios to test the results of many different planning policies for complex areas. Such models require the modelling of both feasibility and plan-enabled capacity to use the same geographic unit of analysis. If plan-enabled capacity is assessed using a GIS model of all individual parcels, integrating a feasibility assessment would require the input of average price and cost data for these parcels.

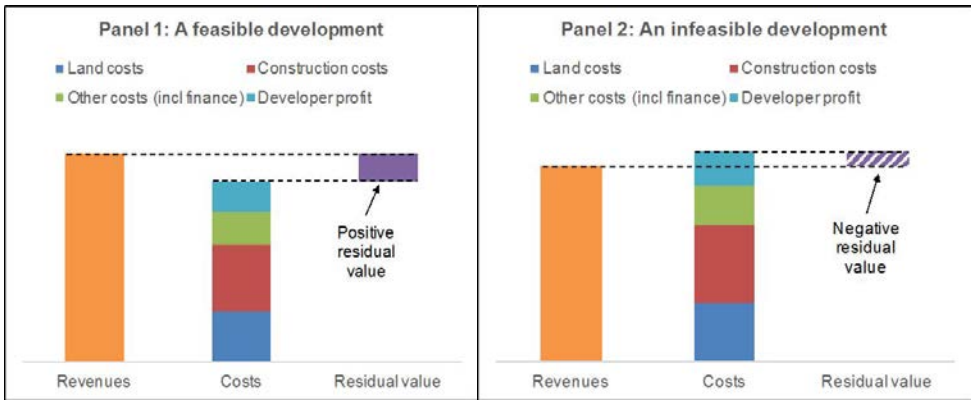
Stand-alone models can be developed at a simpler and more aggregated level than is used to undertake plan-enabled assessments. Both assessments can inform each other but the process is manual and therefore more limited.

3.2.6 Model on the Ministry of Business, Innovation and Employment's website

To assist local authorities to meet the requirements of the NPS-UDC, a stand-alone Excel spreadsheet model has been developed to estimate the feasibility of plan-enabled development capacity. This can be found on the Ministry of Business, Innovation and Employment's website. The model can be used on a standalone basis to understand the development feasibility of representative sites in specific greenfield or brownfield areas. The user is assumed to have some prior knowledge of the prevailing planning controls and market conditions.

The model uses the **residual value** method to calculate feasibility. Figure 6 shows how the development feasibility calculation works. In Panel 1, development revenues exceed development costs, resulting in a positive 'residual value'. In Panel 2, development revenues are lower than costs, resulting in a negative 'residual value'. The development in Panel 1 would be considered feasible, as it covers costs and provides an adequate return to the developer. In contrast, the development in Panel 2 is considered infeasible and is unlikely to be progressed by a private-sector developer.

Figure 6: Development Feasibility (residual value calculation)



The model includes parameters for site-specific issues that may affect the cost or complexity of development for a range of housing typologies. However, it does not provide parameters for a detailed model of the effects of planning constraints on development capacity, as these tend to be specific to a local authority and therefore need to be defined by the local authority using the model. This is an important consideration for redevelopment and infill in existing urban areas.

The model includes two modules, depending on the focus of the assessment to be undertaken:

1) **A land development feasibility module** that analyses the feasibility of developing new residential sections from previously undeveloped or vacated land, which could be either in a greenfield area or a major brownfield redevelopment area.
2) **A building development feasibility module** that analyses the feasibility of developing distinct types of buildings on an existing residential section. This could be applied to either a vacant section or a section with existing buildings or other constraints.

The land development module allows users to choose between different densities of development, and the building development module allows users to assess up to six different housing typologies (note, these may not be not relevant for all areas):

1) Stand-alone house
2) Duplex
3) Townhouse
4) Apartment (2–3 storeys)
5) Apartment (4–7 storeys)
6) Apartment (8–12 storeys)

The model can be used to compare the feasibility of developing different sub-territorial authority locations. The level of geographic detail is only limited by the reliability of the data inputs required.

The model uses as a starting point, real estate agency sales price data for new dwellings, and Quantity Surveyor cost data. Users can adjust these data inputs to reflect up-to-date local realities. Property development expertise should be sought to provide more precise advice on these and other costs, and also on the return that is required for development of different types. Costs, prices and rates of return demanded by finance institutions vary and fluctuate, and can significantly affect the feasibility calculation.

The New Zealand Property Council has offered to assist local authorities with this.

3.2.7 Choosing a modelling approach

Local authorities are advised to use the modelling approach that best suits the nature and complexity of development capacity in the assessment study area.

For example, if a significant amount of growth could occur in redevelopment situations, then it might be appropriate to model every individual parcel. If the vast majority of growth in the study area is likely to occur in greenfield situations, then a model of representative sites should suffice.

Local authorities may wish to start with a stand-alone, representative sites feasibility model for the first housing and business development capacity assessments, while investing in the development of a more sophisticated integrated model of individual parcels. Local authorities are encouraged to build on modelling capabilities that have already developed locally.

3.2.8 Seeking and using the input of the local property community

Whatever approach is decided on, local authorities are advised to engage with development expertise in their area, in order to ensure that the modelling reflects a realistic understanding of costs and revenues in the development process. This includes providers of social housing and residential care facilities. The providers could make a significant contribution to development capacity.

3.2.9 Reporting feasibility assessments

The feasibility assessments should produce:

- an **estimate of the number of dwellings that would be feasible in current market conditions**, for the assessment study area and the composite territorial areas, over the short, medium and long term
- estimates of **how much development capacity would be feasible by dwelling type and location**
- **an analysis of how sensitive these estimates are to changes in particular drivers**. These may be market drivers (ie, build costs, sales prices, etc.), or changes to planning rules. The assessment might outline the range of feasible development capacity that is possible depending on changes to these drivers.

Using feasibility assessments

The NPS-UDC requires local authorities to both undertake feasibility assessments, and also ensure that their plans provide sufficient, *feasible* development capacity. Feasibility modelling can inform this by evaluating the impact of planning rules, such as changes in density requirements, height restrictions, car parking or on-site amenity requirements.

Feasibility modelling can also evaluate the need for, and the feasibility of, opening up different greenfield development areas, therefore informing infrastructure expenditure decisions.

Local authorities are encouraged to build internal capacity to interpret and use the results of these assessments, and integrate feasibility modelling into their ongoing planning functions.

3.3 Assessing the take-up of development capacity

3.3.1 The concept of take-up

The expected take-up of feasible development capacity is what determines actual development over a particular time period. Actual development is what really matters. The minimum amount of development capacity provided for 10-year periods in District Plans is progressively taken up, at a rate which may change over time depending on the property cycle.

However, take-up for that 10-year period will typically be only a proportion of both plan-enabled and feasible development capacity. There are three broad reasons for this.

1) **A proportion of feasible capacity will not be developed at all** – owners of land with feasible development capacity may not bring this land to market or develop it themselves. Owner-occupiers (including iwi, farmers, households with backyards, or businesses) often have an attachment to the current use of the land even though it is zoned for residential development. Owners may also wish to hold land in expectation of future capital growth.
2) **Some feasible capacity will be developed but at a lower intensity** – land may be developed for residential purposes but not at the intensity expected in the feasibility assessment. This may be because of the scale and capabilities of development companies, access to finance, or the uncertainties and risks involved in going through consenting processes. This shortfall is development capacity that is lost for the life of the development (likely to be greater than 50 years).
3) **Some feasible capacity is exceeded** – some development occurs as a result of private plan changes or as the result of resource consents that produce more development than was envisaged in a plan and reflected in feasible assessments.

Generally, however, undeveloped and under-utilised capacity usually outweighs the proportion of capacity that is exceeded.

3.3.2 Methods for estimating take-up

The NPS-UDC requires local authorities to investigate take-up of past development capacity and monitor it in the future. They should compare actual housing numbers (or proxies) with historic assessments of plan-enabled development capacity,[16] and future assessments of feasible development capacity. Key sources of information include:

- vacant site registers and site surveys
- building consents (which provide a leading indicator), code compliance certificates (a lagging indicator), and residential rates data (an additional source)
- the Census count of dwellings by Statistics NZ which provides an additional periodic estimate of the number of houses
- the information associated with private plan changes or resource consents
- land ownership concentration indicators that suggest potential for major land owners to significantly affect the land brought to market (see part six).

[16] Estimating past take-up will require meaningful assessments of plan-enabled capacity to have been undertaken in the past. This might not always be the case. For example, an estimation of past take-up in Christchurch would not be useful, given the disruption caused by the Christchurch earthquakes.

Quantitative approaches could be supplemented with discussions with informed stakeholders in the development community about their views of take-up behaviour. This may provide insights into patterns of take-up behaviour, what is driving this, and what may be likely to occur in the medium term.

Information may not be available to accurately assess past take-up. Local authorities are encouraged to put the most effort into setting up future systems for monitoring take-up, and sharing information with each other. Over time the assessment of take-up should inform the margins required in policies PC1 and PC2 (outlined below). The margins allow local authorities to factor in the proportion of feasible development capacity that may not actually be developed.

PC1: …local authorities shall also provide an additional margin of feasible development capacity over and above projected demand of at least:

- 20% in the short and medium term
- 15% in the long term, or

PC2: If evidence from the assessment under PB1… indicates a higher margin is more appropriate, this higher margin should be used.

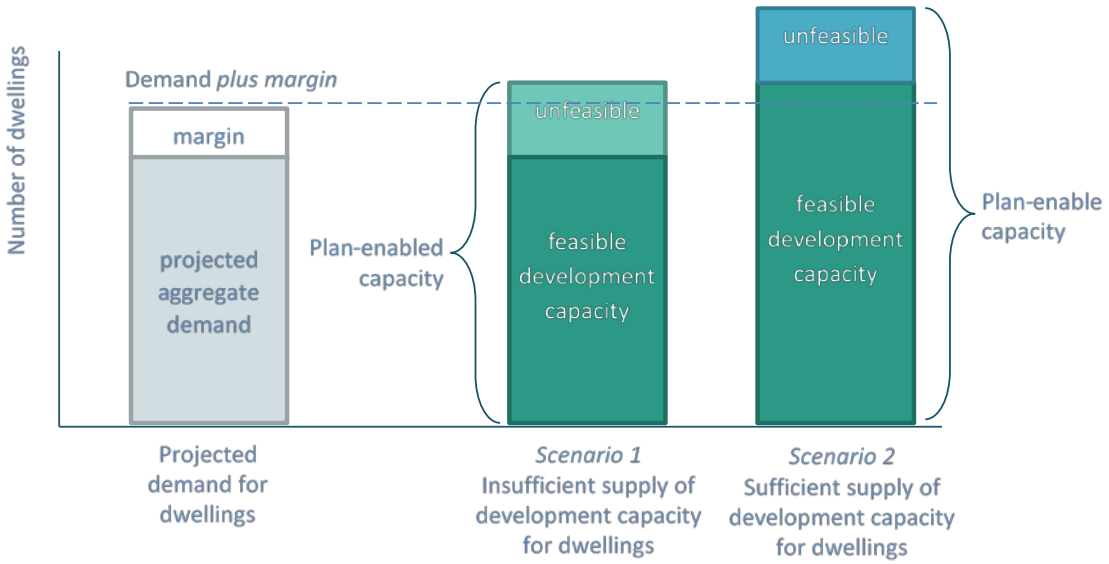
4 Sufficiency

The primary objective of the assessments of demand and capacity for housing is to test the sufficiency of the supply feasible development capacity. Figure 6 illustrates how the assessments of demand, feasibility and take-up should be brought together to assess sufficiency.

The assessment of aggregate demand for housing will project the number of additional dwellings required within an area over a period of time (factoring in demand from residents and visitors). This aggregate demand, plus a margin to account for take-up, can be compared with the estimated feasible and plan-enabled development capacity. Figure 7 shows:

- Scenario 1 where development capacity is not sufficient, because not enough is considered feasible to meet demand plus a margin to account for take-up
- Scenario 2, in which considerably more development capacity is provided, and enough of it is assessed as feasible to meet demand plus a margin to account for take-up.

Figure 7: Inclusion of additional margin in sufficiency assessment



The price efficiency indicators discussed in part six provide a cross-check to this assessment. High price-cost ratios, rural-urban differentials or concentrated land ownership might suggest that development capacity is currently insufficient.

It is expected that the test for sufficiency will be reported with:

- a quantitative estimate (number of dwellings) of the surplus or shortfall, for the assessment study area and constituent territorial areas, in the short, medium and long term
- a discussion about the sufficiency of development capacity to enable development of choices that meet demands by dwelling type, location and price, including comment about potential unmet demand in the current housing market
- a sensitivity analysis, identifying the impact of possible shifts in the key drivers of demand and capacity
- a discussion about what price efficiency indicators suggest about sufficiency.

Part three: Business demand and development capacity

This part of the guide recommends methods for assessing the demand and capacity for business land and floor area to meet the requirements of NPS-UDC policies PB1 – PB5.

1 Overview

1.1 Relevant policies

Policies PB1 – PB5 require the assessment of demand and capacity for business space (as outlined below):

PB1: Local authorities shall, on at least a three-yearly basis, carry out a housing and business development capacity assessment that:

b) Estimates the demand for different types and locations of business land and floor area for businesses, and the supply of development capacity to meet demand, in the short, medium and long term.

PB2: The assessment… shall use information about demand including:

b) Future changes in the business activities of the local economy and the impacts that this might have on demand for… business land.

PB3: The assessment…shall estimate the sufficiency of development capacity provided by the relevant [regulatory and infrastructure plans] including

a) the cumulative effect of regulations

b) availability of development infrastructure

c) current feasibility of development

d) rate of take-up observed over the last 10 years and estimated for future

PB4: The assessment… shall estimate additional development capacity needed if any of the factors in PB3 indicate that the supply of development capacity is not likely to meet demand…

PB5: …local authorities shall seek and use the input of…the property development sector…

1.2 Definitions

The NPS-UDC defines "business land" as follows:

Business land means land that is zoned for business uses in urban environments, including but not limited to land in the following examples of zones:

- Industrial
- Commercial
- Retail
- Business and business parks
- Centres (to the extent that this zone allows business uses)
- Mixed use (to the extent that this zone allows business uses).

Local authorities each have their own set of District Plan zones that allow business uses. This guide is focused on assessing demand for space and capacity in these.

In general, most business uses in these zones can be grouped according to their property requirements into three high level categories:

- *Office:* Finance, business and professional services and public administration often locate in above ground floor space in offices, particularly in centres
- *Retail*: Shops and consumer services, which usually occupy ground floor space in centres or single level buildings with car parking close to residential areas
- *Industrial*: Utilities, manufacturing, wholesale, logistics and distribution, trade suppliers etc., which use relative large platform land with often single level buildings. Industrial zones may be split into "heavy" or "light" industry zones according to their emissions, and tend to exclude significant office or retail activity and residential development.

Further guidance is provided in Section 2.1 on how to establish these high level groupings.

Significant community services employers such as *tertiary education institutes* and *hospitals* are considered business uses for the purposes of this guide (even though they may have their own "special purpose" zones).

Some business uses also can and do locate in residential zones and in some urban areas these are significant and increasing. Part Four of this guide provides further suggestions for how to assess demands and capacity for such uses.

1.3 Intent

The NPS-UDC aims to address issues identified in a report commissioned by the Ministry for the Environment and Ministry of Business, Innovaton and Employment: *Business land: problems and causes. Research to support a proposed NPS on urban planning* (2016). This report found that local authorities were often making planning decisions based on incomplete information about local business demands for property, and that this presents risks.

The NPS-UDC requires local authorities to undertake comprehensive assessments of demand and capacity of business space at least every three years, and quarterly monitoring of market indicators. This should help inform decisions that:

- provide sufficient capacity and choices for all business uses, and an efficient allocation of capacity between them
- support thriving town centres, efficient transport, and management of the negative effects of business activities and reverse sensitivity
- enable constant spatial change to support growth and change.

These outcomes would contribute to effective and efficient urban environments that enable people and communities and future generations to provide for their social, economic, cultural and environmental well-being.

1.4 Recommended quality and detail

To meet the NPS-UDC requirements, most local authorities will need to demonstrably improve their evidence base on the demand and capacity for business development. A good first housing and business development capacity assessment would:

- contain a level of detail appropriate to the size, complexity and growth of the local area
- provide a narrative on the local economy, highlighting its current broad sectorial composition, employment densities and spatial characteristics. Emerging trends and the sectors that are expected to drive future land/space demands would also be outlined
- cover office, retail and industrial business space, but provide more focused analysis of dominant sectors or those that present particular issues. Industrial activities may require particular focus, as these tend to use significant amounts of land, may be incompatible with other uses, and have very specific space requirements. Even where industrial activities are not forecast to grow, there may be a need to find suitable alternative industrial locations to release brownfields space for higher value uses. Retail activities may also require particular focus given they actively compete for space against other land uses. It is assumed that office activities are much easier to provide for
- contain projections of demand and capacity for the medium and long term, and articulate the key drivers that might change these projections
- analyse the requirements of different business uses for different locations, property types, sizes and tenure and use this information to assess the feasibility of available capacity
- compare the projections of demand with capacity to assess sufficiency
- check this against the industrial zone differentials (see part six), and information about prices, leases and vacancy rates if this is available.

Methods to assess demand and capacity for business would desirably include both:

- desk-top estimates of demand and capacity
- processes to ground truth the results. These might include observing actual activities in business zones, and surveying stakeholders.

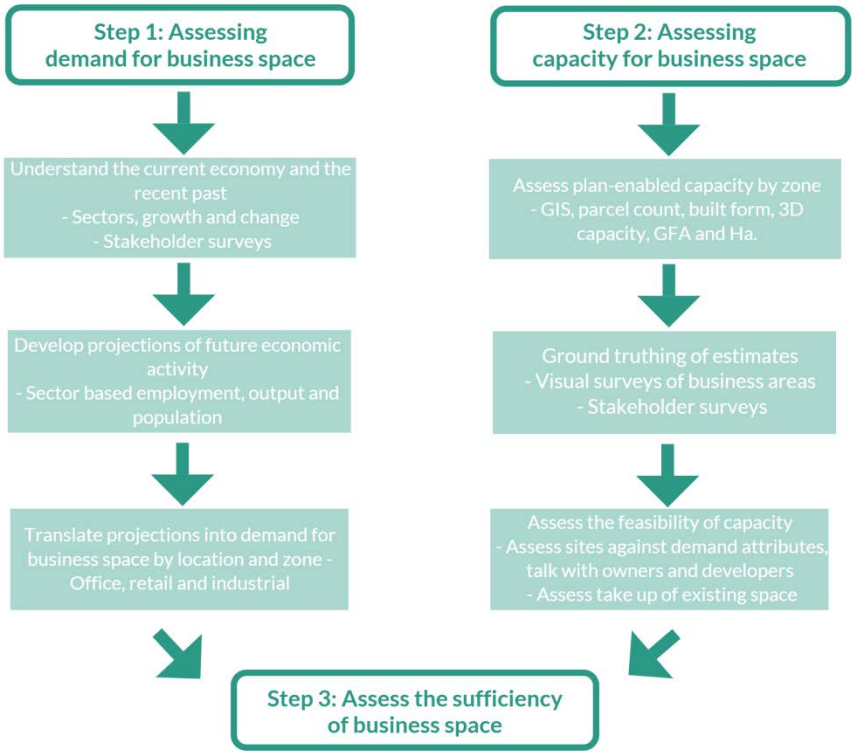
The assessment should be undertaken collaboratively by neighbouring local authorities and use information from local business land owners, developers and users.

This guide presents methods of differing degrees of sophistication to suit the context of different local authorities.

1.5 Overview of assessment methodology

This part of the guide explains three main stages or components of analysis for both demand and capacity, presented in the following figure.

Figure 8: Business assessment methodology overview flow chart



For Step 1, at a minimum, local authorities need to:

- present their understanding of their local economy (perhaps by talking to their local economic development agency)
- use publicly available projections of regional sectoral employment and territorial authority population and households
- construct simple long term projections, and scenarios around these
- apply standard ratios to convert projections into business space requirements (examples derived from national research are included in section 2.4.1)

Local authorities will gain significant insights about their own local economies and how they are evolving by undertaking some analysis of current and past trends. This should inform planning policies more generally. The underlying data required to do this is also necessary to translate projections into demand for space in different locations and zones within territorial boundaries.

For Step 2, at a minimum, local authorities need to:

- compare demand estimates with information in their rating property database about the amount of vacant zoned business land available
- seek comment from local property experts
- rank the feasibility of different parcels of industrial land, by comparing their attributes against a checklist of key business property requirements.

Step 3 involves:

- considering what industrial zone differentials (available on the dashboard on the Ministry of Business, Innovation and Employment's website) suggest about the current sufficiency of different types of business land (see part six)

- a comparison of the demand and capacity estimates for the next three, ten and 30 years.

More complex local areas (and other areas in time), local authorities would desirably take these steps further to also:

- explore Statistics New Zealand's Business Demography data, estimates of territorial authority gross domestic product, and demographic data, to understand trends
- calculate their own projections for sectoral employment and GDP growth
- match Business Demography data with their rating property data base to calculate local activity/space ratios for each sector, and document their spatial distribution and allocation to zones
- explore capacity on under-utilised land, and the potential for redevelopment and rezoning undertake more comprehensive ground truthing
- check the quantitative assessment of sufficiency against data on prices, leases, vacancy and absorption rates, and yields, if this is available. Property research companies hold this information and publish some of it.[17] Local authorities are encouraged to obtain this information to inform their assessments and to meet the requirements under Policy PB6 to monitor market indicators.

[17] For example, Colliers and Bayleys both publish online business property research and data.

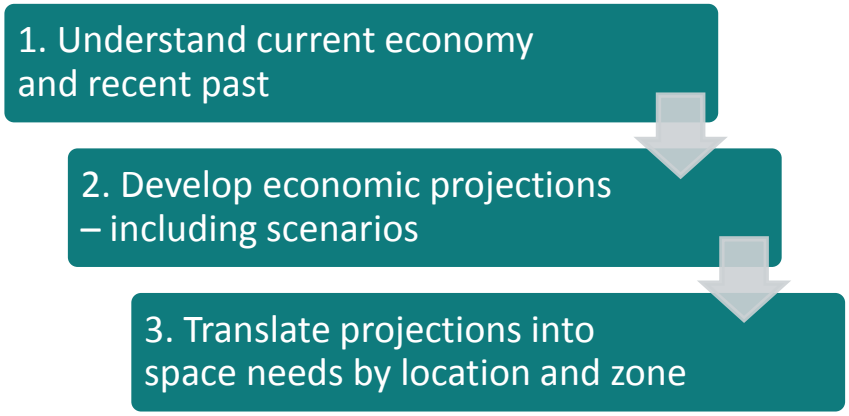
2 Assessing demand for business space

The NPS-UDC defines "demand" for business space (land and floor area) as follows:

> *Demand* means:
>
> In relation to business land, the demand for floor area and lot size in an urban environment in the short, medium and long-term, including:
>
> a) the quantum of floor area to meet forecast growth of different business activities;
>
> b) the demands of both land extensive and intensive activities; and
>
> c) the demands of different types of business activities for different locations within the urban environment.

2.1 Overview of demand assessment

The key steps to assess demand for business space are as follows:



Before starting the process of calculating demand for business space, it is important to understand the local economy. Local authorities could tap into the knowledge of their local economic development agency and external stakeholders, and published information such as the regional growth studies and Regional Economic Activity Report available on MBIE's website.

Most reports classify economic activity into sectors (ie, groupings of business activities that produce similar goods and services) using the *Australian New Zealand Standard Industrial Classification* ('ANZSIC 2006').[18]

The ANZSIC has 19 sectors and within these about 500 subsectors. These can be aggregated into high level business groupings for analysing requirements for urban business space. Table 6 provides a highly summarised example of this, and can be used for the purposes of an *equivalence table* to convert ANZSIC sectors into the high level business groupings referred to in this guide.

[18] http://www.stats.govt.nz/browse_for_stats/industry_sectors/anzsic06-industry-classification.aspx

Table 6: ANZSIC economic sectors by business group

Economic Sectors (ANZSIC)	Sectoral Grouping	Business Sectors
Accommodation & food services (*Accommodation*) Information, media & telecommunications Finance and insurance Professional, scientific & technical services Administrative & support services Public administration & safety	Hotels, business services & public administration	**Office**
Retail trade Accommodation & food services (*Food services*) Rental, hiring and real estate Education & training Health care and social assistance Arts & recreation services	Restaurants, & personal & community services	**Retail**
Manufacturing Electricity, gas, water & waste services Construction Wholesale trade Transport, postal & warehousing Information, media & telecommunications (*Telecommunication services*) Rental, hiring and real estate (*Heavy machinery hiring*)	Manufacturing, warehouses & utilities	**Industrial**

Demand assessments need to understand the local economy and produce aggregated projections for business space for at least the three high-level business groupings shown in Table 6.

However, it is very important to understand the activities that dominate these groupings in your location. For example, in Queenstown, construction and car parking associated with the airport currently comprise the key uses of industrial land. Population and visitor growth directly drive these industries. By contrast, in Tauranga port-related warehousing and storage servicing the upper North Island dominate industrial demands. In Christchurch and Hamilton, export-oriented manufacturing activities are relatively more important. Different factors determine the growth of these different activities.

Each economic sector also has very different business space demands, even at an aggregated level as illustrated in Table 7.

Table 7: Characteristics of business space use by different economic sectors

	Office	Retail	Industrial
Location preference	Town centres close to other business services and skilled labour	Centres and residential suburbs close to consumers (usually ground floor only)	Close to motorways, ports, airports and supply chains
Intensity of land use	High density – high rise in CBD, midrise in other centres, low rise business parks	Ranges from medium to low density (large platform retail uses large lots)	Land extensive, large lots, flat land
Site size	Generally small	Small to large	Generally large

	Office	Retail	Industrial
Compatibility with other uses	Compatible	Somewhat compatible. Large format retail can generate significant traffic impacts	Heavy industry incompatible (given emissions, noise, and traffic impacts). Light Industrial and warehousing can co-locate with other business uses
Own-lease preference	Lease	Lease or own	Own
Typical $ paid (per sqm)	Prime CBD rentals can be $215/sqm – $450/sqm	Prime rentals can be $800/sqm – $1,500/sqm	Average land values can be $285/sqm – $450/sqm
Ability to shift	Relatively high	Relatively high	Relatively low (ie, high costs with moving capital intensive operations)
Growth in space requirements	Fastest growing sector but density minimises growth in space requirements	Matches population and visitor growth	Depends – may show declining employment, but increasing output, requiring substantial additional land.

The information outlined in Table 7 above can inform the assessment of feasibility, as discussed in Section 3.4.

2.2 Understanding the current economy and recent past

All local economies have some similar activities, but they also have areas of specialisation. For example, Wellington is New Zealand's public sector capital, Queenstown is an international tourism destination, and Hawkes Bay a producer of food and beverage exports.

New Zealand's urban areas reflect the competitive and comparative advantages of their location within New Zealand, with their region and their links with other cities both nationally and internationally.

Their economies reflect established investment patterns and the structures of their populations and institutions. Many of these characteristics or drivers of growth and change evolve slowly over time, meaning that the existing structures will play an important role in the short to medium term.

Understanding the characteristics and drivers of local economies is a prerequisite for understanding demands for business space.

2.2.1 Data sources

The key metrics of local economic activity include:

a) *For office based activities*: employment (number of jobs) by sector

b) *For retail activities*: population and households (and for some areas, visitor numbers)

c) *For industrial activities*: output (the dollar value of gross domestic product) by sector. Statistics about businesses and their size also provide useful information.

Sources of all of these statistics include:

- The Ministry of Business, Innovation and Employment provides regional and territorial authority economic activity data via an online interactive online web tool (the full data set can also be downloaded)[19]
- Statistics New Zealand Business Demography data on employment, working proprietors and businesses, available from 2000 at detailed ANZSIC sub sector level and by region, territorial authority, area unit and meshblock for a small fee[20]
- Statistics New Zealand's published regional Gross Domestic Product from 2007, by sector[21]
- The Ministry of Business, Innovation and Employment's published territorial authority Gross Domestic Product from 2000, by sector[22]
- Statistics New Zealand's population and household statistics
- The Ministry of Business, Innovation and Employment's online interactive tourism dashboard[23]
- Statistics New Zealand's business register, which includes information about business size (in terms of employee numbers).[24]

Local authorities can obtain the time series and an updated set of Business Demography information for businesses, employment and working proprietors, by meshblock, annually. This is a high quality, comprehensive, timely and detailed source of data that can be matched to other data bases and used in a variety of ways.

It would be simple and cost effective for local authorities to obtain the Business Demography data at the most detailed industry classification and by meshblock, and then aggregate this data to match the business zones in their District Plans. The detail would enable pockets of speciality, and distinct business property trends within sectors to be identified. This may be particularly important for retail and manufacturing activities. For example, the difference between Car Retailing (G391100) and Clothing Retailing (G425100) is significant in terms of their locational characteristics and space needs. If data is sourced at Level 1, (Retail) then these differences would be lost.

Local authorities should also access the regional and territorial authority GDP estimates by sector published by Statistics New Zealand and the Ministry of Business, Innovation and Employment. A comparison of the employment and GDP information will show that there are significant differences in the employment density of different sectors, and also that this relationship varies across territorial authorities and changes over time with technological improvements. Employment growth is a strong indicator of demand for business space for employment-dense services sectors, while GDP is a better indicator for capital-intensive activities such as manufacturing, warehousing and utilities.

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19 http://www.mbie.govt.nz/info-services/business/business-growth-agenda/regions/web-tool

20 http://www.stats.govt.nz/browse_for_stats/businesses/business_characteristics/nz-business-demography-statistics-info-releases.aspx

21 http://www.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/regional-gdp-info-releases.aspx

22 http://www.mbie.govt.nz/info-services/sectors-industries/regions-cities/research/modelled-territorial-authority-gross-domestic-product/interactive-web-tool

23 https://mbienz.shinyapps.io/tourism_dashboard_prod/

24 Business Register, Statistics New Zealand, Tel: 09 920 9300 Fax: 09 920 9126

Employment data provides a reasonable indication of demand for retail space, but the consumption of households and visitors is really what drives this. Local authorities can use the same statistics about population or households and visitors as for their housing demand assessment.

Local authorities could also make a specialised request every three years for Business Register data about the size groupings of businesses (in terms of their employee numbers) by sector in their local area. This will provide information about the potential lot size requirements of businesses within particular sectors. There is not an exact relationship between business size (by sector) and their footprint needs, but it is important for local authorities to note any significant mismatch between business size and parcel size within their jurisdictions. The key is understanding the degree to which the urban economy is dominated by small footprint or large footprint businesses and across the different business types.

2.2.2 Methods of analysis

Having established a base of core information about the economy and its recent past, some simple methods can be used to analyse trends. The use of "location quotient", "shift share" and "labour productivity ratio" assessments allow local authorities to understand more about the competitive and comparative advantages of their urban areas. These techniques are explained below.

Location Quotient analysis

A location quotient (LQ) is a simple measure of the level of concentration of a particular activity in a location compared with its concentration in the national economy.

Mathematically, a location quotient is the concentration of an activity locally divided by the concentration of that activity nationally. It is best measured in terms of employment. For example, looking at Management Advice and related consulting services in Auckland (M696200):

- (15,922 M696200 workers in Auckland / 819,987 total workers in Auckland) / (34,529 M696200 workers nationally / 2,390,430 workers in total nationally),
- Share in Auckland / Share nationally = (0.019)/(0.014) = 1.34 (based on 2016 Business Directory information).

This tells us that Management Advisors are 34% more likely to be located in Auckland than in New Zealand overall. If evenly distributed, the ratio would be 1.00. Significantly higher or lower ratios than 1.00 tell a lot about the comparative advantage of the urban area. A comparison to the national average will highlight the type of activities that are located in urban settings (which is important) and the scale of difference may highlight local specialities.

Shift-Share Analysis

Shift-share analysis explores changes in sectoral growth over time and shows whether particular sectors are growing significantly faster in the local economy than nationally. This is useful for highlighting growing local competitive advantages or specialisations in those sectors. Shift-share analysis can be undertaken using Business Demography employment data or GDP estimates for 2000 to 2016.

Labour productivity ratios

Labour productivity ratios show the dollar value of output (GDP) produced per full time equivalent employee, by different sectors in local areas. These can be calculated using Business

Demography employment data and GDP estimates. They will reveal significant differences in the employment density of different sectors (eg, retail is more labour intensive than manufacturing). The amount of space required to accommodate employees in one sector will also be different to another sector.

Comparing local labour productivity ratios with national labour productivity ratios for the same sector will also highlight differences in the characteristics of these sectors in different places. For example, in many parts of New Zealand, manufacturing comprises primary sector processing (eg milk factories), while in Auckland and Christchurch there is more high-tech manufacturing. The location requirements of these activities vary.

Tracking changes in labour productivity ratios over time may reveal technological improvements in some sectors that are improving their productivity, with potential impact on business space requirements. For example, automation in the warehousing sector is enabling the construction of high density storage facilities.

Past trends will offer insight to where the local economy may be going in the short to medium term.

2.2.3 Economic drivers

While the metrics described in section 2.2 describe local characteristics and recent changes, it is at least as important to understand what is driving trends observed in the data. These drivers will affect projections of future growth and demands for business space.

There are both demand and supply-side drivers, internal to the local economy and external. Some of these are listed in Table 8.

Table 8: Drivers of local economic change and development

	Internal	External
Demand	• Local households as consumers • Other local sectors/businesses as customers	• Central government, businesses and consumers in other regions • Domestic and international visitors • Businesses and consumers in other countries
Supply	• Local natural and physical environment (incl. infrastructure) • Local population as labour force • Other local sectors/businesses as suppliers • Local government regulations and services	• Businesses in other regions or countries as suppliers • Central government policies and services
	• Technology and innovation	

The relative significance of these different drivers varies by sector and local area. For example:

- The retail sector is driven by household demand in most local areas, but in some locations, tourism demand outweighs household demand.
- Accommodation and Hospitality is mostly driven by tourism flows, both domestic and international.

- Business Services are driven by the overall economic performance of the economy. Urban centres provide business services for other regions and are therefore affected by them.
- Manufacturing activities are driven by export demand and globalisation trends. The shift of manufacturing activities to developing countries means that in local areas over the next 10 years this sector may grow more slowly than service activities.

Many of New Zealand's urban areas service their regions and tend to be relatively more affected by internal demand and supply factors. However, the importance of tourism in Queenstown and export manufacturing in Hawke's Bay mean that these areas are directly affected by external demand.

Local economic development agencies or sector organisations will often understand or have information about the key drivers affecting local businesses. These might include the possible impacts of technological change and innovation that is otherwise very difficult to quantify. Infrastructure improvements, such as major roading improvements can also have a significant impact on demand for business space (ie, the Waikato expressway and the potential industrial land demands that this may stimulate).

Local authorities that wish to undertake more sophisticated quantitative analysis could explore the use of an Input-Output model. These models are based on the value of transactions between sectors of the local economy and sectors of final demand (households, central government, inter-regional and inter-national exports). They show how each sector's output could change in response to growth (in any of the demand sectors).

Statistics New Zealand produces national accounts Input-Output tables[25]. Larger urban areas that are developing or commissioning their own projections might consider the development of a customised Input-Output model. A multi-regional Input-Output model would pick up interactions between urban areas and their hinterlands.

2.3 Developing projections of future economic activity

Once the base demographic and economic structures of the urban area are established, the next step is to obtain or generate a robust, defendable set of **economic projections** that allow a view of future business space requirements to be established.

Local authorities will require employment and output by business sector (based on the ANZSIC groupings in Table 6), and population or household projections covering the short, medium and long term. As discussed above, employment data provides a rigorous predictor of office based activities, while output is a more accurate reflection of trends in industrial activities, and household growth drives retail and consumer services growth.

Ultimately the aim is to be able to provide robust projections of the additional space required for the three high level business sectors, as outlined below in Table 9.

[25] http://www.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/input-output%20tables-2013.aspx

Table 9: Projected additional requirements for office, retail and industrial business space

	Office	Retail	Industrial
Short term (3 years)	X Square metres	X Square metres	X Square metres (or hectares)
Medium term (10 years)	Y Square metres	Y Square metres	Y Square metres (or hectares)
Long term (30 years)	Z Square metres	Z Square metres	Z Square metres (or hectares)

2.3.1 Publicly available projections

As a minimum, local authorities can use various publicly available projections:

- MBIE's short term employment forecasts, by region and sector[26]
- MBIE's medium to long-term (10-year) national employment forecasts, by sector[27]
- Statistics New Zealand's projections of population, available by region, territorial authority, urban area and are unit; and households, available by territorial authority.

The employment projections can also be used along with MBIE's modelled territorial authority GDP estimates, to develop local GDP projections for the future.

Longer term (30-year) economic projections can be estimated by extrapolating out the shorter term projections, using population growth rates while holding the relationships within the economy constant. At best a 30-year view is a broad estimate, or an indication as to where the economy might head with continued population growth and a stable economic climate. Such projections would be ideally developed in-house, or if this was not possible, provided by a third party (ie, consultants who undertake economic modelling). It is recommended that scenarios are also derived to look at variations around this central projection. These might be based on different assumptions about say, the impact of a significant roading expansion, or loss of a major industry.

The degree of sectoral detail required for the projections depends on the complexity of the business land issues. Smaller local authorities may require only distinction between retail, office and industrial sectors, with some distinctions within those categories to identify large format retail from small format retail and heavy industry from light. Larger urban areas will require more detail, in line with the planning framework in place.

2.3.2 Customised projections

This section provides guidance for those local areas with the capability to commission, or generate their own, more sophisticated customised economic projections.

The first step in this process is to establish a methodology for generating sectoral activity projections. The projections should divide the economy into meaningful sectors and allow for the key drivers of each sector to influence the growth outcome. Ideally, the projection approach will take into account the urban area's role within both the region and nation, so that growth takes into account hinterland growth and national growth.

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[26] http://www.mbie.govt.nz/info-services/employment-skills/labour-market-reports/forecasting/short-term-employment-forecasts/short-term-employment-forecasts-2016-2019-nov-2016

[27] http://www.mbie.govt.nz/info-services/employment-skills/labour-market-reports/forecasting/medium-long-term-employment-forecasts/looking-ahead-to-2025

The methodology should also test a range of growth scenarios to understand what might happen should growth proceed ahead or behind expectations – or be focused in different sectors. At a minimum, it is necessary to assess low, medium and high projections.

A model could incorporate low, medium or high population growth scenarios and:

- **export projections** at the national level by the key exporting sectors. These are based on Treasury expectations of national export performance growth.
- national estimates of **sector productivity** (in this example a multi-factor productivity value that increases over time).
- a **national consumption effect** which allows households to increase their consumption over time in real terms.
- **household growth** rates locally, regionally and nationally.

Multi-regional models can consider cross border flows of goods and services between regions. The model would most usefully generate estimates of output as well as employment, allowing consistent estimates of both key metrics, which can be converted into business space.

2.4 Translating projections into business space, locations and zones

Once a view of future output or employment is established for the short, medium and long term, this needs to be translated into future requirements for business space by zone and location.

A minimum approach to doing this would be to:

- use Business Demography employment data by sector and meshblock (or aggregated at some higher level) to document the current locational distribution of sectors
- make transparent assumptions about the proportion of each business zone that is allocated for each sector (eg, a survey could highlight that 90% of light industry zones in a local authority area are allocated to manufacturing, warehousing and utilities, 5% to ancillary business services and 5% to retail)
- use standard space ratios (examples are supplied below) to estimate the current amount of space used by different sectors
- apply publicly available employment projections by sector, or population projections, to the above information to estimate the future amount of space required by zone and location.

Larger and more complex local authority areas are strongly advised to pursue greater accuracy. This can be achieved by matching Business Demography employment data by sector and meshblock to rating property data by parcel. This would enable local authorities to simultaneously:

- calculate local, more detailed activity/space ratios
- document the actual allocation of zones to sectors
- document the spatial distribution of sectors.

This information can be presented in tabular form, as shown in Table 10. Publicly available or customised projections can then be applied to the information to calculate future requirements for space by zone and location.

The next sections discuss the components of these different approaches, as separate steps.

Table 10: Translating sectoral projections into demand for space by zones

	Business Zone Types: Share											Business Zone Types: Employment to Zone										
Industry Total	CBD	Metro. Centre	Town Centre	Local Centre	Neighbourhood Centre	Mixed Use	General Business	Light Industry	Heavy Industry	Residential	RURAL	CBD	Metro. Centre	Town Centre	Local Centre	Neighbourhood Centre	Mixed Use	General Business	Light Industry	Heavy Industry	Residential	RURAL
Horticulture & fruit growing											100%	0	0	0	0	0	0	0	0	0	0	-28
Livestock & cropping farming											100%	0	0	0	0	0	0	0	0	0	0	192
Dairy cattle farming											100%	0	0	0	0	0	0	0	0	0	0	124
Other farming											100%	0	0	0	0	0	0	0	0	0	0	78
Svcs to agriculture, hunting & trapping											100%	0	0	0	0	0	0	0	0	0	0	113
Forestry & logging											100%	0	0	0	0	0	0	0	0	0	0	274
Fishing											100%	0	0	0	0	0	0	0	0	0	0	49
Mining & quarrying											100%	0	0	0	0	0	0	0	0	0	0	39
Oil & gas exploration & extraction											100%	0	0	0	0	0	0	0	0	0	0	1
Meat & meat prod manuf								20%	80%			0	0	0	0	0	0	0	6	22	0	0
Dairy prod manuf								20%	80%			0	0	0	0	0	0	0	80	320	0	0
Other food manuf								20%	80%			0	0	0	0	0	0	0	239	957	0	0
Beverage, malt & tobacco manuf								20%	80%			0	0	0	0	0	0	0	119	477	0	0
Textile & apparel manuf								100%				0	0	0	0	0	0	0	227	0	0	0
Wood prod manuf									100%			0	0	0	0	0	0	0	0	138	0	0
Paper & paper prod manuf									100%			0	0	0	0	0	0	0	0	243	0	0
Printing, publishing & recorded media								100%				0	0	0	0	0	0	0	1,782	0	0	0
Petroleum & industrial chem manuf								20%	80%			0	0	0	0	0	0	0	38	150	0	0
Rubber, plastic & other chem manuf								20%	80%			0	0	0	0	0	0	0	263	1,051	0	0
Non-metallic mineral prod manuf								20%	80%			0	0	0	0	0	0	0	186	746	0	0
Basic metal manuf									100%			0	0	0	0	0	0	0	0	521	0	0
Sheet & fabricated metal prod manuf								20%	80%			0	0	0	0	0	0	0	99	397	0	0
Trans equipment manuf								20%	80%			0	0	0	0	0	0	0	57	226	0	0
Machinery & equipment manuf								80%	20%			0	0	0	0	0	0	0	412	103	0	0
Furniture & other manuf								80%	20%			0	0	0	0	0	0	0	63	16	0	0
Electricity generation & supply								20%			80%	0	0	0	0	0	0	0	56	0	0	224
Gas supply								100%				0	0	0	0	0	0	0	24	0	0	0
Water supply								100%				0	0	0	0	0	0	0	71	0	0	0
Construction								50%		50%		0	0	0	0	0	0	0	6,267	0	6,267	0
Wholesale trade								100%				0	0	0	0	0	0	0	2,002	0	0	0
Retail trade	9%	26%	19%	11%	3%	10%	10%	12%				367	1,060	775	448	122	408	408	489	0	0	0
Accommodation, restaurants & bars	7%	23%	30%	19%	4%	7%		5%		5%		390	1,281	1,670	1,058	223	390	0	278	0	278	0
Road trans								70%	30%			0	0	0	0	0	0	0	1,605	688	0	0
Water & rail trans												0	0	0	0	0	0	0	0	0	0	0
Air trans, svcs to trans & storage												0	0	0	0	0	0	0	0	0	0	0
Communication svcs	70%	5%	5%			5%		15%				368	26	26	0	0	26	0	79	0	0	0
Finance	85%	10%	5%									669	79	39	0	0	0	0	0	0	0	0
Insurance	85%	10%	5%									448	53	26	0	0	0	0	0	0	0	0
Svcs to finance & investment	85%	10%	5%									286	34	17	0	0	0	0	0	0	0	0
Real estate	25%	15%										696	418	0	0	0	0	0	0	0	0	0
Owner-occupied dwellings										100%		0	0	0	0	0	0	0	0	0	0	0
Business svcs	50%	10%	13%	8%		5%		15%				11,706	2,341	2,927	1,756	0	1,171	0	3,512	0	0	0
Central government	100%											1,227	0	0	0	0	0	0	0	0	0	0
Local government	50%	10%	13%	8%		5%		15%				460	92	115	69	0	46	0	138	0	0	0
Education	20%									80%		1,775	0	0	0	0	0	0	0	0	7,099	0
Health & community svcs	5%	10%	13%	8%		5%				60%		1,104	2,208	2,760	1,656	0	1,104	0	0	0	13,250	0
Cultural & recreational svcs	9%	26%	19%	11%	5%	10%				20%		440	1,271	929	538	244	489	0	0	0	978	0
Personal & other community svcs	5%	15%	19%	11%	10%	10%				30%		59	177	224	130	118	118	0	0	0	354	0
											TOTAL	**19,994**	**9,039**	**9,509**	**5,655**	**708**	**3,751**	**408**	**18,092**	**6,055**	**28,226**	**1,066**

2.4.1 Business space ratios

To determine future space requirements, local authorities need to establish the current relationship between economic activity and space (ie, Gross Floor Area (GFA) or land) used.

One approach is to use ratios based on employment densities in different sectors. As an example, Table 11 provides average ratios based on employment for the three broad business sector groupings, derived using nationally sourced data.[28]

Table 11: Ratios of employment to business space

Broad Sector	GFA square metres/Worker
Retail	30 – 50
Office	15 – 20
Industrial	100 – 170

A more sophisticated approach is to use employment ratios to calculate demand for office space, a households-based ratio to calculate retail demand and an output-based ratio to calculate industrial demand. The following national business space ratios could be used:

- **Office** – 15 – 20 square metres per worker
- **Retail** – 7 square metres per household
- **Industrial** – approximately 1 square metre for every $4,000 turnover.

However, local ratios may be very different to these national averages, so local authorities should look at other sources of information where this is available. This would include published research from commercial property agents (nationally this includes firms such as Colliers International, Bayleys and CBRE).

Alternatively, local authorities could derive their own and any locally derived ratios (see box below for guidance on how to calculate these).

Calculating local business space ratios

Local economic business space ratio estimates can be calculated by matching Business Demography employment data by sector and meshblock to local authority property parcel information. Sectoral employment numbers can be aggregated into categories that match the broad business sector groupings outlined in this guide. Then property parcels can be aggregated by zone within each meshblock, and employment/Ha or GFA ratio's estimated for each activity type (ie, industrial, retail, and office)

Activity/Ha ratios are suitable for most, but not all activities. For example, with office and retail activities sqm of gross floor area (GFA) is a more appropriate measure. The calculation process is exactly the same with GFA replacing Ha as the denominator. GFA is information contained within the property parcel file.

Business space ratios are likely to change over time with technology and productivity improvements. This will also affect locational demand. Higher productivity businesses are likely to be more centrally located in the urban area and lower productivity businesses towards the fringe. This is especially the case for retail space and can have a significant effect on the amount of space likely to be required for growth. Recalculating business space ratios at least every three years provides an opportunity to stay abreast of these changes.

[28] Based on data collected by a private consultancy – this is not data public data.

2.4.2 Locational distribution of activity

Business demand assessments need to include information about the future demand of different businesses for different locations. For example, it is important to understand the percentage of office type activity that will be directed to the CBD versus other centres, mixed use areas and office parks. The same holds true for retail and industrial activities.

In the first instance, the assessment should be based on current distributions, but it could also be usefully informed by a survey of business users.

It could divide the city into the logical land use categories, for example North, South, East, West and:

- **Central Business Districts and Centres**
- **Mixed use areas**
- **Light industrial areas**
- **Heavy industrial areas**
- **Residential areas**
- **Special areas – ie, airports, hospitals and schools.**

A good housing and business development capacity assessment would provide information about the degree to which spatial specialisation occurs across different activity types.

This is especially important for industrial activities that, by the nature of emissions they may generate or other characteristics, are constrained to one or two land use types. Other activities are more indifferent to the type of location they inhabit. Business services may be present in any of the above listed area types, with the locational decision influenced by factors such as residential location of business owners, size, client base, staff location and so on.

Locational patterns that emerge from the framework provide insight into the type of additional capacity that a local authority may need to provide to facilitate growth. Using a GIS would allow local authorities to progressively build up additional layers of information to assist in their assessment of sufficiency, including zoning layers, property boundaries, infrastructure layers and other characteristics such as the physical properties of the land (slope, soils overland flows and other development constraints).

If the urban area is large, it is important to distribute employment according to the areas of the city most likely to be required to accommodate it. Again, historical growth information can be used to assist in this allocation. Using a historical time series of employment, a broad spatial distribution of future employment can be carried out. This will require splitting the urban areas up into logical blocks (ie, North, South East and West would be sufficient).

It is not appropriate to produce a fine-grained spatial allocation as it will inevitably be inaccurate, nor is it necessary in order to meet the broad objectives of the NPS-UDC.

2.4.3 Converting space requirements to business zones

The allocation of sectoral activity to different business zones can be estimated by applying some assumptions. Alternatively, the Business Demography employment data by sector and meshblock can be matched to the rating property database (which includes zones). The process for doing this is:

- The current relationship between activity and zoning can be established by coding each property parcel to the zone within which it resides. This is done using GIS overlays.
- Information from the rating data base, land use classifications and Statistics New Zealand (business frame at mesh block level) is then used to tie business activity (and employment) by type to property parcel and thereby to land use zone. This process may not be 100% accurate, but can be adjusted as part of a ground truthing exercise (discussed in the section on assessing the capacity of business land).
- Percentage of activity by location can then be established once the entire area is coded. This provides the basis for allocating future activity to business zones.
- The translation represents the status quo but can be adjusted to reflect alternative policy settings that might be explored to direct future growth.

When undertaking this process:

- Ensure that economic activities that occur in residential areas are accounted for in these zones and not allocated to business zones.
- Within the allocation process be aware of activities that are not likely to locate within business zones or residential zones, such as hospitals, schools, defence facilities, prisons and other central government activities. They should have a category within the framework above.

(Reconciling different uses in zones is discussed more fully in Part Four of this guide).

This distribution of sectoral employment by zone can be brought together with the activity/ space ratios and projections of growth, to generate a first cut assessment of the future demand of each sector for space in each zone.

2.5 Summary of demand for business space

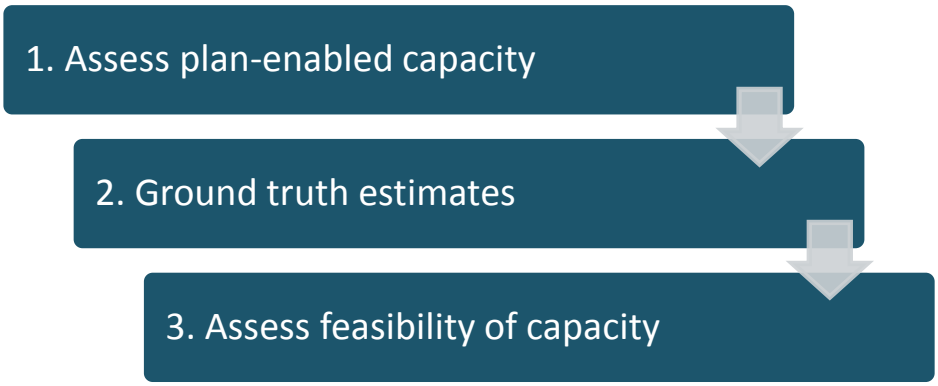
The final step is to create a demand summary. For ease of understanding, it is recommended that demand is summarised by:

- Sector or broad sector grouping: An ANZSIC-based projection series can be aggregated to meet the planning framework needs for each local authority.
- Building typology or land area type and tenure: Demand for space in each zone type is driven by businesses' needs to be accommodated in a particular building typology.
- Location: In larger urban areas, it is recommended that local authorities split the urban area into meaningful sub-urban catchments, such as North, West, East, South and central. It is important not to be too detailed with this, as economic activity has a degree of flexibility in terms of location.
- Zone: As determined by the relevant District Plan.
- Timeframe: The NPS requires assessment to focus on the short term (next three years), the medium term (3–10 years) and the long term (up to 30 years).
- Scenarios/sensitivity testing.

3 Assessing the capacity of business space

3.1 Overview of capacity assessment

The key steps to assess capacity for business space are as follows:



3.2 Assessing plan-enabled capacity

Plan-enabled capacity is, by definition, capacity provided in the current District Plan for at least the next 10 years. In simple terms, it is a stocktake of all land or space zoned for business activities in the urban area. Smaller local areas may simply undertake a stocktake of vacant land. Larger and more complex areas should also look at redevelopment potential.

All local areas should also identify, at a higher level, long-term (30-year) capacity for business space (which might be indicated in a spatial plan).

3.2.1 Stocktake amount of vacant land by zone type

Local authorities should have GIS information containing the following:

- Every land parcel within the business zones in the urban area and its associated dimensions – in particular, area and built form, but also other key characteristics such as slope, and any other geotechnical or other constraint that may limit its ability to be developed for business uses (for example, other plan provisions or covenants).
- Overlaid or appended to the base layer should be the district plan zoning. This will allow parcels to be grouped according to plan zone, by property type and location.
- Aerial images to help determine the use of land parcels and to identify vacant land.

Once this information has been produced it is necessary to:

- Remove physically unsuitable land – slope, shape, access etc.
- Identify all **vacant** (including greenfield) land within each current business zone by location, distinguishing between vacant land that is serviced with infrastructure, and that land which is not. Only land that is either serviced with infrastructure or will be in the next 10 years meets the NPS-UDC definition of development capacity.

This will produce the first cut of vacant land under the current zoning provisions, which could be presented in a table similar to Table 11. This is the key land resource available to cater for future growth within the urban area. Local authorities should maintain and update this stocktake of vacant land annually.

Table 12: Stocktake of vacant land by location and business zone type (example)

	Business Zone Types						
Zone Name/Location	CBD	Local Centre	Mixed Use	Office Park	LFR	Light Industry	Heavy Industry
Albany							
Albany							
Albany		Land Area (Ha)					
Upper Harbour Ind.							
Upper Harbour Ind.							
Upper Harbour Ind.							
TOTAL VACANT LAND							

3.2.2 Redevelopment potential

Larger, more urbanised urban areas could also investigate land not currently developed to its full potential. To do this, local authorities should:

- Identify all occupied land within each current business zoning by location.
- Identify existing urban land that is already occupied and being used for some purpose but may not be developed to its full potential or be ready for redevelopment. This category can include parcels of land that have a current low level of capital improvement (statistically significantly lower than similar properties in the same location). This is best measured as a capital value to land value ratio. Divide capital value by underlying land value for each property then compare across the business zone. Those that are statistical outliers are more likely to be redeveloped for more intensive uses.

Redevelopment potential that is identified in this way should be treated with caution. There are many reasons why development has not occurred to the potential on these properties:

- **Industrial Zones**: Businesses may be using vacant space for a wide range of valid business-related activities.
- **Retail Zones**: Retail only occurs on the ground floor, at street level (with very few exceptions). This means that retail capacity is only represented by vacant land. The exception to this is that, in areas of low productivity, additional retail trade can be accommodated through increased worker productivity and no additional space.
- **Commercial Zones**: Offices can be stacked on top of each other in multi-storey buildings. This means that centres with buildings not developed to the full plan-enabled potential should be treated as having additional capacity. This is a valid form of additional capacity for planning purposes.

It is best if local authorities identify the nature of all business land but rely mostly on **vacant** land as having development potential in industrial and retail zones.

Local authorities may have a database of business properties that contains information about site coverage, building GFA, the nature of activity, Land Value, Capital Value, rates and ownership, and records property sales. This will begin to highlight if land with redevelopment potential land is being purchased and redeveloped. This is most likely to be a GIS-based dataset that could be updated annually and would form the basis for updating capacity assessments every three years as required by the NPS-UDC.

3.2.3 Translating land area to Gross Floor Area (GFA)

Within each zone, vacant land parcels can be translated into GFA by simply applying the relevant site coverage ratios on a site by site basis contained within the planning provisions, plus relevant height limits to determine the number of developable storeys.

Table 13 provides an example of how this information GFA could be presented. Note that in this example, each parcel is captured and identified separately. The information is likely to look like this in the underlying GIS, but an aggregation of parcels to each business areas is more usable for policy-making.

Table 13: Ground Floor Area by property, location and zone type (example)

		Business Zone Types						
Zone Name/Location	Parcel ID	CBD	Local Centre	Mixed Use	Office Park	LFR	Light Industry	Heavy Industry
Albany	90210							
Albany	90211							
Albany	90212							
Upper Harbour Ind.	...		Building Gross Floor Area (GFA) sqm					
Upper Harbour Ind.	...							
Upper Harbour Ind.	...							
TOTAL BUILDING GFA (sqm)								

3.2.4 Size of vacant parcels

It is important to create a stock-take of the number of **vacant land parcels by size** within each of the business zones. Table 14 is an example of the type of stock-take local authorities should hold and maintain over time as land comes on line, property is developed and subdivided (note that the range of parcel size categories are likely to differ between commercial and industrial land, with industrial land requiring larger lot sizes, in general).

Table 14: Stocktake of vacant business zoned parcels by size, zone type and location (example)

Zone Name/Location	Zone Type	<1,000 sqm	1,000 - 2,500 sqm	2,500 - 5,000 sqm	5,000 - 7,500 sqm	7,500 - 10,000 sqm	1ha - 1.25ha	1.25ha - 1.5ha	1.5ha - 2.0ha	>2.0ha
Albany	Local Centre									
Albany	Mixed Use									
Albany	Light Industry									
Upper Harbour Ind.	Light Industry									
Upper Harbour Ind.	Mixed Use									
Upper Harbour Ind.	Local Centre									

Totalling up at the bottom of the table provides local authorities with their total stock of vacant business land parcels by zone and location. All local authorities should develop this stock-take and maintain it so they have a clear view on what is available to the market and whether it meets demand.

3.3 Ground truth estimates

Secondary data and modelled analysis including GIS-based desktop studies do not tell the full story with respect to business land. There are always areas that have developed in different ways to the data or the modelled outcomes. In addition, development moves ahead of record keeping, so that aerial images may not capture the reality of the most recent developments. It is important for local authorities to ground truth estimates of capacity and activity by visiting business areas and recording what is developed and the nature of land use.

3.3.1 Ground truthing methods

There are two general methods which can be used to help determine the validity of capacity estimates:

- Surveys of business occupiers
- Visual inspections.

Surveys may be time-consuming and potentially not capture all areas. However, it is possible to visually inspect and record activity in a relatively short space of time. For example, to drive around all the industrial areas in most large or high growth urban areas would generally take less than two weeks.[29] All commercial centres can be added over the course of the year, and the process repeated annually.

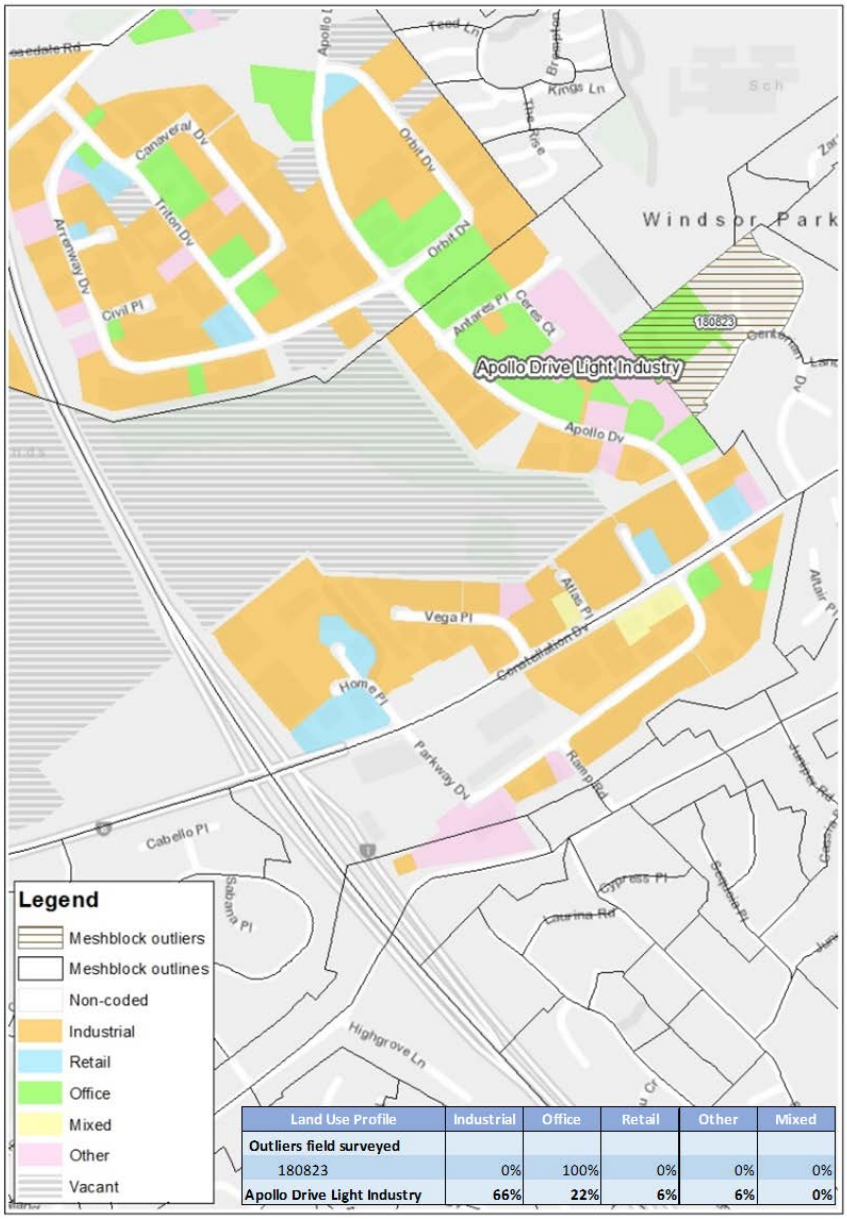
The process of visual inspection is essentially a manual one:

- Print out a property parcel boundary map of each industrial area (in the first instance).
- Enter known data, such as zone, onto the map and potentially overlay a point file with business names (if available)
- Survey the properties from the street (at the minimum) to understand the type and nature of actual land use and the degree to which the site is occupied. A broad classification system for activities is recommended that aligns with the plan provisions (eg, retail less than X sqm, office over Y sqm, etc).
- Aggregate the information into the overall GIS project covering all industrial zones in the urban area. Adjust all calculations as a result of findings from this survey – current density by activity, vacant land, and brownfields capacity.

The map in Figure 9 outlines the type of data able to be obtained through survey. In the Apollo Drive Light Industrial Zone all properties were coded as to vacancy or not and activity occurring. The survey found that only 66% of the industrial zoned land in the area was being used for industrial purposes. Some 22% was dedicated to office activities with 6% retail and a further 6% across a range of other activities.

[29] As part of reporting to the Independent Hearings Panel in the Auckland Proposed Auckland Unitary Plan hearings, all industrial areas in Auckland were surveyed in this manner in less than two weeks.

Figure 9: Apollo Drive Light Industrial Area – Land Use Map 2016



Land Use Profile	Industrial	Office	Retail	Other	Mixed
Outliers field surveyed					
180823	0%	100%	0%	0%	0%
Apollo Drive Light Industry	**66%**	**22%**	**6%**	**6%**	**0%**

3.3.2 Using the results of ground truthing

The results of ground truthing can be used to adjust the estimates of capacity for different uses actually likely to develop on vacant land. Local areas will need to make their own judgement as to what is appropriate. Zones, or implementation of zoning policies, often explicitly anticipate (and may target) a mix of activities. Even the more exclusive industrial zones do need some non-industrial uses such as ancillary office services and cafes.

However, ground truthing can also reveal spatial evolution that might evidence a case for rezoning. For example, as urban areas intensify industrial areas in older central locations transform into higher-value uses. Alternatively, ground truthing might reveal that permissive zoning or implementation is having unintended negative consequences. For example, the development of large format retail in industrial zones may draw custom away from centres and add traffic congestion to the industrial street network, reducing efficiency.

Once the initial ground truth process has occurred, local authorities are encouraged to maintain the dataset so future iterations of this assessment are straightforward.

3.4 Assessing the feasibility of capacity

The approach described above focuses on establishing plan-enabled capacity. That is, the amount of theoretical capacity that arises by way of the plans zoning and other provisions. This volume of capacity may not translate to actual business properties available to accommodate growth unless it is "feasible" to develop.

The NPS-UDC defines "feasible" as follows:

> Feasible means that development is commercially viable, taking into account the current likely costs, revenue and yield of developing; and feasibility has a corresponding meaning.

The intent of this definition is that local authorities assess whether development capacity is feasible *to a developer*. The definition refers to the costs and revenue that would be faced by a developer, to develop capacity that is enabled by a plan and supported by public infrastructure.

A feasibility model has been developed to assist local authorities with assessing the feasibility of development capacity for housing. However, at this stage it has not been calibrated to assess business capacity. While many of the same principles apply, business capacity is more complex and the data available on business property sales is poorer.

In addition, the diversity of sectoral demands and development options for business space present significant challenges for modelling feasibility. Particularly for industrial land, there are potentially a wide range of development options available that require specific and unique build structures and ownership patterns. This makes it difficult to be exact about cost and therefore the potential feasibility of capacity.

An alternative approach is to assess feasibility by comparing the attributes of zoned sites to the requirements of business users.

3.4.1 Assessing the feasibility of different sites

To assess the feasibility of capacity provided for meeting business demands, it is recommended to undertake a multi-criteria analysis of sites to identify which are most likely to be candidates to meet demand within a sector. The focus may only need to be on industrial and possibly retail sites, given the relative ease of providing office capacity in commercial zones.

This assessment would evaluate sites against the attributes required by its intended sector, and to rank them using weightings. The process would:

- identify the key location, size, tenure, price and other characteristics important to the sector (identified in the demand assessment – see Table 7 for other relevant factors to consider)
- define and weight the characteristics according to their importance
- score each site, precinct or land parcel against the weighted score range

- rank the sites and determine those that are deemed most suitable to meet demand within a sector and those that are unsuitable and not likely to be developed (and therefore not feasible). Discussing the ranked results with industry experts may help take the subjectivity out of this assessment

Criteria and their associated weightings should be developed via a process of engagement with industry stakeholders and any large commercial and industrial operators to gain an understanding of the nature of the local area. The order in which the remaining sites rank should guide local authorities as to the development future, noting that any unsuitable sites may still become feasible in the future.

3.5 Summary of capacity of business space

The final step requires local authorities to aggregate the plan-enabled, feasible capacity for business into a single framework.

3.5.1 Short and medium-term capacity

Table 15 provides an example of how this framework might look at a disaggregated level. Zones can be aggregated into broad sub area within the urban area. These would split the urban area depending on how the urban area functions (potentially north, south, east, and west). It is important to not be too rigid as there will be a degree of fluidity with demand.

Table 15: Summary of feasible plan-enabled employment capacity by location and zone type (example)

	Business Zone Types						
Zone Name/Location	CBD	Local Centre	Mixed Use	Office Park	LFR	Light Industry	Heavy Industry
Albany							
Upper Harbour Ind.							
Takapuna		Financially Feasible Capacity (sqm GFA or Ha land)					
Smales Farm							
Wairau Rd							
TOTAL FEASIBLE CAPACITY							

Local areas could prepare a similar table populated with both floor space (GFA) as capacity and one with land. That will ensure a high degree of flexibility should aspects of the economy change and will ensure a deeper understanding of the manner in which the plan provides for growth.

3.5.2 Long-term (30-year) capacity

Having established the business capacity enabled by the provisions of the current District Plan, the NPS-UDC requires local authorities to look further ahead. Local authorities should assess long-term capacity (ie, capacity sufficient for 30 years of growth) and provide for it in relevant plans and strategies. The NPS-UDC directs high growth urban areas to prepare future development strategies that identify this capacity. The development infrastructure to support it must be identified in an infrastructure strategy under the LGA.

Long-term business capacity is effectively capacity provided for in District Plan provisions, plus any additional capacity likely to be enabled under the long-term planning documents that local authorities are required to hold (eg, growth strategies, Asset Management or Infrastructure Strategies).

It is likely that land will be identified in growth strategies and other documents at a higher level in terms of location, scale and type of land. For example, there may be a general understanding that in some future zone, 10% of land will be made available for business activities to meet the demands of population growth. In other instances, projections may highlight the need for substantial amounts of greenfield business land to accommodate industrial growth.

In these instances, estimates of the size and location of the future capacity should be made, and the land run through the same processes for translating it into built form and having an employment carrying capacity. Local authorities will need to assume that there are no significant constraints on the land that may limit its capacity. If there are, it may be necessary for local authorities to reassess its future plans for growth.

Finally, as the urban area matures and becomes more intensively populated, future business capacity is much more likely to be more intensively used than today. Local authorities should adjust or at least acknowledge that future capacity will be used in a different manner than today.

Long-term business capacity should be presented and recorded in the same manner as current capacity above to allow it to be compared with future growth. This means aggregating capacity into a framework such as Table 16.

Table 16: Summary of future employment capacity by location and zone type (30 years) (example)

	Business Zone Types						
Zone Name/Location	CBD	Local Centre	Mixed Use	Office Park	LFR	Light Industry	Heavy Industry
Albany							
Upper Harbour Ind.							
Takapuna		Future (30 years) Capacity (sqm GFA or Ha land)					
Smales Farm							
Wairau Rd							
TOTAL FEASIBLE CAPACITY							

4 Sufficiency

The demand and capacity assessments for business space should be brought together, and a quantitative comparison between them made to draw conclusions about the sufficiency of capacity over the short, medium and long terms.

The NPS-UDC policy PA1 requires local authorities to ensure that "at any one time there is sufficient development capacity". This includes business land that is zoned and feasible for the next 10 years, and identified in relevant plans and strategies over the next 30 years. The process of identifying and amalgamating land and then the plan change process takes about 10 years, and business land becomes supply-constrained before it runs out. The NPS-UDC requirement for a rolling supply of development capacity seeks to avoid this.

4.1 Current sufficiency

Industrial zone differentials (available on the dashboard on the Ministry of Business, Innovation and Employment's website) provide a starting point for checking whether current zoning matches demands of different business land uses for space in specific locations. Significant differences in the values of adjacent industrial, commercial or rural land might signal that demands have been changing and some activities are more "capacity constrained" than others (see part six).

4.2 Future sufficiency - short and medium-term

Feasible capacity that has been enabled under the District Plan/s can be compared with medium term demand projections to determine sufficiency of the plan provisions to cater for short or medium-term growth. An example of how this may be assessed is presented in Table 17 below.

Table 17: Measure of plan sufficiency, capacity – demand, short-medium term (example)

	Business Zone Types						
Zone Name/Location	CBD	Local Centre	Mixed Use	Office Park	LFR	Light Industry	Heavy Industry
Feasible Capacity (sqm)							
Urban North		Financially Feasible Capacity (sqm)					
Urban Central							
Urban South							
Urban East							
Urban West							
TOTAL EMP. CAPACITY							
Expected Demand (sqm)							
Urban North		MEDIUM GROWTH FUTURE: Demand for Business Space (sqm)					
Urban Central							
Urban South							
Urban East							
Urban West							
TOTAL DEMAND							
MEASURE OF SUFFICIENCY							
Urban North		Employment Capacity - Employment Demand = Sufficiency of Plan					
Urban Central							
Urban South							
Urban East							
Urban West							
TOTAL Surplus/Shortfall							

Table 17 aggregates capacity (measured in sqm of feasible space) for each zone type, into broad geographical catchments for an urban area. This is then compared with the amount of demand likely to be focused on each zone type, in each broad geographical catchment of the urban area.

The difference is either a shortfall or a surplus of capacity that may be available to cater for growth that occurs in the longer term (out to 30 years). Shortfalls must be viewed in both a geographical and zone type context. An obvious issue is that the urban area will only have one CBD. More importantly, if a local authority has a range of smaller centre classifications then a shortfall in one type may be compensated appropriately by a seeming oversupply in another.

As mentioned above, many businesses have a high degree of flexibility when it comes to locational choice within a city and to a certain extent the share of growth in one area over another may be driven as much by supply as natural demand characteristics.

This quantitative assessment should be checked against information on prices, leases and vacancy rates – both within and between zones and locations. Significant movements in price and rents will highlight if capacity is becoming tight in a particular zone and/or location.

4.3 Long-term sufficiency

Long-term sufficiency is more generalised. It is unlikely that detailed information on future capacity is available. In addition, long-term projections of demand are likely to be far less detailed. Therefore, measures of sufficiency will be less detailed. Table 18 presents a clear simplified approach to assessing long-term business land sufficiency. The process is the same as for the short and medium-term approaches, above.

Table 18: Measure of long-term plan sufficiency, capacity – demand, 30 years (example)

	Business Zone Types		
Zone Name/Location	Retail	Commercial Office	Industrial
Feasible Capacity (sqm)			
Urban North	Financially Feasible Capacity (sqm)		
Urban Central			
Urban South			
Urban East			
Urban West			
TOTAL EMP. CAPACITY			
Expected Demand (sqm)			
Urban North	MEDIUM GROWTH FUTURE: Demand for Business Space (sqm)		
Urban Central			
Urban South			
Urban East			
Urban West			
TOTAL DEMAND			
MEASURE OF SUFFICIENCY			
Urban North	Employment Capacity - Employment Demand = Sufficiency of Plan		
Urban Central			
Urban South			
Urban East			
Urban West			
TOTAL Surplus/Shortfall			

Given that local authorities are expected to repeat this process every three years then the long-term capacity will be updated over time. Local authorities are encouraged to retain a history of long-term sufficiency assessments to track changes in economic activity and outlook.

4.4 Conclusion

This information should be reported in a summarised form for decision-makers. The following provides an example, presented to the Independent Hearings Panel while it was deliberating on the business land provisions in the Auckland Proposed Auckland Unitary Plan.

Example – Business land provisions in the Proposed Auckland Unitary Plan 2016

The modelling indicates that at the regional level,

- Demand for commercial and industrial zoned land by 2026 is expected to range between 112 ha (Medium) and 142 ha (High) per annum.
- The majority of the demand for land is expected to be located in industrial zones, with annual demand between 61 ha (Medium) and 79 ha (High) per annum.
- Commercial zones are expected to attract demand for land of 51 ha (Medium) to 63 ha (High) per annum.

The results for the individual commercial and industrial zones indicates that,

- The majority of land demand is forecast to be located in Light Industry zone, with demand ranging between 46 ha (Medium) and 59 ha (High) per annum.
- Following Industrial land demand is Mixed Use Zone, with forecasts showing high demand for this zone ranging between 18 ha (Medium) and 22 ha (High) per annum.
- Land demanded for Heavy Industry is also significant, with demand ranging between 15 ha (Medium) and 20 ha (High) per annum.
- The Metropolitan Centre, Town Centre and General Business zones have moderate demand growth ranging from 8 to 13 hectares per annum.
- The Local Centre, Neighbourhood Centre, and Business Park zones recorded low growth in land demand per annum (generally less than 5 ha p.a.).

In terms of geographic locations the results indicate that,

- Most of the growth in demand for land will be focused on southern areas of Auckland (Urban South and Rural South). The results suggest that approximately 45% of demand could be located in these areas (over 50 ha p.a.).
- The Urban Central could be expected to attract a large share of demand (approximately 25%).
- The Urban North and Urban West are both expected to draw considerable demand, with the Urban North more focused on commercial and the Urban West more focused on industrial land.

This example highlights the overall growth under a high and medium scenario, plus growth by zone type, and by broad location (Urban South, Rural South, CBD, etc.). Significant detail about short, medium-term and long-term sufficiency underpinned this summary. Historically data on business capacity has been poor, but this guide goes some way to assist local authorities to improve the information they have.

In preparing these assessments, local authorities will build up a body of economic evidence that can inform District Plans, Future Development Strategies and Infrastructure Strategies. Systematic and consistent data collection, linking economic activity with land parcel information is the key to making informed policy decisions.

Part four: Business and Housing Interactions

This part of the guide recommends methods for meeting the requirements of NPS-UDC policy PB1(c).

1 Overview

1.1 Relevant policy

Policy PB1 in the NPS-UDC requires that:

> PB1: Local authorities shall, on at least a three-yearly basis, carry out a housing and business development capacity assessment that:
>
> c) Assesses interactions between housing and business activities, and their impact on each other

1.2 Intent

Policy PB1 c) is intended to bring the assessment of housing and the assessment of business together. It should also produce additional information to help shape planning responses, including Future Development Strategies.

Housing and business development capacity assessments can meet the requirements of PB1 c) by:

- Reconciling the housing and the business capacity assessments to ensure that capacity is not double counted or under- or over-estimated
- Providing information about the positive and negative spatial interactions between housing and business capacity, and impacts on accessibility and transport
- Analysing barriers and opportunities for development and change.

1.3 Recommended quality and detail

All housing and business development capacity assessments should reconcile the capacity counted for different uses. The usefulness of other information about the interactions between housing and business development capacity will depend on the size, complexity and rate of change in the local area.

For a large and complex urban area, a good assessment would include information about the locational preferences of households and different types of businesses, how accessible the urban form is, and potential demands on the transport system. It would also provide information about complementarities and negative impacts.

Urban areas that are experiencing, or could in future experience, significant changes in their built environment would desirably produce an assessment that considers the implications of different scenarios. This assessment might also draw on price information about changing demands, the results of ground truthing, and surveys of business owners.

This guide outlines a range of methods for measuring interactions between housing and business development capacity. Some local authorities will already be undertaking such work for district or spatial planning processes.

2 Reconciling housing and business assessments

District plans typically provide capacity for housing and business activities in zones that enable some types of activities to establish while excluding others.[30] Most district plans also include some zones that allow for multiple types of use, eg through centre or mixed use zones that allow retail, commercial, or residential uses, or residential zones that also allow home-based businesses to establish.

Housing and business assessments must therefore compare projected future demand for housing and business uses against the capacity enabled within zones. In cases where zones enable multiple types of activities to establish, it is important to ensure that:

- Capacity is not **double-counted** between housing and business assessments. For example, if a development opportunity in a centre is counted towards housing capacity, it should not also be counted towards capacity for office-based activities or visitor accommodation.
- Capacity is not **under-estimated** by excluding development opportunities that exist in other zones. For example, some growth in retail demand may be met within industrial zones, subject to zoning rules that enable them. In such cases it is also be necessary to adjust down the supply of industrial land.
- Capacity is not **over-estimated** for a particular land use by failing to account for the fact that some development opportunities will be taken up for other uses that may be more commercially feasible to develop.

Local authorities are encouraged to undertake a reconciliation exercise to ensure that there are no major gaps or overlaps between housing capacity assessments and business capacity assessments that may materially affect results.

2.1 Identifying capacity that is available for multiple uses

Local authorities should begin by identifying cases where development capacity may be taken up for different types of housing or business uses. This can usually be done through a review of district plan activity tables to identify the types of activities that are enabled in different zones. However, it is also useful to 'ground-truth' these cases by analysing current land uses within zones that enable multiple types of use or discussing with stakeholders, eg in the development community, to understand why some businesses may seek to establish in 'out of zone' locations.

Local authorities should consider four main cases where development capacity may be available for multiple uses.

First is the potential for business activities to establish in residential zones. The following types of businesses may choose to do so and are often enabled by district plan rules:

[30] While zoning is not required by either the Resource Management Act 1991 or the NPS-UDC, it is common practice.

- the residential construction sector, eg small building firms operating out of garages or sheds at the owner's house
- home offices and other home-based services such as property maintenance, small consultancy firms, small start-ups, child care, and household staff[31]
- houses being used almost exclusively as holiday rentals (including Airbnb), which is both important and growing in places such as Queenstown
- houses that have been remodelled as business premises, eg doctors' surgeries.

Many of the above activities (such as home offices) may increase as digital communications technologies improve. This could have implications for the future demand profile and capacity requirements of certain businesses, particularly office-based industries.

Second, there is the potential for housing to be developed in business zones. This may include:

- new housing development in town centres and other mixed use zones that anticipate apartment development alongside offices and retail
- conversion of warehouses or offices into dwellings, usually in zones that anticipate a mix of uses.

Third, capacity in business-focused zones could be used to meet demands from different business sectors. This may include:

- retail activities seeking to establish in industrial areas to take advantage of lower land costs or larger site areas (eg for large format retail)
- retail activities developed as an adjunct to industrial activities in industrial zones, such as cafes for local employees or factory outlet stores
- the potential for development capacity in centres to be used for either retail activities, office activities, or mixed-use buildings with retail at ground storey and offices above.

Fourth, local authorities should consider how requirements for large social infrastructure and community facilities affect development capacity available for other housing and business uses. This may include hospitals, schools, defence facilities, prisons and other central government activities. The Ministry of Education and District Health Boards can act as designating authorities, meaning that public schools and public hospitals do not need to be explicitly provided for in district plans. However, private schools and hospitals may need to be addressed in district plans. Furthermore, development capacity used to accommodate these activities will not be available to meet demand from business sectors.

2.2 Identifying how that capacity may be used

After identifying cases where development capacity may be available for alternative uses, local authorities should identify how that capacity may be allocated between those uses in the future. The aim of this reconciliation exercise is to ensure there are no gaps or overlaps between housing and business assessments.

[31] Note that demand for home-based employment may affect demand for homes of different sizes, as people who work at home often require a spare room to use as a home office. This could mean that the composition of housing demand differs from household projections.

For instance, if a plan provides capacity to develop 100,000m^2 of new floorspace in multi-storey buildings in a town centre that enables retail, offices, and apartments to be developed, local authorities should identify the share of that capacity that may be used for each use. This may mean assuming that (say) 20% of the capacity would be available for retail use, reflecting retail's preference to locate on the ground storey, while the remaining capacity would be split evenly between offices (40%) and apartments (40%). Where there is significant uncertainty about future uses, a range should be used for sensitivity testing.

The following sources of information could be used to assist in identifying how current and future capacity may be allocated between alternative uses:

- ground-truthing: Gathering 'on the ground' information on existing land uses within mixed use zones (eg, by undertaking physical site visits) can inform estimates of how future capacity will be allocated between housing and business use, or between competing business uses such as some large format retail and light industry. Discussions with the local development community can also assist in ground-truthing.
- analysis of employment, population, or journey to work data from the Census: Fine-grained data (eg, at the Census meshblock or area unit level) may be used to estimate how space is currently used, and the degree to which people are working from home. However, a limitation is that Census areas do not necessarily align with zoning.
- Airbnb and other short-term rental platform registrations: This is particularly important for smaller centres (such as Queenstown) where the visitor population is large relative to the resident population. In such cases, the short-term rental market may compete with locals for accommodation, effectively reducing the supply of dwellings available to locals, or raising prices beyond the means of key workers. Local authorities should attempt to quantify the role of the short-term rental market and use it to inform estimates of how future development capacity will be allocated between housing and visitor accommodation. A limitation however is that it won't tell you the primary use of the dwelling, so local authorities may need to investigate alternative means to assess this, for example by surveying local property owners.
- council rating databases: These provide information on existing building and parcel uses, which may help identify commercial and residential activity in mixed use zones and inform estimates of how future capacity will be allocated between uses (noting that this may differ by location within an urban area and evolve over time).

3 Spatial interactions between housing and business capacity

Housing and business development capacity assessments might usefully provide information about spatial interactions between housing and business capacity. The aim of this is to better understand:

- The potential for complementary land uses that enable positive social, economic, environmental, or cultural effects
- Implications for accessibility and transport infrastructure
- The potential for reverse sensitivities and conflicts between incompatible land uses that result in negative effects, either at the boundaries between residential and business zones or within mixed-use zones.

This analysis could be used to inform planning responses under the NPS-UDC, including Future Development Strategies. It may also be relevant for general regulatory practice, as it may assist in understanding how to effectively and efficiently respond to effects.

Analysis of labour market accessibility is likely to be most relevant for large or complex urban areas where the location of development capacity can affect broader transport and economic outcomes, such as labour market access. Smaller urban areas might choose not to investigate accessibility measures.

3.1 Understanding housing and business location preferences

A good housing and business development capacity assessment would provide some information about location preferences for different housing and business activities. Understanding how location preferences differ for different uses can be useful when devising planning responses, as it may assist in identifying opportunities to provide capacity for different activities or reallocate land between sectors.

Local authorities could use the following sources of information to assist in understanding how location drivers differ between sectors:

- discussions with property experts or people in the development community to identify drivers of location choices
- analysis of Statistics New Zealand data on the location of existing residents and businesses – existing patterns of population and employment location at an industry level may reveal what factors are important to different types of uses; however, they are also affected by previous urban planning policies
- analysis of price data, which can help to reveal what households and businesses are willing to pay for proximity to different types of amenities and employment. A key insight is that if one business is willing to pay a higher price to operate in a particular location, then it is likely to value that location more highly than another business
- custom surveys of household and business location preferences.

The following table summarises some primary and secondary drivers of location decisions for housing and business uses. While there are likely to be many similarities between cities, local authorities are encouraged to also consider their specific market and locational drivers which may differ in important ways. For instance, in larger centres where transport costs are higher, people may be more willing to trade-off space for proximity to employment in the form of apartment living.

Table 19: Primary and secondary drivers of location decisions

Land use	Primary drivers of location choices	Secondary drivers
Housing	Local amenities (beaches etc) School quality Available housing types (eg, single house; or apartment)	Access to employment Access to built amenities (town centres and retail opportunities)
Office-based activities	Transport access (particularly skilled labour) Proximity to clients (eg, walking distance)	Amenities for workers
Retail activities	Transport access Proximity to customers Attractive public realm	Proximity to other retail
Industrial activities	Access to motorways / ports Affordable land	Avoidance of reverse sensitivities (from nearby uses)

3.2 Understanding potential complementarities between land uses, assessibility and transport

NPS-UDC policy PA3 a) and b) requires local authorities to make planning decisions that provide for social, economic, cultural and environmental well-being, while having particular regard to:

- providing for locational choices for dwellings and businesses
- promoting the efficient use of urban land and infrastructure.

The spatial arrangement of housing and business zones interacts with the transport system to determine how "well-functioning" a city is. Well-integrated land use and transport infrastructure, and services that complement each other, can enhance people's access to jobs, education, and consumer goods and services; and businesses' access to labour, skills, and customers.

Poorly integrated land use and transport may reduce households' access to employment, education, and other social and economic opportunities. It may also make it difficult for businesses to attract skills, limiting the scale and functioning of local labour markets. Similarly, public infrastructure that is over-built or poorly aligned with land use can reduce the efficiency and increase the costs of infrastructure provision.

A good housing and development capacity assessment would include information about these factors where they are likely to be relevant.

The following table summarises some measures of the degree to which land uses complement each other, and of accessibility and transport capacity. Not all of these measures will be relevant for all urban areas.

Table 20: Indicators of complementarities between land uses, accessibility and transport capacity

Spatial layout and mapping	Measure/Method
Map **where** housing development capacity is located in relation to business and other employment generating activities	Use spatial mapping tools (eg, GIS) to identify where housing and business developing capacity is located.
Calculate **how much** development capacity for housing (eg, number of potential dwellings) is provided in areas in close proximity to business and other employment generating activities.	Combine the above GIS spatial information with information from the housing and business capacity feasibility assessments to assess the amount of housing development capacity in close proximity to employment. Map dwelling capacity density by Census Area Unit or Meshblock, and compare visually with current employment areas.
Analyse and map travel accessibility: • the number and variety of jobs, and goods and services people can access from different locations • the number and skills of workers, and consumers who businesses can access from different locations.	Accessibility measures can be used to analyse variations between different locations in larger urban areas. These measure either: a) the number of destinations accessible within a particular distance or time-frame – eg, the number of jobs within a 45-minute bus journey; or b) the 'effective density' of destinations, where closer destinations are weighted more highly than those further away. These measures require detailed geographic information on locations of population, jobs and relevant land uses; and travel times. Also, draw on existing transport modelling, where available, to assess levels of accessibility.
Analyse and map infrastructure capacity and expected current and future capacity constraints.	Draw on existing transport strategies and modelling to assess current infrastructure capacity and areas where infrastructure is at capacity or severely congested.
Analyse the costs of infrastructure provision in different locations.	Draw upon existing transport and land use strategies and recent infrastructure development costs to estimate the cost of infrastructure provision in different locations, taking into account capacity in existing networks.
Analyse and map socio-economic distribution. Identify whether there are certain areas or communities that are more disadvantaged in terms of access to jobs, education, goods and services.	Combine the New Zealand Index of Deprivation with relevant transport information (as above) to assess whether access to employment differs by location (eg, CAU). Compare and contrast labour force participation rates by census area unit with employment accessibility measures (as above) to explore the relationship between employment access and labour market participation (as used by the Grattan Institute). https://grattan.edu.au/wp-content/uploads/2014/04/188_productive_cities.pdf

3.3 Understanding potential interactions between incompatible land uses

Local authority planning often deals with land uses that may be incompatible or result in reverse sensitivities or nuisances. Some common examples of this include:

- Industrial activities generating noise, odour, and pollution that may affect nearby residential uses and in turn trigger complaints from residents
- quarry and mining operations generating noise, dust, and truck movements that may affect nearby urban uses
- agricultural activities generating odour, dust, and pollution that may affect adjacent residential areas or countryside living.

In cases where the existence of reverse sensitivities may have a significant effect on decisions about how to provide development capacity, local authorities are encouraged to identify types of land uses that are potentially incompatible and define the distance over which any reverse sensitivities may arise. Housing and business development capacity assessments could usefully provide relevant qualitative and quantitative information on the magnitude of these reverse sensitivities, eg, based on noise complaints received around existing incompatible activities.

4 Understanding development and change

A good housing and business development capacity assessment would include information about past and future processes of development and change in urban land use. This would be useful for shaping planning responses required under the NPS-UDC, including but not limited to Future Development Strategies.

Urban areas can change significantly. The Productivity Commission (2017) provides this history of changes in land use in Petone (Wellington), a former heavy industrial area that has transitioned to a mixed residential and retail area.

> In the 1920s and 1930s, Petone was a thriving industrial hub with a range of businesses based around its good access to shipping and rail transport. Industry in the area began to decline in the 1950s – a process which intensified during the 1980s. In the 1990s, Petone began to transition from an industrial area to a shopping destination with the development of large format retail on vacant industrial sites.
>
> More recently, Petone has become a desirable place to live due to its abundance of character homes, emerging shops and cafes, and good transport access to Wellington City. Today, Petone houses many apartments, such as the Grand Theatre, which was converted to an apartment complex with boutique shops below.

The intent of the NPS-UDC is that decision-makers enable urban environments to "over time, develop and change in response to the changing needs of people and communities and future generations" (objective OA3). In some cases, this might call for the re-allocation of land from one use (eg, industrial) to another use (eg, residential or mixed use) to meet the changing needs and demands of communities and businesses.

Housing and business development capacity assessments might also provide information about whether urban planning policies that limit re-allocation of land between uses are imposing social and economic costs, by inhibiting beneficial changes in the built environment.

4.1 Prices can provide information on changing demands

Prices for land and floorspace can provide insight into how demands for different uses are evolving in different locations in urban areas.

Price movements may reflect:

- Changes in the overall level of demand for different activities in cities – for instance, in the case of Petone, the level of demand for industrial land fell in the 1980s due to changes to trade and industrial policy
- Changing preferences of businesses due to changes in transport and communication technology or consumer demands – for instance, suburban malls developed in response to increased uptake of automobiles, which made it easier to reach suburban locations for shopping.

To illustrate how changing demands may be reflected in changing prices, Figure 10 and Figure 11 show demand for three different urban land uses – offices, industrial uses, and residential uses – in a 'bid-rent diagram'. The diagram shows the relative value that different uses place on proximity to a specific location – in this case a city centre.

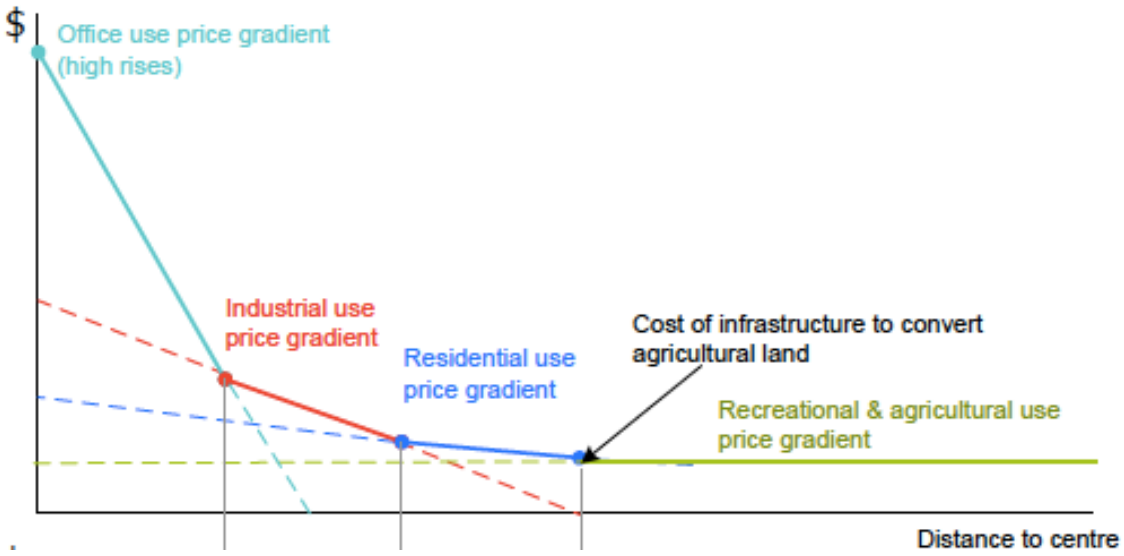
Figure 10 shows the demand of these sectors as they might have been in the early 20th century. Office uses were prepared to pay the most to establish near the centre, followed by industrial uses and then residential uses. This is the pattern that resulted in the Wellington CBD being developed for government offices in the early 20th century, while Petone was developed for industrial uses and residential uses were developed further out.

Figure 11 shows the effect of changes in relative demands for different uses over time. As the economy has transitioned from manufacturing to services, manufacturing uses have placed relatively less value on being close to the centre. Meanwhile, population growth has increased the demand for housing close to the centre. These changes are reflected in relative prices.

If land uses are allowed to change, then this will tend to result in the redevelopment of former industrial areas for office and residential uses that are willing to out-bid them for space. This can be an economically beneficial process, as office-based activities offer employment opportunities to offset the loss of industrial jobs.[32] Conversely, if zoning makes it difficult to re-allocate land to new uses, the result will instead be large differences in land values at the boundary between office / residential zones and industrial zones.

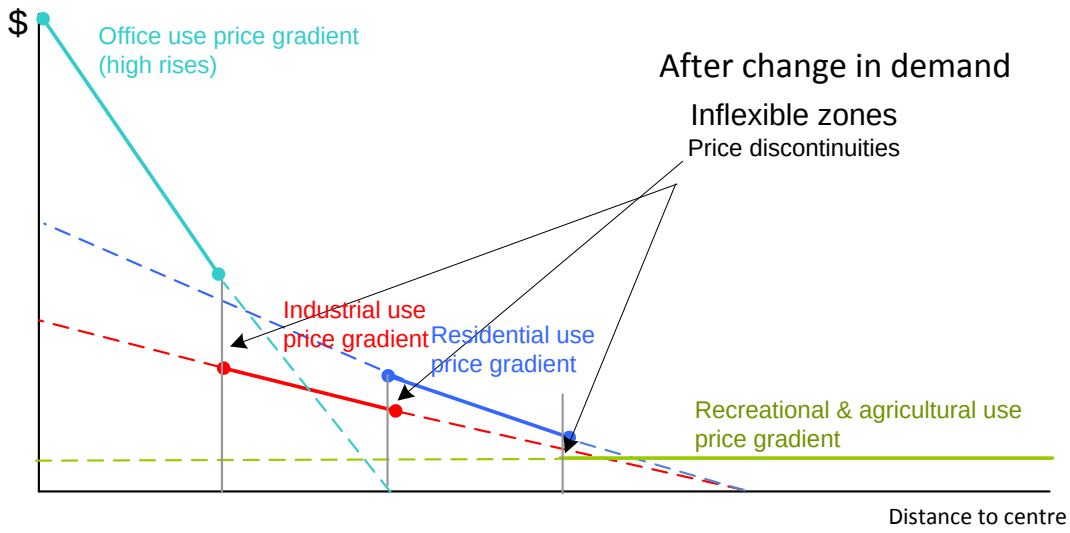
Differences in land prices may therefore indicate that there are opportunities to use resources more efficiently by rezoning. Industrial zone differentials available on the dashboard on the Ministry of Business, Innovation and Employment's website may indicate where zoning no longer matches demands of different land uses for particular locations (see part six).

Figure 10: Locational demands of different land uses: value placed on proximity to the centre (early 20th Century)



[32] In fact, re-allocation of land may improve access to jobs as office-based activities tend to offer more employment per hectare than industrial activities.

Figure 11: Locational demands of different land uses: changes in the value placed on proximity to the centre, as reflected in price differentials between zones (21st Century)



4.2 Identifying opportunities for and barriers to development and change

The following table summarises a range of measures and methods that local authorities may use in order to understand opportunities for and barriers to development and change. These measures are intended to assist in identifying:

- where there may be demand for land use change that is not being met due to current urban planning policies, based on price measures and 'ground-truthing' of recent development outcomes
- other barriers potential to land use change, such as the intentions of existing landowners to maintain existing uses or re-invest in long-lived plant and infrastructure
- the potential for reverse sensitivities or other positive or negative 'spillovers' between uses during the process of land use change
- where long-term outcomes for land use change may be significantly different than short-term outcomes, as in the Petone example.

Table 21: Measures of opportunities for and barriers to development and change

Measure / method	Description
Short-term	
Seek development sector advice on mis-matches between the relative demand for housing and business space and available development capacity.	Undertake regular meetings and structured interviews with development sector participants and peak bodies.
Assess whether there are large differences in land prices between industrial land and adjacent residential land which may indicate that land resources are not being allocated efficiently; and, Where possible, assess the underlying drivers of this price differential.	Industrial zone differentials on dashboard on the Ministry of Business, Innovation and Employment's website (see part six).

Measure / method	Description
Undertake 'ground truthing' to assess whether some areas zoned for business (particularly those areas showing large price differentials) may be already developing a more residential or mixed use character.	This might involve considering aerial photographs, CoreLogic data, consent and plan change enquires and requests (including unsuccessful requests), rating data base information, or undertaking physical site assessments to document changes over time.
Identify, particularly for areas already undergoing land use changes (eg, 'transition zones'), whether there are current or emerging reverse sensitivity issues occurring as a result of residential activity taking place within or in close proximity to a business zone.	Track and record reverse sensitivity concerns and complaints over time (eg, maintain a complaints register); and Survey local business and land owners to understand current and potential concerns (see below).
Survey local land and business owners to understand their current and future business intentions and development plans, location preferences, expectations for the area, and – where relevant – whether there are any barriers to relocation (eg, stranded assets, lack of suitable alternative sites etc.).	Engage with local business and land owners, and compare and contrast owner intentions and expectations with industry surveys and analysis (eg, CBRE Industrial Land surveys).
Assess possible impacts of changing zones on existing and new land uses.	Assess whether there are negative effects (externalities) associated with current activities that are not easily managed or mitigated. Identify whether a change of land use would be likely to displace existing activities (eg, residential activity may displace industrial activity, but commercial areas are likely to be able to accommodate both residential and business activity as mixed use activities).
Long-term	
Consider wider economic and structural trends (domestically and where relevant internationally) and consider the degree to which they may apply to the local study area.	Using information from the Business Assessment, consider and compare housing and business trends in your urban area with other urban areas (including international examples).
Project forward current economic trends, and consider how they may affect the future demand profile and preferences of different businesses and sectors over time.	This information should prove useful – but will need to be further developed – to inform work on the Future Development Strategy.

Part five: Monitoring market indicators

This part of the guide provides advice to local authorities on meeting the requirements of policy PB6 in the NPS-UDC. It explains the charts and data in the interactive online dashboard on the Ministry of Business, Innovation and Employment's website, and provides examples to show how they can be interpreted. It also suggests further indicators that may be useful.

1 Overview

1.1 Relevant policies

Policy PB6 in the NPS-UDC is:

> PB6: To ensure that local authorities are well-informed about demand for housing and business development capacity, urban development activity and outcomes, local authorities shall monitor a range of indicators on a quarterly basis including:
>
> a) Prices and rents for housing, residential land and business land by location and type; and changes in these prices and rents over time;
>
> b) The number of resource consents and building consents granted for urban development relative to the growth in population; and
>
> c) Indicators of housing affordability.
>
> Local authorities are encouraged to publish the results of their monitoring under policy PB6.

1.2 Intent

The requirement that local authorities monitor market indicators complements the policies requiring three-yearly housing and business development capacity assessments.

The policy also seeks to address specific weaknesses in local authority evidence bases: when the NPS-UDC was released local authorities did not tend to use price signals in their planning decisions, and few had a systematic programme of monitoring in place.

There are three key reasons for monitoring market indicators on a regular basis.

First, monitoring and reporting indicators on a quarterly or frequent basis will provide council decision-makers with timely information about market changes that may affect the sufficiency of development capacity and require their attention. Demand and supply dynamics in housing markets can change significantly in the interval between three-yearly assessments, meaning that a more timely source of information is required.

Second, maintaining a time series of data for a package of indicators will enable local authorities to track short, medium and long-term trends in housing and business land markets. This is similar to existing ongoing monitoring of air and water quality trends. Tracking trends will provide a more nuanced and sophisticated understanding of the dynamics of their local areas, and should be considered alongside the information provided by the assessments and indicators of price efficiency.

Third, some market indicators provide key inputs for the housing and business development capacity assessments.

1.3 What local authorities need to do

To give effect to the requirements of policy PB6, it is recommended that high and medium-growth local authorities:

- set up a process for quarterly reporting of market indicators to council decision-makers, which may include sharing resources between local authorities that share responsibility for a single urban area
- access the charts and data on the dashboard on the Ministry of Business, Innovation and Employment's website
- identify additional information that may also be relevant in the local context, such as data held by local authorities, other datasets published by Statistics New Zealand, and other data, including data from private providers
- develop an ongoing narrative to interpret what these indicators reveal about trends in the demand and supply of housing and development capacity
- establish a working relationship with other stakeholders that have expertise on their local markets that may be relevant in interpreting indicators, including the development community, housing providers, and others
- use these indicators to inform and update their housing and business development capacity assessments.

Local authorities should become familiar with market indicators and develop their own narrative about what they mean for the sufficiency of housing and business land capacity.

2 The indicators

The indicators discussed in this guide provide a starting point for analysis to enable local authorities to better understand market trends in their urban areas.

They can signal emerging problems but they do not demonstrate what factors are contributing to these problems. Further analysis and local knowledge is required to understand what is driving these trends, and whether land-use regulations may be a contributing factor.

These indicators should be used alongside complementary information provided by the housing and business development capacity assessments, and indicators of price efficiency.

2.1 What makes a good indicator?

The indicators discussed in this guide comply with the following set of criteria, based on guidance from Statistics New Zealand and other agencies. That is, they are:

- **Relevant**: The indicator provides meaningful information about the local development market and the possible impact of planning on this.
- **Timely:** Data are collected and available within a timeframe that is helpful to planning and decision-making needs.
- **Robust**: Statistically sound (measurement is methodologically sound and fit-for-purpose).
- **Clear:** Easy to understand, interpret, use and communicate; the inherent characteristics (eg, lags, caveats and limitations) are known and understood.
- **Comparable**: Trends in the indicator can be compared over time and/or across regions/areas, and can be disaggregated into the desired areas/levels of interest.

2.2 Key sources of data

This guide identifies several sources of data that can be used to meet the requirements of policy PB6:

- Data provided in an online dashboard on the Ministry of Business, Innovation and Employment's website
- Other sources of data held by local authorities, published by Statistics New Zealand, or private data providers, which can be used to delve deeper into housing market trends or investigate trends in business land markets.

2.2.1 Data on the Ministry of Business, Innovation and Employment's website dashboard – focus on housing

The Ministry of Business, Innovation and Employment's website hosts an online dashboard of market indicators that local authorities are required to monitor under policy PB6, and price efficiency indicators they should use to meet policy PB7.

The market indicators focus on housing. These indicators fall into four main categories:

Indicators of demand and supply

The dashboard provides an indicator that provides a rough comparison of estimates of demand for and supply of homes in urban environments:

- **Residential building consents compared to changes in household numbers.** This approximates the demand for, and supply of, new dwellings. It provides a starting indicator of how responsive supply is, ie, the sufficiency of development being undertaken, relative to demand.

This indicator provides a quick view on whether enough residential building consents are being issued to keep up with population growth. However, it is important to be aware that it does not account for all sources of housing demand in an urban area – factors such as visitor accommodation, purchases of holiday homes, or demand to move out of overcrowded shared accommodation may also drive demand.

Indicators of prices and rents

Trends in dwelling sales prices and rents are provided by the following measures:

- **Dwelling sales prices.** The level and trend in prices reflect trends in demand and supply, which can be matched against the demand/supply information above. More detailed price data provides information about relative demands for, and feasibility of, developing dwellings in particular locations.
- **Dwelling rents**. The level and trends in rents provide similar information as the level and trends of prices, above.

These indicators also provide information on whether demand for housing is being met. If there is an insufficient supply of housing relative to demand, both sale prices and rents will tend to increase as people bid up the price of the housing that is available. However, other factors, such as the availability and cost of mortgage finance, may affect the price that people are willing and able to pay for a home without directly increasing rents.

Housing affordability indicators

The Housing Affordability Measure (HAM) published by the Ministry of Business, Innovation and Employment measures trends in affordability of prices and rents relative to income.[33] Two HAM indicators are provided:

- **HAM Buy**, which provides a picture of affordability trends for first home buyers
- **HAM Rent**, which provides a picture of affordability trends for renters.

HAM indicators are more complicated to interpret as they depend upon outcomes for dwelling sale prices and/or rents as well as labour market outcomes (ie, whether incomes are rising or falling) and, in the case of the HAM Buy measure, the availability and cost of mortgage finance. In principle, affordability can improve even while dwelling prices are rising, if incomes are rising or mortgage interest rates are falling. Further information on the HAM is on the Ministry of Business, Innovation and Employment's website.

[33] http://www.mbie.govt.nz/info-services/housing-property/sector-information-and-statistics/housing-affordability-measure

Other contextual indicators

The dashboard also includes several additional metrics that may provide additional context:

- **Ratio of dwelling sales prices to rents**. This ratio augments the above price and rent indicators, by providing information about the relationship between owning and renting dwellings over time. It shows trends in investor yields and changes in the ease of moving from renting to ownership.
- **Dwelling sales volumes as a percentage of total residential stock**. This measures the quantity of dwellings being bought and sold relative to the total stock. It is a measure of activity or tightness in the local housing market.
- **Land value as a percentage of capital value**. This measure shows the share of house values that are accounted for by land prices, as opposed to the value of housing construction. A higher ratio indicates that land is more valuable relative to the buildings that occupy it.

Charts can be downloaded in image and pdf file formats for reporting purposes, and the underlying data can be downloaded in spreadsheet format for custom analysis and reporting.

Notes on the dashboard

a) Data, charts and maps are available for:
   - "Expanded urban areas" (the combined area of the territorial authorities that share jurisdiction over a high- or medium-growth urban area). This is the default geographic unit on the dashboard
   - Each Territorial Authority (TA)
   - Wards and statistical area units (except for building consents and population).

b) Most of the indicators are available from 1993.[34] This date roughly coincides with the start of a new era for housing markets, with household borrowing steadily increasing from the early 1990s following financial deregulation. All data series are updated quarterly, except for population estimates which are revised annually.

c) The sources for this data are Corelogic (for valuation data, sales prices and volumes), Statistics New Zealand (for building consents and population, and the Housing Affordability Measure) and MBIE's rental bonds data base (for rents and the Housing Affordability Measure).

d) Most of the charts and maps show median values, to remove the effect of extremes (such as the occasional very expensive house). Some charts show a rolling average (median or mean) in order to reduce the seasonal effect (eg, fewer homes are usually sold in the winter). Some indicators are presented as an index, which converts different data series into a common base so that their change over time can be more easily compared.

e) The dashboard is best accessed using Chrome as a browser. The dashboard and methodology underlying the charts will be periodically updated. A more detailed methodology paper will be posted on the dashboard to help local authorities to interrogate the underlying data and construct additional indicators that they consider useful.

[34] Except for building consents which are available from 1997.

2.2.2 Other data – not on the Ministry of Business, Innovation and Employment's website dashboard

There are three additional sources of information that local authorities may choose to draw on to develop monitoring reports.

First, local authorities have their own sources of data which they could make greater use of to meet the requirements of policy PB6. This may include:

- more detail about consents than is provided on the dashboard on the Ministry of Business, Innovation and Employment's website
- supplementary information about demolitions and completions
- rating property data recording the attributes of every parcel or title, including valuation and sales information
- vacant land registers.

Local authorities are encouraged to build their own local knowledge using this kind of data.

Second, Statistics New Zealand, the Ministry of Business, Innovation and Employment, and other government agencies publish additional data on population, housing, and other economic indicators, that local authorities may find useful when seeking to understand trends in their housing markets. This may include:

- data on dwelling types and dwelling occupancy rates from the Census (updated on a five-yearly basis)
- household crowding indices calculated based on Census data (updated on a five-yearly basis)
- sub-national population and household estimates and projections (updated on an annual basis)
- data on visitor guest nights, international tourism arrivals, and permanent and long term migration (updated multiple times a year)
- national construction cost inflation indices (updated multiple times a year).

Third, private data providers also hold complementary information on housing and business market outcomes. These data providers typically release a limited selection of data for free online, but more in-depth data on individual locations or trends must be purchased. Local authorities are encouraged to be aware of this data and identify how it may help them to understand specific aspects of their urban area that are not informed by public sources.

Information from private providers is likely to be important for understanding trends related to business land and property, as this is an area where there is little publicly available data. As outlined in part three (Assessing demand and capacity for business land), Statistics New Zealand and the Ministry of Business, Innovation and Employment provide a range of data about local economies and businesses, including statistics on employment and GDP. However, **the dashboard hosted on the Ministry of Business, Innovation and Employment's website for the NPS-UDC provides indicators that mostly relate to residential land and homes.**

Local authorities may hold data on commercial building consents and about business land in their rating property database. As recommended in part Three, local authorities can augment this data through stakeholder and field surveys.

A range of private providers publish both data and market intelligence about local markets for office, retail and industrial property.[35] This may include information about:

- business property sales and lease values, eg for office space and retail space
- industrial land sale prices
- development yields and absorption rates of new capacity, eg greenfield industrial land take-up
- office, retail, and industrial vacancy rates.

This information can be used to meet requirements of policy PB6 to monitor market indicators for business property. Local authorities could contact their local branch of the Property Council for advice on data sources and interpretation, including data quality issues.

[35] For example, both Colliers International and Bayleys publish online research about local business property markets.

3 Interpreting the indicators in the the Ministry of Business, Innovation and Employment's website dashboard

3.1 A package of indicators tells a story

Each of the individual indicators on the interactive online dashboard provides useful information about specific aspects of local land and development markets. However, it is important to consider indicators as a package as they tell a richer story in combination.

For instance, if prices for homes are rising in an urban area, this does not necessarily mean that housing supply is constrained. There may be other factors that are driving price trends. To investigate this, it is helpful to also look at the following indicators:

- Rents: If rents are not rising, it may indicate that other factors, such as a change in the availability and price of mortgages, have affected the prices of homes without affecting rents. Conversely, if rents are rising, it may indicate that there is a shortfall in homes that is affecting the market for both rental property and owned property.
- Residential building consents compared to changes in household numbers: If household growth has increased faster than residential building consents, there may be supply-side factors making it difficult to build more homes in response to growing demand.

Additional information can also be used to enrich the narrative.

For example, if both prices and rents are rising and building consents are not keeping up with household growth, it may be necessary to investigate other sources of information such as:

- Construction cost inflation data: If construction costs are rising rapidly, it may indicate that the local construction industry is capacity-constrained and facing challenges scaling up to build more homes in response to demand.
- Price efficiency measures on the dashboard: These provide information about how land ownership or planning may affect the supply of development opportunities (see part six).

Conversely, if both prices and rents are rising and dwelling consents *are* tracking with household growth, it may be necessary to investigate indicators such as:

- Visitor arrival trends and tourism activity: A significant upsurge in visitor arrivals may also increase demand on the local accommodation sector, eg by encouraging some people to rent out dwellings via Airbnb rather than as long-term rentals.
- Buyer classification data: A significant change in the composition of home buyers in the urban area, eg, an upsurge in the number of people from other regions who are purchasing investment properties or holiday homes, may also increase demand on housing.

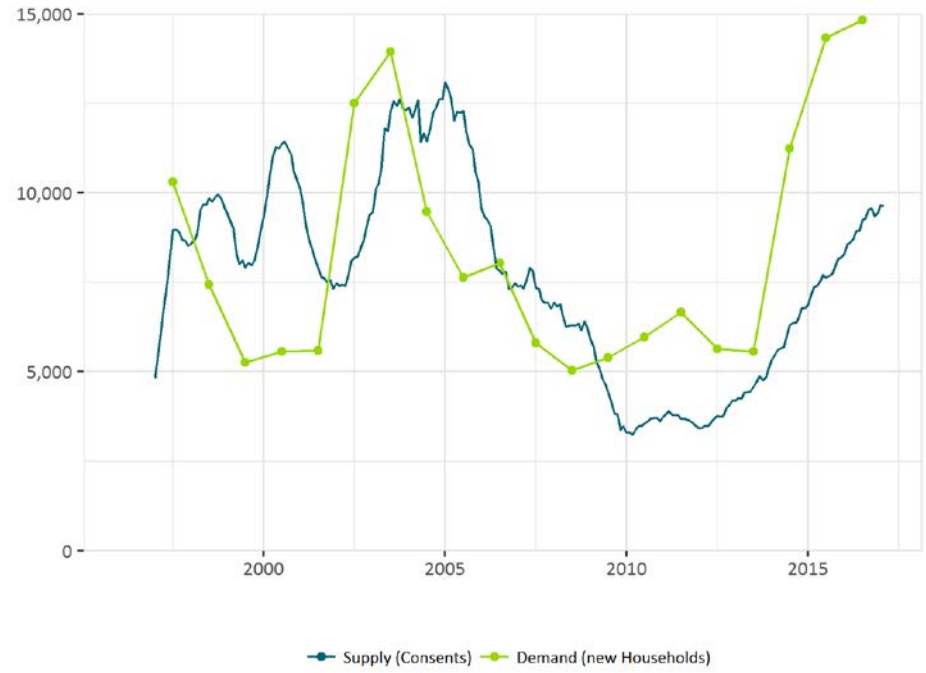
An example of a monitoring report that analyses a package of such indicators to meet the requirements of policy PB6 is provided in section 5 of this part.

The rest of section 3 explores each of the market indicators available on the dashboard in more detail.

3.2 Indicators of demand and supply

3.2.1 Residential building consents compared to household growth

Figure 12: Example – Residential supply (building consents lagged six months) vs demand (change in household numbers), for Auckland



Technical notes

The two data sets provided in the dashboard are:

- The annual number of building consents, as a proxy for the supply of new dwellings. This data series is lagged by six months, to account for the time taken from consenting to completion.[36] The data does not account for uncompleted building consents, nor is it net of demolitions. It also does not adjust for differences in type or size of dwellings between TAs or over time. (There is in fact very little difference, except for Queenstown-Lakes District which has experienced increasing dwelling sizes since 2005).
- The most recent estimate of resident population, divided by the local average household size (which differs for each TA), as a proxy for demand for new dwellings. As the population estimates are only updated annually by Statistics New Zealand, the population growth line can be extended to include the projected figure for the last data point. The data does not include visitor demand for new dwellings.

Data source: Statistics New Zealand

Interpretation

This indicator provides a rough estimate of movements in both demand and supply for new residential dwellings, and the gap between the two. It does not include the demand for new dwellings driven by visitors and others who live outside the local area, which at times can be a significant driver of prices. Nor does it account for latent demand, such as people who live in crowded or shared accommodation who may want to move into a separate dwelling.

Some excess supply is desirable for the market to operate efficiently. Short-term gaps happen as supply responds and adjusts to changes in demand. However, if household growth is higher than new dwelling consents, and the gap between the two series is increasing over time, it may indicate supply-side constraints, especially if prices for residential properties are also rising. (If construction is lagging behind demand growth it will tend to push up prices.)

For example, the chart above for Auckland shows that dwelling consents have increased in recent years but have not fully responded to continued population growth. The price and rent indicators discussed later in this guide suggest that the significant and prolonged nature of the gap has translated into price increases.

Supply may be constrained by a number of factors: such as landowners withholding land from development (land banking), and/or increasing construction costs or labour shortages. Planning regulations can open up or constrain supply. A key objective of the NPS-UDC is to ensure that local authorities know how their resource management plans and infrastructure capacity is impacting on supply.

For regions with significant visitor growth or non-resident investment in housing, such as Queenstown, it may be useful to adjust the growth in household figures provided by Statistics New Zealand with data on visitor numbers or the proportion of unoccupied dwellings to reflect these components of demand for new dwellings. Local authorities could also consider actual data on international migration which is released monthly by Statistics New Zealand, to enhance the population estimates that are produced between Censuses.

[36] The majority of consents are completed within this period, although this varies over time and place.

Local authorities can also use the underlying building consents data from the dashboard on the Ministry of Business, Innovation and Employment's website and supplement it with their own data to:

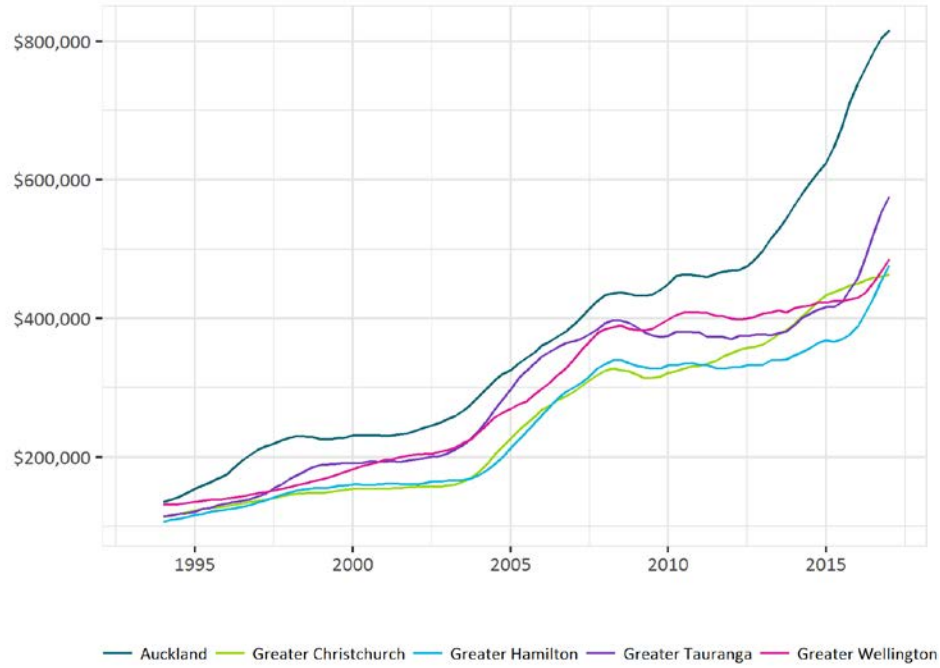
- adjust for demolitions and completions
- adjust the lag on time to completion, where the lag may be longer than six months for medium- to higher-density dwellings
- explore more detailed information on the size and type and value of new dwellings.

Local authorities may also choose to augment the data on building consents data by analysing their own data on resource consents relative to building consents, to help assess the supply that will be coming on-stream but which has not yet reached the building consent stage.

3.3 Indicators of prices and rents

3.3.1 Dwelling sales prices (actual)

Figure 13: Example – Median dwelling sales prices, by selected expanded urban area



Technical notes

Prices are presented in nominal terms; that is, they have not been adjusted for general inflation.

Median prices are heavily influenced by the sale of existing stock, as new builds comprise a small proportion of total sales in any given period.

They are also affected by the composition of sales, including the size and quality of dwellings, as well as type (houses, apartments etc.), which may vary by area and over time. This median price series is not adjusted for size and quality of dwellings.

Data source: CoreLogic

Interpretation

This indicator shows the median prices of residential dwellings sold in each quarter. It provides a broad and recognisable picture of absolute price levels and is therefore a useful starting point for analysing price trends. Significant dwelling price growth can increase the feasibility of new developments (eg, suburban apartments). On the other hand, rapid price increases can fuel land banking, where landowners expect continued future increases.

In general, if dwelling prices are rising, we would expect to see dwelling building consent numbers rise in response. If prices are rising without evidence of growth in consents, it may indicate a constraint on supply and should motivate further investigation.

Variations in prices between different areas may reflect a range of factors, including differences in demand for housing due to different wage levels or different levels of consumer and natural amenities; or imbalances between demand and supply due to constraints on housing development. Where price differences persist over long periods of time and coincide with similar rates of housing supply, they are more likely to reflect differences in demand.

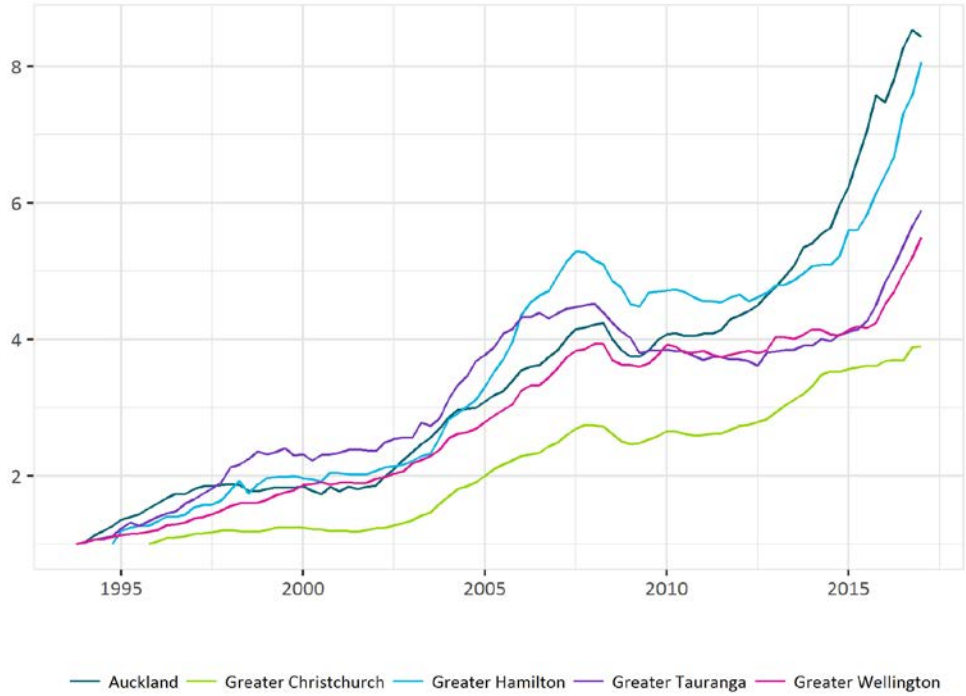
The chart above presents median prices for a selection of expanded urban areas. It shows that, for these areas:

- Median prices are currently highest in Auckland; the gap between Auckland and other areas widened significantly after 2012.
- More recently, prices in Tauranga, Hamilton, and Wellington have risen more rapidly, while prices have grown more slowly in Christchurch.
- House prices have generally increased in all areas over the past two decades, and have followed some common trends that may arise due to macroeconomic factors. For example, prices increased to a peak in 2008/09 before falling after the global financial crisis.

Price trends reflect many different forces acting in the market, including but not limited to the effect of urban planning policies. Developing a narrative about which factors are driving price trends is challenging but can provide useful insights for a local authority's planning response to these trends.

3.3.2 Dwelling sales price trends (index)

Figure 14: Example – Sales Price Appraisal Ratio, by selected expanded urban area



Technical notes

The Sales Price Appraisal Ratio (SPAR) provides a measure of residential dwelling sales price trends that adjusts for the composition and quality of the dwellings sold over each period. It does this by comparing the sales price of each dwelling sold in a period compared with its valuation estimate.[37]

In this way, the SPAR adjusts for some of the problems of simple sales price data, which is based on only a very small sample of the total housing stock (as individual dwellings are not typically bought and sold very often). The SPAR also takes account of the differences in quality of dwellings (such as the value of renovations).

The Fisher dwelling price index is an alternative to the SPAR and is available for download on the dashboard. The Fisher index is based on real prices (ie, adjusted for price inflation using the consumer price index).

The Reserve Bank of New Zealand has recently issued advice that it considers the SPAR is a better way of producing an index than the Fisher price index mentioned above.[38] REINZ is also moving to this method. Further information on how the SPAR is generated will be provided in a detailed methods paper on the dashboard.

Data source: CoreLogic

Interpretation

Changes in dwellings' prices over time are best compared using a price index. There are several methods for calculating an index of dwellings' price movements. The preferred method (shown above) is the Sales Price Appraisal Ratio (SPAR) as it adjusts for the composition and quality of dwellings sold and is thereby a better indicator of underlying price movements.

The above chart provides an index of dwelling sales price trends for the same group of TAs as Figure 13, adjusted for the composition and quality of the housing sold. This index shows how prices for comparable dwellings have changed relative to the base year of 1993. For instance, a SPAR index of 5 would indicate that prices are five times higher today than in 1993.[39]

The SPAR index shows some differences relative to median dwelling sale prices:

- While Hamilton has a low median house price compared to the other four urban areas, Hamilton has experienced a similar rate of house price *increases* as Auckland over the entire period
- Wellington and Tauranga have experienced a similar rate of house price increase over the entire period, while Auckland has only experienced a more rapid rate of house price increase than these cities since 2010
- Christchurch has consistently experienced the lowest rate of house price increase over the entire period.

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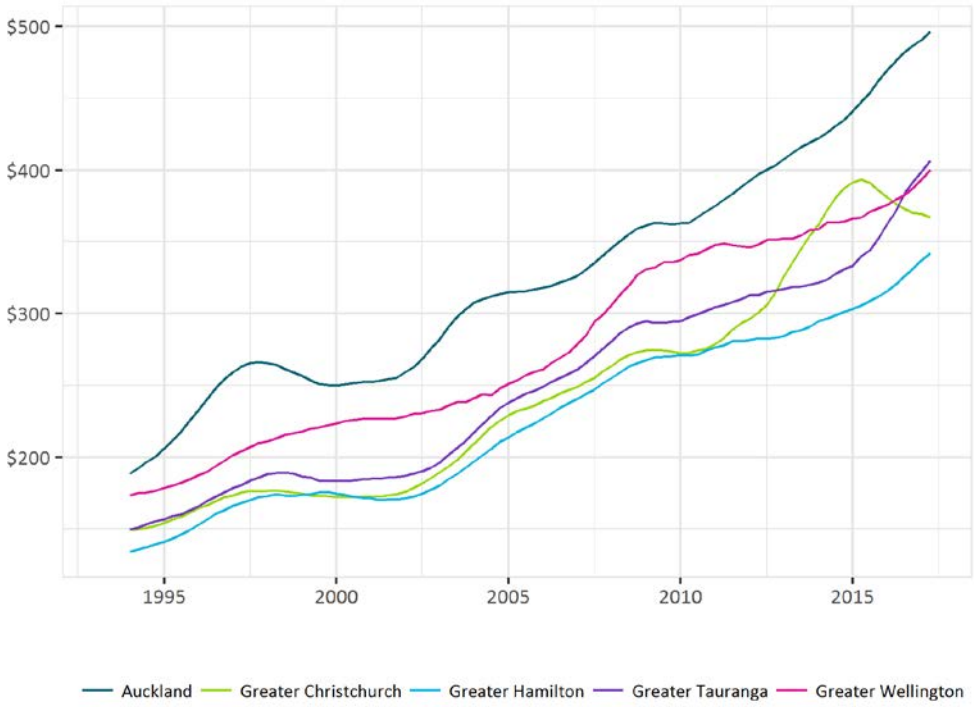
[37] New builds are included in these figures if their valuation was completed within the latest three-year valuation period.

[38] See http://www.rbnz.govt.nz/research-and-publications/analytical-notes/2017/an2017-02

[39] This index is presented in nominal terms, ie not adjusting for general consumer price inflation, rather than real terms.

3.3.3 Nominal dwelling rents

Figure 15: Example – Nominal geometric mean residential rents, by selected expanded urban areas



Technical notes

This indicator reflects nominal mean rents as reported in bonds lodged with MBIE, in dollars.

The data is for private bonds (private landlords) and hence excludes social housing.

The mean used is the geometric mean. The reason for using this mean is that rents cluster around round numbers, and tend to plateau for months at a time (spiking up by say $10 or $20 at a time). This makes analysis of time series difficult and using the geometric mean is a way of removing this clustering effect.

There are a number of caveats on these data series:

- Property type is self-reported so can be inconsistent, particularly the distinction between apartment and flat as there is no clear separation between these categories.
- It captures bonds at the time of lodging (typically at the start of a tenancy), so doesn't reflect subsequent changes in these rents. It will therefore tend to understate the rent over the term of a tenancy.

Source: MBIE

Interpretation

Like the median dwelling sale price indicator shown in Figure 13, this measure provides a broad and recognisable picture of absolute rent levels, and should therefore be the starting point for analysing trends in rents. In general, strong and persistent growth in rents indicates, even more strongly than house price increases, that housing supply is insufficient to meet demand.

This is because rents tend to be more sensitive to income levels than dwelling prices, and on average, renters also have lower incomes than home owners. For this reason, rent increases tend to follow incomes more closely than house prices and are less volatile.

Estimates of mean rents at a local level may be affected by the composition of rental stock (ie the size and type of rental dwellings). This does not vary markedly between territorial authority areas. However, there may be significant differences between suburbs that may make a 'like for like' comparison difficult. For instance, the Auckland city centre has a high proportion of one bedroom apartments while other suburbs are dominated by three-bedroom stand-alone houses. More disaggregated data on rent trends for different types of rental accommodation is available on the Ministry of Business, Innovation and Employment's website.[40]

The rental stock is typically of lower quality and less well maintained than owner-occupied dwellings. This means that comparing average prices with average rents may be misleading as the characteristics of the average rental property are likely to be different than the characteristics of the average dwelling sale.

The chart above presents geometric median rents for five high-growth urban areas. It shows that:

- The cost of renting is highest in Auckland and lowest in Hamilton, which is consistent with differences in median sale prices between cities
- Rents in Christchurch rose rapidly after the 2011 Canterbury Earthquake, due to the shortage of housing resulting from earthquake damage, but they have fallen since the start of 2016.

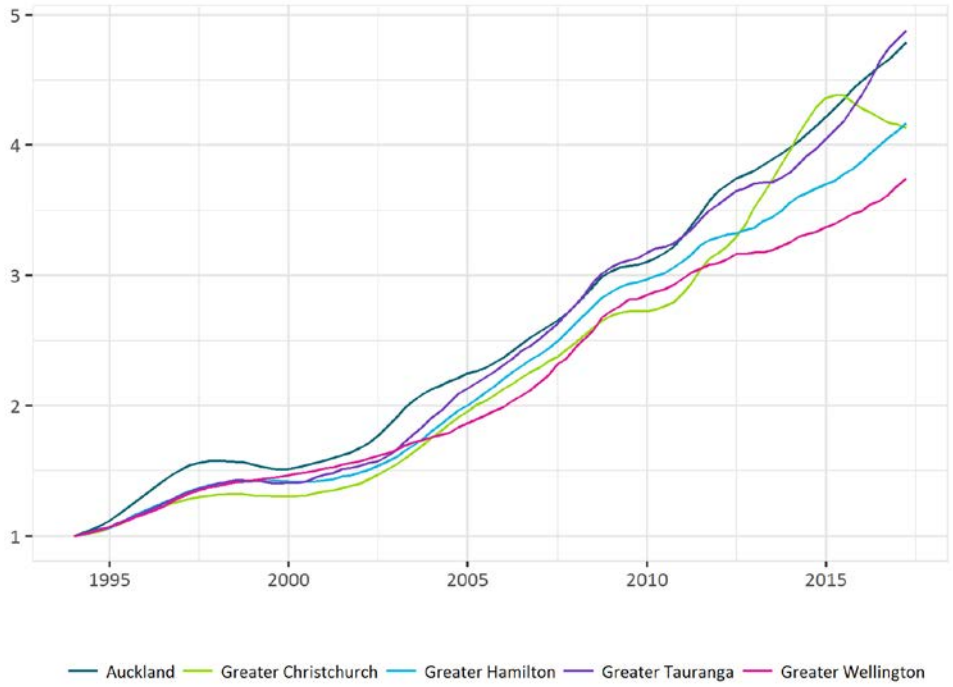
To assist in interpreting data on rents, information on the share of households living in rented accommodation versus owner-occupied housing, and the characteristics of those households, is available on Statistics New Zealand's website.[41]

[40] http://www.mbie.govt.nz/info-services/housing-property/sector-information-and-statistics/rental-bond-data

[41] http://www.stats.govt.nz/browse_for_stats/people_and_communities/housing/housing-indicators.aspx

3.3.4 Index of dwelling rents

Figure 16: Example – Residential rents index, by selected expanded urban areas



Technical notes

This indicator draws on the same nominal mean lodged rents as the previous indicator, but the results are presented as an index rather than in nominal dollars to show the percentage change relative to a common base year of 1993.

Using an index enables the rate of change in the level of rents to be compared across territorial authority areas, as it uses a common base (starting point) for all data series.

This index is not adjusted for dwelling composition, but this could be done using data on the dashboard on the Ministry for Business, Innovation and Employment's website.

Data source: MBIE

Interpretation

This indicator enables the rate of change in average rents (using their geometric mean) to be compared across different areas. It is similar to the dwelling sales price index but does not adjust for changes in the characteristics of rental dwellings over time.

This index shows how prices for comparable dwellings have changed relative to the base year of 1993. For instance, a rent index of 5 would indicate that prices are five times higher today than in 1993.[42]

The above chart presents an index of rent increases in five high growth urban areas over the 1993 to 2017 period. The chart indicates that:

[42] This index is presented in nominal terms, ie not adjusting for general consumer price inflation, rather than real terms.

- The selected areas have experienced very similar rates of rent increases, perhaps reflecting similar income constraints on demand in all of their rental markets. There is more divergence in relative house price increases.
- Although Wellington has high absolute rents compared with other cities, it has experienced a slower rate of rent increase over the last decade than other cities.
- Christchurch experienced the most rapid rent increases between 2011 and 2015, before experiencing falling rents in 2015 and 2016.

3.3.5 Detailed geographic data on dwelling sale prices and rents

Figure 17: Example – Median dwelling sales prices for Greater Hamilton area units, quarter 4 2016

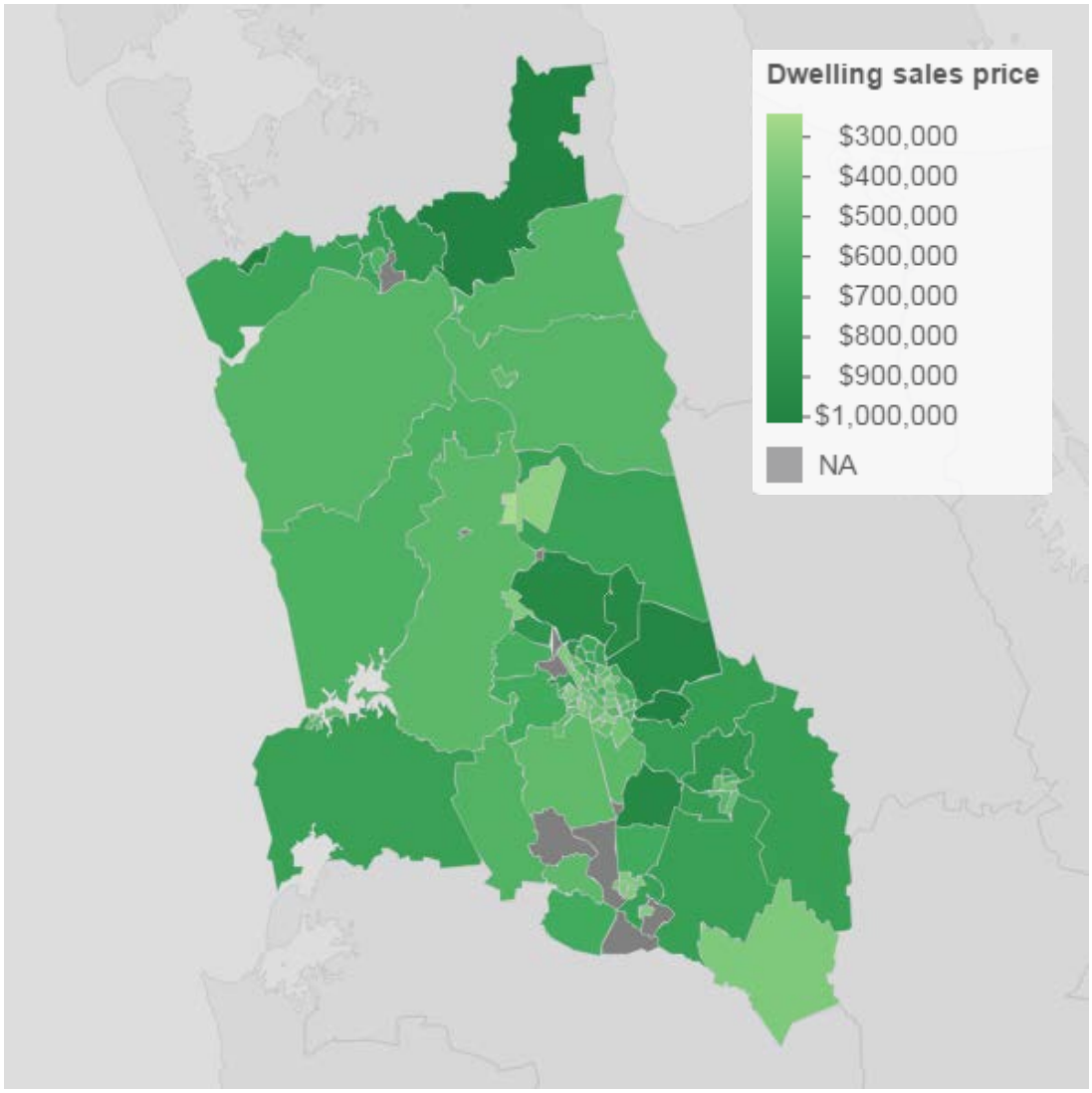
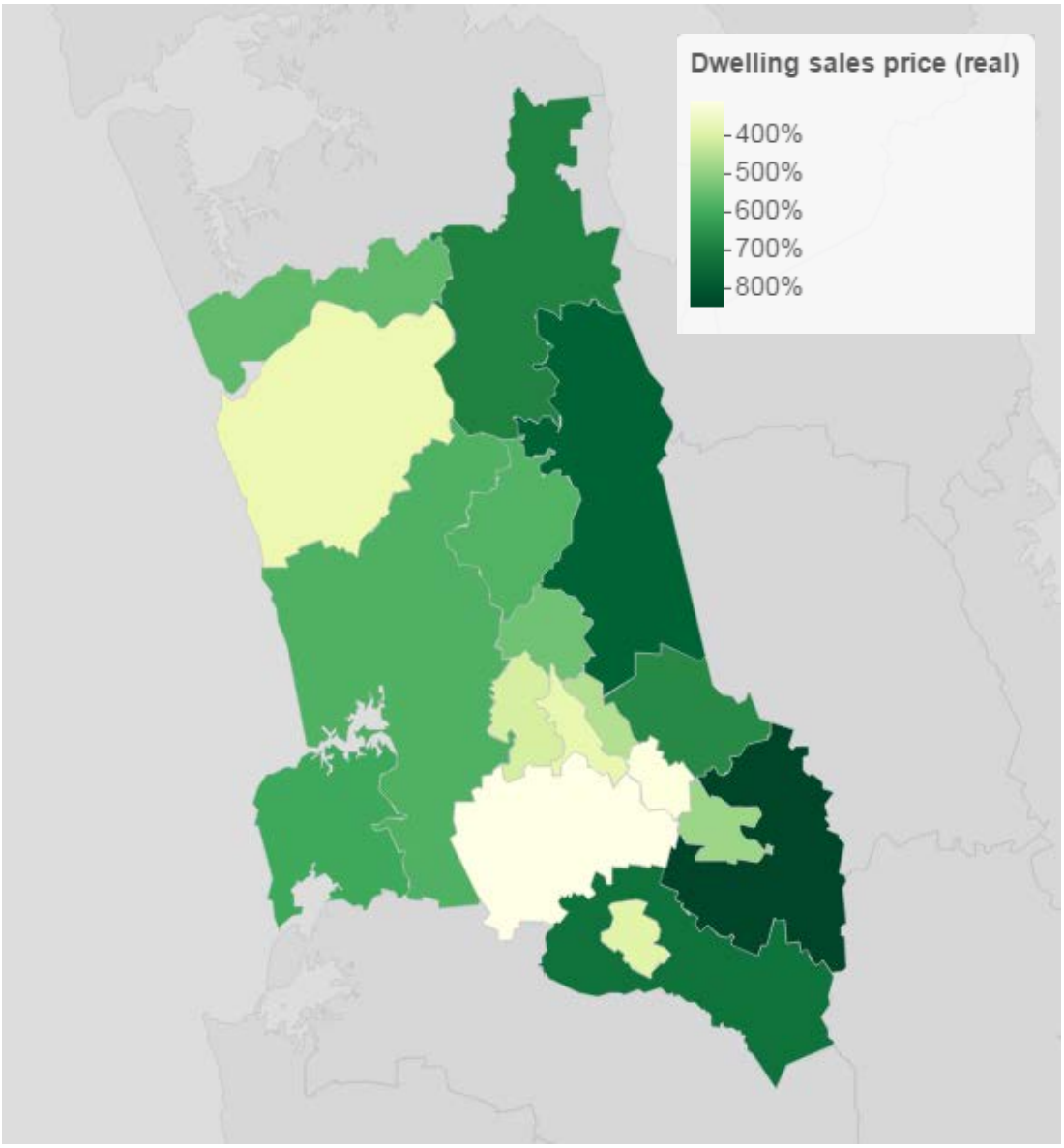


Figure 18: Example – Change in median dwelling sales prices, for Greater Hamilton wards, 1996 Q4 –2016 Q4



Technical notes

- The price data used for these heat maps are the same as used for the median dwelling sales prices, but disaggregated into smaller areas.
- These maps do not control for the types of dwellings that are being sold in different locations and as a result do not present a 'like for like' comparison. Larger areas on the map tend to have lower population densities and a higher proportion of large lots and lifestyle blocks, while smaller areas tend to have higher population densities and a higher proportion of flats, apartments, and houses on small sections.
- Additional analysis is required to control for variations in dwelling types between areas to obtain a 'like for like' comparison of prices between different areas.

Data source: CoreLogic

Interpretation

Data on sales prices and rents within local areas can provide insights into the location of residential demand. Holding dwelling types constant, areas with higher prices or rents tend to have higher levels of housing demand. This reflects the fact that these areas have better access to employment and other social and economic opportunities, or better localised amenities such as access to beaches or a desirable school zone.

Larger cities may have larger price differences between locations compared with small cities. This is because large cities tend to have more congestion, leading to greater variations in access to employment and amenities between central and outlying locations. They may also have more variation in amenities between neighbourhoods. Similarly, cities' geography may affect price variations: for instance, coastal cities tend to have more variation in views than flat inland cities.

Geographic data on house prices is an important input into feasibility modelling for residential dwellings. Because many development costs, such as construction costs, do not vary significantly between different suburbs, it is more likely to be commercially feasible to develop new housing in areas with higher dwelling sale prices. Data from the dashboard on the Ministry of Business, Innovation and Employment's website can be used as an input to development feasibility models for different locations, with additional input and validation from local Property Development Expert Groups.

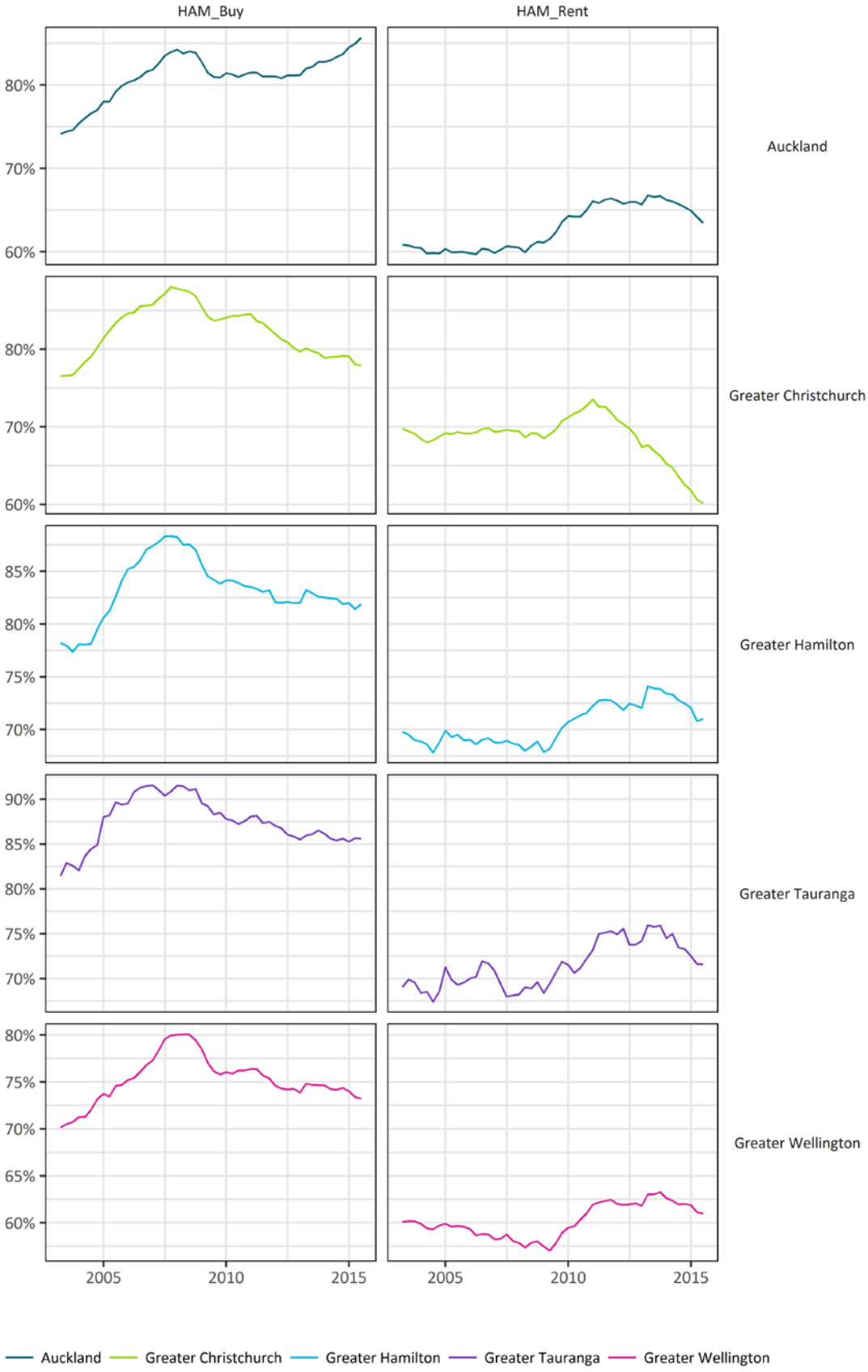
Dwelling sales data underpinning these maps can be used as an input to more detailed analysis of price variations between areas. Some price efficiency indicators under Policy PB7 are estimated using these techniques.

Figure 17 shows median prices in the last quarter on 2016 for area units within the Hamilton urban area, while Figure 18 shows changes in prices for wards within this area between 1997 and 2016. Darker green shows higher prices, price increases, or rents, and lighter green lower prices, price increases, or rents. These heat maps show that recent prices have been highest closest to Hamilton City and in the north-west of the expanded urban area but that, over the last two decades, prices have increased the most in the south.

When areas with lower starting dwelling prices experience significant price growth, it may indicate the effect of constraints on housing supply leading to 'spillover' of demand into formerly low-priced areas, or changes in the quality of amenities in different areas. This may also have implications for housing affordability, as people who are priced out of low-priced areas may have fewer alternatives.

3.4 Housing affordability indicators

Figure 19: Example – HAM Buy and HAM rent for selected expanded urban areas



Technical notes

HAM Buy and Rent measures have been released as an 'experimental' series that will eventually be turned into official statistics on housing affordability.

These measures use data on household incomes and rents from Statistics New Zealand's Integrated Data Infrastructure, Corelogic sales price information, and mortgage interest rates.

For potential home-owning households, HAM Buy calculates what their residual income would be after housing costs if they were to buy a modest (ie lower quartile) first home in the area in which they currently live. For renting households, HAM Rent calculates what their residual income would be after paying the rent.

Households are then classified as being either above or below a 2013 National Affordability Benchmark. This is set as the median affordability for all homeowners and renters, nation-wide, in June 2013.

HAM measures are available for territorial authorities, and also for Auckland wards. At the time this guidance was released, they were only available through the first quarter of 2016, ie with a one-year lag. This indicator will be updated to be more timely in future releases. For further information, refer to the Ministry of Business, Innovation and Employment's website.

Data source: MBIE

Interpretation

The HAM indicators provide a picture of national and regional housing affordability trends, bringing together the impact of changes in house prices or rents, mortgage interest rates and incomes.

The indicators calculate how much money households have left over after paying for their housing costs. For renting households, HAM Rent reflects how much money is left over after paying rent for an appropriately sized dwelling in the area in which they currently live. For the population of potential first home buyers, HAM Buy reflects how much money they would have left over if they were to transition from renting to home ownership by purchasing a modest home in the area in which they currently live.

These residuals are then compared with a 2013 National Affordability Benchmark, which is the national average for all renting and home-owning households. Because renting households typically have lower incomes relative to housing costs than home owners, more than half of them fall below the 2013 National Affordability Benchmark.

A higher number on the charts indicates a lower level of affordability, as it indicates that more households fall below the affordability benchmarks, and vice versa.

It is most appropriate to use HAM Buy and HAM Rent to understand trends in housing affordability in a particular area. If the share of households that do not meet the affordability benchmark is rising, it indicates that housing is becoming less affordable in an area. Comparisons between cities may be less meaningful.

Differences in the level of HAM indicators between cities could reflect a combination of factors. For instance, Auckland and Wellington have lower HAM Rent indicators than other cities (indicating better rental affordability) in spite of the fact that rents in these cities are generally higher. This reflects the fact that renting households in these cities also have higher incomes.

The charts above show that:

- Buying a home is less affordable than renting for households with comparable incomes in all urban areas.
- Between 2013 and the first quarter of 2016, first home buyer affordability declined in Auckland (as indicated by the upwardly-sloping HAM Buy indicator) but increased in Christchurch. It held constant, or increased slightly, in Tauranga, Hamilton, and Wellington. The costs of buying a first home and servicing a mortgage have probably increased more rapidly than incomes in Auckland over this period.
- Between 2013 and the first quarter of 2016, rental affordability appeared to increase in all five cities, suggesting that renters' incomes increased more rapidly than rents.

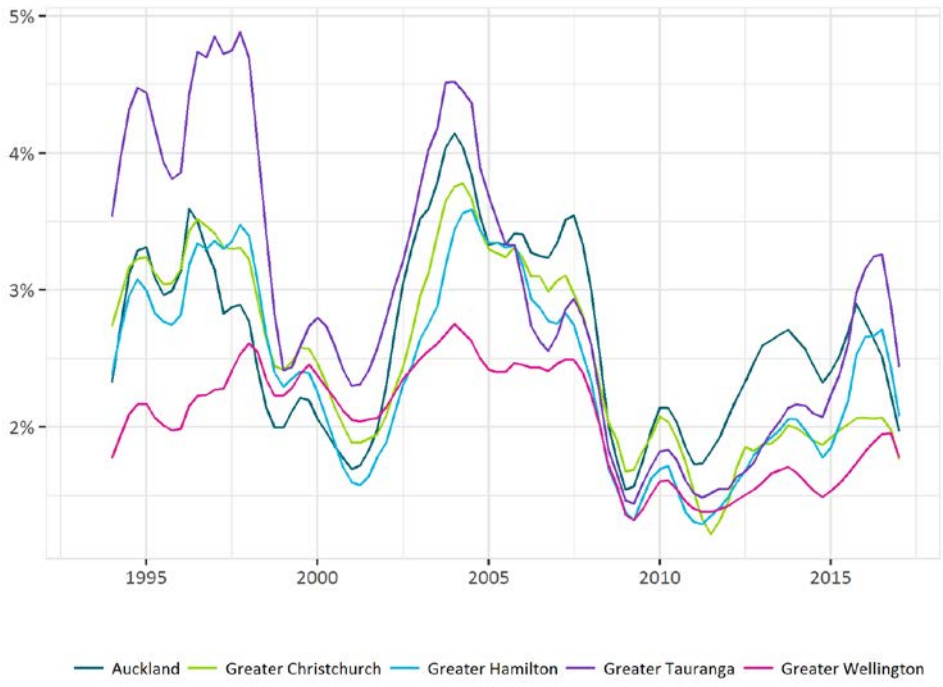
Given evidence that dwelling sale prices in several cities have risen significantly from 2016, it seems likely that home buyer affordability will have deteriorated. This should be picked up as the indicator is updated.

3.5 Additional data on the dashboard

This section briefly summarises some additional indicators that are included on the dashboard hosted on the Ministry of Business, Innovation and Employment's website. These may provide additional context to assist in interpreting other indicators, but are not considered to be core indicators.

3.5.1 Dwellings sales volumes as a percentage of total residential stock

Figure 20: Example – Sales volume as percentage of residential stock, by selected expanded urban area



Technical notes

This indicator shows the annual number of sales as a percentage of the total stock of residential dwellings, by expanded urban area. It is calculated as a rolling average, to help smooth out short-term fluctuations and provide a better indication of long-term trends.

Data source: CoreLogic

Interpretation

This indicator supplements the previous measures (which show the supply of new dwellings). Growth in this measure suggests a more active market – people are more willing to buy and sell houses – and can be a leading indicator of future price growth.

Sales volumes indicate a supply response to strengthening drivers of demand (eg, population growth). Existing owners tend to be more willing to put their house on the market in a rising rather than a falling market. Conversely, a declining trend in this indicator can signal existing owners withdrawing from the market and constraints in the supply of dwellings.

When sales volumes are high, rising investors (owners of more than one dwelling) often tend to be particularly active buyers and sellers, and when they pull back sales volumes fall.

The chart above shows dwelling sales volumes for a selection of expanded urban areas. The pattern follows the property cycle. For most areas there are three distinct "peaks" in the series followed in each case by a downward trend, with seven to 10 years from peak to peak. With regards to the current cycle, the indicator shows sales volumes peaked about a year ago and are slowing in all housing markets shown. Sales volumes in the current cycle never reached the levels of the previous two cycles, indicating greater constraints in the supply of dwellings for sale (relative to total stock) in this cycle.

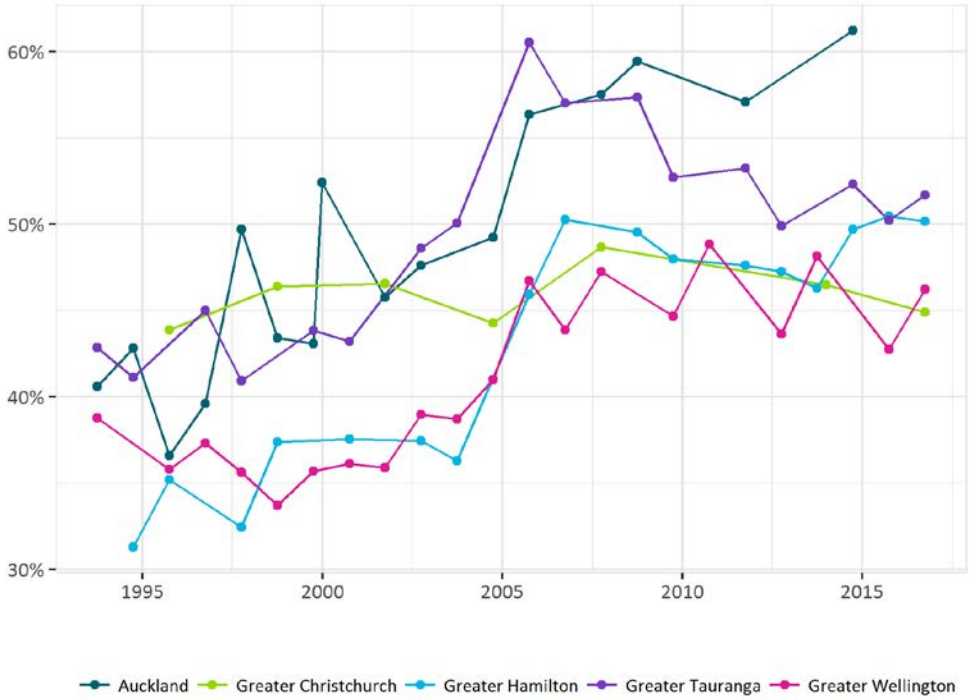
The chart also shows that over the last 24 years, Tauranga has experienced the highest and most volatile movements in sales volumes as a proportion of total stock. Meanwhile, sales volumes/total stock have been consistently low in Wellington. This may reflect a greater supply response to demand in Tauranga (of new dwellings, for example, from greenfield developments) than has been the case in Wellington over the same period. To help understand the role new supply may be having on trends in this indicator it should be considered in conjunction with trends in building consents (see previous indicator).

Demand-side drivers also need to be considered when interpreting this indicator, such as changes in population and trends in home ownership (available on Statistics New Zealand's website).

Related measures to this indicator used by the real estate sector include the median days that a property takes to sell and measures of the inventory of unsold houses and listings. Local authorities could access these measures from REINZ.

3.5.2 Land value as a percentage of capital value

Figure 21: Example – land value as percentage of capital value, for selected expanded urban areas



Technical notes

This indicator has been derived from rating valuation data for residential property only. Land value is stated as a percentage of capital value.

The land value percentage for each valuation period is calculated as a mean within statistical area units and then combined for TA and EUA areas using the weighted average of the component area units.

The value of renovations may not be fully captured in the valuation data, so the indicator may overstate the relative value of the land (due to the value of improvements being under-stated).

Each data point represents the three-yearly cycle of revaluations for rating purposes.

Data sources: CoreLogic, MBIE

This indicator shows residential land values as a percentage of capital value. The volatility in this indicator reflects that it is updated on a three-yearly basis, consistent with the revaluation cycle for rating purposes. Movements in the charts reflect the land value component of capital value shifting relative to the improvement value (the other component of capital value). This movement needs to be interpreted with care as it can be driven by changes in the relative value of one or other component, or both, that make up the capital value valuation.

A rise in the relative improvement value (and therefore a decrease in this indicator) can be driven by increased investment in existing homes (eg, expansions or refurbishments), an increase in the stock of new homes (as a new home tends to have a higher improvement in its earlier years than an older home), or a trend over time toward larger and more expensive homes.

A rise in the relative value of land (and therefore an increase in this indicator) may reflect a number of things, depending on the circumstances. It may reflect a rise in the locational value of the land, for example due to its proximity to employment, to transport or to attractive amenities (eg, to a beach or park). It may also reflect a shortage in the supply of urban land more generally relative to demand. Conversely, a decrease in locational value of the land will have the reverse effect.

In existing urban environments, it may reflect planning constraints or existing housing, relative to market expectations of more efficient use. For example, if the market perceives an area would be used more efficiently for medium rise apartments, but due to planning rules or existing housing it is used for detached single housing, in the transition the land value per dwelling will typically be relatively high in anticipation of the more efficient (and higher value) use.

Figure 21, above, presents land values as a percentage of capital value for a selection of expanded urban areas. It shows that land values as a percentage of capital values increased in most of the selected areas up to about 2008 when they levelled out, except for in Auckland where they have continued to increase. The data underlying this chart shows that both land values and capital values have increased over this time, but that land values have increased faster. This has happened despite the underlying data also showing an increase in average dwelling floor areas (which increases improvement value).

Figure 22: Example – land value as percentage of capital value, for Auckland wards

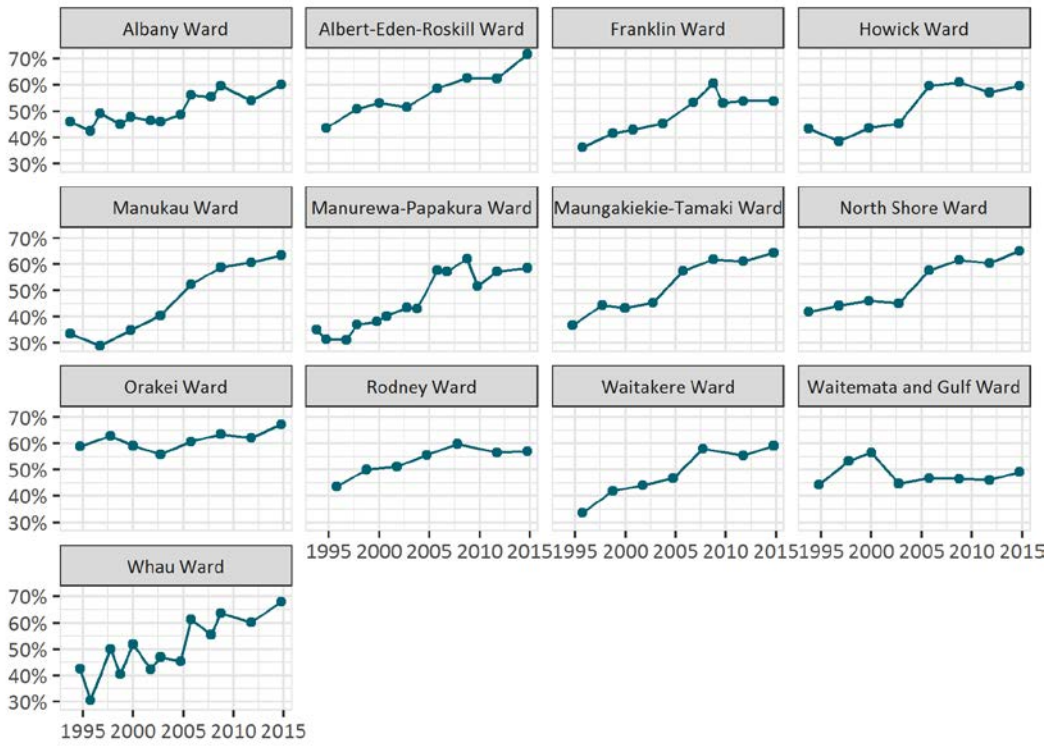


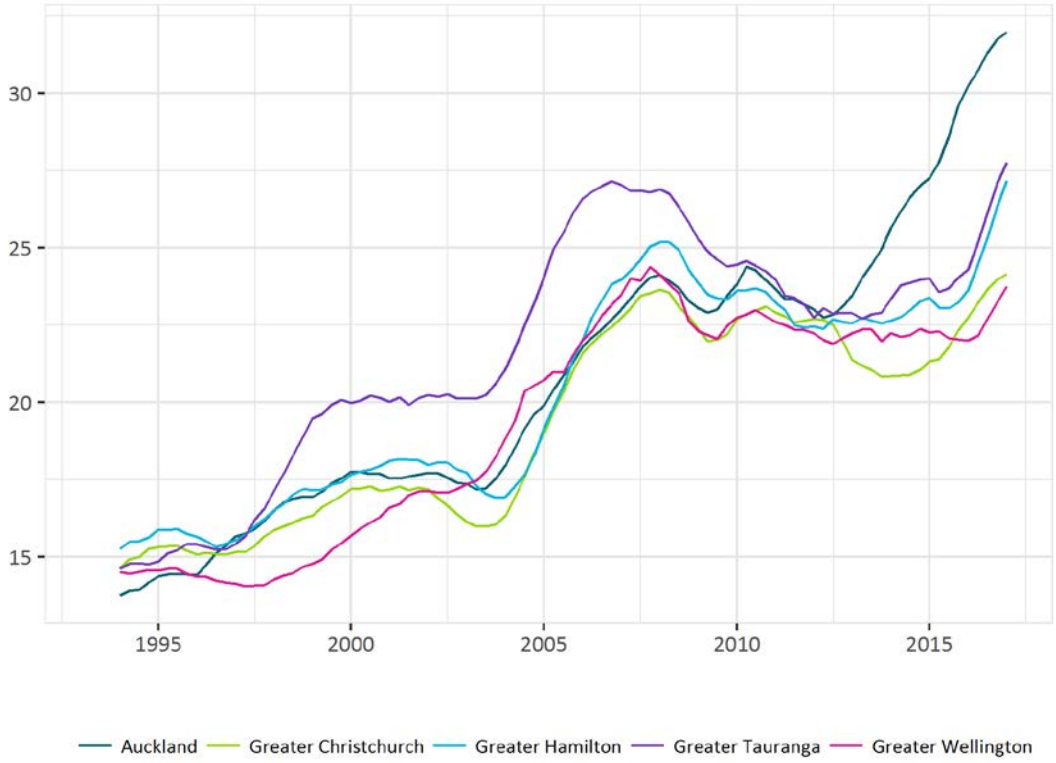
Figure 22 presents this indicator at a more disaggregated level (ward-level) for Auckland. The same upward trend is evident for most wards. Some care and local knowledge is needed when using this indicator to compare wards or suburbs within a territorial authority. Increasing relative land/capital value might reflect capacity constraints in an attractive area that is in demand. On the other hand, the ratio of land to capital values might also be increasing in a less attractive area with poor and deteriorating housing stock that is perceived to present attractive development opportunities. Meanwhile, areas of higher density housing may tend to have lower land/capital value ratios, reflecting a more efficient use of the land.

Local authorities should use a range of supplementary information to interpret this indicator. This includes regular updates to data and knowledge about:

- the age and condition of the existing housing stock
- under-utilisation of land (ie, where there is a demand for housing in a location, but the land is being used at a lower density or for lower value uses)
- the extent to which planning rules or existing housing stock is contributing to this.

3.5.3 Ratio of dwelling sales prices to rents

Figure 23: Example – Ratio between median dwelling prices and residential rents, by selected expanded urban areas



Technical notes

This indicator shows the ratio of nominal median dwelling prices to nominal (geometric) mean rents. The geometric mean is used to help smooth the data by removing the "clustering effect" (where rents cluster at round number amounts).

House prices relate to the whole housing stock in the selected area, not just the rented stock. As owner-occupied housing tends to be of better quality and of higher value than rented stock–this ratio tends to over-state house prices (relative to the median price for rented housing only).

This relationship between rents and house prices is often expressed as a rental yield to investors using the same data, which is calculated by mean rents divided by the median house price.

Data source: CoreLogic, MBIE

Interpretation

This indicator reflects the relationship between median house prices and mean rents in the same geographical area.

The higher the house price/rent ratio:

- *The greater the gap between renting and buying*. A ratio of 30 indicates that the price of a median house is 30 times the mean annual rent paid. High ratios will tend to reduce home ownership rates due to it being more attractive or affordable for many to rent than to buy a dwelling.
- *The lower the average yield to an investor from renting out a dwelling*. Investors vary in their motivations for purchasing rental properties, and in the types of properties they are interested in owning. Income-focused investors will seek to maximise rental yields while others may be more motivated by the expectation of capital gains over the longer term. When increases in rents don't keep pace with house prices, investors increasingly rely on capital growth as a source of returns rather than rental yield.

The chart in Figure 23 shows the ratio of dwelling prices to rents, for select expanded urban areas.

- The ratios between house prices and rents increased in all areas over the period between 2003 and 2008 and in the last few years (but fell noticeably for a few years following the global financial crisis).
- This is because, while both house prices and rents have increased over the last 20 years, rent increases have been flatter and have lagged house price increases, and especially so at the peaks of the cycle.
- Prior to 2012, the house price/rent ratios in Auckland, Wellington, Christchurch and Hamilton tracked relatively closely to each other, while ratios in Tauranga were noticeably higher. Since 2012, the house price/rent ratio in Auckland has rapidly escalated. This reflects the rapid growth in median house prices in Auckland since then that has not been matched with increases in rents.

Further analysis of trends in home buyers may assist the interpretation of this measure. CoreLogic has a "buyer classification" that disaggregates sales according to whether the purchasers are first home buyers, existing owner 'movers', or investors. This data also records where investors are based or movers are from, so is a useful indicator of the impacts of one local area on another.

4 Additional data sources not on the dashboard

Local authorities can also draw upon additional sources of data to supplement the market indicators on the dashboard on the Ministry of Business, Innovation and Employment's website. There are three broad sources of data that may be relevant:

- Data held by local authorities, including more detailed resource and building consent data, rating valuation databases that record property attributes, and vacant land registers
- Data on population, housing, and other economic indicators that is published by Statistics NZ, the Ministry of Business, Innovation and Employment and other government agencies
- Data from private providers about business land and property markets.

The following table summarises a variety of publicly available datasets and private sources of data that may be useful for local authorities. It is not expected that local authorities will use all of these sources of data; rather, they may choose to use some in order to further investigate specific issues that arise in the local context.

Table 22: Other data sources for monitoring housing and business property development markets

Measure	What it tells you	Where to get it
Publicly available data		
Dwelling occupancy rates, by region, household composition, dwelling type and tenure	Additional information on the drivers of residential demand, to augment data on number of households (eg, in regions with a significant proportion of second homes/holiday homes)	http://www.stats.govt.nz/browse_for_stats/people_and_communities/housing/housing-indicators.aspx
Home ownership rates, by region	The significance of rental accommodation in a region	http://www.stats.govt.nz/browse_for_stats/people_and_communities/housing/housing-indicators.aspx
Percentage of households by dwelling type, by region	Additional information on demand by type of dwelling	http://www.stats.govt.nz/browse_for_stats/people_and_communities/housing/housing-indicators.aspx
Sub-national population, family and household estimates and projections	Underlying population and demographic drivers of residential demand	http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections.aspx
Visitor guest nights (domestic and international), by region (commercial accommodation)	To supplement population data for areas with high visitor populations	https://mbienz.shinyapps.io/tourism_dashboard_prod/
Permanent and long-term migration	To supplement the population estimates that are produced between Censuses	http://www.stats.govt.nz/infoshare/Default.aspx
Number of building consents for new dwellings, by floor area	Additional information on the composition of new supply, to help assess the extent to which it is keeping pace with demand for different sizes of dwellings	http://www.stats.govt.nz/infoshare/Default.aspx
Number of resource consents processed, by district and region	Additional information on residential supply response	http://www.mfe.govt.nz/nms-resource-consents

Measure	What it tells you	Where to get it
Number of eligible applicants for social housing, by household composition, ethnicity, age, number of bedrooms, district	Additional information on the composition of demand for dwellings (new demand for social housing) – register shows eligible applicants for social housing	http://housing.msd.govt.nz/information-for-housing-providers/register/index.html
Ratio of housing costs to income; or residual income after housing costs	Additional information on the affordability of housing, from the perspective of home owners and renters	See Covec and MR Cagney (2016), chapter 7 for details
Household overcrowding index	Additional information on the extent to which supply is keeping pace with demand Note: a detailed report has been produced for Auckland but this index has not been updated for other regions for the 2013 Census results	http://www.stats.govt.nz/browse_for_stats/people_and_communities/housing.aspx
Other data sources (may incur costs)		
Dwelling sale prices per square metre of dwelling	Construction costs vary between building types; this measure provides a standardised measure of prices and may provide a better indication of underlying price trends	Can be derived from data on size of dwellings sold and sale prices https://www.qv.co.nz/ or http://www.corelogic.co.nz/
Days that a property takes to sell, inventories of unsold houses, listings	Additional measures used by real estate agents that provide indications of the liquidity of the residential market	https://www.reinz.co.nz/
CoreLogic's Buyer classification	Additional information on composition of demand, as disaggregates dwelling sales by first home buyers, existing owner movers and investors, and location of where the investor is based/mover is from	http://www.corelogic.co.nz/
Office rents, vacancy rates, and office space per worker Retail rents and vacancy rates Industrial land prices, rents, and vacancy rates	Additional measures published by real estate companies to track office, retail, and industrial property trends. Publicly available reports often provide information on trends and variations in prices and vacancy rates between locations; more in-depth data can also be purchased.	https://www.bayleys.co.nz/information/research http://www.colliers.co.nz/find%20research/ http://www.cbre.co.nz/copy%20of%20research-reports http://www.jll.nz/new-zealand/en-gb/research
Land valuations	The value of land is a key input to the supply of new dwellings and hence is an important driver of dwelling prices. Growth in this measure may indicate a shortage of land for development purposes	TLAs/CoreLogic

Measure	What it tells you	Where to get it
Construction costs	Construction costs are a key input to the cost of the supply of new dwellings and hence dwelling prices; vary by building type and construction technology, building quality and attributes	Construction cost estimators, eg Rider Levett Bucknall, JLL, QV Costbuilder
Land development/site preparation costs	Development costs are a key input to the cost of the supply of new dwellings, and hence one driver of dwelling prices	Construction cost estimators or subdivision companies
Design and consenting costs	Design and consenting costs are a key input to the cost of the supply of new dwellings, and hence one driver of dwelling prices	Construction cost estimators or developers
Development and financial contributions	Development costs are a key input to the cost of the supply of new dwellings, and hence one driver of dwelling prices	Council development contribution policies
Developers' cost of capital	Holding costs to developers if there is a time lag between when development costs are incurred and development revenues earned; another driver of dwelling costs	Developers or general market information

5 Example NPS-UDC market indicators monitoring report

Section 5 provides an example market indicators monitoring report that meets the requirements of policy PB6. It shows how the charts and maps in the dashboard on the Ministry of Business, Innovation and Employment's website can be analysed along with other indicators, to provide a story about the markets for housing and business property in Wellington as at April 2017.

Example NPS-UDC market indicators report

Greater Wellington – April 2017

Housing market narrative

Greater Wellington's housing market is predominantly driven by residential demand. Visitor accommodation and holiday homes play a small role in the city's housing market – 2013 Census data shows that only 6% of dwellings in the core urban area were unoccupied, which is below the national average. Wellington experienced slower rates of household growth after the Global Financial Crisis, but household growth has increased significantly since 2014. However, residential dwelling consents have not increased to meet increased household growth over this period, which may indicate the presence of barriers to the supply of new housing.

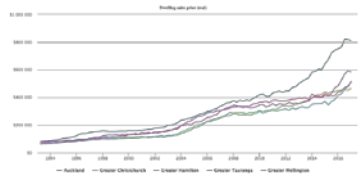
The widening gap between new households and new dwelling consents is likely to be one contributor to rising house prices and rents over the last year. Greater Wellington dwelling sale prices and rents are now at historic highs. Absolute prices are highest in Wellington City but have started rapidly increasingly in nearby areas.

Prior to recent price increases, affordability for first home buyers and renters had improved in 2014 and 2015, as wage growth and falling interest rates offset slower rates of price and rent growth. More recently it appears that first home buyers, while very active in the market, are increasingly buying in Porirua and Hutt Valley as Wellington City has become less affordable to this group.

Further investigation is required to understand what, if any, barriers there are to building more homes to meet growth in demand, and what impact these are having on prices. These barriers may include urban planning policies that constrain development, land banking, lending rules or construction industry capacity constraints.

Dwelling sale price and rent trends

Dwelling sale prices – urban area comparison



Sale prices are determined by the interaction of demand and supply, including for investment property

Wellington sale prices have increased over the last year after flattening out in the wake of the 2008 Global Financial Crisis. They appear to be trending upwards in line with Tauranga and Hamilton prices. The median dwelling sale price in Greater Wellington was $521,000 in the first quarter of 2017. This represents the highest real house price recorded in the region's history.

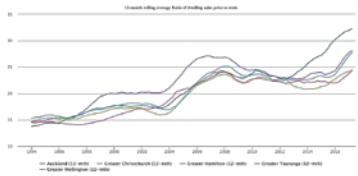
Dwelling rents – urban area comparison

Rents are determined by the interaction of demands for and supply of rental homes

The geometric mean rent in Greater Wellington was $431/week in the first quarter of 2017. This represents the highest real rents recorded in the region's history.

Wellington rents have increased faster over the last year after rising more slowly since 2008. They are also heavily seasonal, possibly reflecting strong student rental accommodation demand at the start of the year.

Price to rent ratio – urban area comparison



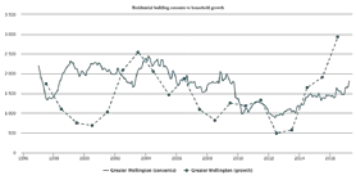
Price to rent ratios show the relative attractiveness of renting versus owning; higher ratios also indicate that rental yields for investors are lower

Greater Wellington's price to rent ratio now stands at 25.4, meaning that it would take over 25 years of rent payments to pay for a median house.

This ratio has risen over the last year as price growth has outstripped rent growth. However, it is low compared to the ratio in other cities. This suggests that transitioning from renting to home ownership remains easier in Wellington.

New construction

Residential dwelling consents vs household growth

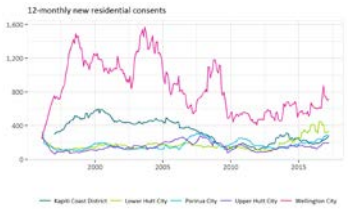


When household growth outstrips new dwelling consents, it may indicate barriers to supplying new homes to meet demand

Greater Wellington has experienced an uptick in new household formation since 2014, but dwelling consents have not increased to the same degree.

This is likely to contribute to recent sale price and rent increases, as not enough housing is being built to keep pace with demand. Slow growth in building consents may indicate that there are barriers to building more homes, potentially including planning constraints and/or construction industry capacity constraints.

Residential dwelling consents – territorial authority



An indicator of the supply of new dwellings in different parts of the urban area

Over the last year, new dwelling consents have trended upwards in most Wellington council areas. Wellington City accounts for the largest number of consents, followed by Lower Hutt City. However, all local authorities except Lower Hutt are now issuing fewer dwelling consents than they did in the mid-2000s, potentially indicating that some supply-side constraints have tightened since then.

Construction cost inflation – national

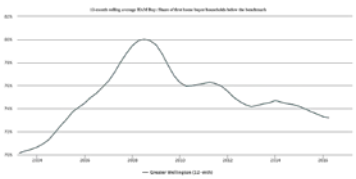
Higher construction cost inflation may indicate that the construction industry is reaching capacity

At a national level, construction costs for residential buildings (CGPI – Residential Buildings) continue to grow faster than inflation. Annual residential construction inflation reached 6% at the end of 2016.

This suggests that construction industry capacity constraints may contribute to difficulties in scaling up home building to meet new demand.

Housing affordability trends

HAM Buy – Greater Wellington



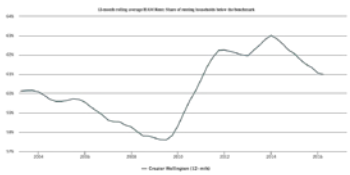
A rising trend indicates that affordability for potential first home buyers is worsening, and vice versa

NOTE: Indicator is published with a one-year lag and hence does not pick up recent trends

Affordability for first home buyers generally declined in Greater Wellington between 2003 and 2008, as rising prices and rising mortgage interest rates outstripped wage growth.

Since 2008, a combination of low interest rates, wage growth, and slower house price inflation has improved buyer affordability. It is unclear whether these trends have changed over the last year.

HAM Rent – Greater Wellington



A rising trend indicates that affordability for renters is worsening, and vice versa

NOTE: Indicator is published with a one-year lag and hence does not pick up recent trends

Rental affordability generally improved in Greater Wellington between 2003 and 2009, as wage growth outstripped rental growth. Between 2009 and 2014, rental affordability declined as wage growth has been slower than rent increases. Since 2014, rental affordability has improved slightly. It is unclear whether this more recent trends has reversed over the last year.

Corelogic Buyer's Classification – Wellington

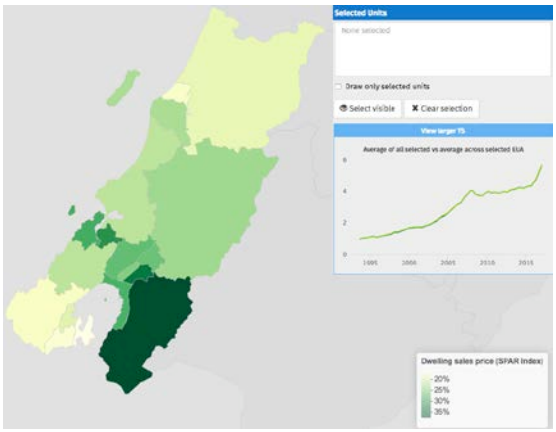
Indicator shows the types of buyers in each market

Over the last year, there has been a significant increase in the share of homes purchased by first home buyers.

Wellington is the only major market in New Zealand in which first home buyers are the main buyer category, although investors are comparable in number. This may reflect Wellington's relatively high education rates and incomes, and its low ratio of prices to rents.

Spatial trends in dwelling sale prices and rents

Change in house price index (SPAR) over last year – ward level

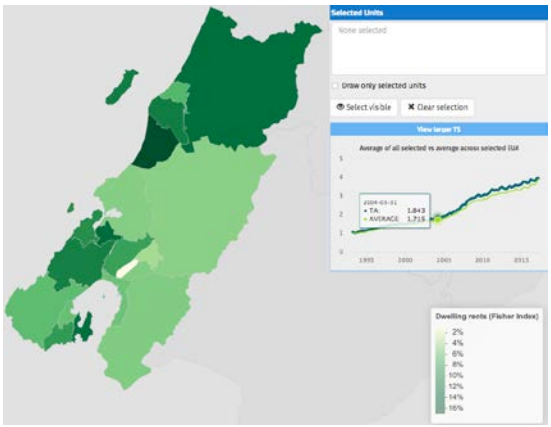


The spatial distribution of recent house price increases provides information about changing patterns of demand within the region – higher growth in some areas may indicate increased desirability or 'spillover' from other areas where demand cannot be met

In 2016, the house price index increased most rapidly in percentage terms in some outlying wards, including Wainuiomata, Lower Hutt Eastern Ward, and Porirua City Eastern Ward. These areas had lower starting house prices, potentially indicating that buyers from across the city are beginning to be attracted to lower-priced housing in these areas.

Price increases were slower in percentage terms in Wellington City wards and also in the Waikanae and Otaki wards. Wellington City wards had higher starting house prices than the rest of the region.

Change in rent price index (Fisher) over last year – ward level



The spatial distribution of recent rent increases provides further information about changing patterns of demand within the region – higher growth in some areas may indicate increased desirability or 'spillover' from other areas where demand cannot be met

In 2016, the rent price index increased most rapidly in percentage terms in some outlying areas, such as Paekakariki-Raumati Ward, Otaki Ward. Increases were also more rapid in the Wellington City Eastern Ward and the Porirua City Eastern Ward. Differences between this map and the house price index map may indicate that there are different drivers of demand for owner-occupied homes and rented homes.

In addition, rental price inflation has generally been slower than house price inflation, which may indicate that some price growth is due to expected future capital gains.

Business market narrative

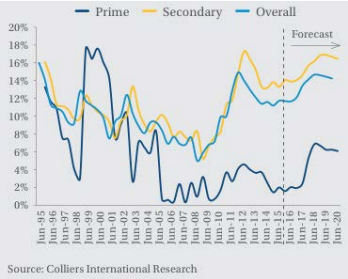
Greater Wellington's economy primarily consists of office-based activities, with a large share of employment located in the Wellington CBD, although it also has significant retail and industrial sectors.

Vacancy rates for CBD offices and industrial space have fallen since 2014. This may reflect the impact of the November 2016 earthquake which removed some office supply. Before the earthquakes there was evidence of office converting to residential in the CBD but this has been halted. Retail vacancy rates rose in most parts of the region in 2016, which may indicate weaker demand. However, vacancy rates for all three sectors are higher than they were in the mid-2000s, which may suggest ongoing slow demand for business space in the Wellington region.

These indicators suggest that there are no major region-wide issues with sufficiency of business capacity. However, there may be some shortfalls in specific locations (eg in retail centres with low and falling vacancy rates) or for specific types of industrial sites (eg large greenfield sites) that are not reflected in this data. Further investigation, including discussion with local authorities' economic development managers and stakeholders in the property and business sectors, is needed to understand whether there are any localised issues.

Business property vacancy rates

CBD office vacancy rates



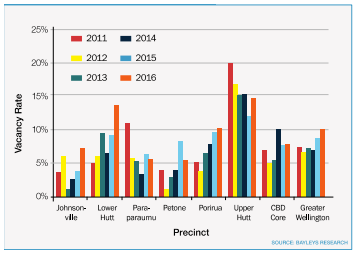
Trends in CBD office vacancy rates indicate whether the current supply of office space is sufficient to meet demand or whether it is growing constrained

Prime vacancy rates in the Wellington CBD remain relatively low and have fallen since 2014. Secondary vacancy rates for less-desirable buildings have also fallen since 2012, although they remain considerably higher than in the mid-2000s.

It is likely that vacancy rates will continue to be low in the short term while Wellington recovers from the shock to supply caused by the earthquake.

Price information on trends in office rents could be used to supplement this data, as rising rents provide additional evidence of a lack of supply.

Retail vacancy rates



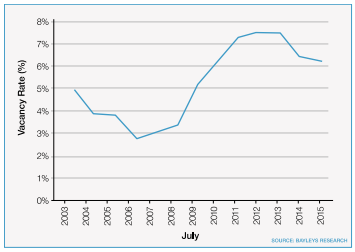
Trends in retail vacancy rates indicate whether the current supply of retail space is sufficient to meet demand or whether it is becoming constrained

Retail vacancy rates rose in most major retail precincts in the Greater Wellington region in 2016. This suggests that the supply of retail space is not becoming more limited relative to demand.

Retail vacancy rates varied significantly throughout Wellington – they were highest in Lower Hutt and Upper Hutt and lowest in Petone, Paraparaumu, and the Wellington CBD. This indicates spatial variation in retail demand that may contribute to localised supply shortfalls.

Price information on trends in retail rents could be used to supplement this data, as rising rents provide additional evidence of a lack of supply.

Industrial vacancy rates



Trends in industrial vacancy rates indicate whether the current supply of industrial space is sufficient to meet demand or whether it is becoming constrained

Wellington's industrial vacancy rates fell in 2014 and 2015. This indicates that there is growing demand for industrial space or, alternatively, conversions of vacant industrial space to other uses.

Industrial vacancy rates rose significantly after the 2008 Global Financial Crisis and remain at elevated levels relative to the mid-2000s. This indicates that overall industrial space capacity is likely to meet current demand, albeit with the potential for mismatches for some types of industrial sites.

Price information on trends in industrial land prices could be used to supplement this data, as rising land prices provide additional evidence of a lack of supply and/or competition from retail and housing uses.

Part six:
Using price efficiency indicators

This part provides guidance to local authorities on meeting the requirements of NPS-UDC policy PB7. It explains the price efficiency indicators in the dashboard on the Ministry of Business Innovation and Employment's website, and outlines how they can be used.

1 Overview

1.1 Relevant policies

This part of the guide focuses on how medium and high growth areas can meet NPS-UDC policies relating to price efficiency indicators, paraphrased as follows:

> PB7: Local authorities shall use information provided by indicators of price efficiency in their land and development market, such as price differentials between zones, to understand how well the market is functioning and how planning may affect this, and when additional development capacity might be needed.
>
> Local authorities are encouraged to publish the results of their monitoring under policies PB6 and PB7.
>
> PB2: The [housing and business development capacity] assessment under policy PB1 shall use information about demand including:
>
> …
>
> c) Market indicators monitored under PB6 and PB7
>
> PB3: The assessment…shall estimate the sufficiency of development capacity provided by the relevant local authority plans and proposed and operative regional policy statements, and Long Term Plans and Infrastructure Strategies prepared under the Local Government Act, 2002, including:
>
> …
>
> e) The market's response to planning decisions, obtained through monitoring under policies PB6 and PB7.

Local authorities with high or medium growth urban areas shall give effect to policy PB7 by 31 December 2017. Local authorities with urban areas that are newly defined as medium growth, as a result of Statistics New Zealand revising its urban area population projections, shall give effect to policy PB7 by 31 March 2018.

1.2 Intent

It is intended that local authorities use the price efficiency indicators in the dashboard on the Ministry of Business, Innovation and Employment's website, to:

- understand how well their land and development markets are functioning, and the impact that their land use regulations may be having on this
- inform their assessment of whether their plans have been providing enough development capacity
- inform planning responses that provide additional development capacity, as required by NPS-UDC policies PC1 to PC14.

The price efficiency indicators are best used as a package, and alongside the PB6 market indicators and other parts of the housing and business development capacity assessments. They can help inform Section 32 analyses of current policies, specific plan changes, and the minimum housing development capacity targets and future development strategies that the NPS-UDC requires of high-growth urban areas. (See guidance on these NPS-UDC responsive planning tools published in December 2017 on the Ministry for the Environment's website).

The requirement to use price efficiency indicators responds to the New Zealand Productivity Commission recommendation (in its 2015 report *Using Land for Housing*) that local authorities use price signals such as the rural-urban land price differential in planning decisions.[43]

1.3 What local authorities need to do

To give effect to the NPS-UDC policies, local authorities need to include information from price efficiency indicators in their housing and business development capacity assessments, and demonstrate how the indicators have been used to inform planning.

High and medium growth local authorities will need to:

- Plan how to include information provided by the price efficiency indicators in the evidence and monitoring they undertake for the NPS-UDC, and how to report this to local decision-makers. Local authorities that share jurisdiction over an urban area are encouraged to work together on this.
- Access the price efficiency charts and data supplied on the Urban Development Capacity dashboard on the website of the Ministry of Business, Innovation and Employment.
- Develop an ongoing narrative using the price efficiency indicators, PB6 market indicators, and other information sources being used for housing and business development capacity assessments. This narrative should explicitly discuss what the relevant price efficiency indicators suggest about whether development capacity provided in resource management plans is, and will be, sufficient.
- Include the price efficiency indicators and narrative in the housing and business development capacity assessments.
- Include the price efficiency indicators in the March 2018 market indicators report, and in future monitoring reports when updated price efficiency indicators are made available.
- Demonstrate that planning decisions are responding to the price efficiency indicators and other information. For example, this could be done by using the indicators in Section 32 analyses of policies, and referring to them in future development strategies.

1.4 The indicators and where to find them

There are four price efficiency indicators discussed in this part of the guide (described in table 23). Of these, three are focused on markets for residential land and one on business land. These indicators are available on the dashboard on the Ministry of Business, Innovation and Employment's website. Technical documentation and code is also provided for each of the indicators on the dashboard, to enable users to explore them and potentially develop their own additional measures.

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[43] The Productivity Commission also recommended that local authorities release land at the city edge for development when rural-urban differentials exceed a certain level. The NPS-UDC does not require this.

Table 23: The four price efficiency indicators

Indicator	What it tells you	Description	Geographic detail	Date
1 Price-cost ratio (for homes)	A general indicator of the extent to which the costs of land or construction have been contributing to the prices of homes. This signals if there is a shortage of sections and development opportunities relative to demand.	House prices are compared to construction costs, to estimate how much of the remaining price is driven by the cost of land (infrastructure-serviced sections) and whether this proportion is changing over time.	15 high and medium growth extended urban areas Territorial authority areas Auckland wards	Annual time-series 1993 – 2017 Updated annually
2 Land ownership concentration indicators (for residential land)	Whether the market for new developable residential land is dominated by a few owners (who could significantly affect development opportunities and/or land prices).	Quantifies the amount of undeveloped residentially zoned urban land and how ownership of this is distributed across different land owners.	Areas based on Statistics New Zealand's urban areas or component zones[44]	Most recent valuation date (ranging from 2014 to 2016) Updated with next three-yearly revaluation
3 Rural-urban differential (residential)	The impact on the value of urban sections at the edge of the city, of current land use regulations that constrain urban residential development capacity.[45] Whether plans have been providing sufficient urban development capacity for homes.	The modelled ratio and per square metre dollar difference between the values of all similar residential land parcels 2 kilometres either side of the boundary between urban and non-urban zones **after** major explainable other factors that affect different land values have been removed.	15 high and medium growth extended urban areas[46]	Most recent valuation date (ranging from 2014 to 2016) Updated with next three-yearly revaluation
4 Industrial zone differential	Whether zoning at specific locations matches current relative demands for different land uses. More expensive land uses may be more capacity constrained than cheaper land uses. A starting point for considering rezoning between uses.	Compares the values of properties 250 metres either side of the boundary between an industrial zone and other zones. These include commercial, residential or rural land.	Industrial zones within 15 high and medium growth extended urban areas	Most recent valuation date (ranging from 2014 to 2016) Updated with next three-yearly revaluation

[44] Small areas zoned for residential development that are excluded from, but contiguous to, Statistics New Zealand's urban areas are included in the land ownership concentration index.

[45] Such regulations are used to avoid, mitigate or remedy the environmental effects of urban development, such as risks from natural hazards. They include zoning and restrictions on density, height, land coverage etc, which may limit urban expansion, intensification and/or allocate urban land to uses that have lower market values.

[46] Extended urban areas are the combined territorial authority areas that share jurisdiction over a Statistics New Zealand urban area.

2 The price-cost ratio: are house prices driven by construction or land costs?

The *price-cost ratio* is the gap between house prices and construction costs, across a defined area. This general indicator shows the extent to which house prices are driven by the costs of construction or land (infrastructure-serviced sections). If the cost of land is a significant and/or increasing share of house prices this indicates a shortage of sections and development opportunities relative to demand.

2.1 Description

The price-cost ratio measures the relative contribution to house prices of:

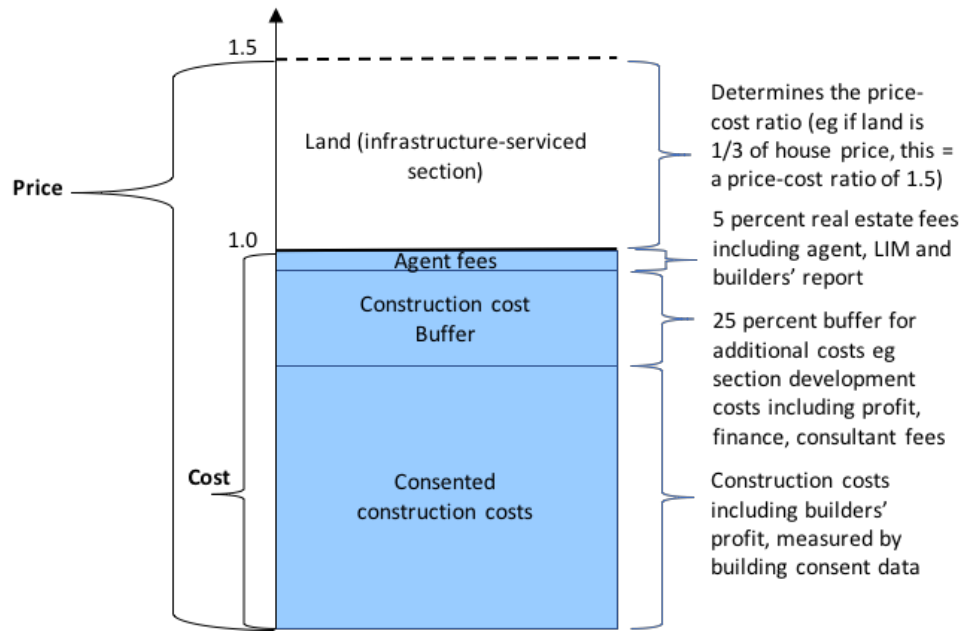
- construction costs and purchase costs such as real estate agency fees
- land (infrastructure-serviced sections).

A time series of price-cost ratios has been calculated for each high and medium growth extended urban area going back to 1993.

The ratios use unit record Corelogic data on residential house sales and size, and Statistics New Zealand data on building consents' value by square metre and territorial authority area. Data for stand-alone houses only is used.

The ratios are developed by comparing the price of each house sold with the relevant building consent values, plus a 25 per cent "construction cost buffer", and 5 per cent for real estate fees and other costs of buying a home. The amount left over is the imputed cost of land (the section). The results for each house are aggregated for urban areas. The price-cost ratio is 1.5 when the cost of a section comprises one third of the house price. Figure 24 illustrates.

Figure 24: The components of the price-cost ratio



Data on the value of building consents cover most construction costs, including builders' profit. However, the construction cost buffer has been added in to adjust for construction costs that building consents' data undercount or exclude, such as land development costs and profit, finance and consultant fees. A 25 per cent buffer is used based on advice from quantity surveyors and industry experts.[47]

Figure 25 shows a worked example of applying the price-cost ratio to an individual house sale. A more detailed description of the methodology is available on the dashboard on the Ministry of Business, Innovation and Employment's website.

Figure 25: A worked example of the price-cost ratio – Great South Road

A house on Great South Road, Auckland, sold for $689,000 in the last quarter of 2014. Its price-cost ratio can be calculated as follows:

- During that quarter, Auckland building consents were $1,728.85 per square metre
- Multiplying this measure by the 25 per cent construction cost buffer plus 5 per cent agent fees suggests total build costs of up to $2,247 per square metre
- Applying this build cost to the size of the house (230 square metres) provides total costs of $516,810
- Comparing build costs to the price produces a price-cost ratio of 1.33 in this case.

[47] The building consents' data provide an imperfect measure of construction costs for several reasons:

- Building costs vary by location within territorial authorities, with steeply sloped sections being more expensive.
- Building consents include GST on the value of construction costs. New builds carry GST at the point of sale. New builds are a small fraction of sales so GST is only implicitly included in new house sales.
- Land development costs and some demolition costs are not included in building consents' data.
- Consultant costs, finance costs, marketing costs, sales costs, holding costs and legal costs over and above conveyancing may also be excluded or undercounted in building consents' data.

Using building consent values plus a buffer of 25 per cent is likely to overstate total construction costs in some places and times, producing a conservative estimate of residual land costs.

2.2 Interpretation

Primary interpretation

The price-cost indicator provides a general indication of how responsive land markets are to demand, relative to construction activity.

When there are enough infrastructure-serviced sections to meet demand, land should be a minor component of the cost of a home. The price of a home should mostly reflect the cost to build it. Construction and land prices might both increase commensurately with growth in demand.

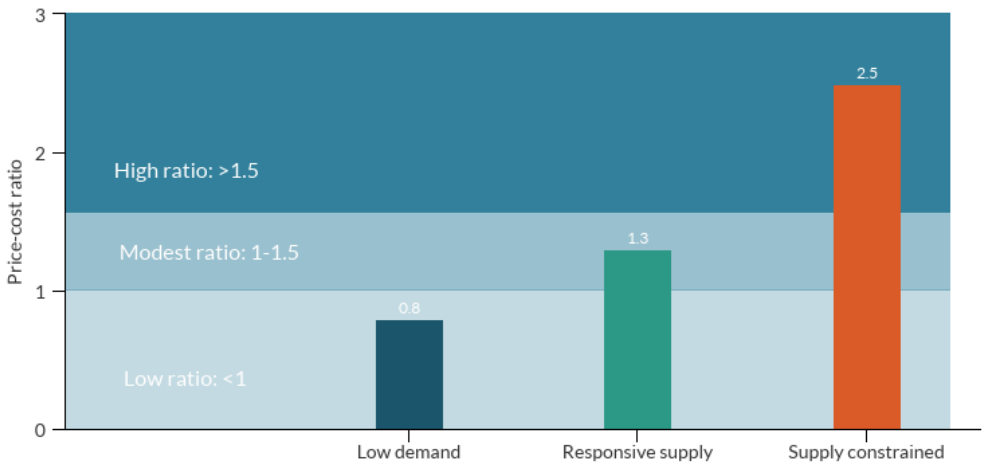
But when there is a shortage of sections for some reason, land prices can push house prices far beyond construction costs. So the gap between house prices and construction costs – the *price-cost ratio* – can be used as a general indicator of the flexibility of land markets to accommodate new homes.

The price-cost ratios calculated for high and medium growth urban areas suggest that:

- Ratios below 1 might occur in places or times where there is no growth, with houses selling below the construction cost to replace them.
- Ratios between 1 and 1.5 (that is, where the cost of an infrastructure serviced section comprises up to one-third of the price of a home) are common where the supply of land and development opportunities are relatively responsive to demand. All New Zealand urban areas had price-cost ratios of between 1 and 1.5 about 20 years ago when land and housing markets delivered more affordable housing, and these ratios are still common in places where homes are cheaper (see examples in section 2.3).
- Ratios above 1.5 signal that the supply of sections and development opportunities is not keeping pace with demand and land prices are materially increasing house prices.

These ratios are illustrated in Figure 26.

Figure 26: What level of price-cost ratio signals a problem?



Nuances, caveats and qualifications

Various factors can inhibit how land and development markets supply homes, affecting how to interpret the price-cost ratio.

Demand can change quickly – for example, in response to changes in mortgage rates. But it takes time to plan, prepare and build a home. In the short term an undersupply of housing may increase house prices more than construction costs and this will also increase the price-cost ratio, whether or not there is a shortage of land. However this should reverse as new houses are built or building capacity constraints show up in higher construction costs.

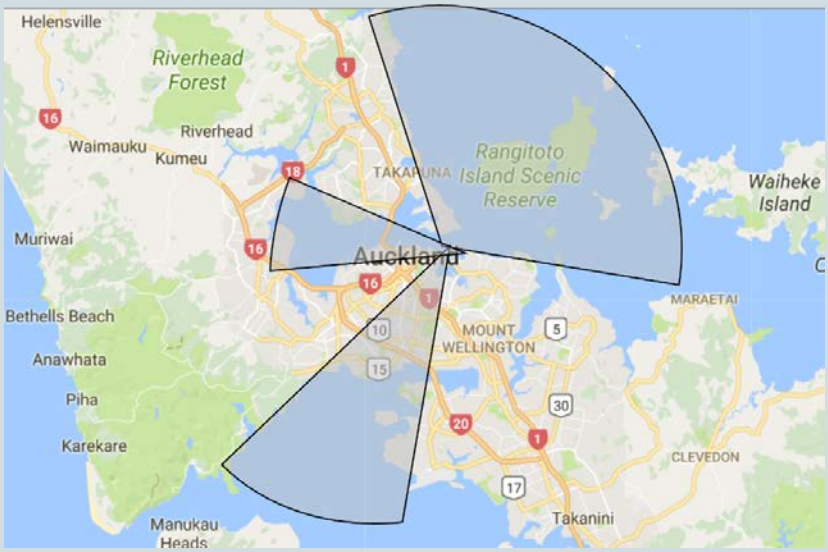
In any one year an elevated price-cost ratio may reflect a temporary demand-supply imbalance (in housing and possibly land) that will change with the property cycle. It is important to look at the longer-term trends. If there are sufficient development opportunities, price-cost ratios should be below 1.5 most of the time.

The price-cost ratio does not suggest what might constrain the supply of sections to market. Possible contributing factors include:

- geography and terrain (see figure 27)
- concentrated land ownership (see section 3)
- land-use regulations and/or lack of infrastructure that restrict development (see sections 4 and 5).

Figure 27: Tight geographic constraints make land use regulation settings critical

For many cities, local geography constrains the land available for development. For example, Auckland's harbours significantly reduce the amount of land within 20 kilometres of the central business district (see below).



Queenstown's mountains and lakes also reduce the amount of developable land close to the city centre.

The very geographic features that constrain supply can also be what draw people to a city, and be the features that they value the most. The challenge for planning is how to accommodate growth while protecting the things people treasure.

Using the information

One of the primary benefits of the price-cost ratio is the long history the indicator provides. It is also relatively simple. It is a general indicator that provides:

- A signal to undertake further analysis of what might be driving up land costs by looking at the rural-urban price differential and other indicators.
- A benchmark of the current environment against earlier periods.
- Information to track the impact of policy interventions over time.

Local authorities will need to be aware of the New Zealand housing market context, including overall demand conditions, but the indicators should be used to inform their own local context.

Shorter term changes in the ratio tend to signal temporary supply-demand imbalances, for example, when development lags a sudden rapid increase in demand. The level of the price-cost ratio over a period of years provides information about whether there are more systemic constraints on the supply of land and development opportunities.

A degree of caution needs to be used when comparing the price-cost ratio between cities. Context and local factors (such as geography) matter.

The price-cost ratio is also best used at the urban area or city level, rather than for individual suburbs. Land parcels have different characteristics and their prices will vary depending on the demand/supply balance for land with these attributes in a given area. There may be significant differences between suburbs because of their different proximity to the coast and centre.

High price-cost ratios might signal that new homes are unlikely to match the distribution of demand in the community (by type, location and price point). When land is costly, the incentive is for developers to build relatively large expensive homes (especially if planning regulations also limit densities). This information could be useful for assessing the match between demand and supply as required by NPS-UDC policy PB1 b).

2.3 Examples

Figures 28, 29 and 30 compare the price-cost ratios for Auckland, the Wellington extended urban area and Dunedin.

All three areas had price cost ratios of between 1 and 1.5 during the 1990s. At times in the past, there did not seem to be an obvious shortage of infrastructure-serviced sections and development opportunities relative to demand, in any of these markets.

However, all areas show elevated price-cost ratios following the 2002/3 property boom and again more recently, and reduced ratios during the 2009–10 global financial crisis. These highs and lows reflect shorter term supply-demand imbalances.

Auckland's price cost ratio has been over 1.5 for the last 20 years and has trended upwards to a high of over 2.5 last year. Something has been preventing development from keeping pace with Auckland's constant high growth and demand for housing for a long time, resulting in a cumulative shortage of homes and very high prices.

While the Wellington urban area has not been growing at the same rate, it has still experienced price-cost ratios over 1.5 for the last decade. It is likely that these ratios have been driven by supply constraints in Wellington City (with underlying data showing higher price-cost ratios for Wellington City).

In contrast, price-cost ratios in Dunedin have been close to 1 for much of the last 20 years. Development opportunities have been able to respond to the low population growth experienced in Dunedin.

Figure 28: Price-cost ratio for Auckland

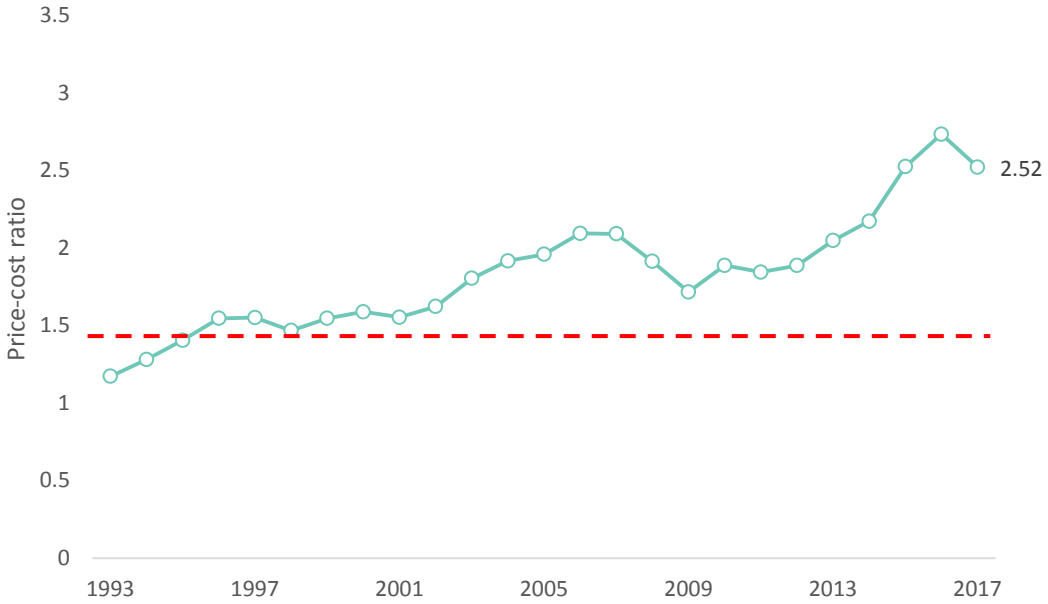


Figure 29: Price-cost ratio for Wellington extended urban area

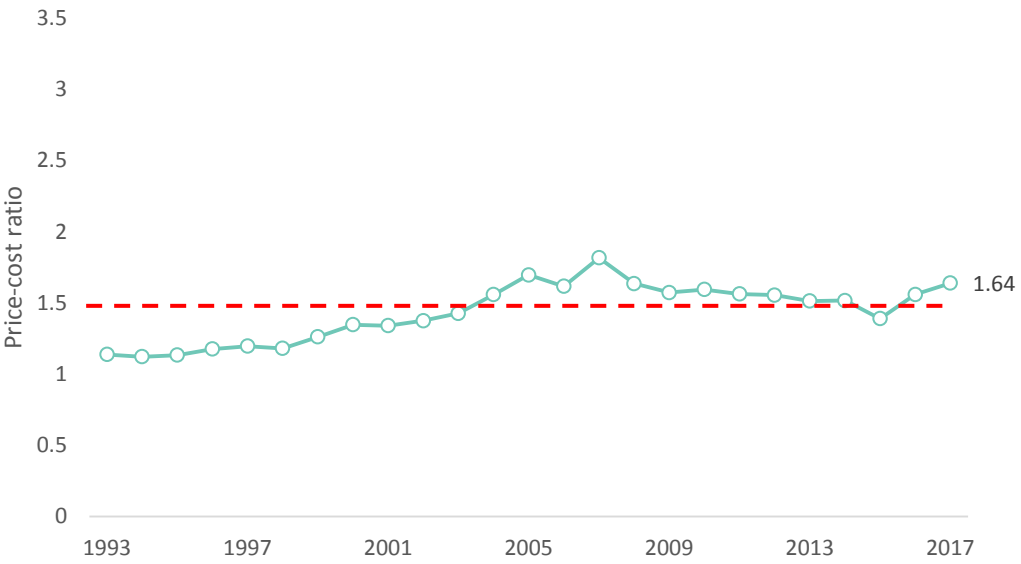
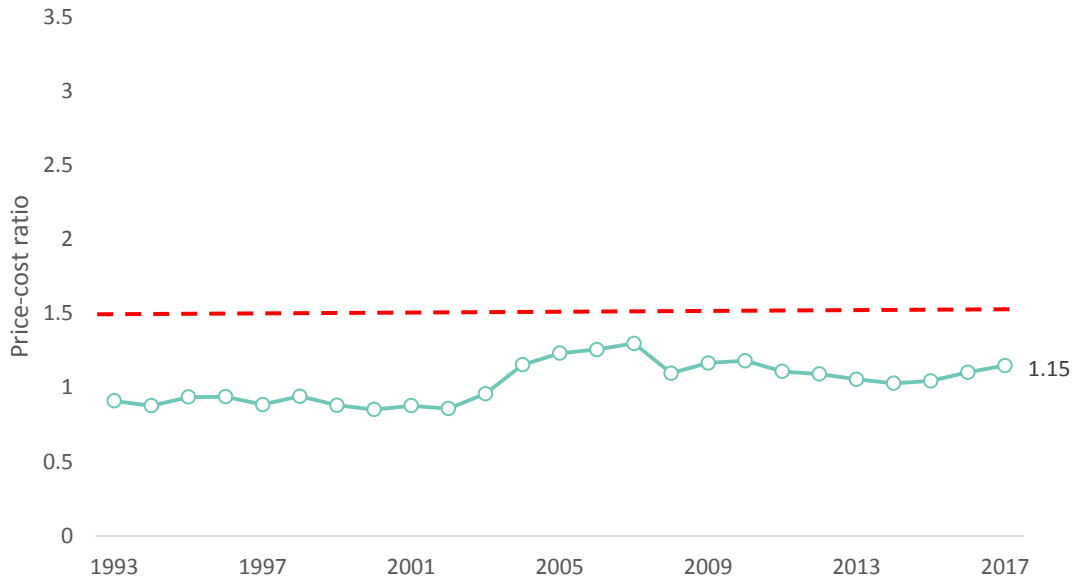


Figure 30: Price-cost ratio for Dunedin



3 Land ownership concentration indicators

How land is distributed between different land-owners can significantly affect the availability of development opportunities and land prices.

3.1 Description

The land ownership concentration indicators provide information about:

1. **Expansion opportunities**: the amount of undeveloped land currently zoned for residential development.
2. **How competitively** these opportunities are held:
   (a) An index of how undeveloped land currently zoned for urban residential development is distributed between all its land owners.
   (b) A list of the top land owners and the shares of land they hold.
3. **How competitive future expansion opportunities might be**: the amount of land and ownership information is also available for "future urban zones", where local authorities have documented these.

The indicators have been calculated for areas based on Statistics New Zealand's urban areas and component zones. These are considered to be a good representation of urban housing markets with similar or "substitutable" development opportunities.

The indicators relate to land parcels:

- of 300m^2 or more (most local authorities prohibit development below 400m^2)
- with a building footprint of less than 20 percent of the total area and a capital value to land value ratio of less than 1.3
- that are zoned for residential development
- within the urban boundaries used for rural-urban differentials (see section 4)[48].

The ownership concentration indicators have been derived by matching land title data from Land Information New Zealand with Companies Office information on land-owning companies. Related companies and individuals are considered to comprise a single land-owning entity.

The square metres of undeveloped residentially zoned land within the boundary, excluding roads etc, are added together to form the total land market. Landowner percentage shares of this land area are squared to derive the index.

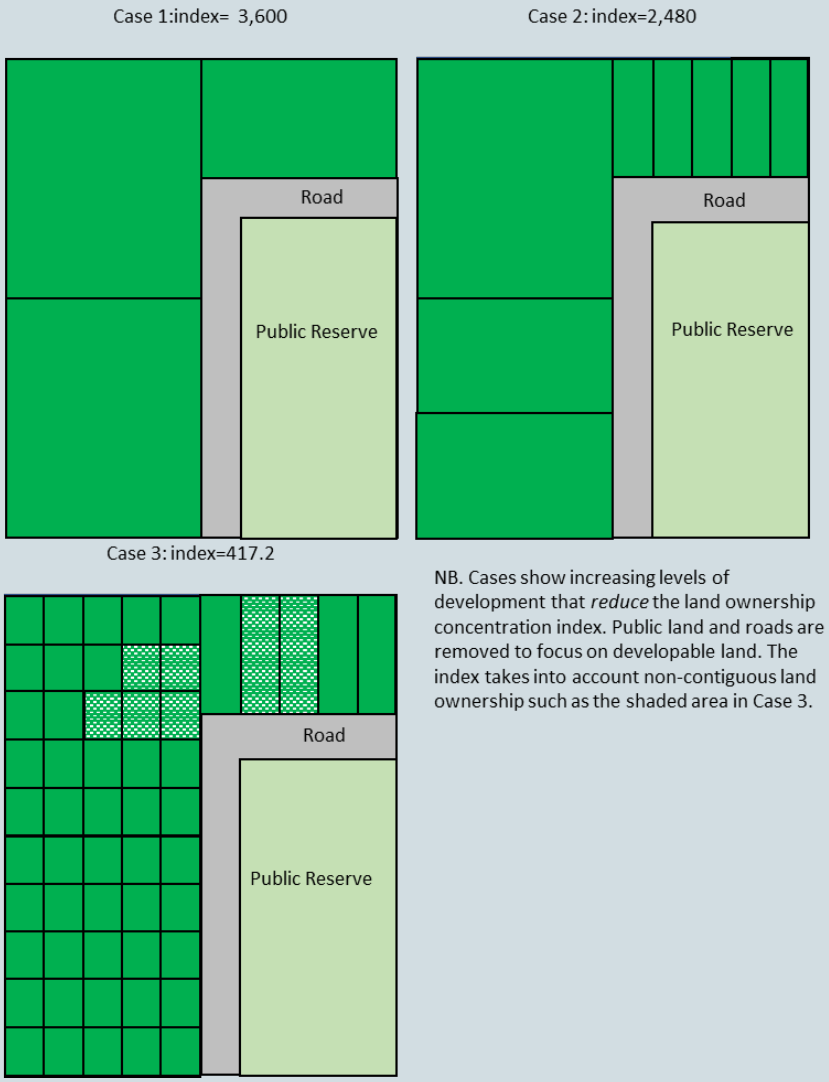
This is illustrated in figure 31, which provides three case studies and shows how land ownership at the edge of cities often becomes less concentrated as large rural sites are

[48] As these land parcels are zoned for urban residential development network infrastructure to support them is likely to be in place.

subdivided and urbanised. In case 1, land holdings are relatively concentrated across three owners and the index has a high value. Case 2 shows less concentrated land holdings. The second landowner split their land in half and the third landowner created five plots from their land, and both sold these to several different owners. Case 3 shows many smaller land-owners and the index has the lowest value.

More detailed information about methodology is available on the dashboard on the Ministry of Business, Innovation and Employment's website.

Figure 31: Stylised case studies of the land market concentration index



Case 1 shows three different land owners. Case two shows eight different land owners. Case 3 shows many land-owners, one of which owns multiple land holdings (the shaded areas). The index references land ownership rather than land parcels.

3.2 Interpretation

Primary interpretation

The indicators provide a range of information about factors other than land use regulations that may affect the availability and prices of undeveloped residential sections on the market, and therefore homes. However, local knowledge will be required to interpret the information.

Local authorities might be interested to compare the expansion opportunities in their area with those in neighbouring territorial authority areas and in other urban areas. These opportunities will necessarily vary with local environmental characteristics, administrative boundaries, community aspirations and infrastructure, the timing of the most recent district plan review, as well as zoning allocations.

The indices of land ownership concentration and list of top land owner shares quantify how competitive the market for undeveloped residentially zoned land is (or could be in the future). They indicate whether individual land owners could potentially constrain development opportunities and drive up prices. This might be a key explanation for high or increasing land prices relative to construction costs.

Local authorities will have different experiences with this. In some areas the largest land owners might be facilitating most of the development, while land fragmented between many small owners is slow to change. In other areas, a significant share of the development opportunities may be locked up with one owner.

Using local knowledge to interpret the indices and the list of top land owner shares should provide information about the take-up of development capacity, required in the housing and business development capacity assessment (under NPS-UDC policy PB3d).

This in turn could also inform the setting of margins of sufficient feasible development capacity over and above demand required by policy PC2, and the targets required by policy PC5. If a significant share (eg, more than 15 to 20 percent) of the undeveloped residentially zoned land market is in the hands of one owner who does not want to bring it to market, local authorities may need to increase development capacity or locate it elsewhere.

Local authorities could use the land ownership concentration indicators to inform the location and sequencing of future urban development capacity (specified in future development strategies) that facilitates competition.

Nuances, caveats and qualifications

The indicators provide information about the competitiveness of the undeveloped residential land market but do not provide about the competitiveness of:

- intensification opportunities on brownfields land (ie, the ownership of sites that are already built up but are zoned for greater density)
- the development market (ie, how many development companies are active in the area).

The indicators indicate the potential impact that individual land-owners could have on the availability of sections for development. They do not provide information about the behaviour of “land banking” itself. Land banking is something that can happen whether or not there is

concentrated land ownership, where other factors are present that may be increasing land prices faster than development.

4 The rural-urban differential: do land prices jump at the city limit?

Rural-urban differentials have been calculated for urban areas that compare the values of residential land either side of the boundary between urban and non-urban zones, after removing the impact of differences in amenities, geographic characteristics and infrastructure. If the value of land jumps where the zoning changes, this indicates that various land-use regulations are constraining urban development capacity. The differential estimates how much urban residential land values are being elevated because of these regulatory constraints. It is a key indicator of whether plans provide sufficient development capacity.

4.1 Description

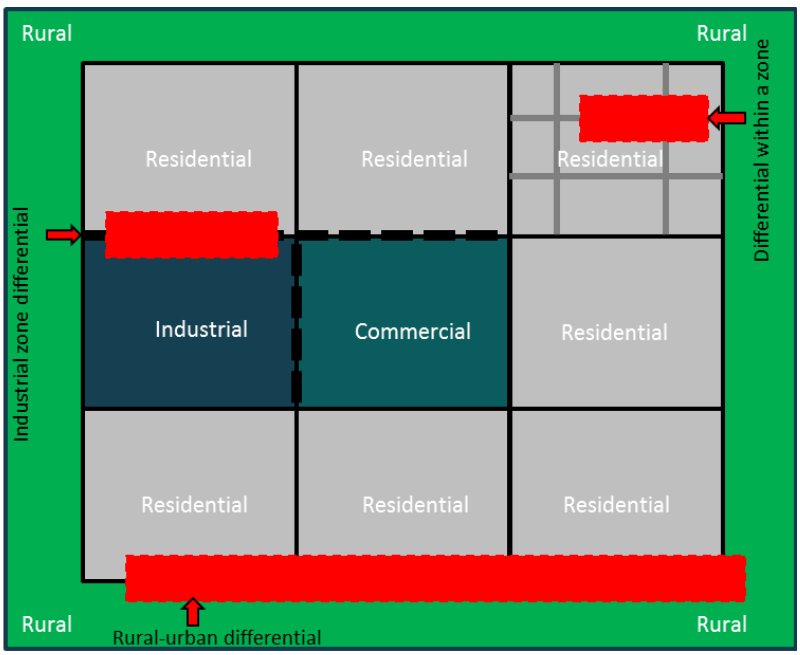
Land price differentials

Land price differentials quantify the difference in values of land either side of a boundary between one set of land-use regulations and another set of land-use regulations. These differentials can be expressed as ratios and as dollar differences.

The rural-urban differential is a specific type of differential. It compares the value of land zoned for residential urban development with the value of land zoned for non-urban development (primarily "peri-urban" land).

Differentials can also be calculated to assess the impact of zoning for different activities or to assess the impact of different regulations within a zone (eg, restrictions on density, height etc.) These various types of differentials are illustrated in figure 32: (i) rural-urban differentials **(this section)**, (ii) industrial zone differentials **(see section 5)**, and (iii) differentials between properties subject to different regulations in the same zone.

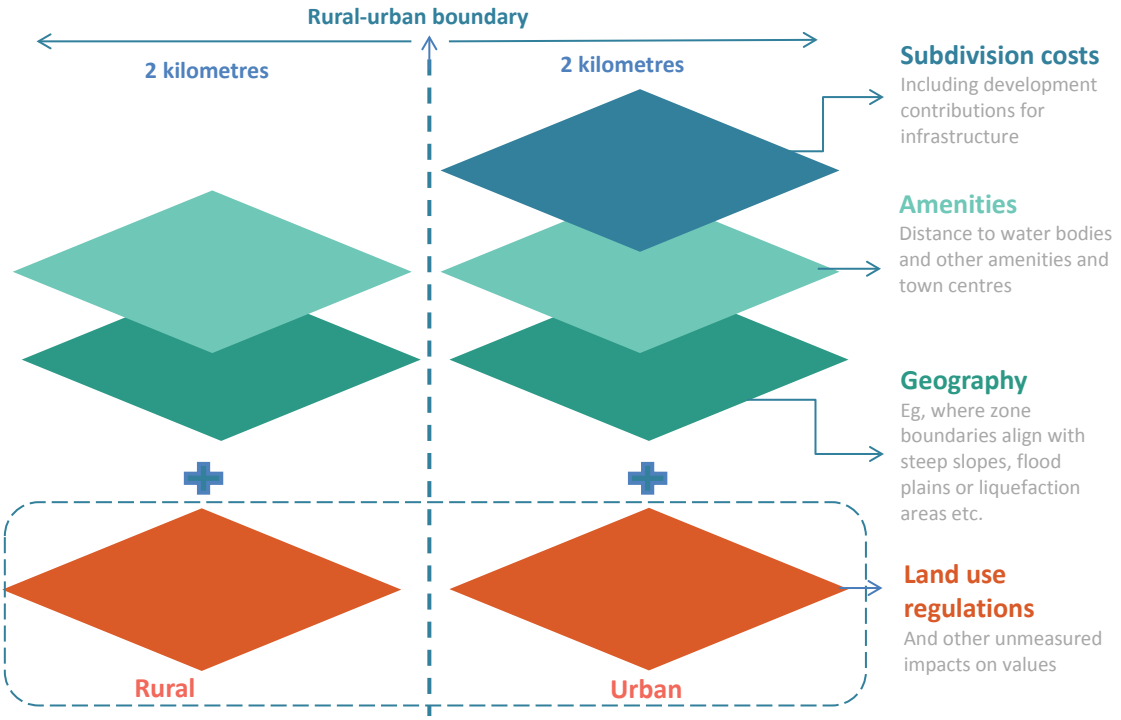
Figure 32: Stylised illustration of three types of land price differentials



Rural-urban differentials calculated for high and medium growth urban areas

Rural-urban differentials have been calculated for each high and medium growth urban area under the NPS-UDC.[49] These model 'like-for-like' properties in an area 2 kilometres inside and 2 kilometres outside the boundary between land zoned for urban residential development and non-urban residential land. Figure 33 illustrates.

Figure 33: Splitting out differences in rural and urban values caused by various factors



First, the boundary between urban and non-urban zones was drawn using Corelogic zoning codes, and adjusted where necessary in consultation with local authorities and using zoning maps. Land zoned as residential, industrial, commercial or similar was defined as urban, while land defined as rural or lifestyle or similar was defined as "rural".[50] Other zones (such as roads) were split and allocated to nearby urban or non-urban zones. Land with detached houses and lifestyle blocks was included, representing the typical urban and non-urban residential uses.

Starting with raw land values, statistical techniques were then applied to remove the impact of material non-regulatory factors correlated with zoning boundaries that may affect relative land values, including:

- the costs of subdivision, including development contributions for public infrastructure, which were subtracted from urban land values
- amenities, including proximity to major water bodies and town centres
- geographic features such as slope, flooding and some natural hazards.

The remaining difference in values between urban and non-urban residential land, at the edge of the city, is primarily attributed to the effect of regulations that constrain feasible urban

[49] It is also possible to measure the differential at various locations on an urban boundary, for example, to estimate whether discontinuities are greater in one location or another.

[50] Land intended for future urban development but not currently zoned as such is classified as rural.

development capacity. Some proportion of the difference in values might be explained by infrastructure that benefits the urban sections, the costs of which have not been fully recovered from these sections in development contributions, water charges or their rates. There may also be some other residual unmeasured factors left over.

The differentials use Corelogic valuation data at parcel level, at the most recent valuation date. (General property valuations are undertaken every three years and the most recent valuations were undertaken at different dates during 2014 to 2016, depending on the area). The values were updated to 2017 levels using the Sales Price Appraisal Ratio, to remove differences in values that can be attributed to different valuation dates. However, the differentials reflect regulatory settings in place at the time of the most recent valuation date.[51]

A more detailed methodology is available on the dashboard on the Ministry of Business, Innovation and Employment's website.

4.2 Interpretation

Primary interpretation

Rural-urban differentials calculated using the method outlined above primarily measure the impact on urban residential section values (and therefore costs to households) of land use regulations that constrain urban development capacity. The availability of infrastructure and the way it is funded may also have some impact - see the qualifications below.

Such regulations include zoning and restrictions on density, (height limits, section coverage etc), to avoid, remedy or mitigate the effects of urban development. These make trade-offs between minimising environmental effects and development. They affect the size of the city, how much land is allocated to different uses and the density of land uses.

Significant and/or increasing rural-urban differentials signal that these regulations, while they may exist for positive reasons, also have high or increasing costs. This can be the case when there is rapid growth in demand for housing and land use regulations are not adjusted commensurately. A high differential indicates that these regulations have been overly constraining supply and there is a need to provide more development capacity.

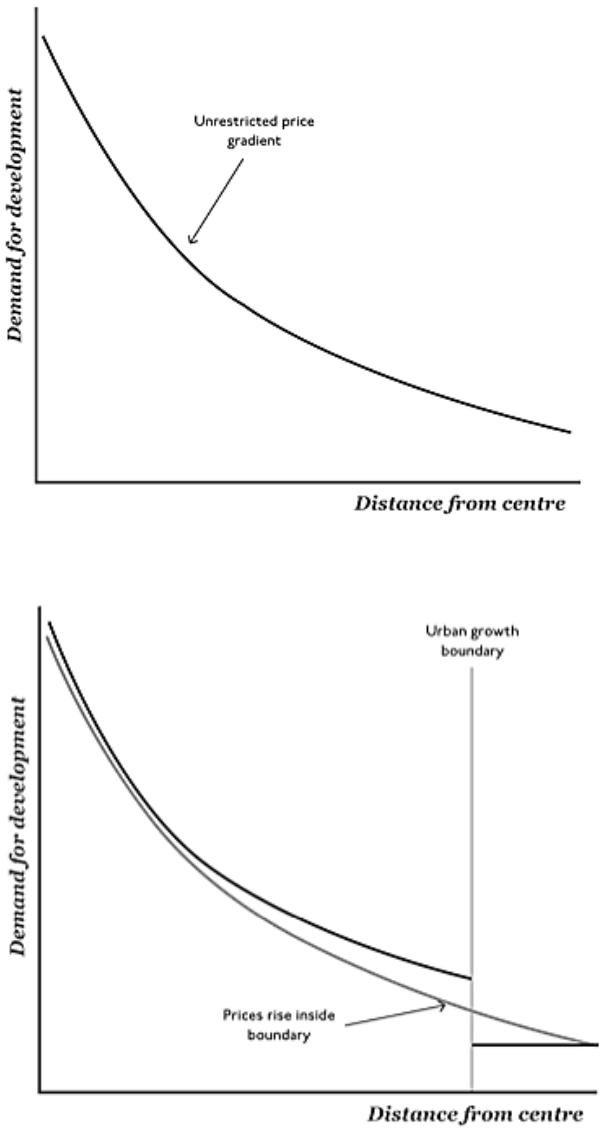
The logic underpinning rural-urban differentials is:

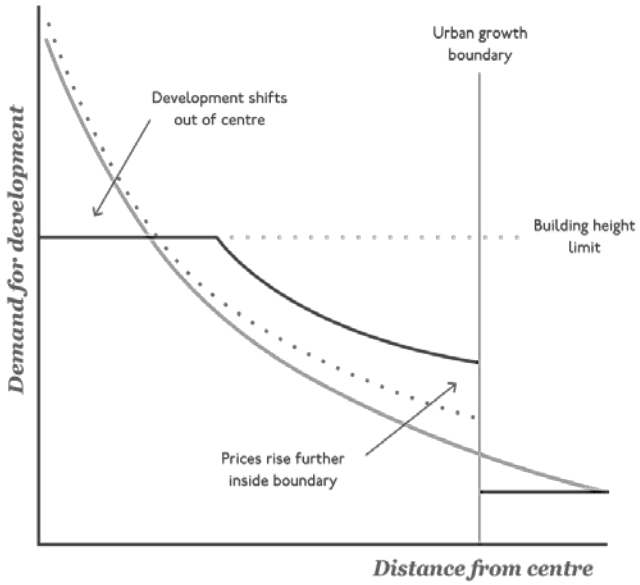
- Prices for different properties vary by location reflecting the demand/supply balance for land and housing with particular attributes, such as proximity to the coast and town centres.
- In a well-functioning land market (one where overall supply can increase responsively to demand) similar properties will have similar values. Adjacent land parcels are likely to be more similar. Large differences (jumps) in prices for similar adjacent land that cannot be explained by differences in their underlying characteristics indicate that something else is distorting prices.
- If discontinuities in prices for similar land are observed at the edges of zones that allow urban development on one side but not on the other side, then it is reasonable to infer that the regulatory constraint on development is increasing prices.

[51] For example, the Auckland rural-urban differential uses July 2014 valuation data, pre-dating the Auckland Unitary Plan.

This is illustrated in the three conceptual diagrams in figure 34. In most cities, land prices tend to reduce with distance from an urban centre. If an urban growth boundary (or zones that prevent urban development) overly constrain urban development capacity, this will have the effect of making urban prices higher and rural prices lower than they would otherwise be, at the boundary. (The shortage of urban development opportunities would make urban land more valuable, while regulations preventing development outside the urban zone would make rural land less valuable). Meanwhile, a maximum building height limit across the city would, first, suppress development (and prices) in the centre in favour of nearby suburbs; and second, it would add to the value of urban properties at the urban-rural boundary.

Figure 34: The impact of urban growth boundaries and building height limits on land values





Nuances, caveats and qualifications

There are two qualifications to this interpretation:

(a) Some of the differential might be due to urban network infrastructure costs not fully recovered by development contributions, water connections or rates charged to these properties. Local authorities are best placed to know what these costs are on a per section basis, and can remove them from the dollar value of the differential.

(b) Land banking by major urban property owners may result in an artificial scarcity of urban residential development opportunities that cannot be attributed to urban planning rules alone. The land ownership concentration indicators discussed in section 3 will provide information for each urban area about whether this is a factor.

Using the information

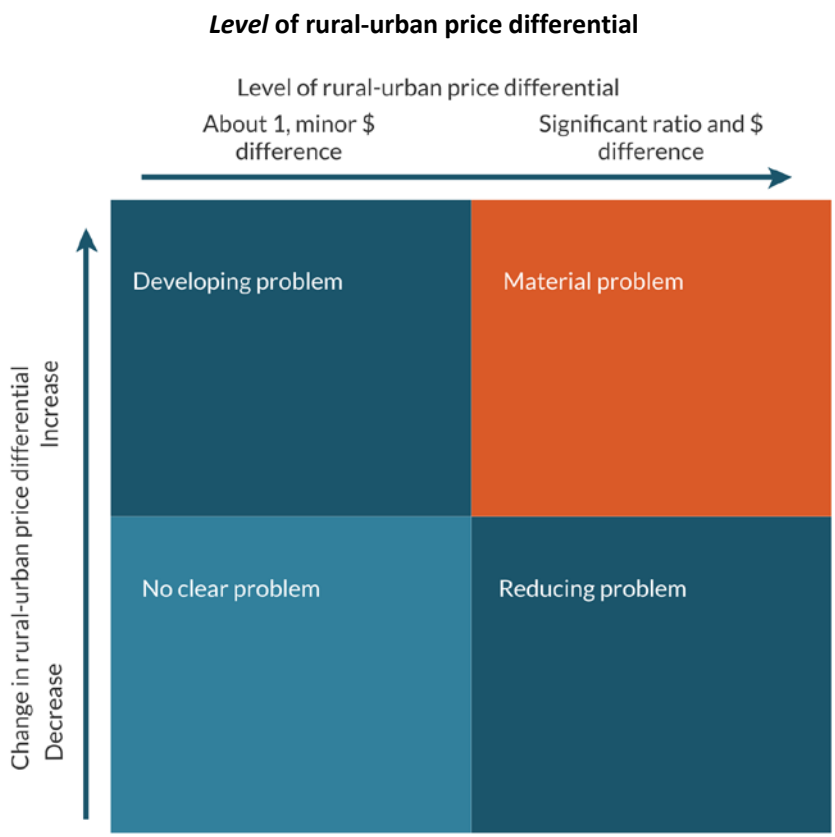
The differential is expressed both as a ratio (ie, urban land is valued at X times the value of non-urban land), and as a dollar amount per hectare (the dollar difference between urban and rural land). These measures have different uses. The ratio is easier to remember, while the dollar difference is useful for quantifying the costs of regulations in Section 32 analyses. Ratios and dollar differences might not move in the same direction over time. If both urban and non-urban land values are increasing, the dollar difference might also increase but the ratio might stay the same. Both measures are best used in tandem.

Care needs to be taken when comparing rural-urban differentials between cities. Prices for land (both rural and urban) vary between locations according to their relative demand/supply, and the differentials do not adjust for this. For example, rural land outside of the Auckland region can be twice as expensive as rural land close to other urban centres, and urban land prices are also much higher, reflecting the value of locating in, or near, a much larger city. The higher land values of both might produce a more significant dollar difference between rural and urban land in Auckland than is observed elsewhere.

We recommend local authorities focus on what the rural-urban differential for their urban area tells them. To some extent the significance of the ratio and dollar difference will depend on local context, that is, local incomes and the environmental values that are being protected.

We also recommend using both the level and the change in the rural-urban price differential to monitor changes in land supply over time.[52] Figure 35 provides a stylised framework.

Figure 35: Both the level and change in the rural-urban price differential are important



***Level* of rural-urban price differential**

A rural-urban differential above 1 signals that zoning and/or other regulations are constraining development capacity enough to increase urban land values. The dollar per hectare difference between urban and non-urban land can be divided by the typical number of sections per hectare, to produce an estimate of the cost per section (or per household).

If the differential shows that urban land is worth, say, twice the value of adjacent non-urban land, and there is a per section cost of more than $100,000, it seems clear that current plans provide insufficient urban development capacity. The NPS-UDC requires local authorities to address this situation by providing additional capacity and enabling development where people would like to live. This might include closer to the city centre as well as at the city fringe.

While a rural/urban differential signals the extent to which development capacity constraints are affecting land prices, it does not identify which regulations are causing this. It may be due to restrictions on densities, insufficient residential zoning compared to other uses, or limits to urban expansion.

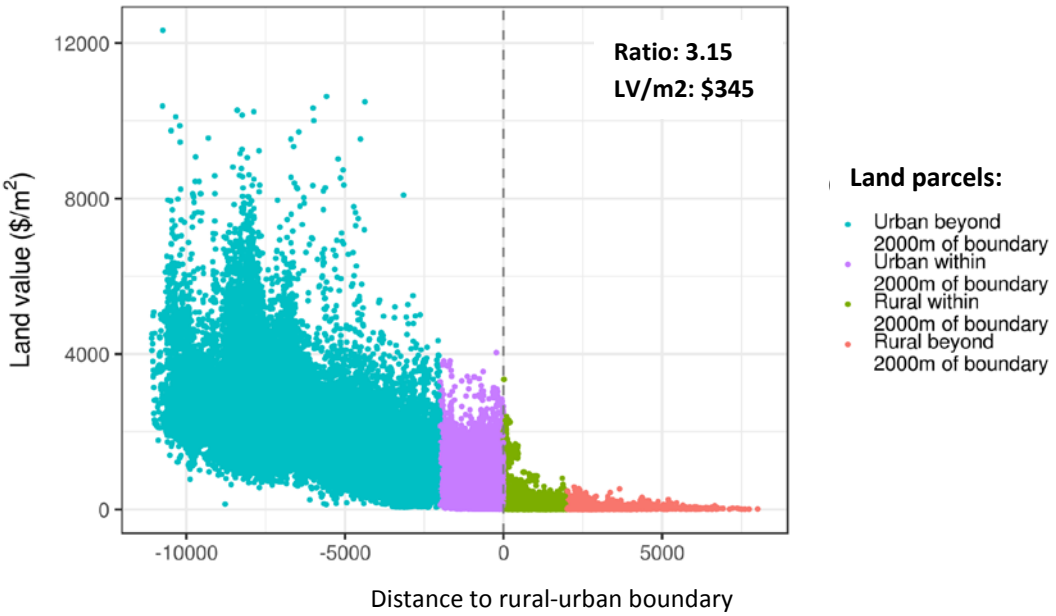
Industrial zone differentials (discussed in section 5), development feasibility modelling and other information can help inform a judgement about how and where to increase urban development capacity. Further NPS-UDC guidance is being made available on planning responses.

[52] When the rural-urban differential time-series are made available.

4.3 Examples

Rural/urban differentials for Auckland, Tauranga and New Plymouth are shown in figures 36, 37 and 38. The rural/urban differentials are presented as both ratios and dollar values, alongside scatter diagrams that show the actual values of each land parcel and their distance from the rural/urban boundary. (The red vertical line represents the boundary, with urban land on the left and non-urban land on the right).

Figure 36: Auckland land parcel values and differentials near the rural-urban boundary, July 2014



The rural/urban differential for Auckland was calculated as at July 2014 when Auckland properties were last valued (and updated to 2017 values using the Sales Price Appraisal Ratio). **The differential measures the impact of District Plans in force in 2014, which provided much less development capacity than the Auckland Unitary Plan does now.**

The scatter diagram shows Auckland land values falling gradually with distance from the central business district (CBD), (except for a peak at the CBD fringe which is subject to heritage protection), and the sudden drop at the rural/urban boundary.

After removing major non-regulatory factors affecting land values, urban residential land close to the rural/urban boundary was worth more than three times the value of rural land next door,[53] or $345 more per square metre. Regulations that constrain development capacity were adding more than $150,000 to the value of an average 450m² urban section on the edge of the city.

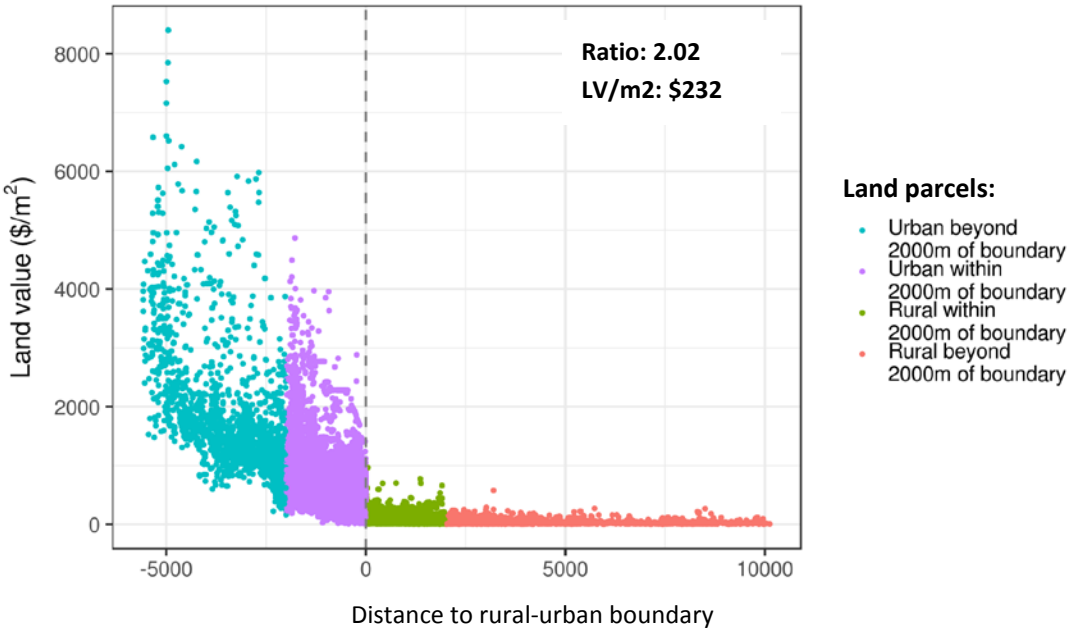
When this differential is updated with the next revaluation (undertaken in November 2017), it could be higher. Population and house prices have increased dramatically over the last three

[53] Rural-urban land price differentials were previously calculated to quantify the impact of Auckland's Metropolitan Urban Limit (Grimes and Liang, 2009; Productivity Commission, 2012; Zheng, 2013). These estimated that land on the urban side of the Limit was worth 7 to 10 times the value of land on the rural side. The rural-urban differentials calculated here is much lower because the methodology was refined to:

- use more recent valuation data and at property level rather than meshblock
- remove the impact of local amenities and geographic factors that may affect land values
- remove the impact of subdivision costs, including development contributions for infrastructure.

years. The Auckland Unitary Plan has released significant additional development capacity but it may take some time for this to be picked up and reflected in land values.

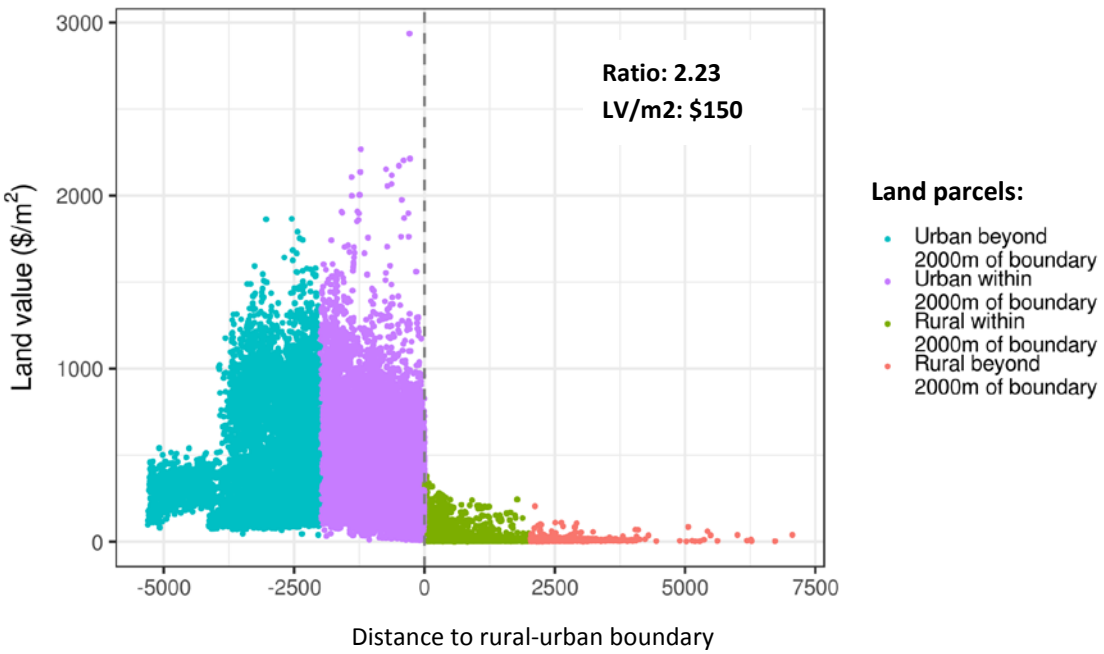
Figure 37: Tauranga land parcel values and differentials near the rural-urban boundary, July 2014–16



Tauranga's rural-urban differential was calculated using 2014 valuation data for Tauranga City and 2016 data for Western Bay of Plenty district (and updated to 2017 values using the Sales Price Appraisal Ratio).

The scatter diagram in figure 37 shows that land values vary significantly within the city, reflecting variations in proximity to the coast. After removing major non-regulatory factors affecting land values, urban residential land close to the rural-urban boundary was worth twice the value of rural land next door, or $232 more per square metre..

Figure 38: Christchurch land parcel values and differentials near the rural-urban boundary, July 2015/August 2016



A rural/urban differential was calculated for the Christchurch extended urban area using August 2016 valuation data for Christchurch City and Waimakariri District and July 2015 data for Selwyn.

The scatter diagram in figure 38 shows how liquefaction risk has reduced the value of land on the eastern ridge of the Christchurch CBD, far from the rural-urban boundary. Unlike in Auckland and Tauranga, land values do not rise as you get closer to the city centre. However, as in other cities, there is a significant drop off in values at the rural-urban boundary.

After removing major non-regulatory factors affecting land values, urban residential land close to the rural/urban boundary was worth over 2.2 times the value of rural land next door, or $150 more per square metre.

The ratio between urban and rural land values in Christchurch is higher than in Tauranga, but there is a lower dollar difference. This is because Christchurch land values are in general lower than in Tauranga.

5 Industrial zone differentials: do prices jump between land uses?

If the value of land jumps significantly where zoning changes between an industrial zone and other activity zones, this indicates that zoning and other regulations are not matching current relative demands for different land uses in that location. Consistent differentials may indicate insufficient development capacity for the more expensive land use city-wide.

5.1 Description

Industrial zone differentials are a specific type of land price differential that measure changes in land values across the boundary between different activity zones. They are expressed in both ratios and dollar amounts.

The industrial zone differentials presented on the dashboard on the Ministry of Business, Innovation and Employment's website measure the difference in rateable land values across small distances, eg, 250m inside and 250m outside the boundary of each industrial zone in each high and medium growth expanded urban area. Separate differentials have been calculated for each contiguous industrial zone in these areas.

These differentials may compare industrial land values with those in adjacent commercial (including mixed use), residential or rural zones. The boundary between these zones was drawn using Corelogic zoning codes, and adjusted where necessary in consultation with local authorities and using zoning maps. Other zones (such as roads) were split and allocated to nearby urban or non-urban zones.

The differentials use Corelogic valuation data at parcel level at the most recent valuation date. They reflect regulatory settings in place at that time. (General property valuations are undertaken every three years and the most recent valuations were undertaken at different dates during 2014 to 2016, depending on the area).

Discontinuities were estimated using a "focused approach" that compares land values for the different uses within small areas on either side of the zoning boundary. This method removes the impact of amenities on land values, and focuses on what the land is allowed to be used for.

A more detailed methodology description is available on the Urban Development Capacity dashboard on the Ministry of Business, Innovation and Employment's website.

5.2 Interpretation

Primary interpretation

An industrial zone differential provides information about how well current zoning and other regulations accommodate demands for industrial land uses relative to other activities in a given location.

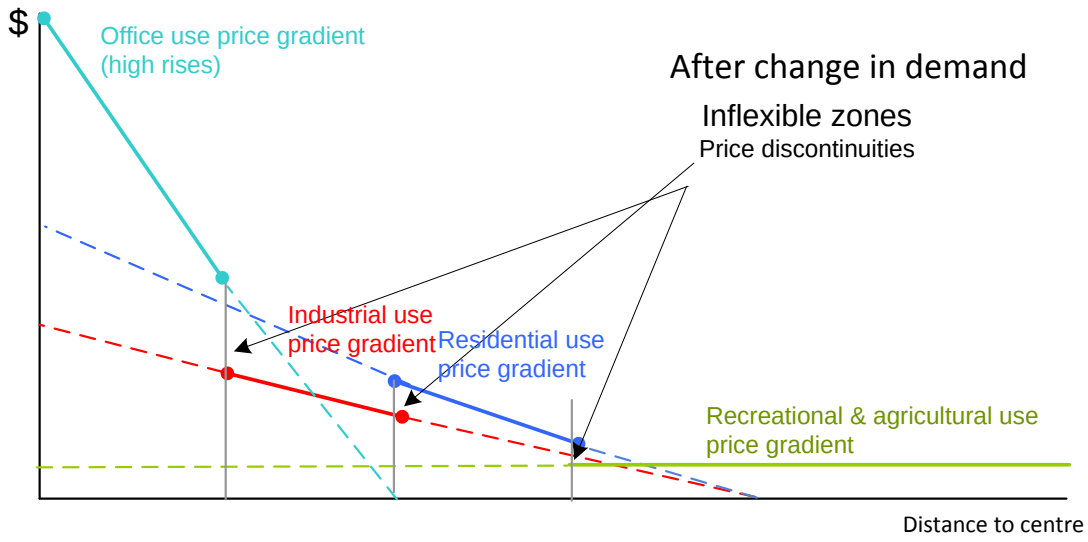
Different activities value different property attributes and often locations. Residential values tend to be higher in coastal locations, while there is a premium for offices in a city centre, and warehouses seek good motorway access. These patterns are dynamic, changing with technology, preferences and different rates of growth in different land uses.

If there is a significant difference in land values either side of the boundary between different activity zones, this indicates a mismatch between zoning and relative demands for different uses of land. For example, residential land would likely be worth considerably more than industrial land near the coast, and commercial land worth more than industrial land in the city centre.

Significant differentials might also indicate insufficient capacity for one use relative to another, city-wide. This might show up in consistently higher land values for a particular use, or might manifest most clearly in certain places. For example, if industrial land is worth significantly more than rural land this may indicate a city-wide shortage of industrial land.

Mismatches can happen over time, if growth and development generate sectoral and spatial changes that make older zoning patterns less relevant. Cities often have old industrial sites in central areas that are ripe for redevelopment for commercial and/or residential uses. In those cases, the value of industrial-zoned sites in central areas is well below that of nearby sites zoned for the alternative use. This situation is illustrated in figure 39.

Figure 39: Locational demands of different land uses: changes in the value placed on proximity to the centre, as reflected in price differentials between zones



It shows a simplified case where zones no longer reflect the relative value that office, industrial and residential uses place **on being close to a centre**. This results in:

- A drop in land values at the boundary between the central commercial zone (in turquoise) and nearby industrial zone (in red)
- A jump in land values at the boundary between the industrial zone (in red) and nearby residential zone (in blue).

Significant or increasing differentials signal that there is greater or increasing demand for the more expensive land use relative to the cheaper land use. Put another way, it suggests that zoning and other regulations have been constraining the more expensive land use more than the other land use.

This may be because:

- various regulations (such as density restrictions) constrain the intensity of development within the areas zoned for the more expensive land use, and/or
- zoning allocates insufficient urban land to the more expensive land use (and too much to cheaper land uses).

Nuances, caveats and qualifications

The following qualifications apply to the interpretation of the industrial zone differentials presented on the Urban Development Capacity Dashboard:

- The differentials use land valuation data for business land. These are a proxy for sales prices and rents and may not be exact or up-to-date.
- Land values for different uses can change quickly up or down with the property cycle and changes in world prices for particular products.
- These provide more information about systemic constraints on supply or mismatches with demands.
- Incompatible land uses may generate negative effects or reverse sensitivities for each other, lowering the prices of both near industrial zone boundaries.

Using the information

The industrial zone differential provides a starting point for further investigation. It is a current/past measure of **relative** values of different land uses. It provides unique information about the cost of a significant amount of land being zoned for industrial activities versus another business use or residential development. This information complements, and should be used alongside:

- recent market indicators for business land, such as vacancy rates, sales prices and leases
- information about what uses are actually occupying zones and whether this has been changing or there have been applications for non-complying activities
- local knowledge about environmental factors
- other data collected for housing and business development capacity assessments that identify long-term demographic and sectoral employment trends and forecasts.

5.3 Examples

Industrial zone differentials calculated for Christchurch are shown here to illustrate how to interpret and use the information.

First, figure 40 shows industrial zones in the Christchurch urban area. These zones abut residential and sometimes commercial and/or rural zones.

Figure 40: Zones in the Christchurch urban area

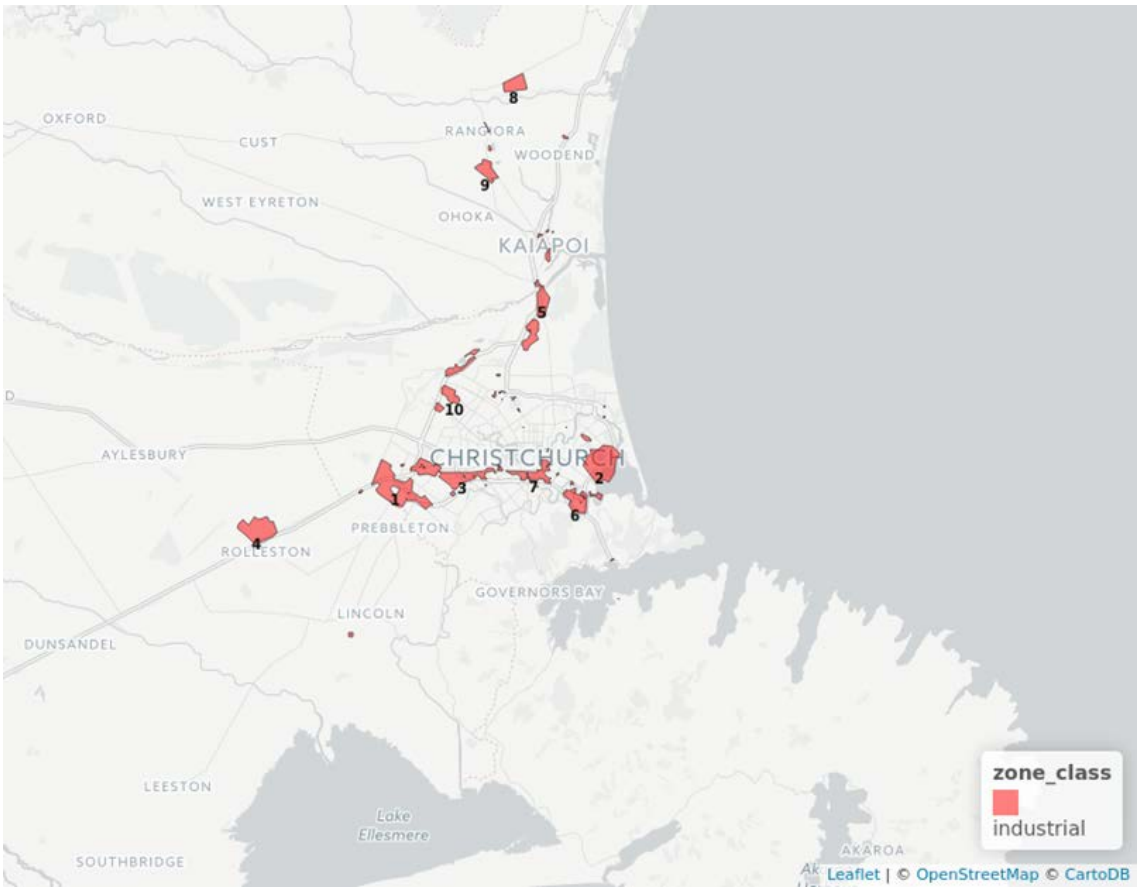
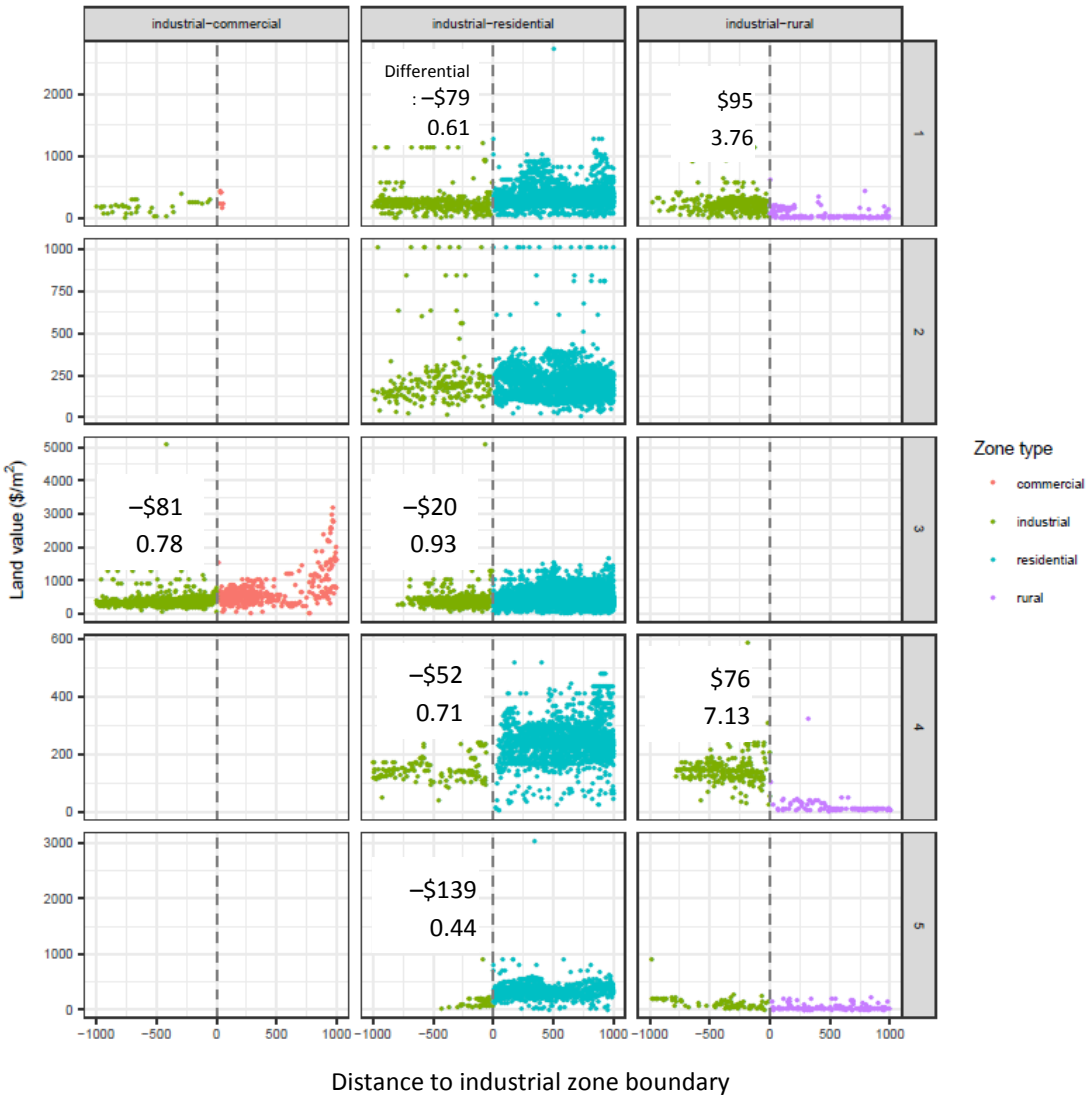


Figure 41 provides scatter diagrams for land values of properties located within 1000m either side of the boundary between the five largest industrial zones in Christchurch and their neighbouring zones. These industrial zones are located in 1. Hornby South, 2. Bromley, 3. Wigram, 4. Rolleston and 5. East Belfast. The differentials between the industrial and other land within 250m of the boundary are shown (both dollar differences per square metre and ratios) where these are statistically significant.

By and large there is little difference in the values of industrial and commercial land for these five zones. In most, but not all cases, industrial land is worth somewhat less than similarly located residential land per square metre, suggesting there could be a relative shortfall in development capacity for housing in these locations. In Hornby South and even more so in Rolleston, industrial land is worth significantly more than similarly located rural land per square metre. In these locations there may be scope to rezone rural to industrial land.

Figure 41: Distribution of land values inside and outside five largest industrial zones in Christchurch



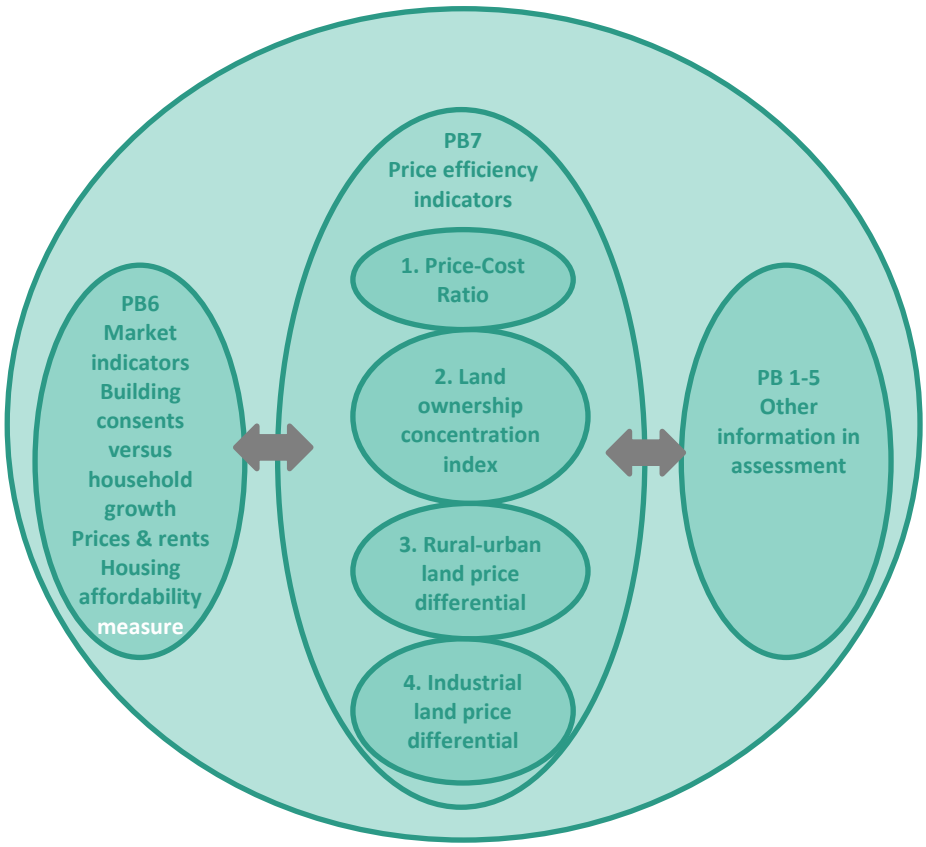
6 Using the price efficiency indicators

The National Policy Statement on Urban Development Capacity requires local authorities with high and medium growth urban areas to include the price efficiency indicators in housing and business development capacity assessments, and to use them to inform planning decisions. The suite of indicators provides information about whether current development capacity for housing and business space is sufficient and, if not, why. They will help inform minimum development capacity targets, future development strategies and plan changes.

6.1 Using price efficiency indicators in housing and business development capacity assessments

The price efficiency indicators are most effective used as an *indicator package,* alongside the PB6 market indicators and other information collated for the housing and business development capacity assessments (see figure 42).

Figure 42: Price efficiency indicators complement other information



Monitoring the market indicators specified under policy PB6 will provide a broad picture of past trends in demand, supply and prices, and housing affordability in urban areas.

The price efficiency indicators augment this by providing more specific information about how *land use regulations* may currently be affecting the supply of development opportunities. The land ownership concentration indicators provide information about land zoned for residential

expansion and how competitive this market is. The rural-urban differential signals whether current plans provide sufficient development capacity for housing overall. The industrial zone differential might highlight opportunities for rezoning between different uses in specific locations, to better provide for relative demands.

This should be brought together with information about future growth in households, visitor numbers and business activity, in the housing and business development capacity assessments.

The role of each price efficiency indicator relative to this other information is outlined in more detail below.

The price-cost ratio

The price-cost ratio is a general indicator of the extent to which the supply of infrastructure-serviced sections and development opportunities to market, rather than construction costs, is determining house prices. The price-cost ratio provides a high-level assessment of potential supply shortages over time.

It can be compared to time series of the PB6 market indicators. A high and/or increasing price-cost ratio will probably correlate with high/increasing house prices. It may also be reflected in the ratio of consents to household growth, and in declining housing affordability.

High price-cost ratios may also be reflected in the construction of new homes that do not match the distribution of demand by type, location and price point. When land is costly, the incentive is for developers to build relatively large, expensive homes (especially if planning regulations also limit densities). This information could be useful for assessing the match between demand and supply as required by policy PB1 b).

Various factors could constrain land supply and development opportunities and elevate prices. The other price efficiency indicators can shed light on this.

The land ownership concentration indicators

The land ownership concentration indicators show:

- how much undeveloped land is currently zoned for residential development in a local area (compared to other places)
- whether or not this land is held by a few land-owners that could have a disproportionate impact on its availability for development, and therefore on prices
- whether land that might be zoned for urban residential development in the future would be concentrated in the lands of a few land-owners, leading to an uncompetitive situation in future
- where is the land owned by the most significant land-owners.

The indicators indicate whether concentrated land ownership can help explain high or increasing price-cost ratios up until now and provides a picture of what could happen in the future. This can help inform future development strategies that identify the location and timing of rezoning and infrastructure provision.

Rural-urban differentials

Rural-urban differentials show the costs to households of land use regulations that constrain development across the city and at the city boundary. The differentials do not account for any of the benefits of land use regulation. But using the dollar values in the dashboard can help local authorities evaluate both.

When costs are high, this indicates that insufficient development capacity is materially affecting the prices of residential sections and therefore homes. The rural-urban differential provides information about whether development capacity is *currently* sufficient. This should be considered alongside household growth forecasts and development feasibility modelling in the housing and business development capacity assessment.

The NPS-UDC requires local authorities to address this situation by providing more capacity where people want to live now and as their city grows.

Industrial zone differentials

Industrial zone differentials indicate whether zoning in a specific location matches the demands of industrial uses for that location, relative to the demands of other business uses or residential development. A group of industrial land price differentials might provide city-wide information about the relative capacity constraints of different land uses. The differentials are best used alongside information about sectoral growth trends, vacancy rates and leases, and accessibility between homes and businesses. Together, all this can inform options for re-locating, or re-allocating development capacity in future.

6.2 Responses

Local authorities must use the PB7 price efficiency indicators along with other evidence to inform planning decisions. Potential vehicles to respond to this information include planning responses required under NPS-UDC policies PC1 to PC14:

- Development capacity targets
- Plan changes
- District plan reviews
- Future development strategies.

In time, these would be reflected in infrastructure strategies, funding policies and Long Term Plans.

The PB7 price efficiency indicators do not specify particular policy responses. Local authorities need to make decisions by weighing up the information in their housing and business development capacity assessments alongside community aspirations and environmental effects.

Other guidance on policies PC1 to PC14 will recommend how best to respond to this information.

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PART TWO

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