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Wellington City District Plan

Proposed Amenity and Design Provisions

Cost Benefit Analysis - June 2022

Quality Control

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Me Heke Ki Poneke

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Executive Summary

Achieving a balance between increasing density and delivering a good standard of amenity

The Wellington City Draft District Plan and Draft Residential Design Guides provide the proposed policy framework that will guide the future growth of Wellington. As required by the National Policy Statement of Urban Development (NPS-UD) and Wellington Regional Policy Statement (RPS), Council is tasked with revising the District Plan to enable sufficient housing supply for future population needs in accessible urban areas.

Alongside enabling capacity for growth, the Draft District Plan must also integrate Council's broader policy framework that seeks to ensure that the City remains liveable and functions in a way that enhances people's wellbeing. Part of achieving a liveable environment and enhancing wellbeing is ensuring that a good level of residential amenity is retained and provided as the city grows. There is a balance to be achieved between increasing housing supply in the right locations and maintaining or improving residential amenity.

The amenity provisions that have been included in the Draft District Plan and the direction given in the Draft Design Guides aim to maintain or create high levels of amenity in areas of the city that are set to intensify over time. The draft provisions have been drafted in a way that requires delivery of on site amenity for residents in residential and mixed use developments including, providing access to sunlight, quality outlook and privacy, access to outdoor space, and provision of adequate living space. The proposed inclusion of a city outcomes contribution provision also requires that development over the permitted height limit and larger scale/comprehensive residential development makes a further contribution to the amenity provided in the broader community. This includes contribution to the provision of public open space and creation of sustainable buildings.

Whilst there has been design analysis undertaken to ensure the proposed amenity provisions achieve a workable site layout, there is also a need to understand the costs associated with these provisions and ensure that they do not tip the balance of development feasibility and therefore indirectly impact housing supply or affability. An important part of this equation is to consider the value increased residential amenity has on a development and its contribution to the revenues that can be generated.

Identifying the benefits of residential amenity

In order to identify the range of benefits that are generated from the provisions, this assessment has used the Wellington City Wellbeing Framework 2021 as a framework to identify the range of benefits that could attributed to the amenity provisions. The assessment demonstrates that providing a residential development with a high level of amenity is not only linked to health and wellbeing benefits for residents directly, it also contributes to broader community, environmental and urban character benefits. Particularly in areas of high density.

For example provision of good quality open space not only improves health outcomes by providing people with access to the outdoors and more opportunities for physical activity, it also provides spaces for people to gather and connect and contributes to greening of the city overall.

The costs of providing amenity

Along side identification of the benefits, this analysis has also assessed the costs associated with the Draft District Plan's proposed amenity provisions both in terms of direct impact on development costs and what this means for development feasibility. This has been done by testing development outcomes on a range of sites under a scenario where the amenity provisions have been applied and a scenario where they have been removed. Wider economic costs on households has also been analysed.

The development feasibility analysis demonstrates that, whilst in most cases where the amenity provisions have been applied the development remains profitable, the profit generated is not sufficient to support a feasibile outcome. This is however also generally the case when the amenity provisions have not been applied and is reflective of the challenges facing the construction sector currently. It is also important to consider that a high quality development with good amenity would also support higher price points achievable for each apartment, supporting a more profitable development but not an affordable outcome.

The most significant cost identified when comparing the two scenarios is the potential loss of yield that is generated when the developable area of a site is reduced, primarily through the amenity provisions that impact site coverage or building bulk such as the street edge height, building depth and separation requirements. This has potential flow on affects to household costs, so the impact is not solely borne by the developer.

Impact on housing supply and urban intensification

A broader implication of the potential reduction of yields achievable under the proposed provisions is the potential impact on overall housing supply, reduced affordability and the potential loss of benefits that can be achieved through achieving higher densities and agglomeration.

When considering the costs and benefits to households, the analysis was limited to the impacts at a site by site level, using the six illustrative development sites identified by Wellington City Council. This has demonstrated the cost implications at a site scale but not at a city wide scale. Based on the literature reviewed the increased cost of compliance to the developer, and reduced yield across many if not most development sites in the target areas can have negative economic impacts for the city as a whole.

The potential negative economic impacts include higher housing costs to households, loss of agglomeration benefits derived from higher density, and increased costs associated with travel as people who could have lived closer to the city live further out. This impact on the potential supply of housing and loss of agglomoration benefits should be further assessed within the context of the scale of housing supply needed to meet Wellington's future needs and the overall increase in heights achieveable under proposed changes to the District Plan which is seeking to increase housing supply.

Recommendations

It is recommended that further analysis of the contribution the amenity provisions make to broader city block and neighbourhood amenity values and the impact on housing supply is required to understand if the balance between creating high quality city environments and providing for an adequate supply of housing has been met.

Based on this analysis undertaken of the costs at a site scale, is recommended that the provisions that impact the developable footprint are reviewed in terms of how the amenity attributes sought can be achieved whilst still encouraging the site to be used to its full potential. In particular, it is recommended that the following provisions are reviewed:

- It is recommended that the Building Depth and Separation rules in both the Central City and Medium Density Zones are reviewed to assess if the design and amenity outcomes sought (sunlight access, privacy, and avoidance of long blank facades) could be achieved using a different assessment tool that has a reduced impact on the sites developable area.
- The Street Edge Height Rule (CCZ-S4) which is specifically aimed at achieving solar access and a reduction of the appearance of building bulk on narrow streets, is creating potential costs to development through a loss of yield without achieving the desired solar access benefit. It is recommended that this rule is reviewed and the actual benefit on appearance of building bulk is evaluated to determine if it is an appropriate control.

1. Introduction

The Property Group Limited (TPG) has been engaged by Wellington City Council (Council) to undertake a cost benefit analysis of the proposed amenity provisions in the Draft Wellington City District Plan (the Draft WCDP). The intention of the draft amenity provisions is to maintain or create an "a good standard" of amenity in areas of the city that are set to intensify over time to allow for growth.

The draft provisions consist of bulk and location and design controls that work together to establish a permitted baseline of amenity to be provided across each zone. This includes allowing for development in a way that maintains or enhances access to sunlight, outlook and privacy, and open space.

Whilst there has been design analysis undertaken to ensure the proposed amenity provisions achieve a workable site layout, there is also a need to understand the costs associated with these provisions and the impact that has on development feasibility. Through undertaking this assessment, Council seeks to better understand the extent to which the Draft WCDP strikes the right balance between enabling housing supply and achieving well-designed developments with a good standard of amenity.

Scope of the Assessment

This assessment of costs and benefits has been prepared to inform Council's finalisation of the draft provisions. It builds on from the earlier design analysis undertaken by Council on a number of different sites to identify and quantify both the costs and benefits of different scenarios across the City.

The assessment is focused on the impact of the provisions in those areas that are set to experience change through the allowance of increases in residential densities. Due to the information available at the time of analysis, the sites that have been assessed are within the City Centre Zone and the Medium Density Zone. For this reason the assessment is focused on the provisions of these zones. However as the provisions are mirrored across a number of the other residential zones, the findings and the recommendations can be applied more broadly.

The results of the assessment are focused on understanding and comparing the costs and benefits of the proposed amenity provisions at a site or street scale and the impact this has on development costs and feasibility, as well as benefits and costs to households.

It is important to note that the work undertaken to identify the constraints and benefits also demonstrates that the provisions have broader, citywide economic and built form costs and benefits. The aggregate citywide impact was not able to be quantified by the study due to data limitations and it is recommended that this is further assessed by Council.

The Approach

The key components of the analysis undertaken includes: identification of the range and scale of benefits generated through the proposed provisions; development cost and feasibility analysis across a range of different development scenarios (included as Appendices A-C) supplemented by consideration of economic costs and benefits to households undertaken by Kalimena Advisory Limited (included as Appendix D) to understand if a balance has been achieved.

The key questions that this assessment focuses on include:

- The extent to which the relevant draft provisions would be cost prohibitive for a development to be viable and/or result in this cost being passed onto future homeowners or tenants of the development.
- The extent to which these provisions contribute to the four key wellbeing criteria (social, cultural, economic and environmental) and any broader benefits (i.e. the pleasantness and appreciation by a future resident, neighbour, or the wider community).
- Whether a more nuanced approach across the different zones may be warranted (such as different size requirements in different areas).
- The extent to which alternative metrics may have a material impact on either the cost of development or the development outcome that is achieved (such as reducing or increasing size requirements).

Report Structure

Following this introduction, this report provides an overview of the cost benefit analysis and the assessment context within the following sections:

- Section 2, puts the assessment in to context by defining what is meant by residential amenity and how it is affected through urban intensification
- Section 3, provides an overview of the draft amenity provisions that have been

assessed including the intention behind them/the benefits they are seeking to achieve

- Section 4, identifies and quantifies the benefits that are linked to the proposed provsions,
- Section 5, provides an overview of the scenarios that have been assessed
- Section 6, identifies the costs and profit across the different sites and scenarios
- Section 7, provides cost benefit analysis of the different sites and scenarios.

Note: this report is based on the Draft District Plan provisions and at the time of finalisation of the report the Proposed District Plan was made live with notification anticipated on July 18.

2. Defining Residential Amenity

The Draft WCDP adopts the Resource Management Act 1991 (RMA) definition of amenity being "those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes".

In applying this definition to a residential neighbourhood or urban area, amenity can be deemed to include the way both residents or visitors experience the built and natural environment. This includes amenity experienced from within both private residences and also public spaces. Some of the attributes that make up amenity across both private and public space are shown below.

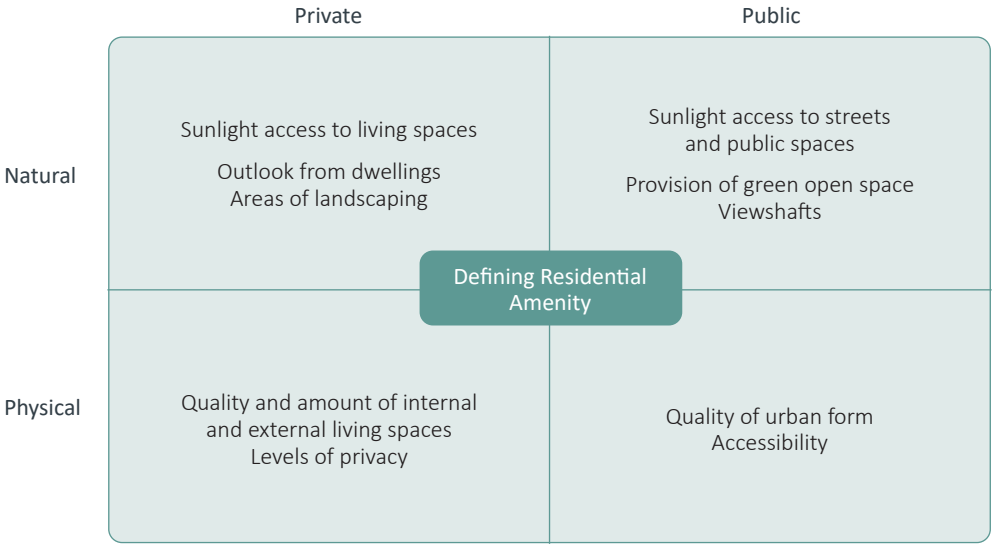


FIGURE 1 ATTRIBUTES OF RESIDENTIAL AMENITY (TPG, 2022)

Measuring residential amenity

Defining what "a good standard of amenity" is across a city is challenging. The way people identify amenity values is subjective and can change over time. People's views on amenity also changes depending on the location and surrounding environment. All areas of a city have their own identity and characteristics and, therefore, amenity values.

In this way the amenity experienced from a residential apartment in central Wellington is likely to be defined by the outlook of surrounding high rise buildings, the extent to which this allows a degree of access to sunlight, and both the physical and view access to the waterfront or other recreational areas. This is compared to the amenity values likely to be associated with one of the cities outer suburbs which would be associated with quieter residential streets and lower development densities.

In areas that are growing or experiencing change, amenity values will also change over time. In drafting the amenity provisions, the Draft WCDP effectively sets the baseline of amenity that is to be provided in that zone as it changes. In measuring the benefits of these provisions it is important to understand the level of amenity that is to be achieved across the different areas.

Urban intensification and changes to existing amenity

The development of housing and intensification of urban areas has the potential to impact both the amenity experienced by existing residents and the future amenity experienced by new residents and visitors.

For those existing residents, urban intensification has the potential to change the way they experience the natural qualities of their surrounding environment (such as a change to sunlight access and outlook) and also the physical environment (such as the ease of access to open space and the experience of privacy). For future residents, the outcome of the intensification will define the amenity of their new neighbourhood, and in moving to the area there is an element of choice about the level of amenity that is acceptable to them. It is also important to recognise the opportunity costs to potential future residents who may be unable to optimise their apreciation of amenity.

Recent national planning policy (the NPS-UD) has acknowledged the need to accept a degree of change to existing amenity values to allow an area to evolve over time, specifically to allow for housing to be provided through intensification.

Under Policy 6 of the NPS-UD, when making planning decisions that affect urban environments, decision-makers must have particular regard to the following matters:

- that the planned urban built form in those RMA planning documents may involve significant changes to an area, and those changes:
  - — may detract from amenity values appreciated by some people but improve amenity values appreciated by other people, communities, and future generations, including by providing increased and varied housing densities and types; and
  - — are not, of themselves, an adverse effect.

This change to amenity values is also reflected in the objectives of the Draft WCDP's proposed City Centre, Medium Density and Residnetial Zones. The objectives provide for healthy, safe and accessible living environments and ensure development contributes positively to a changing and well-functioning urban environment. Building proposals will be assessed against residential design guides and multi-unit housing is subject to enabling standards that provide for the increased density and scale of development that is anticipated.

Linking amenity to wellbeing

In 2021, Council adopted a Social Wellbeing Framework – defined as a tool to understand Council's role in supporting the social wellbeing of its communities. The framework outlines the vision for social wellbeing in Wellington as "an inclusive, liveable and resilient city where people and communities can learn, are connected, well housed, safe and healthy".

The amenity of the City's residential neighbourhoods has a role to play in achieving this vision. The framework identifies that strong social connections, access to basic civic amenities, feeling safe and having a good quality of life are important aspects of social wellbeing.

The framework has been used as a way to identify the benefits of the proposed amenity provisions (refer to Section 6 of this report).

FIGURE 2 SOCIAL WELLBEING FRAMEWORK

The role of planning provisions in managing amenity

Striking the right balance between enabling housing supply and achieving well designed urban developments will be critical to maintaining and improving residential amenity across Wellington's residential areas. Increasing the number of dwellings on a site has the potential to reduce private amenity (e.g. loss of privacy, and increased shading) as well as affecting the amenity of the surrounding neighbourhood (e.g. loss of open space and significant trees). The rate and scale of such changes can determine whether communities accept or reject housing intensification. However, reducing the ability to deliver the appropriate yield to make a development feasible could constrain housing supply to unacceptable levels.

3. Planning for Growth and the Draft Amenity Provisions

The following section provides an overview of how the draft amenity provisions have been drafted as part of allowing for increases in residential density to accomodate the growth of Wellington. It provides an overview of the intention behind the provisions and the benefits that were sought in their drafting.

Planning for Growth

The Draft WCDP and Draft Residential Design Guides provide the proposed policy framework that will guide the future growth of Wellington. As required by the National Policy Statement of Urban Development (NPS-UD) and Wellington Regional Policy Statement (RPS), Council is tasked with revising the District Plan to enable sufficient housing supply for future population needs in accessible urban areas.

In order to accomodate the anticipated housing needs for Wellington into the future the Draft WCDP allows for increases in heights across the central city and increases in residential density in the cities suburbs.

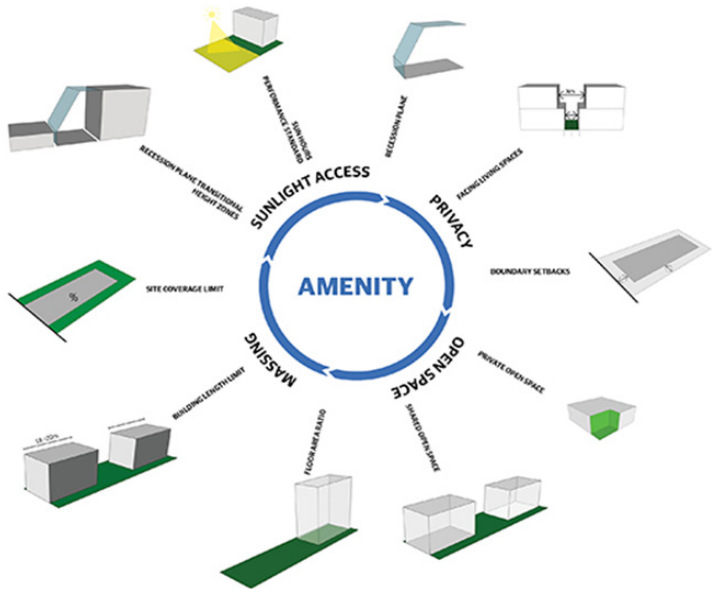


FIGURE 3 DESIGNING FOR RESIDENTIAL AMENITY (BOFFA MISKELL, 2021)

Part of achieving an increase in residential density is ensuring that a good level of residential amenity is retained/provided as the city grows. There is a balance to be achieved between increasing housing supply in the right locations and maintaining or improving residential amenity.

Background to the development of the amenity provisions

In July 2021, Council commissioned a design analysis to understand what measures could be used to achieve a balance between residential amenity and increased density (Boffa Miskell, 2021). The analysis identified attributes of residential amenity that can reasonably be expected to be managed through planning provisions in existing areas undergoing intensification. These include sunlight access, privacy between habitable spaces, the scale and dominance of built form (massing) and the provision of open space

Based on the design assessment, the study made several recommendations in relation to outdoor space, sun access to outdoor space, development envelopes, building lengths, privacy separation distances, on-site storage and waste management storage, and access and circulation legibility to address the effects of anticipated intensification on residential amenity.

It also recommended that the Council develop design guidelines to help guide the design of new density development given the myriad of factors requiring consideration. Consideration of effects on the character of existing areas were outside the scope of the study.

Objectives of the Amenity Provisions

The objectives and policies from each zone that sit behind the draft provisions are summarised in Table 1 below. In the City Centre Zone the objectives are focused on ensuring that development is undertaken in a way that provides a high quality environment and a high standard of on-site amenity. In the Medium Density Zone the objectives are focused more on allowing for increases in residential density and ensuring healthy, safe and accessible living environments.

TABLE 1 - RELEVANT DRAFT DISTRICT PLAN OBJECTIVES AND POLICIES

Zone	Relevant Objectives and Polices (Draft District Plan)
City Centre Zone	**Objective CCZ-O5 - Amenity and Design** Development in the City Centre Zone positively contributes to creating a high quality, well-functioning urban environment, including: 1. Reinforcing the City Centre Zone's distinctive sense of place; 2. Providing a quality and level of public and private amenity in the City Centre Zone that evolves and positively responds to anticipated growth and the diverse and changing needs of residents, businesses and visitors; 3. Maintaining and enhancing the amenity and safety of public space; 4. Contributing to the general amenity of neighbouring residential areas; 5. Producing a resilient urban environment that effectively adapts and responds to natural hazard risks and the effects of climate change; 6. Protecting current areas of open space and providing greater choice of space for residents, workers and visitors to enjoy, recreate and shelter from the weather; and 7. Acknowledging and sensitively responding to adjoining heritage buildings and areas and sites of significance to tangata whenua.

Zone	Relevant Objectives and Polices (Draft District Plan)
	Policy CCZ-P11 Quality and Amenity Achieve a high standard of on-site amenity in the City Centre Zone by: 1. Providing building occupants with access to an adequate level of daylight; 2. Ensuring access to convenient outdoor space, including private and shared communal living areas and pocket parks; 3. Providing for the storage needs of building occupants; and 4. Encouraging use of roof top levels for green roofs, communal spaces and/or stormwater retention as well as for building services. **Policy CCZ-P12 City Outcomes Contribution** Require over and under height, large-scale residential, non-residential and comprehensive development in the City Centre Zone to deliver City Outcomes Contributions as detailed and scored in the Centres and Mixed Use Design Guide guideline G107, including through either: 1. Positively contributing to public space provision and the amenity of the site and surrounding area by: a) Vesting a portion of the site as public space for the use and enjoyment of the public; or b) Providing publicly accessible space such as a laneway or through block connection; or c) Providing a building frontage or set back that helps activate street life and encourage social interaction; or

Zone	Relevant Objectives and Polices (Draft District Plan)
	d) Providing access to permanent on-site amenities such as public toilets; and/or 2. Incorporating a level of building performance that leads to reduced carbon emissions and increased climate change resilience; and/or 3. Incorporating construction materials that increase the lifespan and resilience of the development and reduce ongoing maintenance costs; an/or 4. Incorporating a feasible range and quantity of affordable housing options; and/or 5. Enabling ease of access for people of all ages and mobility.
Medium Density Zone	**Objective MRZ-03 Healthy, safe and accessible living environments** The Medium Density Residential Zone provides healthy, safe and accessible living environments with attractive and safe streets. **Policy MRZ-P10 - City Outcomes Contribution** Require over height, large-scale residential development in the Medium Density Residential Zone to deliver City Outcomes Contributions as detailed and scored in the Residential Design Guide, including through either: 1. Positively contributing to public space provision and the amenity of the site and surrounding area by: a) Vesting a portion of the site as public space for the use and enjoyment of the public; or b) Providing publicly accessible space such as a laneway or through block connection; or

Zone	Relevant Objectives and Polices (Draft District Plan)
	c) Providing a building frontage or set back that helps activate street life and encourage social interaction; or d) Providing access to permanent on-site amenities such as public toilets; and/or 2. Incorporating a level of building performance that leads to reduced carbon emissions and increased climate change resilience; and/or 3. Incorporating construction materials that increase the lifespan and resilience of the development and reduce ongoing maintenance costs; and/or 4. Incorporating a feasible range and quantity of affordable housing options; and/or 5. Enabling ease of access for people of all ages and mobility.

Amenity Controls

An overview of how the different amenity attributes/benefits sought are managed across the different zones assessed is provided below.

TABLE 2 HOW THE AMENITY ATTRIBUTES ARE ADDRESSED THROUGH THE DISTRICT PLAN PROVISIONS

Amenity Attribute	City Centre Provisions	Medium Density	Mixed Use
		Sunlight Access	
Sunlight access for neighbours	**CCZ-S14 – Building Setbacks** Living rooms facing onto any non-road boundary must have a setback of 3m.	**MRZ-S9 – Height in relation to boundary** For any site adjoining another site within the Medium Density Residential Zone: no part of any building, accessory building or structure may project beyond a line of 60° measured from a height of 8m (within Height Control Area 1 or 2) or beyond a line of 60° measured from a height of 12m (within Height Control Area 3) above ground level from all side and rear boundaries.	**MUS-S3 – Height in relation to boundary** For any site adjoining a site in the General Residential Zone, no part of any building, accessory building or structure may project beyond a line of 45° measured from a height of 2.5m above ground level from all side and rear boundaries. (note different angles height are applied depending on location)
Sunlight access to the street and public spaces	**CCZ-S7 – Minimum sunlight access – public space** Buildings or structures on sites adjoining any public space identified in Appendix 9 must be designed and located to maintain sunlight access during specified time periods.	An outcome linked indirectly to the setback provisions.	An outcome linked indirectly to the setback provisions.

Amenity Attribute	City Centre Provisions	Medium Density	Mixed Use
	CCZ –S4 - Street edge height The street edge height of any new building frontage or addition to an existing building frontage facing an identified street that has a width of 21 meters or less must not exceed a height of 16m or the width of the street, whichever is the greater, for the first 4m of frontage depth.		
Provision of on-site outdoor space			
Open space	**CCZ-S11 Residential outdoor living space** Each residential unit, including any dual key unit, must be provided with an outdoor living space that is: 1. For the exclusive use of residents; and 2. Accessible from a habitable room; and 3. A single contiguous space. Except: This does not apply for any residential unit where communal outdoor living space is provided as an alternative.	**MRZ-S14 – Outdoor living space** Each residential unit, including any dual key unit, must be provided with an outdoor living space that is: 1. For the exclusive use of residents; and 2. Accessible from a habitable room; and 3. A single contiguous space. 4. Of the minimum area and dimension specified in the table at clause S14 (5m2 for 1 bedroom and 8m2 for 2+ bedroom, minimum dimension 2m). Except: This does not apply for any residential unit where communal outdoor living space is provided as an alternative.	**CCZ-S11 Residential outdoor living space** Each residential unit, including any dual key unit, must be provided with an outdoor living space with a minimum area of 5sq for a studio or 1 bed and 8sqm for a 2+ bed.

Amenity Attribute	City Centre Provisions	Medium Density	Mixed Use
	Where communal outdoor living space is provided it must be: 1. For the shared use of all building residents; 2. Accessible to all building residents; and 3. A single contiguous space.	Where communal outdoor living space is provided it must be: 1. For the shared use of all building residents; 2. Accessible to all building residents; and 3. A single contiguous space. 4. Of the minimum area and dimension specified in the table at clause S14 (10m2 for every 5 units, minimum dimension 8m).	
Liveable space and storage			
Apartment sizes	**CCZ-S10 - Minimum residential – unit size** Residential units, including for each dual key unit, must meet the following minimum sizes: • 35sqm for a studio • 40 sqm for a 1 bed • 55 sqm for a 2+ bed.	**MRZ-S13 – Minimum residential unit size** Residential units, including any dual key unit, must meet the following minimum sizes: • 35sqm for a studio • 45 sqm for a 1 bed • 55sqm for a 2+ bed.	**MUZ-S8 – Minimum residential unit size** Residential units, including any dual key unit, must meet the following minimum sizes: • 35sqm for a studio • 45 sqm for a 1 bed • 55sqm for a 2+ bed.
Scale and Dominance (note these rules also seek to achieve the attributes of outlook, privacy and sunlight access)			
Building depth	**CC-13 -Maximum building depth** Any new building or additions to existing building must not result in the continuous depth of any external side wall being greater than 20m.	**MRZ-20- Maximum building depth** No part of any building or structure must exceed 20m in continuous length.	

Amenity Attribute	City Centre Provisions	Medium Density	Mixed Use
Building separation distance	**CCZ-S12 – Building separation distance** Any new building or addition to an existing building used for residential activities must provide a 10m separation distance between buildings located on the same site.	**MRZ-S11 – Minimum building separation** Buildings must be set back at least 10m from the nearest part of any other building on the same site. **MRZ-S12 – Minimum privacy separation to a boundary** Any outdoor living space or habitable room window above ground floor level must be at least 2m from any boundary except a road boundary.	

City Outcomes Contrubution

The Draft WCDP and Draft Residential Design Guides also include a City Outcomes Contribution assessment criteria for larger scale residential, commercial and mixed use developments (G146) .

As this assessment is based on testing scenarios that comply with the relevant height and built form controls, the direct cost and benefit balance of this provision has not been assessed. It is noted however, that this assessment has identified the the proposed amentity provisions (which make up the permitted baseline) do impact the allowable building footprint and yeild that can be aciheved. In most cases tested, under current market conditions this does impact the fesibility of development. It is likley that to acheive a feasible development under the draft provisions, that either the height or bulk controls may need to be exceeded and therefore the city outcomes contribution will be a key assessment tool.

This assessment outlines that the proposed amenity provisions have been found to have developments costs that may not be outweighed by the direct benefits to residents or neighbours. As noted in the introduction however, when considered at a broader neighbourhood or street block scale the benefits of the provisions have the potential to have broader benefits for the community and this is something that should be assesssed in more detail. The key to sucess of the City Outcomes Contribution provision will be that it is used as a way to work with the development sector to achieve a good design outcomes without generating siginficant additional costs.

Design Guides

Council is currently also revising the Design Guides that sit alongside the Wellington City District Plan. The Design Guides provide best practice design guidance for developments of particular types, in particular areas that supports the proposed rules and development standards in the District Plan. The Design Guides use principles and guidelines (rather than rules and standards) to achieve quality homes and urban environments that are compact, attractive, functional and inclusive. They are also used as an assessment tool used to assess resource consent applications for development where the District Plan provides discretion to do so.

The Guides relevant to this work are the Residential Design Guide and the Centres and Mixed Use Design Guides. The Residential Design Guide is intended to support residential developments across the City, while the Centre's and Mixed Use Design Guide is intended to support residential developments located within the City Centre, Centre (Metropolitan, Local, Neighbourhood) or Mixed Use Zones.

The Guides are a particularly important tool to ensure that quality design principles are applied to increased residential density, taller buildings, and new types of housing. High density housing has a reputation internationally, and more recently here in New Zealand, for increased crime, anti-social behaviour, overcrowding and sub-standard living conditions.

However, when the Guides are adhered to, denser housing can achieve a wide range of benefits for people and communities. This is achieved by design that responds to the natural environment, supports an effective public-private interface, well-functioning sites and high-quality buildings. The potential benefits include, but are not limited to:

- Enhanced wellbeing (mental and physical) of people
- Increased biodiversity
- Reduced flooding and stormwater run-off
- Enhanced environmental features and mana whenua sites of significance
- Increased sense of place and neighbourhood identity
- Enhanced neighbourhood safety and amenity
- Improved storage, access and permeability for sustainable travel modes
- Universally accessible buildings for people of all ages and abilities
- Reduced waste and carbon emissions
- Improved energy efficieny.

4. Identifying the Benefits

Using the Wellington City Wellbeing Framework 2021 as a base, the range of benefits that could be attributed to the amenity provisions have been identified (refer to table 11). Identification of the benefits has been drawn from available industry research which is summarised in the following section.

The identifcaiton of benefits has focused on those provisions that have been tested as part of this analysis including increases or maintainance of access to sunlight, providing quality outlook and privacy, access to outdoor space, and provision of adequate living space. It is noted that there are broader benefits that may result from other draft provisions included in the Draft WDP. For example, the benefits that may arise through provision of additional bycyle parking, such as improved health outcomes and reduced carbon emissions from less car use. However, due to the level of information available on the sites tested this has not been able to be assessed.

The impact of the resulting built form outcomes on overall urban form at a broader neighbourhood scale have not been included as part of this evaluation. This would require further design analysis at a city wide scale.

Note: The benefits identifed in Table 11 are presented in absolute not net terms – in other words the table does not present potential offsetting disbenefits. As one example, while improved solar access should have carbon emission benefits, there may also be disbenefits arising from longer travel journeys because of reduced supply.

TABLE 3 – IDENTIFYING THE BENEFITS OF AMENITY

	Solar Access	**Provision of open space (private and communal)**	**Privacy and outlook**	**Living Space**
Environmental Wellbeing	Potential to contribute to lowering carbon emissions and improve environmental outcomes from increased appreciation of the natural environment	Potential to contribute to lowering carbon emissions and improved ecological and environmental outcomes	Potential to improve environmental outcomes from increased appreciation of the natural environment from positive outlooks	Potential to contribute to lowering carbon emissions resulting from increased living space
Social Wellbeing	Potential to contributing to improved public health outcomes (mental and physical) resulting from dryer, warmer homes and increased access to sunlight	Potential to contribute to improved public health outcomes (mental and physical) and sense of place/ connection/ community resulting from access to outdoors/shared open space	Potential to contribute to improved public health outcomes (mental and physical) resulting from improved feelings of security, and positive outlooks	Potential to contribute to improved public health outcomes (mental and physical) resulting from increased living space

	Solar Access	Provision of open space (private and communal)	Privacy and outlook	Living Space
Cultural Wellbeing		Potential to contribute to improved sense of place/ connection/ community resulting from access to shared open space	Potential to support cultural and spiritual well being from enhanced feelings of privacy and positive outlooks	Potential to contribute to improved cultural and spiritual wellbeing from increased living space
Economic Wellbeing	Potential for lower household costs (i.e. heating and drying) Potential for lower health costs resulting from increased access to sunlight Potential for increased property values	Potential for lower health costs resulting from increased access to outdoors/open space Potential for increased property values	Potential for increased property values resulting from enhanced feelings of privacy and positive outlooks	Potential for lower health costs resulting from increased living space/ reduced overcrowding Potential for increased property values

It is importnat to note that the benefits identified not only have a direct impact on the tenant or neighbour but also have broader indirect citywide benefits.

TABLE 4 - INDIRECT AND DIRECT BENEFITS (KALIMENA, 2022)

	Direct impacts – Benefits				Indirect
	Benefits to future occupants on site		Protecting benefits enjoyed now by neighbour		Desired Wider Benefits
A.		More sunlight and daylight		More sunlight and daylight	Lower chance of streets with no sun (more walkable neighbourhoods) largely applicable to the central city, where taller buildings permitted
B.		Better outlook, less privacy imposition		Better outlook, less privacy imposition	
C.		Direct access to outdoor space, to spend time outside	N/A		Greater sense of identity and civic pride, where buildings are better designed
D.		Minimum size – more storage options. More sociable space (storage for bikes etc.)	N/A		More people cycle, relies on improved end-of-trip (home) facilities supporting increased cycling Possibly - more accessible housing for those with disabilities
E.		Less noise from neighbours		Less noise from neighbours	Gentrified neighbourhoods – lower rates of crime
	Improved well being • Mental health • Social Interaction • Noise – related				City branding – more appealing to visitors and potential workers (look and feel)

Sunlight Access

As noted in Section 2, one of the key impacts identified in areas of growing urban density is the impact of the loss of sunlight.

Access to sunlight from a private dwelling is well documented as being important in achieving enhanced health and wellbeing benefits as well as better healthy home standards (dryer, warmer homes that have reduced heating costs) (World Health Organisation, 2018 and Ministry Housing and Urban Development, 2021).

Access to sunlight from a private dwelling has the potential to contributing to improved public health outcomes (mental and physical) resulting from lighter, dryer, warmer homes. Exposure to sunlight is thought to increase the brain's release of a serotonin - a hormone associated with boosting mood and helping a person feel calm and focused. Natural light also helps to regulates our body's circadian rhythms, improving sleep quality and therefore health overall. Studies have shown that exposure to natural light during the working day leads to 46 minutes more sleep each night (Boubekri et al., 2014).

Allowing daylight into homes also controls damp, mould and bacteria growth, lowering the risk of asthma and other respiratory diseases (WHO, 2018).

Sunlight access also has economic benefits for residents. Research has shown that increased daylight can reduce the need for artificial lighting by 16-20%, saving energy and associated household costs (Mardaljevic, 2012). In New Zealand, it has been estimated that building 100,000 homes to certified Homestar standards could provide benefits of $680 million in energy savings (NZGBC, 2018). These energy savings also support emissions reductions, which has far-reaching social and environmental benefits.

Access to private or communal open space

Access to the outdoors and green spaces in urban areas is shown to have both health and wellbeing benefits as well as contributing to increases in surrounding real estate values. A wealth of research has pointed to the mental and physical health beneficial effects of green space and experiences with nature (Maas et al., 2006).

In 2010, the Wellington Regional Health Board released a paper outlining the benefits of access to open space in urban areas. The report outlines that the increasing urbanisation combined with local spatial planning policies of densification will result in more people living in residential environments with fewer green resources. Because people who live in towns and cities have less access to the natural environment, the availability of urban and peri-urban open space and 'green' areas is an increasingly important part of a healthy urban environment, and will serve to safeguard health and wellbeing as the population in centres intensifies. It does however also point out that it is important that the spaces provide quality open and green spaces that are relevant to and utilised by all sections of the community.

Whilst much of the research undertaken to date is focused on the benefits of access to public open space there is also evidence that on site private open space can also drive health and wellbeing benefits. Recent research undertaken by Pootinga et al, 2021 demonstrates the important role private and communal space plays in ensuring people have a good level of access to the outdoors. The study points out that It is not only the presence of outdoor space but also the perceived distance and accessibility of green space that drives their use and benefits.

Including provisions for quality on site communal and private open space is one way of providing residents direct access to the outdoors. However, it is important to note that the importance of this is relative to the location and its access to quality public spaces.

‘

[2]More information about the Medium Density Residential Standards is available at: https://www.hud.govt.nz/urban-development/enabling-housing-density/

Outlook and Privacy

The provision of both a positive outlook and a retained sense of privacy from a dwelling is shown to have a positive impact on peoples sense of security and mental wellbeing (Rolfe et.al. 2020). A living space that is free from surveillance is deemed to be a human right where as having a good quality outlook is not. When building a residential development, the building code requires that an appropriate degree of privacy is provided from habitable rooms.

It is important to note that the level of privacy and degree of natural outlook expected from a private dwelling changes as we move from an outer residential neighbourhood to a denser city location (refer to Section 2 of this report). This is acknowledged in the draft provisions.

The City Centre Zone provisions require that living rooms facing onto any non-road boundary have a setback of 3m (CCZ-S14) and in the medium density zone it is that required that any outdoor living space or habitable room above ground level to be at least 2m from any boundary (MRZ-S12).

The testing of sites demonstrates that these rules along with the building depth and building separation rules, effectively allow the development to achieve the privacy separation rule- not only from external site boundaries by 2m, but between buildings on the same site by 10m. Whilst, the combined result of these rules is to create a space between buildings, they also result in a reduced developable area and therefore reduced residential yield. It is questionable as to whether up to 10m separation is achieving the level of benefit in privacy and outlook that justifies the loss of yield. If this rule is retained it recommended that further guidance in the Centre's and Mixed Use Design Guide is provided to ensure this space is utilised to improve outlook.

Living Space

The provision of adequate living space is a key component of healthy housing. According to World Health Organization, living space must be such as to guarantee adequate privacy in order to meet the needs of the occupants, be accessible and usable for extended users and be large enough to comfortably accommodate people of different ages.

There is no universal relationship between size of living space and subjective wellbeing as different people, cultures and societies use and understand living space in different ways. However, western research has shown that a shortage of living space is associated with poor psychological wellbeing (Hu, Y & Colter, R., 2017). Inadequate living can also cause household overcrowding, which is a risk factor for contagion and respiratory illnesses (EHINZ). In 2007–2011, an estimated 1,343 hospital admissions for infectious diseases were caused by household crowding annually in New Zealand (EHINZ). Adequate living space therefore has the potential to lower health costs associated with infectious and respiratory diseases.

On the other hand, adequate living space is understood to have a positive impact on wellbeing (Foye, 2017). It supports a high quality of life by providing space and privacy to unwind, socialise and do activities that we enjoy. This has the potential to reduce transport emissions, as it provides opportunities to conduct activities in the home that would otherwise require travel (e.g. working, exercising, and socialising). A report by the Energy Efficiency and Conservation Authority (EECA) found that if a fifth of those who usually travel to work by car chose to work at home at least one day a week, Aotearoa could avoid 84,000 tonnes of carbon emissions each year (2020).

Large living spaces can also enable multi-generational living, which supports social and cultural wellbeing and reduces household costs.

5. Testing the Potential Outcomes

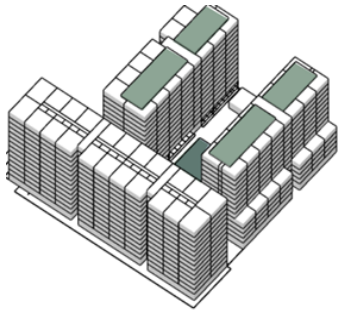
In order to identify the cost of the draft amenity provisions the outcomes on a range of sites across different zones have been reviewed. To allow for comparison, two scenarios have been tested on each site:

- Scenario 1: a scenario that demonstrates a development outcome based on the proposed amenity provisions
- Scenario 2: a comparative/baseline scenario where the amenity requirements have been removed (and where necessary replaced with the Operative District Plan rule to establish a site layout).

Note to ensure the assessment tests the amenity controls only, the same height limit (as proposed in the Draft WCDP) has been used across both scenarios. This is important to note when understanding the results of the assessment. As shown in the following summaries, one of the impacts identified is the loss of yeild between the two scenarios. Whilst this has a direct impact on generating a feasible outcome and potential flow on impacts to the potential supply of housing and loss of benefits that are generated from agglmoration (this is further discusssed in Appendix D), it is recommended that this should be further assessed within the context of providing for Wellington's anticipated housing needs and the overall the increase in heights achieveable under proposed changes to the District Plan which is seeking to increase housing supply.

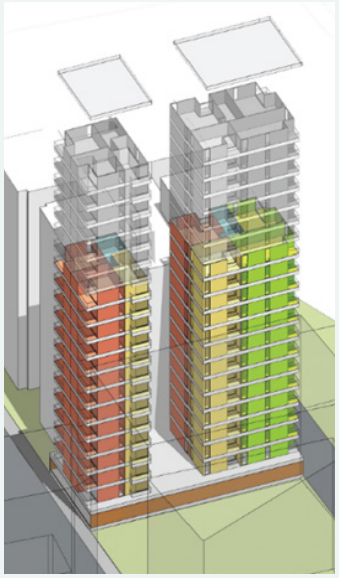
A summary of testing for each scenario is provided in the follwing section with more detail provided in Appendix A.

SITE A - CENTRAL CITY ZONE – THE PADDINGTON, TE ARO

Scenario 1 – With Amenity Provisions	**Scenario 2 – Without Amenity Provisions**
	*(no diagram available)*
Key amenity controls impacting the layout: • Street edge height requirement • Outdoor living space • Building separation • Maximum building depth • Minimum apartment size.	**Amenity controls removed:** • Street edge height rule removed • Provision of private and communal open space reduced. • Removal of building separation rule.
Key development attributes: Number of apartments: 717 (note higher number of studios in scenario 1) Private open space (balconies): 5,226sqm Amount of shared open space (roof top and terrace garden): 970sqm Site coverage: 43,176sqm	**Key development attributes:** Number of apartments: 717 Private open space (balconies): 5,287sqm Amount of shared open space: 0sqm Site coverage: 44,193sqm

SITE B - CENTRAL CITY ZONE – THE TERRACE, WELLINGTON

Scenario 1
With Amenity Provisions



Key amenity controls impacting the layout:

- Outdoor living space
- Building separation
- Maximum building depth
- Minimum apartment size
- Building setbacks.

Key development attributes:

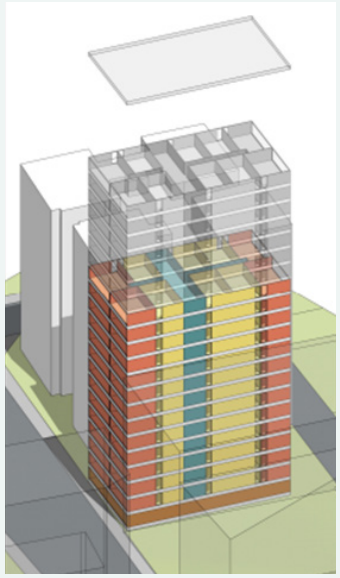
Number of apartments: 98

Amount of private open space (balconies): 518sqm

Amount of shared open space: 0sqm

Site coverage: 5,343sqm (residential towers only).

Scenario 2
Without Amenity Provisions



Amenity controls removed:

- Reduction of private living space requirement
- Building separation rule
- Maximum building depth rule.

Key development attributes:

Number of apartments: 200

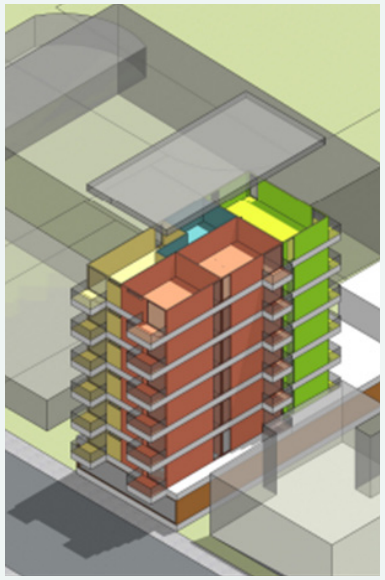
Amount of private open space: 0sqm

Amount of shared open space: 146.7sqm (based on

Site coverage: 7,472sqm.

SITE C - CENTRAL CITY ZONE – HILL STREET, THORNDON THE TERRACE, WELLINGTON

Scenario 1
With Amenity Provisions



Key amenity controls impacting the layout:

- Private outdoor living space
- Maximum building depth
- Minimum apartment size
- Building setbacks.

Key development attributes:

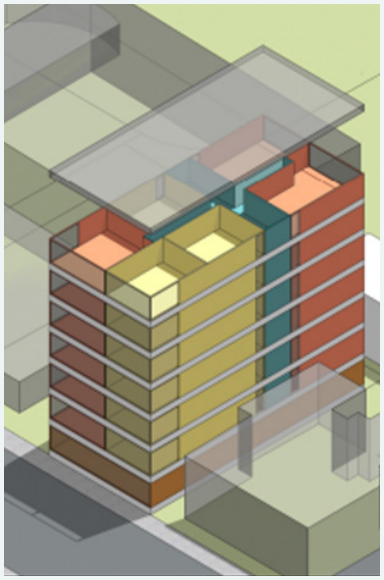
Number of apartments: 32

Amount of private open space (balconies): 160sqm

Amount of shared open space: 0sqm

Site coverage: 1,747sqm.

Scenario 2
Without Amenity Provisions



Amenity controls removed:

- Outdoor open space rule
- Maximum building depth rule.

Key development attributes:

Number of apartments: 48

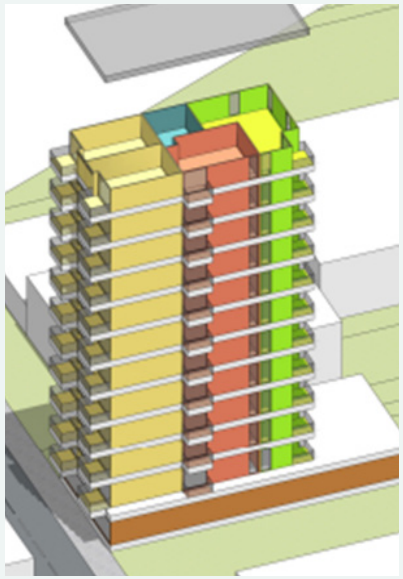
Amount of private open space: 0sqm

Amount of shared open space: 33sqm

Site coverage: 2,392sqm.

SITE D: CENTRAL CITY ZONE - HANIA STREET, MOUNT VICTORIA

Scenario 1
With Amenity Provisions



Key amenity controls impacting the layout:

- Outdoor living space
- Building separation
- Maximum building depth
- Minimum apartment size.

Key development attributes:

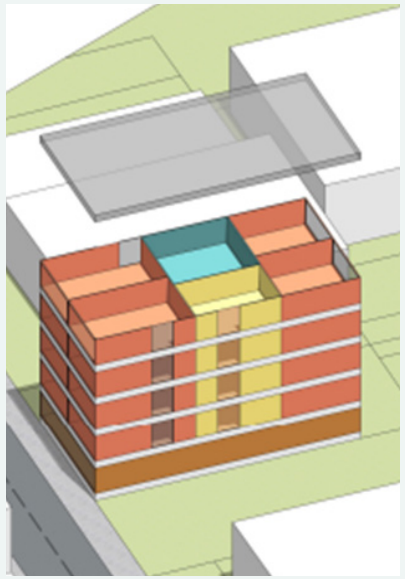
Number of apartments: 48

Amount of private open space: 240sqm

Amount of shared open space: 0sqm

Site coverage: 2,426sqm.

Scenario 2
Without Amenity Provisions



Amenity controls removed:

- Provision of private and communal open space reduced.
- Removal of building separation rule.

Key development attributes:

Number of apartments: 60

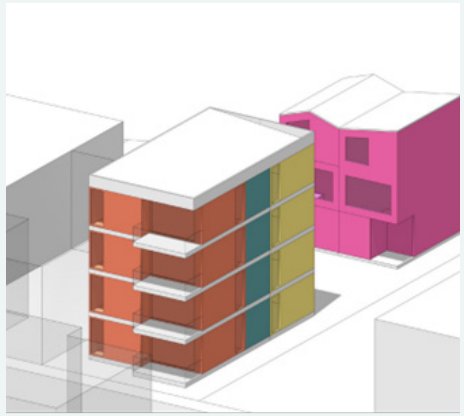
Amount of private open space: 0sqm

Amount of shared open space: 72sqm

Site coverage: 3,000sqm.

SITE E: MEDIUM DENSITY ZONE - PIRIE STREET, MOUNT VICTORIA

Scenario 1
With Amenity Provisions



Key amenity controls impacting the layout:

- Building setbacks
- Outdoor living space
- Building separation
- Maximum building depth
- Minimum apartment size.

Key development attributes:

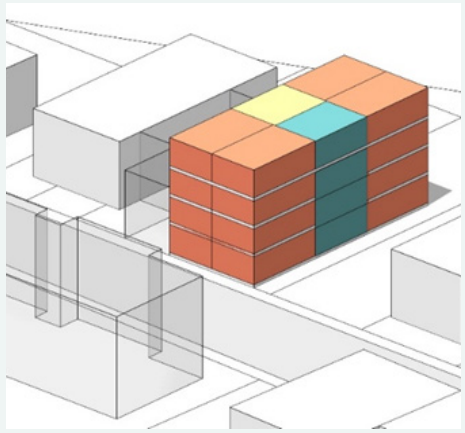
Number of apartments: 10

Amount of private open space: 52sqm

Amount of shared open space: 80sqm

Site coverage: 509sqm.

Scenario 2
Without Amenity Provisions



Amenity controls removed:

- Building depth and building separation
- Outdoor living space.

Key development attributes:

Number of apartments: 20

Amount of private open space: 0sqm

Amount of shared open space: 0sqm

Site coverage: 780sqm.

SITE F: MEDIUM DENSITY ZONE - EVEREST STREET, KHANDALLAH

Scenario 1
With Amenity Provisions

Scenario 2
Without Amenity Provisions

Key amenity controls impacting the layout:

- Building setbacks
- Outdoor living space
- Building separation
- Maximum building depth
- Minimum apartment size.

Amenity controls removed:

- Building depth and separation
- Outdoor living space requirements.

Key development attributes:

Number of apartments: 9
Amount of open space: 194sqm
Amount of shared open space: 185sqm
Site coverage: 1,404sqm.

Key development attributes:

Number of apartments: 11
Amount of open space: 262sqm
Amount of shared open space: 0sqm
Site coverage: 1,144sqm.

6. Benefit Analysis

The scenarios tested provide a basis from which to evaluate the scale of benefit that is achieved. A summary of the benefits identifed is provided below.

Sunlight

To determine how the provisions have resulted in better access to sunlight, a high-level solar access study across the scenarios tested has been undertaken (refer to Appendix B). This assessment shows the area of shading experienced in the scenario with the implementation of the amenity provisions compared to that which would occur without them (the red dotted line).

Overall, the increase in access to sunlight across the scenarios when the amenity provisions are included is found to be fairly minor. Based on a high-level assessment of the change in shaded areas across different times of the year, it is estimated that an increase in between 2-10% of solar access is achieved at adjoining properties and on the indicative development footprint. The change is most noticeable in the medium density areas where the lower building heights mean that by limiting the building footprint and ensuring separation between buildings, more sunlight access is achieved.

In the City Centre Zone, the Street Edge Height Rule (CCZ-S4) which is specifically aimed at achieving solar access and a reduction of the appearance of building bulk on narrow streets has been assessed. This rule, whilst it does change the appearance of building bulk in the upper floors has not been found to have a significant increase in solar access to the street. Due to the heights available within the city centre there would need to be a significant setback on the upper floors or the building itself to achieve a significant increase in solar access.

It does however, have an impact on the yield that can be achieved and therefore results in a cost to development that impacts feasibility. A good example of this is the Paddington site where the rule results in a reduction in residential gross floor area without any additional solar access to the street. It is therefore recommended, on the basis of the cost and benefit analysis, that this rule is reviewed and the actual benefit of appearance of building bulk evaluated to determine if it is an appropriate control to impose.

Open Space

The sites tested demonstrate that with the implementation of amenity provisions an increase in quality outdoor space in both zones is generated. In all scenarios tested the provision of open space is reflected in the cost per unit.

Outlook and privacy

The City Centre Zone provisions require that living rooms facing onto any non-road boundary have a setback of 3m (CCZ-S14) and in the medium density zone it is that required that any outdoor living space or habitable room above ground level to be at least 2m from any boundary (MRZ-S12).

The testing of sites demonstrates that these rules along with the building depth and building separation rules, effectively allow the development to achieve the privacy separation rule- not only from external site boundaries by 2m, but between buildings on the same site by 10m. Whilst, the combined result of these rules is to create a space between buildings, they also result in a reduced developable area and therefore reduced residential yield. It is questionable as to whether up to 10m separation is achieving the level of benefit in privacy and outlook that justifies the loss of yield. If this rule is retained it recommended that further guidance in the Centre's and Mixed Use Design Guide is provided to ensure this space is utilised to improve outlook.

7. Cost Analysis

To analyse the development costs that are associated with the proposed amenity provisions, a development feasibility model has been developed to identify the costs, revenues and profit across the different sites and scenarios (summarised in the previous Section 5).

The model assesses a site's development potential, in simple terms, by comparing the likely costs of development (including addressing issues of resilience) with the potential realisation of the sale of the completed development. The result of subtracting the total development costs (including the cost of the land) from the net realisation of the sale of the completed development, comprises an estimate of the total developer's profit or loss. The profit or loss value can be used to compare the feasibility of development on the individual sites under the proposed amenity provisions, against the operative District Plan.

A detailed overview of the results and key assumptions is provided in Appendix C. A summary across each site tested is provided in Table 9.

TABLE 5 COMPARATIVE YIELD AND COST OUTCOMES OF SCENARIOS TESTED

Site tested	Reduction in number of units provided with amenity provisions applied	Increase in total development costs when amenity provisions applied
Site A: Central City Zone – The Paddington, Te Aro	0 units	- $14,186 2% reduction
Site B: Central City Zone – The Terrace, Wellington	-102 units 49 % reduction	+$135,653 26.7% increase
Site C: Central City Zone – Hill Street, Thorndon	-16 units 33 % reduction	+$35,902 6.9% increase
Site D: Central City Zone – Hania Street, Mount Victoria	-12 units 20 % reduction	-$5,937 1.2% reduction (in this case the increase in yield achievable has not)
Site E: Medium Density Zone – Pirie Street, Mount Victoria	-10 units 50% reduction	+$144,434 28.9% increase
Site F: Medium Density Zone – Everest Street, Khandallah	-2 units 18% reduction	+$92,120 6.7% increase

Decrease in residential yield

Across all of the sites tested, when the amenity provisions are applied, there is a reduction in residential gross floor area (GFA) achievable within the building footprint. In most cases this results in a reduction in the number of residential apartments accommodated. The reduction in yield ranges from a 50-20% reduction in number of apartments which is a large range but demonstrates that, overall, a material loss of yield, is a likley outcome of the provisions.

The exception to this is Site A, where the reduction in GFA results in more studios and less 1 bed apartments and the creation of narrow corridors for circulation, which impacts the internal experience of the building. If this was addressed in the design it is likely that the loss in yield would be more significant, or the site and building layout would be arranged differently to try and accommodate the controls.

The sites where this reduction in yield is the largest are in the City Centre Zone. On these sites, due to the heights achievable, the reduction in the developable footprint (site coverage) results in a greater potential for residential yield achieved. In the Medium Density Zone the loss in yield is lower due to the relative densities allowable.

The rules that contribute most significantly to impacts on yeild (and therefore cost per unit) are the building depth rule, the building separation rule and the street edge height requirement where it applies (refer to Table 2). Combined, these rules result in an overall reduction in the site coverage and gross floor area achievable.

As outlined in Section 3 of this report, the objectives of the rules in the City Centre Zone are primarily to achieve increased access to sunlight and also reduce the appearance of building bulk from the street or neighbourhood residences. It is important to evaluate whether the resulting reduction in yield is ultimately achieving the benefits sought. These benefits are assessed in more detail in the following Section 5 of the report. impact on housing supply (refer to the economic cost benefit analysis provided in Appendix D).

The impact of minimum apartment sizes

The scenarios tested demonstrate that the minimum apartment sizes that can be used provide an efficient floor layout in both scenarios. However, the scenarios also show that the decrease in residential gross floor area available results in a different apartment configuration and in most cases the need to provide more smaller units (more studios or 1-bedroom apartments as compared to 2+ bedroom apartments). The relative cost of this is the ability of developments to provide larger apartments within the allowable development footprint and has an impact on housing supply more generally.

Based on this analysis it is difficult to determine whether the minimum apartment sizes given in the amenity provisions are contributing to a direct increase overall development cost. Scenarios and layouts across a broader range of site sizes would need to be assessed to determine this impact.

Increased development cost

The reduction in GFA has an impact on the overall development costs. Across the majority of sites tested, when the amenity provisions are applied, there is an increase in the cost to develop the net remaining apartments. This ranges from an increase of $35,000 to $145,000 per dwelling.

The increase in cost per dwelling is attributable to both the costs being spread across a reduced yield and to a lesser degree, the increased costs associated with provision of a greater degree of private and communal open space. On the sites tested where the development costs are reduced when amenity provisions are applied, the reduction in development scale means construction costs are less even with amenity provisions applied.

It is improtant to note that high construction costs based on the current market conditions have been factored into this assessment.

Costs of open space provisions

The analysis of open space provisions across the scenarios indicated generally mixed results with an increase in development costs associated with private open space (balconies) and public open space. Increased development costs and a reduction in profitability for balconies was linked to dwelling yield and application of the amenity provisions. This is compared to the options analysed under the operative District Plan that generally showed improved profitability. Public open space similarly indicated mixed results and generally marginal impacts to the overall development cost and profitability of the scenarios.

MRCagney (2014), p.22.

In a paper prepared for Auckland Council, MRCagney (2014) found that rules on minimum floor area and balcony areas would likely cause a material increase in the price of small apartments, which they quantified at approximately $50,000 - $100,000 per apartment, or 25 – 50%. Further, they found that the economic costs of the proposed rules on minimum floor areas and balconies would likely exceed their economic benefits. They estimated the economic costs to be approximately $10 million per annum. No evidence was found to support the notion that the rules would result in a material improvement in the well-being of affected residents.

There may be a case for controls that seek to ensure accessibility for people of all abilities. The additional cost of accessibility is unlikely to be high if designed for from the outset, while the longevity of the building stock means that poor accessibility will have substantial, ongoing impacts. Accessibility is a universal benefit that does not vary by location, however local planning regulations are unlikely to be the most efficient, or lowest cost mechanism for ensuring these benefits are achieved.

In all scenarios tested the provision of open space is reflected in the cost per unit. As outlined in Section 4, whilst the costs of providing the balconies and communal spaces is difficult to isolate, in most cases when it is spread across the development it is a relatively low cost to development. Removing the open space provision has a minimal impact on overall development profit. It is important to note that the price points used in the analysis are at the upper end of the market. This is required to achieve a viable development. The upper end of the market for apartments and town houses does reflect a development that provides quality outdoor space and landscaping. In this way the draft provisions are supporting a viable outcome.

Impact on development feasibility

The analysis demonstrates that, whilst in most cases where the amenity provisions have been applied the development remains profitable, the profit generated is not sufficient to support a feasibile outcome. This is however also generally the case when the amenity provisions have not been applied and is reflective of the challenges facing the construction sector currently.

Despite this across the majority of sites tested there is a decrease in developer profit when the amenity provisions are applied. In some cases this also results in a reduction in development feasibility/return on investment.

As a general rule of thumb, a development is considered feasible when the return on investment (the margin of projected revenues over costs) is above 20% of total cost. However, it is important to note that the more complex the development is, including in scale and length of time the development takes, the higher the risk the developer is taking on and therefore the bigger return on investment required.

If the development is projected to deliver a return less than 20%, financing the development may prove difficult and it will be unlikely to proceed As shown in Table 10 below, whilst the majority of the scenarios tested do still result in a profitable development (depending on the financing model used by the development sector and the developer's risk appetite) the reduction in potential profit may still be passed on in full or part to the purchaser/renter to achieve a viable development outcome.

Important caveat: the outcomes modelled below are only one potential scenario. Rational developers will also design and build to meet market demand since there is a substantial cost of capital where there are delays in revenue realisation.

TABLE 6 COMPARATIVE DEVELOPER PROFIT AND FEASIBILITY OUTCOMES

Site tested	Reduction in developer profit with amenity provisions ($m)	Impact on development feasibility (Return on investment)
Site A: Central City Zone – The Paddington, Te Aro	$0.00	With amenity provisions: 4% Without amenity provisions: 4%
Site B: Central City Zone – The Terrace, Wellington	$4.51	With amenity provisions: 24% Without amenity provisions: 22%
Site C: Central City Zone – Hill Street, Thorndon	$1.95	With amenity provisions: 19 % Without amenity provisions: 22%
Site D: Central City Zone – Hania Street, Mount Victoria	$1.80	With amenity provisions: 29% Without amenity provisions: 29%
Site E: Medium Density Zone – Pirie Street, Mount Victoria	$0.96	With amenity provisions: 30% Without amenity provisions: 35%
Site F: Medium Density Zone – Everest Street, Khandallah	$0.90	With amenity provisions: -4% Without amenity provisions: 3%

Impact on housing affordability

Price points associated with the development scenarios were assessed at the higher end of the capital value ranges for the housing typologies and relevant suburbs.

Whist the scenarios assessed demonstrate a reduction in developer profit and potential impact on development feasibility, it was not possible to demonstrate how this cost may then be passed onto the apartment cost (home owner or renter). This is however a potential outcome and therefore a potential cost of the provisions and a more important factor when pricing becomes more conservative or costs increase due to cost escalation and inflationary pressures.

Economic benefits and costs to households

To inform the cost benefit analysis an assessment of the broader economic cost and benefit has been undertaken by Kalimena (included as Appendix D). The economic assessment undertaken incorporates consideration of the costs of the provisions identified at a site by site scale (outlined above) as well as any of the benefits discussed in the following Section 5 that have an economic impact.

The analysis identifies the following three main costs to the economy from the proposed provisions.

1. Increased direct cost of housing per householdLoss of rental income – data limitations made it non-viable to calculate this figure precisely but it can be assumed that higher costs of development per unit would lead to higher sales price and by extension higher rental costs (taking rental cost as a proxy for housing costs) for future occupants of the developed apartments.
2. Increased costs for households unable to occupy future units due to reduced yield - the rental income lost due to the reduced number of units that are able to be built due to the impact of the amenity provisions. Although not modelled, the implication is that the amenity provisions result inwith less units being built, meaning that a significant number of potential occupants would need to find alternate places to buy or rent property, imposing higher costs on the household – either direct costs such as transport costs, or opportunity costs due to being forced to substitute an alternative residence (either shared or in a different location) against their preferred accommodation.
3. Impact on agglomeration benefits - a disbenefit of lost agglomeration to the economy as when residents are forced to live further away from economic and social opportunities provided by cities, they not only face higher costs to travel, they contribute less to economic potential. There are other costs to society too such as increased congestion and increased transport emissions

The analysis also quantified one household benefit, being the benefit attached to protecting sunlight to neighbouring households. There are some other benefits including privacy and outlook that have not been quantified. The scale of all the benefits is small and unlikely to exceed the costs.

The results of this analysis are shown the following Table 8.

Agglomertation

The estimated benefits from agglomeration are substantial, indicating that the cost to cities of constraining urban intensification is potentially much greater than the disbenefits experienced by existing residents of urban intensification through things like lost sunlight, even without allowing for the increased cost on households due to higher costs of housing. Further, amenity controls that seek to control minimum dwelling sizes are unlikely to be economically efficient: the market failure is not clear.

Territorial authorities that seek to provide for non-specific ‘better outcomes’ for potential new residents by controls that require private or communal outdoor space on site for residents, may find that the costs faced from less agglomeration economies caused by loss of yield outweigh the costs of public provision of high-quality outdoor space. Appropriately specified policies, such as development contributions policies, may also fully internalise the cost of public provision.

TABLE 8 –Benefits and Costs

	Hania Street	Pirie Street	The Terrace	The Paddington	Hill Street	Everest Street
Scenario 1 (with)- Site yield (units)	48	10	98	717	32	9
Scenario 2 (without)- Site yield (units)	60	20	200	717	48	11
Scenario 1 (with)- Site yield (bedrooms)	60	12	126	852	40	27
Scenario 2 (without)- Site yield (bedrooms)	60	20	200	888	48	33
Rental difference Scenario 2 less Scenario 1 (due to yield and typology changes)- per annum $m	($0.46m)	($0.28m)	($2.16m)	$0.06m	($0.41m)	($0.04m)
Developer margin difference Scenario 2 less Scenario 1 (due to yield and typology changes)- total per site	($2.41m)	($2.34m)	($9.18m)	($0.00m)	($2.18m)	($0.12m)
Total cost of additional regulation on the units under Scenario 1- total value for each site	($4.96m)	($1.03m)	($10.12m)	($74.07m)	($3.31m)	($0.93m)
Reduced benefits from agglomeration under Scenario 1 due to reduced yield – total value for each site	($0.07m)	($0.05m)	($0.55m)	($0.00m)	($0.09m)	($0.01m)

8. Conclusions and Recommendations

The assessment has demonstrated that providing a residential development with a high level of amenity is not only linked to health and wellbeing benefits for residents directly, it also contributes to broader community, environmental and urban character benefits. Particularly in areas of high to medium density. However when assessed at a site by site scale the proposed amenity provisions have been found to have developments costs that may not be outweighed by the direct benefits to residents or neighbours.

The analysis (which has been limited to 6 test sites) demonstrates that, whilst in most cases where the amenity provisions have been applied the development remains profitable, the profit generated is not sufficient to support a feasibile outcome. This is however also generally the case when the amenity provisions have not been applied and is reflective of the challenges facing the construction sector currently.

The most significant cost identified when comparing the two scenarios on each site is the potential loss of yield that is created when the developable area of a site is reduced, primarily through the amenity provisions that impact site coverage or building bulk such as the street edge height, building depth and separation requirements. Whilst the increase in yeild does in some cases contribute to the development being more profitable, a high standard of development with good amenity would also support a higher price point achievable for each apartment.

As noted in the analysis of economic costs and benefits to households provided in Appendix D, when considered more broadly the economic impacts (being the loss of agglomeration/density) is considered significant and is not outweighed by the benefits achieved to the residents and neighbours.

It is also important to consider the socio-economic impact on different cohorts: while the provisions can be met in these scenarios by relying on higher price points, it does indicate that more affordable housing is more strongly affected. Lower income households are likely to be the most advantaged by better access to the economic opportunity that comes in urban locations while – perversely - the provisions may make more affordable dwellings less commercially viable. This risks limiting the socio-economic groups that benefit from denser housing

These impacts on the potential supply and affordability of housing and loss of agglomeration benefits should be further assessed within the context of the scale of the increased housing supply anticipated under the revised heights proposed and the broader benefits that can be attributed to providing on site amenity or through application of the City Outcomes Contribution.

Recommendations

As the research reviewed has demonstrated that providing on-site amenity has broader community wide benefits and costs and this assessment was limited to a site by site assessment, it is recommended that further analysis of the contribution the amenity provisions make to broader city block and neighbourhood amenity values and the impact on housing supply is undertaken. This will to allow a better understanding of whether the balance between creating high quality city environments and providing for an adequate supply of housing has been met. Despite this overarching finding, recommendations that can be made from the site by site assessment are provided below.

Review of the building depth and building separation requirements

Based on a review of the costs and benefits at a site scale, is it is recommended that the provisions that impact the developable footprint are reviewed in terms of how the amenity attributes sought can be achieved whilst still encouraging the site to be used to its full potential. The building depth and building separation rules in both the City Centre Zone and the Medium Density Residential Zone has an impact on how much of the site can be used for development under the permitted baseline.

City Centre Zone

The analysis has shown that on larger sites, in particular in the City Centre Zone, the building depth control (CCZ-S13) coupled with the building depth rule (CCZ-S12) and the building set back control (CCZ-S14) for a permitted activity results in the site not being utilised to its full potential.

It is understood that use of the building depth rule in the City Centre Zone is aiming to both increase solar access to residential apartments as well as reduce building bulk, and the building separation rule is aiming to increase solar access and the potential for outlook/privacy to be created. It is considered that these outcomes can be achieved more effectively by separating out the two objectives (solar access and breaking up of long facades), whilst also optimising the sites development potential.

The solar access study undertaken as part of this analysis has demonstrated that the benefits of solar access that result from the built form being restricted to a depth of 20m and separated by 10m in the City Centre Zone is minimal both on the site and adjoining sites. This is primarily due to the surrounding height of buildings. Achieving optimum solar access to apartments in the City may be better managed through ensuring that the internal floor layout and orientation of apartments maximises the available sunlight and every apartment has access to an external facade. This could

potentially be managed more appropriately through a reference in the Design Guides.

Whilst non-compliance with these rules as drafted would trigger a Restricted Discretionary Resource Consent Assessment and therefore increased site coverage could be achieved, it is considered that using this as a permitted baseline may drive an un-desirable outcome for the City Centre and underutilisation of sites in accessible locations.

Medium Density Zone

The minimum building depth rule also has an impact on yield in the Medium Density Zone, however it is not as great as in the Central City Zone due to the difference in the heights limit. In the Medium Density Zone the building depth rule also results in the site not being utilised to its full potential and in some cases resulting in two buildings being located on one site but separated by 10m.

In the Medium Density Zone, there is an additional proposed separation rule (MRZ-S12) that requires any outdoor living space or habitable room above ground level to be at least 2m from any boundary.

The testing of sites within the Medium Density Zone demonstrate that this rule along with the building depth and building separation rules, affectively allow the development to achieve the privacy separation rule - not only from external site boundaries by 2m but between buildings on the same site by 10m. Whilst, the combined result of these rules is to create a space between buildings, they also result in a reduced developable area and therefore residential yield. It is questionable as to whether up to 10m separation is achieving the level of benefit in privacy and outlook that justifies the loss of yield. If this rule is retained it recommended that further guidance in the urban Design Guide is provided to ensure this space is utilised to improve outlook.

Furthermore the additional sunlight access that is achieved through managing the building depth is not shown to be significant. It is recommended that the building depth rule is reviewed to ensure that it is achieving the overall design outcome sought. As an alternative, the height to boundary rule is considered able to achieve solar access to adjoining sites and the separation rule is considered adequate for achieving privacy outcomes. It is worth noting that the MDRS will override the building depth rule.

Review of the Street edge height requirement

As outlined in Section 7, the Street Edge Height Rule (CCZ-S4) which is specifically aimed at achieving solar access and a reduction of the appearance of building bulk on narrow streets, is creating potential costs to development (in particular a loss of yield) without achieving the desired solar access benefit. It is recommended that this rule is reviewed and the actual benefit on appearance of building bulk is evaluated to determine if it is an appropriate control to impose.

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Appendix A - Scenarios tested

Appendix B - Solar access study

Appendix C - Development cost and feasibility assessment

Appendix D - Economic cost benefit analysis (Kalimena Advisory Limited)

kalimena

ECONOMIC COSTS AND BENEFITS OF AMENITY PROVISIONS

Wellington City Council (WCC) is interested in understanding the range of economic costs and benefits that may flow from introducing planning provisions that control for enhanced amenity.

Amenity can cover a range of different outcomes for residents, and needs to be considered in terms of short-term effect on existing residents as well as long-term effect on existing residents and potential future residents. Both these groups stand to gain benefits from enhanced amenity, but may also bear costs – and in some cases those costs could be the opportunity cost of being unable to live in their most desired location due to lack of supply – with or without the desired amenity. In terms of regulatory planning, amenity provisions seek to control effects on environmental conditions that many people consider important: access to sunlight and daylight – both inside and outside, noise, greenspace. Some amenity provisions also seek to control the size and availability of private living space, storage capacity and outdoor space.

This analysis attempts both quantitative and qualitative analysis on the impacts of controlling access to amenity, based on analysis of six illustrative sites identified by WCC as potential medium-high density residential sites. Within the timeframes and information provided to us we have not attempted to scale up the analysis across the city, although we note that the proposed amenity provisions are intended only to be applicable to the central city and locations immediately adjacent to the central city (refer map at Appendix [x]) – they are not intended to apply to general residential areas.

There is a fair amount of economic literature that studies the impacts of amenity controls (see Reference list). There are also many New Zealand-specific papers that seek to understand the costs and benefits of controlling for amenity enhancements.

Our approach is to establish a cost and benefit framework that links the wellbeing benefits through to the relevant planning provisions – giving WCC a clear line of sight between controls and their related benefits and costs.

Not all benefits and costs can be monetised. Where we are unable to monetise a benefit or a cost, we attempt to quantify the costs and benefits in another way, or through comparison to other locations or jurisdictions. Qualitative approaches are also deployed as a way of considering the potential positive and negative impacts of amenity controls.

Planning controls can affect our economy positively and negatively

From an economic perspective, we understand that WCC's objective is to identify where there is a role for planning restrictions to intervene in market processes to prevent undesirable outcomes for society – a market failure.

Planning requirements that restrict development will be efficient where they prevent a market failure. Market failures occur when the market does not account for the disbenefits that development imposes on people that are not participating in a change / development: negative externalities and may include:

- Incompatible land uses, such as noise, air pollution, or building form that causes overshadowing
- Transport: crashes, congestion, emissions
- Health and safety: lack of transport choices due to poor facilities, crime
- Environmental: polluted water, erosion, flooding

Planning regulations done well can also facilitate positive externalities:

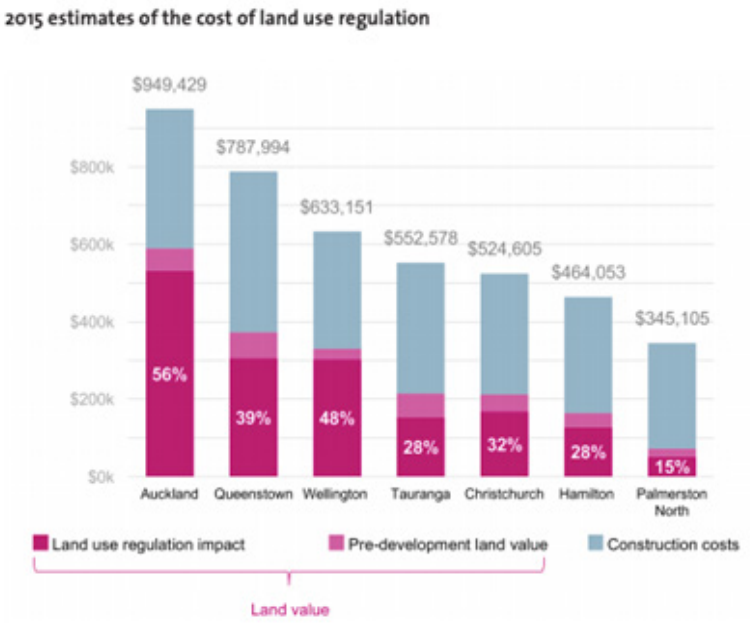
- Agglomeration: both in production, where increased scale and density mean that firms can be more productive / face lower costs through economies of scale, specialisation and knowledge sharing; and in consumption, whereby more residents enable a greater scale and variety of cultural facilities, retail, hospitality venues and social interaction.
- Supporting the provision of greenspace or attractive building frontages that have positive spillovers for neighbours and the community.

Planning regulations are, however, never costless. While the intent of planning regulations is to promote positive outcomes – addressing market failures- even when they do, the transaction costs and the perception of transaction costs can distort economically advantageous activity. This may occur where unnecessarily high costs

to gain consent (compliance costs), for example, discourage developers from building the sort of development they think will most meet the needs of their customers, and therefore be the profit maximising position for the developer.

Economists have developed microeconomic models to investigate the impact of uncertainty and delay on the development process. Increased delays in obtaining consent tend to reduce the quantity of developments that apply for resource consent (leading to increased deadweight losses). In addition, increased uncertainty about the outcomes of consent applications also tends to reduce the quantity of development. Grimes and Mitchell (2015) amongst others, showed that increases in the cost of consent applications, delays during the consent process, and perceived uncertainty about consenting outcomes are all likely to reduce the value of developments - and hence the likelihood of development.

In a paper for Superu (July 2017) Sense Partners estimated the total cost of land use regulation on the cost of a home in New Zealand and found that the cost ranged from 56% in Auckland to 15% in Palmerston North.



Excessive compliance costs can have the effect either of adding to the cost of construction – and therefore ultimately the costs of housing to households, or of pushing developer investment capital to other locations where compliance costs are lower relative to the sort of housing the market finds desirable. This can lead to additional deadweight costs – developers are constrained from building their preferred projects, and households are unable to find housing in the places they would prefer to live in. Furthermore, restrictive planning regulations will tend to reduce elasticity of housing supply – so that even as market values rise (and hence the commercial viability of a development improves), supply does not necessarily follow (McLaughlin, 2011). By way of example, it could be the case that investment in major infrastructure projects could lead to increased land values, but housing supply may still not follow.

Complex planning restrictions may be even more likely to discourage community-led / small-scale development activity, perhaps due to perceptions of difficulty or complexity, and the best outcome may therefore not be realised. In combination, keeping in mind that not all developers are the same, it could be the case that improved elasticity of supply, driven by more permissive planning controls, could be sufficient to accommodate several years' worth of population growth in Wellington. These are the fundamental trade-offs that must be made.

The focus of our economic assessment is to understand the direct benefits and costs of the proposed planning provisions that focus on amenity, by analysing six illustrative sites.

Access to sunlight / daylight is a common element across many of the potential amenity provisions. A reasonable, quantifiable proxy for the impacts on neighbours of growing density could be the impact of the loss of sunlight.

In their paper, Fleming et al. (2017) identify that humans do indeed prefer to live and work near daylight. The authors found that the value of residential property in Wellington is positively affected by the level of sunlight received: all other things equal, the authors found that each extra hour of sunlight received per day by a house, on average throughout the year, leads to a 2.4% increase in house price. This estimate was nearly constant regardless of suburb or season.

Using this analysis, PwC & Sense Partners (2022) developed a model to estimate the impact of a new development on sunshine available to nearby properties in order

to produce a cost benefit analysis of the proposed Medium Density Residential Standards. The authors report a present value impact due to loss of sunlight from the implementation of the Medium Density Residential Standards across all of Wellington of between $28.5 million and $63.4 million, with a central estimate of $45.5 million.

While a change to the price of a property does not necessarily reflect the direct impact experienced by a house owner of a change to the level of sunlight on their property, it does identify a proxy to allow an estimate of the cost of a neighbouring property intensification that reduces the level of sunlight they receive.

Nevertheless, as identified in Nunns (2015), it is necessary to consider how planning regulations impose cost on households and how they can generate benefits for households and society that would not have occurred otherwise. It is also important to consider which households benefit since a frequent complaint of planning regulations is that they overestimate the disbenefits of growth on existing households and underestimate the benefits available to potential, new households.

Further, a balanced analysis must consider the wider costs and benefits to the communities of Wellington City. The benefits of efficient labour markets and knowledge spillovers that come from dense urban agglomeration are well understood and documented, as are the long-run benefits that accrue to the residents of a city from more efficient use of infrastructure and the access to nature / protection of biodiversity that comes from densifying within the existing urban footprint rather than expanding into greenfields locations.

Agglomeration benefits must be taken into account. When residents are forced to live further away from economic and social opportunities provided by cities, they not only face higher costs to travel, they contribute less to economic potential. Not only does this reduce the level of economic productivity of a city, it tends to create congestion externalities and more costly infrastructure, increasing the costs of servicing larger populations more than would otherwise be the case from denser development. Planning restrictions that reduce the opportunity for people to live close to economic opportunity will have negative economic consequences.

Additionally, policies that raise the cost to supply new housing can dissuade workers – particularly low income workers – from moving to cities even those offering higher per capita incomes, if the gains from increased wages are consumed by higher household costs. While there is no documented empirical evidence of this happening in Wellington, there is some evidence that the high cost of housing in Auckland has led to people relocating to other parts of the country (2020 poll by The Spinoff/SSI). In the United States studies have shown that particularly stringent land use regulations in some cities such as New York dampens economic output by up to 9.7% (Hsieh and Moretti 2015) – a cautionary tale for cities in New Zealand.

Planning policies will have different effects in different locations – driven in large part by land values. Where land is cheaper on the periphery of a city, amenity provisions are unlikely to affect developers' commercial decisions because the type of housing product the market expects is likely to exceed minimum requirements. This is not necessarily true on more expensive land close to city centres, where planning regulations that restrict yield or increase developers' costs could cause significantly different commercial decisions. The effect of planning policies can be very specific: applying rules or restrictions in a uniform way will likely have unintended, negative, consequences.

The distribution of benefits and costs tends to be very uneven and consequently inequitable. Planning restrictions that have the effect of significantly dampening intensification result in benefits that largely accrue to current residents, at the expense of future residents. This results in a loss of potential future housing supply, to the detriment of the wider economy. On the other hand, enabling intensification (through more permissive planning rules) in urban centres tends to result in higher productivity and wages and lower housing costs, benefiting new residents and (often) lower socio-economic groups.

Nunns and Denne (2016) estimated the monetised value of positive and negative externalities associated with urban development. This includes amenity impacts, such as overshadowing from tall buildings, blocked views, loss of peri-urban open space, as well as agglomeration economies in production. While their work is based on Auckland, and is now seven years old, it is still helpful to review New Zealand-based data on the costs and benefits of urban development, notably with the costs and benefits of some specific amenity provisions monetised.

The authors considered three scenarios for the costs of overshadowing from tall buildings in urban areas in Auckland:

- Low scenario, where overshadowing was controlled by height and setback controls, resulting in no disbenefits to existing residents: $0 cost per unit added;

- Medium scenario, where new development to mid-rise results in an increase in energy costs from overshadowing, estimated at a cost of $4,230 per apartment added (in present value terms at 2016);
- High scenario, where new development to a tall apartment building blocks sun from neighbouring standalone houses, results in costs to existing residents of $9,832 per apartment added (present value).

In contrast, Nunns and Denne also estimated the potential agglomeration benefits (from production) to the economy that come from enabling new residents to locate in urban areas:

- Low scenario: each additional unit added $92,895
- High scenario: each additional unit added $46,419

Market failure?

Amenity provisions are also commonly advanced to require private outdoor space and to control specific elements of internal space, such as unit size (internal floor area), living room size, as well as for outlook, access to private outdoor space, size of outdoor space.

In his paper, based on analysis of property sales in Auckland, Nunns found that additional living space and increased proximity to the city centre had a strong positive impact on house prices, while the presence of additional land (outdoor space) also had a positive impact on price, but a smaller positive impact. He notes that this could be interpreted as indicating that people value private living space, especially in areas that have convenient access to jobs and social services, more than they value private open space. If this finding were supported for Wellington, it suggests that planning policies that enable intensification will improve welfare (benefits to new residents will exceed costs to existing residents).

Nunns also identified no reason to expect the value of floorspace and amenities to be constant throughout a city. As identified earlier, planning policies will vary in their impact across the city.

In a paper examining the impact of regulatory policies and processes on residential property development, Grimes and Mitchell (2015) designed a conceptual framework for the property development process and then applied this to the design of a survey of Auckland property developers active in the 'affordable' part of the property market. Their intent was to determine developers' views on the impact of planning rules and restrictions.

While this paper relies on developers' views on costs, and not on the benefits of the restrictions, it provides a useful insight to the costs of amenity provisions that may prevent urban intensification occurring, particularly at the more affordable end of the market where planning restrictions that inefficiently prevent development occurring, or increase its costs, are likely to have the most negative socio-economic impact. The impact of a lack of certainty in the way that amenity provisions may be applied through consent processes can also be a significant dampener on developers entering the market to deliver more housing, and well-designed housing.

Regulations that had the largest effect, from the developers' perspective, on actual building costs for apartments were building height limits, balcony requirements, conforming to Council's desired mix of apartment typologies and minimum floor to ceiling heights. For residential sections and standalone housing, it was infrastructure contributions not related to the specific development, section size requirements, extended consent process and urban design considerations coming from Council's urban designers.

The typical cost range of the total impact of regulation was estimated to vary between $32,500 and $60,000 per dwelling in a subdivision. For affordable apartments, assuming the total internal floor area remains the same and no deck is built, the typical cost was estimated to range between $65,000 and $110,000 per apartment.

Council imposed rules and regulations were considered to result in a significant loss in potential development capacity – the difference between the optimal market-oriented development capacity and the capacity able to be achieved following council restrictions. The median loss in capacity was estimated at 22% for developments that ultimately did proceed (i.e. this analysis excludes the loss of capacity for developments that did not proceed). For apartment buildings, the primary cause of this was loss of capacity due to height restrictions or issues relating to view shafts. For standalone dwellings, the loss of capacity was related to urban design requirements, retention of heritage buildings and protected trees, and the need to provide on-site infrastructure over and above what was needed to service the development.

It is unclear what market failure is addressed by amenity provisions that seek to control the size of dwellings or access to outdoor areas. To the extent that dwellings do not conform to a user's requirements, it will be reflected in the price paid to the developer, or in a unit's rental value. As noted in Nunns (2015), amenity provisions controlling the presence of outdoor space may not represent buyers' best interests. Provision of well-managed, high-quality public outdoor space could be a less costly way of providing residents with access to greenspace if the benefits of this are sufficiently high. While Nunns and Rohani (2016) identified some evidence of a link between natural light and reduced incidence of depression, they found few ways to accurately determine a value.

In a paper prepared for Auckland Council, MRCagney (2014) found that rules on minimum floor area and balcony areas would likely cause a material increase in the price of small apartments, which they quantified at approximately $50,000 - $100,000 per apartment, or 25 – 50%. Further, they found that the economic costs of the proposed rules on minimum floor areas and balconies would likely exceed their economic benefits. They estimated the economic costs to be approximately $10 million per annum. No evidence was found to support the notion that the rules would result in a material improvement in the well-being of affected residents.

There may be a case for controls that seek to ensure accessibility for people of all abilities. The additional cost of accessibility is unlikely to be high if designed for from the outset, while the longevity of the building stock means that poor accessibility will have substantial, ongoing impacts. Accessibility is a universal benefit that does not vary by location, however. Local planning regulations are unlikely to be the most efficient, or lowest cost, mechanism for ensuring these benefits are achieved.

Household costs

A number of studies by NZIER (2014, 2015a) have estimated the annual cost per household per annum of different types of land regulation. For example NZIER (2014) calculated the impact of the Metropolitan Urban Limit (MUL) in Auckland as $859-$4,560 per household per annum, while NZIER (2015a) calculated the impact of a number of density limits (e.g. building height limits) on Auckland households as $933 per annum, based on a more relaxed building height limit.

These calculations were based on the Alonso-Muth-Mills "monocentric city" model to estimate the impact, which assumes that all households rent dwellings and therefore directly bear the costs of development restrictions. NZIER (2015a) found key changes from changes to land use regulations are a reduction in housing costs, an increase in dwelling sizes, an increase in population density in the inner areas of the city, and a reduction in population densities in the outer areas of the city (i.e. people tend to move from outer areas to inner areas). The land price gradient also changes, with prices rising nearer the centre and falling at the outskirts of the city. Average travel distances fall as a result of the fact that households are able to live closer to the centre of gravity for employment. The overall effect of relaxing building height limits in the study is to reduce the combined housing and transport costs facing Auckland households by $933 per annum.

NZIER do not provide an estimate of the modelled change in peak travel resulting from a relaxation of building height limits. However, their model implies that Auckland would occupy approximately 15% less land in the absence of building height limit. NZIER (2014) found that a 22% increase in the city's urbanised area was associated with an 8.21% increase in peak travel, therefore a 15% reduction in urbanised land area could be associated with a proportionate reduction in peak travel (5.6%). The effect would undoubtedly be different in Wellington due to differences in the distribution of population (and employment) within the city and region but conceptually it is likely that greater inner city intensification would lead to a reduction in urbanised land further out and thus reduced peak travel volumes.

Our findings

For the six potential development sites analysed for this study we looked at the following:

1. The benefits to existing residents from amenity controls that mitigate potential loss of sunlight and daylight from new developments.
2. The lost yield (reduced capacity) on each site as a result of the amenity controls, and the likely changes to typology indicated by the ratio of bedrooms to units.
3. The lost potential profit margin to the developer at a site level.
4. The lost potential rental to a future building owner (investor) at a site level (assuming all units are rented).
5. The potential increased average cost per unit as a result of additional amenity controls.

6. The potential loss of agglomeration benefits to Wellington (per site) as a result of fewer household units living at each site

The table below show the outputs, comparing Scenario 1 (with the proposed amenity provisions) to Scenario 2 (without the proposed amenity provisions) across the six illustrative sites. These outputs are not additive and are presented only for a single period:

- Scenario 1: This is the most likely outcome with the proposed amenity controls in place across the six illustrative sites.
- Scenario 2: This case assumes that the current operative District Plan amenity controls continue to apply. For the illustrative sites modelled, the current operative amenity controls are in most cases LESS restrictive than the proposed new amenity controls. If the existing controls were made even MORE permissive, this would change the results. However, as we do not have a defined set of more permissive controls (for example, substantially easing site coverage or building depth controls), it has not been possible to form a basis to model this outcome.

Benefit and Costs with and without Amenity Provisions

	Hania Street	Pirie Street	The Terrace	The Paddington	Hill Street	Everest Street
Scenario 1 (with)- Site yield (units)	48	10	98	717	32	9
Scenario 2 (without) - Site yield (units)	60	20	200	717	48	11
Scenario 1 (with)- Site yield (bedrooms)	60	12	126	852	40	27
Scenario 2 (without)- Site yield (bedrooms)	60	20	200	888	48	33
Rental difference Scenario 2 less Scenario 1 (due to yield and typology changes)- per annum $m	($0.46m)	($0.28m)	($2.16m)	$0.06m	($0.41m)	($0.04m)
Developer margin difference Scenario 2 less Scenario 1 (due to yield and typology changes)- total per site	($2.41m)	($2.34m)	($9.18m)	($0.00m)	($2.18m)	($0.12m)
Total cost of additional regulation on the units under Scenario 1- total value for each site	($4.96m)	($1.03m)	($10.12m)	($74.07m)	($3.31m)	($0.93m)
Reduced benefits from agglomeration under Scenario 1 due to reduced yield – total value for each site	($0.07m)	($0.05m)	($0.55m)	($0.00m)	($0.09m)	($0.01m)
Benefits to neighbouring properties from amenity provisions under Scenario 1 – total value per site per annum	$0.01m	$0.04m	$0.02m	$0.00m	$0.01m	$0.08m

The table above presents the potential economic impacts for the six scenario sites across Wellington if the proposed amenity provisions were to be put in place. We have not been able to calculate each of these benefits and costs at a household level with the information provided and it is not possible therefore to model the NPV over time.

If it was possible to calculate the additional marginal rent a household might be expected to pay due to the additional amenity provisions (and controlling for changes in typology), then we could calculate the NPV of these increased household costs over a future period (say 30 or 50 years, discounted at The Treasury's recommended discount rate of 5%). Further, to account for the increased deadweight costs arising from lost yield, we could apply this additional household cost not only to the households that are accommodated on each site but also to those forced to reside in another location due to the lost capacity. This would provide us with a more complete picture of the total cost on households since there is undoubtedly a cost to these households too.

We have isolated one quantifiable benefit and three quantifiable costs that have been modelled across the six scenarios. It is well understood in economic literature that it is more difficult to quantify the value of social benefits than it is to quantify the value of specific costs due to the nature of these potential economic benefits i.e. calculating and placing a value to society of access to sunlight on the street or the impact on wellbeing and mental health of increased sunlight. That does not mean that these are not valuable to the economy; they are just not reflected directly in this modelling due to the complexities around trying to value these.

In this case although we have been unable to fully model all costs and benefits on a comparable basis (i.e. at a household level) we consider it very unlikely that the benefits of the proposed amenity controls would outweigh the costs across any of the illustrative sites. Extending this further across the streets and suburbs of Wellington where it is proposed the amenity controls would apply would be highly unlikely to change this finding. This is because the combination of higher compliance costs and significant deadweight costs from lost yield and a mismatch between household demand and supply will be much higher than the benefit to existing residents, even allowing for some spillover effects to the wider community beyond immediate neighbours.

Of the three costs to the economy that we have identified the first cost modelled is the rental income lost due to the reduced number of units that are able to be built due to the impact of the amenity provisions. Although not modelled, the implication is that the amenity provisions result in less units being built, meaning that a significant number of potential occupants would need to find alternate places to buy or rent property.

The second cost identified is the direct cost of complying with the amenity controls. This cost is shown as one-off cost and has been quantified drawings on research from Grimes and Mitchell (2015), as discussed earlier in this paper. We have applied their estimate for additional regulatory requirements arising from controls including building height, balconies, floor to ceiling height amongst others. We have applied an average of the range specified and then inflated the 2015 estimate to today's value. This has been applied only to Scenario 1 (with amenity controls) however we note that as with the lost rental calculation, it could be argued that households forced into alternative accommodation also bear a cost.

The total one-off cost of meeting the amenity controls is significant and although there will be a corresponding benefit to the household from (for example) access to private outdoor space, it is difficult to quantify the value that society gains in addition to the private value that the households place on this improved private amenity, which in any event is fully captured by the (implicit) price paid to occupy the apartment. We know that over time residents will experience benefits such as a positive impact on wellbeing and in turn improved mental health. However, the impact of this provision is to increase the cost of living in locations to which this amenity provision applies. We have not found any evidence that supports the valuation of the wider benefits of this amenity provision being higher than the upfront cost.

The third cost that we have modelled is the impact of amenity provisions on agglomeration benefits. As discussed above, the potential for lost agglomeration benefits must be taken into account as the application of the amenity provisions has reduced the number of units that can be built on five of the six sites. Therefore, it is important to look at the disbenefit of lost agglomeration to the economy as when residents are forced to live further away from economic and social opportunities provided by cities, they not only face higher costs to travel, they contribute less to economic potential.

There are benefits that will be created by the amenity provisions such as access to outdoor space and sunlight all contributing to greater wellbeing. We have therefore quantified the value of retaining improved sunlight to neighbouring properties as a result of the amenity provisions. In the Fleming et al. (2017) the authors found that the value of residential property in Wellington is positively affected by the level of sunlight received: all other things equal, the authors found that each extra hour of sunlight received per day by a house, on average throughout the year, leads to a 2.4%

increase in house price. We used this as a proxy and applied this to a solar access analysis that was prepared for the six scenarios. The solar access study identified the percentage in overshadowing without amenity provisions.

This was applied to the number of adjoining properties impacted to calculate the increased property value to neighbouring properties which would be experienced as a result of the amenity provisions.

In sum, over time, less elastic supply will lead to increased housing prices and larger economic costs, as growth in housing supply lags behind growth in demand. The economic costs are a combination of higher costs for those that bear the increased housing costs for those developments that do proceed, and the deadweight losses associated with those who are unable to access housing in their preferred location due to inflexible supply. People who would have purchased or rented houses end up with some outcome they regard as inferior, e.g. sharing accommodation or living somewhere else.

Summary

The costs that existing residents may experience from decreased amenity as the urban environment intensifies are commonly cited as reasons why urban growth should be controlled or constrained. While many reasons are provided for why amenity controls should be imposed it is unclear that the benefits gained by existing residents are sufficient to outweigh the substantial costs from preventing new residents from accessing accommodation in their desired urban locations.

Amenity controls imposed through land use regulations are promoted as a way to ensure that intensification is "done well", by comparison to a more permissive planning environment where the market is left to decide what level of amenity is desirable. While the objectives behind these amenity controls are understood and worthy, it is critical to keep in mind that planners and planning rules do not activate developments.

Other agents – landowners, developers, and investors/financiers – drive construction activity, in response to demands from households and businesses. Amenity controls only make a positive difference if they turn "badly" designed developments into something better – they do not of themselves promote new supply or redevelopment. On the other hand, easing land use regulations to be more permissive may turn an uneconomic proposition into a viable one.

The estimated benefits from agglomeration are substantial, indicating that the cost to cities of constraining urban intensification is potentially much greater than the disbenefits experienced by existing residents of urban intensification through things like lost sunlight. Further, amenity controls that seek to control minimum dwelling sizes are unlikely to be economically efficient: the market failure is not clear.

Territorial authorities that seek to provide for non-specific 'better outcomes' for potential new residents by controls that require private outdoor space may find that the costs faced from less agglomeration economies caused by loss of yield outweigh the costs of public provision of high-quality outdoor space. Appropriately specified policies, such as development contributions policies, may also fully internalise the cost of public provision.

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