Boffa Miskell

PLANNING FOR RESIDENTIAL AMENITY

WELLINGTON DISTRICT PLAN REVIEW

PREPARED FOR WELLINGTON CITY COUNCIL

JULY 2021

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EXECUTIVE SUMMARY

PLANNING FOR GROWTH

Since early 2019 Wellington City Council (WCC) has been engaging with the community on scenarios to address projected future growth in the city and a preferred spatial strategy to inform how this might be accommodated. Based on WCC projections approximately 25,000 – 32,000 additional dwellings will be required to house the increase in population anticipated.

To maintain a compact city form, accommodating more people in the existing urban footprint was preferred over extensive new greenfield development. However, the flow-on effect of this is that future development will need to go 'up' rather than 'out'.

In response, WCC has prepared a draft Spatial Plan for comment, the release of which coincided with the National Policy Statement on Urban Development (NPS UD) issued by the Minister for the Environment. Both the draft Spatial Plan and NPS UD have a strong growth focus and are relatively consistent in their directive approach towards urban intensification. Following adoption of the Spatial Plan WCC will move towards developing relevant provisions to deliver on the growth direction adopted as part of its District Plan review.

FOCUS ON RESIDENTIAL AMENITY

This study focuses on residential amenity and measures that can be used to achieve a balance between amenity and the increased density envisaged by the NPS UD and draft Spatial Plan. The study references NPS UD Policy 6 which signals that some detraction from amenity values can be expected as a result of changes to the urban environment to accommodate projected growth.

For the purposes of this study residential amenity considerations are limited to three key attributes that can reasonably be expected to be managed in existing areas undergoing intensification. These are:

- Sun and natural light to indoor and outdoor living space
- Privacy between habitable spaces
- Scale and dominance

In addition to this, the following are also identified as important on-site amenity related considerations for new residential development:

- Clear access into the building and circulation within
- Storage and solid waste management
- Open space for various functions

Consideration of effects on the character of existing areas was outside the scope of the study and will be separately addressed by WCC.

STUDY OUTPUTS

The operative District Plan contains policy and related measures that seek to manage the existing environment in a manner that maintains a similar urban form to that which currently exists. By contrast, the proposed changes outlined in the draft Spatial Plan have the potential to demonstrably alter the urban form in identified areas of change. To facilitate these changes, while also balancing competing residential amenity considerations, new planning provisions are to be developed as part of the review of the District Plan.

Qualifying what constitutes a reasonable level of amenity has been informed by combination of considerations including;

- Investigating what other comparable centres are doing to enable intensification and to gauge how residential amenity considerations have been addressed
- Engaging with WCC planners and urban designers
- Testing a sample of feasible development configurations to understand the nature and scale of potential impacts and determine a necessary and sufficient response.

To this end the study has assessed the effects of different development formats on representative areas – Johnsonville, Mt Victoria and Newtown – where increased heights are proposed to enable increased density, with a particular focus on selected 4,5 and 6 storey areas proposed in the draft Spatial Plan.

GIS (Geographic Information System) analysis indicates that most of the sites in the inner residential areas are typically relatively narrow, with 75% of these being12m wide or less. By contrast, sites in the outer residential areas are typically wider, with 75% over 14m in width. A further function of Wellington's urban form is that sites are typically relatively long, with most (80%) of those in the areas noted above longer than 20m (the width of a typical main street road reserve).

These site dimensions in combination with the District Plan provisions are influential to the development capacity.

To help 'ground truth' the study a range of development formats were tested using a simple unit module. These modules were configured in various combinations on typical site areas drawn from the three representative areas noted above. The testing involved the application of different amenity related planning provisions to gauge their effect on residential development form as described above.

Three workshops with WCC planners and urban designers were also conducted, the purpose of which was to:

- Identify commonly addressed amenity issues
- Confirm a set of key amenity attributes to be investigated
- Understand how current planning provisions are used and their level of effectiveness
- Canvas different approaches to future amenity related District Plan provisions

STUDY RECOMMENDATIONS + KEY FINDINGS

Based on the process and outputs outlined above, a recommended planning response to addressing the effects of anticipated intensification on residential amenity is as follows (refer to main report for further detail):

- Sun access to outdoor spaces between the spring to autumn equinox (4hrs), as well as sun access to internal living spaces in winter (2hrs)
- Outside open space to be provided at a ratio based on the number of units
- A development envelope formed by a recession plane and a height limit (8m and a 60 degree angle)
- A limitation on building length (20m)
- Privacy separation distances (6m between habitable space/windows of opposing units)
- On-site storage and waste management storage
- Access and circulation legibility

Further to this, key findings of the study are summarised below:

1. The existing subdivision pattern of the city will influence the capacity that can be gained within the growth areas identified within the draft Spatial Plan.
2. Residential amenity is a consideration that applies to both the residents of areas receiving new density development, as well as for residents within any new development.
3. Design guidelines are largely proposed to be used to guide the design of new density development given the myriad of factors requiring consideration.
4. District Plan measures relating to height, development envelopes (recession planes), privacy set-backs, building length and open space are proposed to work in concert to provide reasonable level of residential amenity.
5. There are changes proposed within the District Plan measures that allow for an increased development envelope, with this controlled to an extent by site dimension. Buildings up to the increased heights (6 storey + within walkable catchments of rapid transit stops) anticipated by the draft Spatial Plan will only be achievable on larger sites.
6. Site amalgamations are not assumed as an outcome of the proposed provisions, but may occur in order to create wider sites and thus greater development capacity. Increased density on narrower sites will also be enabled.
7. All multi-unit development should be treated as a Restricted Discretionary Activity and supported by supplementary Guidelines, with guidance centred around addressing on-site amenity attributes and building massing and articulation to inform the future form of new buildings and their ‘fit’ within existing contexts.
8. The NPS UD intent to realise as much development as possible (NPS UD Policy 3) by its being feasible and reasonably expected to be realised (Subpart 1 (3.2)) is satisfied in that as much development as possible is enabled within the bounds of existing site dimensions and the proposed provisions. Although some detraction in existing amenity may be experienced, the proposed provisions will maintain a reasonable level of amenity in terms of sun access, privacy, and dominance in scale.

1.0 INTRODUCTION

This report has been prepared for Wellington City Council (WCC) by Boffa Miskell urban planners and urban designers as an input to the District Plan review working process.

The report focusses on residential amenity provision within the District Plan, particularly in response to the increase in population and dwelling density within existing residential areas of the city anticipated by the draft Spatial Plan for Wellington City and recent national direction on urban development issued by central government[1] .

2.0 REPORT FOCUS

2.1 INTENT

The report presents the outcomes from a study into appropriate measures to manage amenity in residentially zoned areas of Wellington City where increased density is being considered. The increased density is to be given effect to through a review of the current Wellington City District Plan (the Plan). A precursor and key input to the review is the draft Spatial Plan for Wellington City which signals areas where blanket changes to height limits are anticipated to enable increased density.

Another key input is relevant national direction, particularly as this is a matter that Council must give effect to under s.75(3) of the Resource Management Act (RMA). In this regard the recently (2020) issued National Policy Statement on Urban Development (NPS UD) is particularly influential given the clear directive in Policy 3 towards increased density (intensification) in identified Tier 1 urban environments such as Wellington City.

In light of this, the intent of the report is to assist WCC to more clearly understand[2] :

… the impacts of anticipated incremental change towards taller multi-unit building typologies on the residential amenity of existing low density and future medium density residents, particularly:

- *What level of residential amenity can be reasonably expected to be maintained by existing lower height buildings as development grows 'up' around them (a consideration of short, medium- and longer-term implications is required)*
- *What level of residential amenity can be achieved/ should be maintained for future higher density developments in proximity to each other (inc. consideration of protecting amenity of adjacent sites for future development opportunities)*
- *How updated District Plan Provisions and Design Guides should optimise quality amenity outcomes. What other mechanisms are relevant?*

2.2 SCOPE

The focus of the report is on residential amenity, with this limited to:

- the on-site amenity of residents in any new development; and
- the off-site amenity of those residing in the area surrounding such development.

However, it is acknowledged that there are other qualities that people living in the city value as a key part of the amenity of a place, and that there is no hard line between the range of values people associate with 'their' place and those that are the focus of this report (e.g. amenity value derived from neighbourhood character or community infrastructure).

The scope of work that underpinned the findings in this report included modelling and testing of various 3D multi-unit residential configurations for typical sites sizes in representative suburbs (Newtown, Mt Victoria and Johnsonville) where changes in residential density are being considered.

As it was impractical to model and test sites of all shapes and sizes, typical sites have been modelled. Consequently, there will be other site types that reflect different characteristics to the test sites modelled. The testing explored the impacts of a variety of taller multi-unit development configurations and different approaches that could be employed to manage associated amenity impacts. Although the tests provided a useful tool for exploration, professional urban design and planning judgement was also applied to inform the report outcomes.

No site-specific engineering, servicing, seismic or building regulation related input was sought in preparing this report but some architectural unit modelling was undertaken (unit modules provided by Novak Middleton architects) to test the potential yield of various configuration options considered However, the viability of these options was not tested with the development community, with the degree of developable viability indicated in this report based on the experience of the planners, urban designers and architects involved in this process.

2.3 PROCESS

This study has been undertaken over a 6 week period and involved the following process (refer to Figure 1):

- background research into defining amenity attributes by reference to other contexts and Wellington;
- modelling of 3D forms to test the effects on amenity

1 National Policy Statement on Urban Development 2020 (July 2020)

2 WCC Request for Quote Wellington City District Plan Review Managing Residential Amenity

of a range of potential configurations and potential rule settings;

- weekly progress meetings with WCC planners to check-in and set actions for the period ahead or challenge thinking as it evolved;
- 2 workshops with a larger group of WCC planners and urban designers involved in the consenting processing and policy development areas to gain feedback on amenity attributes and associated settings and guidance;
- A follow up workshop held specifically with consent planners to further discuss the workability of settings and approaches being considered; and
- draft study report preparation and finalisation following feedback.

3.0 AMENITY INFLUENCES

3.1 GROWTH AND THE SPATIAL PLAN

WCC embarked on a 'Planning for Growth' programme in 2017, a key facet of which was engagement with Wellingtonians on what they wanted from their city in the future - Our City Tomorrow. The goals derived from this engagement are presented in Figure 2:

From this initial engagement WCC tested a range of growth scenarios with the community in response to a projected population increase of 50,000 – 80,000 people in the city over the next 30 years (from 2017 to 2047). This growth, in turn, equates to the need for between 24,929 and 32,337 additional dwellings.

The responses received to the proposed growth scenarios favoured the 'compact' goal, with accommodating more people in the existing urban

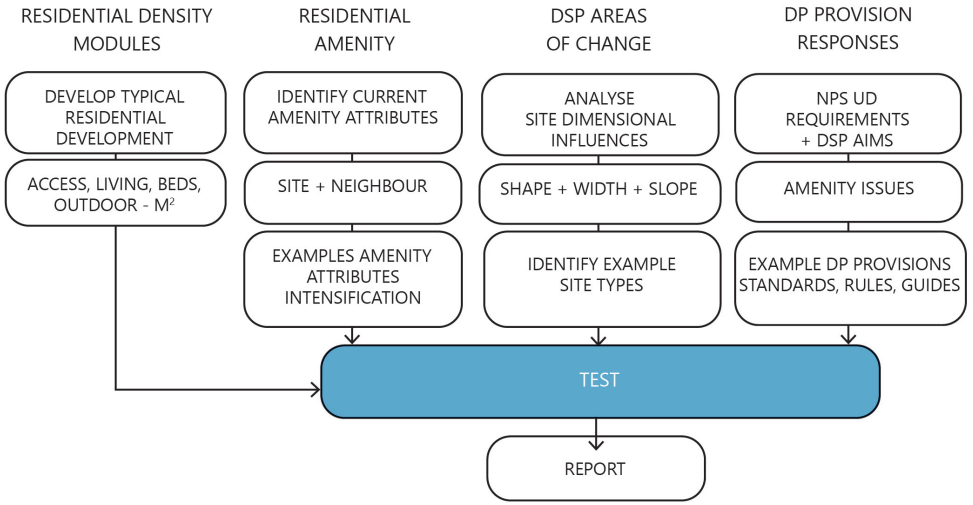

Figure 1: Process

Our City Tomorrow

Our City Tomorrow Planning for Growth

Absolutely Positively Wellington City Council
Me Heke Ki Pōneke

What is the vision?

Our plan is to be the most-liveable city. As the Capital heart, we celebrate our unique Wellington way, and creative culture where businesses flourish. Housing must be affordable, and we strive to be a place that is accessible, safe, and close to nature. Where streets are made for walking, and mana whenua culture is a living presence from harbour to hills. Our vision is a welcoming home for all.

Compact

Wellington builds on its existing urban form with quality development in the right locations.

- Our urban form is compact, liveable, easily accessible and connected and makes efficient use of existing infrastructure, community facilities and transport links.
- New housing is well-designed and supported by quality recreational, community and transport facilities.
- Public open space is safe, well-designed, enables a range of innovative and creative uses and meets the needs of our diverse communities now and in the future.
- Long term investment in our infrastructure, community and recreation facilities and services supports future development in existing urban areas.

Resilient

Wellington's natural and built environments are healthy and robust, and we build physical and social resilience through good design.

- Urban development supports social and physical resilience.
- Infrastructure, facilities and services are designed, maintained and improved to mitigate and adapt to the effects of natural hazards and climate change.

Vibrant & prosperous

Wellington builds on its reputation as an economic hub and creative centre of excellence by welcoming and supporting innovation and investing strategically to maintain our thriving economy.

- Support creativity, innovation, and technology in urban development and the economy.
- Attractive, vibrant public spaces that incentivise new development.
- Suburban centres are revitalised to support their viability and stimulate adjoin residential growth and development.
- Increased opportunities to stimulate further employment and business growth and development in the city are available.

Inclusive & connected

Wellington recognises and fosters its identity by supporting social cohesion and cultural diversity, and has world-class movement systems with attractive and accessible public spaces and streets.

- A range of housing types and densities offer greater housing choice across the city.
- Public spaces are universally accessible across the city.
- Sport, recreation, play and community infrastructure and investment that fosters increased opportunities for social connection and physical activity.
- Places, cultures, histories and people that contribute to Wellington's identity and sense of place are recognised and celebrated.
- Ahi kā is recognised and celebrated in developing our city.
- Our movement systems support a compact urban form, reduce carbon emissions and promote improved health outcomes.

Greener

Wellington is sustainable and its natural environment is protected, enhanced and integrated into the urban environment.

- New development supports the city's goals of being 'zero carbon' by 2050.
- Water management infrastructure and practices improve water quality across the city.
- Important natural and physical features that enhance the city's character and identity are protected and the natural environment contributes to improving our quality of life.
- Nature is integrated into the city and green networks are accessible to all.
- New initiatives and development reinforce the city's aspiration to become a sustainable eco-city.

View Our City Tomorrow – Draft Spatial Plan for Wellington City

Figure 2: City Goals

footprint preferred over extensive new greenfield development. Consequently, this implies that development needs to go 'up' rather than 'out'.

There are currently few empty large sites within the existing urban area where new development can be accommodated. Consequently, existing residential areas will need to be redeveloped over time by a process involving existing dwellings being removed and replaced with more dwellings at greater densities, typically via multi-storey typologies. WCC proposes, and the NPS UD requires[3] , that this anticipated redevelopment is enabled by the Plan.

Delivery of this redevelopment is anticipated to l be market responsive, which means either an existing property owner redeveloping their land or selling to someone who will on the expectation of a reasonable return. However, to achieve the greater densities sought in response to estimated dwelling demand more multi-unit buildings will be required, with this likely to be developer-led as it will be beyond the capacity and capability of typical residential property owners.

It is also unclear at this juncture whether WCC or any other 'public' agency is intending to play an active role in delivering this increased density.

The draft Spatial Plan is the blueprint that sets out where and how the city could change to meet the goals of ensuring a compact, resilient, vibrant and prosperous, inclusive and connected, and greener Wellington, including maps showing the areas where growth capacity is proposed.

For residential areas the subject of this study this means enabling more medium to high density dwellings in the city's inner and outer suburbs. The Spatial Plan identifies 5 dwelling building types to reflect the range

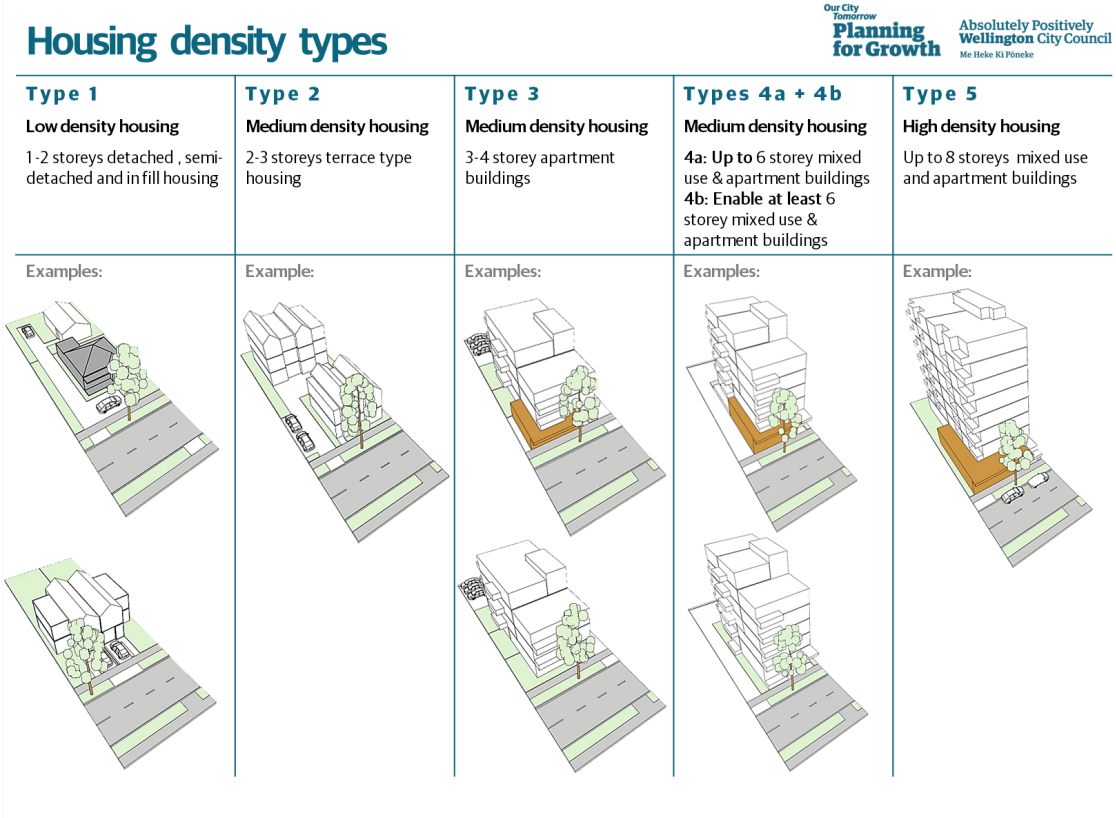

Figure 3: Housing Density Types from draft Spatial Plan

3 Refer Policy 3 NPS UD

of densities proposed in these suburbs. These are expressed as storeys with a recognised, but approximate equivalent, minimum height of 4m for the first storey and 3m per floor beyond that. The 5 types are described as indicative typologies in Figure 3.

3.1.1 SPATIAL CAPACITY PLAN ENABLEMENT AND AMENITY

There are two key NPS UD policies (Policy 3 and Policy 6) for consideration in this study which bring forward the natural tension between enabling capacity for development and the impact this has on residential amenity.

Policy 3 of the NPS UD directs WCC to satisfy the following spatial requirements[4] :

For tier 1 local authorities, maximum capacity must be enabled in city centre zones. They must also enable development of at least six storeys in metropolitan centre zones and within walkable distances of rapid transit stops, and the edge of city centre and metropolitan zones. In these locations, six storeys is not a target, but is a minimum for what must be enabled in plans.

Consequently, every Tier 1 local authority must identify, by location, the building heights and densities required by Policy 3. WCC has provided for this requirement in its draft Spatial Plan and is expected to do so in its District Plan review. In terms of providing development capacity Tier 1 urban environments need to be 'plan-enabled' and 'infrastructure-ready' - this includes an expectation that any such capacity is feasible and reasonably expected to be realised. There is also a requirement that a (15-20%) factor of competitiveness margin be included in capacity.

Amongst other matters 'plan-enabled' implies that land is appropriately zoned for the use (in this case residential) and the use is a permitted, controlled, or restricted discretionary activity on the land. This 'plan enabled' aspect of the Policy is relevant to this study in that it implicates the District Plan towards a density permissive regime of provisions.

Policy 6 requires that when making planning decisions that affect urban environments, decision-makers have particular regard to a range of matters including the following (the matter below is a key influence for amenity):

6(b) the planned urban built form in those RMA planning documents (ie Wellington City District Plan) 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.*

4.0 DEFINING AMENITY

The RMA (s2) defines amenity as:

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.

For the purposes of this study the residential amenity was limited to[5] :

*the benefit enjoyed from physical external space which is part of the private home. The benefit enjoyed depends on the quality of space. The level of enjoyment is also dependent on several factors, including location, size, orientation, sounds, noise, accessibility and enclosure. Private amenity space is not the same as public open space. Neighbourhood character amenity is excluded from the definition and is not within the scope of this projec*t.

To determine what level of amenity can reasonably be expected to be maintained by lower height buildings as the city progressively intensifies the approach adopted in this study has been to:

- Assume that it is fair and reasonable for the people living in a "receiving environment" subject to intensification to expect that not all of their current or anticipated amenity will be removed[6] ;
- Assume that in the absence of any known local research as to minimum standards of residential amenity that are needed to sustain the wellbeing of people, reference to comparable intensification related amenity provisions from elsewhere provides useful direction/ guidance;
- Consider that, by virtue of site sizes and existing building context, there are multiple other factors that influence built form and the amenity of the receiving environment that the District Plan cannot change; and
- Consider that amenity can be described as both a set of attributes (eg sun or privacy) as well as an extent to which this is provided (eg hours of sun per day).

4.1 RESIDENTIAL AMENITY ATTRIBUTES

For the purposes of this study residential amenity attributes were determined to fall into two specific contexts[7] :

4 Ministry for the Environment (2020) National Policy Statement on Urban Development 2020 – intensification fact sheet

5 From WCC RFQ

6 Noting that although Policy 6 indicates that changes may 'detract' from amenity it does not explicitly state that this extends to its elimination

7 These were informed by referencing a sample of relevant planning documents and design guides as well as testing in study workshops

a) on-site residential development amenity – what a new development reasonably needs to provide to make it a good place to live for new residents; and

b) neighbouring residential amenity - how the amenity of the receiving environment is reasonably provided for when new development occurs.

In light of this a set of corresponding key amenity attributes and measures have been identified based on the following[8] :

- Current Wellington City District Plan and Residential Multi-unit Guidelines because they identify the current attributes and settings.
- Auckland Unitary Plan (particularly the Terrace Housing and Apartment Buildings Zone) because this is a contemporary RMA planning document that has a directive towards increased intensification in existing urban areas in a metropolitan NZ city and incorporates standards and guidance.
- New South Wales Planning Environment Apartment Design Guide because Australia is relatable culturally to NZ in respect of people's expectations of living environments, has standards and guidance, and reflects a range of types of buildings types that compare with draft Spatial Plan. It also won the Planning Institute of Australia National Award for Planning Excellence in 2016.
- Various other comparable District Plan provisions were also considered by reference to those noted to the study by others. At various points in this report the above references of examples are noted.

These attributes and measures are outlined in Table 1 below and are further referred to in Section 5 of this report. The suggested measures have been tested through modelling, acknowledging however that what is 'reasonable' in an amenity context is open to interpretation and that people will hold different views as to an appropriate measure. The principle point of reference for this study has been to use the comparable provisions set out above and to calibrate them to apply to the Wellington context and to respond to the NPS UD.

8 Refer Appendix 1 for a summary of the related amenity attributes and measures

TABLE 1 AMENITY ATTRIBUTES AND MEASURES

ON-SITE AMENITY	PURPOSE	MEASURES DISCUSSION
Private open space	For the use of the people in each dwelling unit	Open space provides a place to take fresh air, experience the warmth of the sun, grow plants, play, smoke, cook outside or host others. It can provide an extension to internal living space. Private open space assumes it is only accessible to the dwelling it is attached to. There are various measures of private open space in the referenced provisions with $5m^2$ -10 m^2 being observed for balconies and the like. Given the inter-relationship between private open space, shared open space (which is space shared with other people living in the same multiunit development) and public open space (which is an amenity that may be accessible to the wider neighbourhood) a matrix approach to open space is proposed, with adequate levels of amenity likely if one or more of these means is provided. Good shared open space in conjunction with nearby public open space may be preferable to small private spaces in order to provide the amenity that comes with open space. Good shared space will also be reliant on design guidance. It needs to be of sufficient dimension to enable usage by all those that may want to share it at any one time. The current DP Guidelines provide some direction. Referenced provisions such as NSW design guide indicate 25% of the site area being set aside for shared space. The Auckland THAB includes a maximum site coverage of 50% and 30% landscaped requirement. If locally there is a need to provide all open space amenity on site due to a lack within the immediate area then provision for this as a mix of shared and private open space is preferable. However, if good quality private open space cannot be delivered for any unit then an accessible and proximate shared space should be an option. If there is public open space within a walkable distance then on-site open space could be considered in conjunction with some use of public space, however as an offset more than a matter of course. Sizing of shared spaces needs to be considered to ensure it is functional and appropriate for resident numbers. Several shared spaces may be preferable to a single space in larger developments. To provide a measure of minimum open space it is proposed that the matrix is operationalised through the design guidelines, with a minimum of $5m^2$ per bedroom per unit as a 'guide' comprising either private open space or in combination with shared open space and consideration. Shared open space is proposed to be ground-based, although shared space such as roof tops, atrium and the like can also be provided. The amenity provided by existing and future WCC public open spaces (ie can it accommodate a BBQ, or play or is it a communal garden?) will need to be available and accessible to make this work optimally. Presently the provision of public green open space in the city is insufficient to meet current and future needs[9] . Until such time as better provision is made by WCC there will continue to be a need for on-site open space. A further point to note concerning ground-based open space is the influence it can also have on other factors. For example, open space can provide light into a development, provide for on-site soakage as permeable ground, and provide some relief within the mass of the building which can beneficial to the amenity enjoyed by neighbouring properties'.
Shared open space	For the use of people living on the site	

9 Sustainable Cities (2018) Green Space in Wellington's Central City: Current Provision, and Design for Future Wellbeing

TABLE 1 AMENITY ATTRIBUTES AND MEASURES

ON-SITE AMENITY	PURPOSE	MEASURES DISCUSSION
Sunlight to living and outdoor space	Residents' access to sunny outdoor space and for sun into living areas	As noted above in relation to on-site amenity, similar expectations of reasonable amenity also apply to neighbours. There is a myriad of factors influencing shading, noting that there are currently numerous examples of properties in Wellington that are topographically affected by shade. The test modelling indicates that most sites will be able to accommodate a new development and retain 4 hours of sun between the equinox assuming that there is no shading already experienced due to existing development or natural topographical features.
Access	To move to and from the street and for on-site circulation which can also be vertical	Universal access requirements in the Building Act (2004) will need to be met, and it is proposed that DP Guidelines will also apply. Many Wellington sites are long, with depths of more than 30 metres common. Typically, an access width of 2m allows for people to pass, and to enable the movement of push bikes or push chairs and large objects. In light of this a 2m wide internal circulation dimension and ground level access is proposed and can be included in DP Guidelines and has been applied in the modelling. There is no presumption of vehicle access onto a site as car parking is not required to be provided for residential developments under the NPS UD[10]. If there is a need for on-site waste collection or provision of on-site car parking there are technical requirements relating to these in the DP - any changes to current requirements would need to be discussed with WCC engineers.
Privacy	Residents' visual privacy in relation to other units	There are design measures that can be used to mitigate privacy such as blinds or screens which can be manipulated to suit. The referenced provisions include measures relating to unit privacy, with 12 m between the facing windows of living or outdoor living spaces considered a reasonable measure based on the NSW guide. Where there are windows of bedrooms or non-living spaces facing it is proposed that this distance can be reduced to 9m between habitable/non-habitable rooms and 6m between non-habitable rooms. This provision also applies to neighbouring amenity.
Storage space	Waste and other larger items (like bikes, sports equipment)	At a minimum there needs to be accessible storage for solid waste/recycling. It is unreasonable for each dwelling unit in larger developments to each have a bin at the kerb side, or for one to be provided for each unit. Consequently, it is proposed that ground level shared bin systems are provided for larger developments. A storage space to keep larger items which may be difficult to accommodate within a unit or to manoeuvre within the building is an important amenity for people that need it, noting that some will not. An option to rent or use storage units is common. A facility for cycle storage and also battery charging will also be useful for some. Currently over 20% of NZers own a bike and this is anticipated to grow over time given Wellington's relative compactness and as cycle facilities improve and e bike technology is increasingly accessed. Given the variable nature of future storage need it is proposed that design guidance is developed to address on-site storage provision as opposed to reliance on standards in the District Plan.

10 Refer Policy 11

TABLE 1 AMENITY ATTRIBUTES AND MEASURES

NEIGHBOUR AMENITY	PURPOSE	MEASURES DISCUSSION
Sunlight to living and outdoor space	Residents' access to sunny outdoor space and for sun into living areas	As noted above in relation to on-site amenity, the same expectations of reasonable amenity apply to neighbours. There is a myriad of influences to shading and properties currently in Wellington that are topographically affected by shade. In Wellington, topographical conditions have a major bearing on the level to which some properties are currently exposed to the sun, with sheltered places in valleys often experiencing significantly reduced sunlight hours. The test modelling indicates that most sites will be able to accommodate a new development and retain 4 hours of sun between the equinox assuming that there is no shading already occurring from existing development or from natural topographical features.
Privacy	Residents' visual privacy from neighbour	As noted above in relation to privacy the separation of habitable spaces and non-habitable spaces are proposed to apply to neighbouring properties. This, in turn, will require some interpretation of neighbouring buildings' layout.
Adjacency/ dominance	Residents' sense of being dominated by new development	There is no specific measure of dominance identified in the references considered in this study. The various measures that are applied to bulk and location combine to affect the overall form of new buildings. Test modelling indicates that for narrower sites there will be a limit to the scale of new buildings that can be built. There is an expectation arising from the draft Spatial Plan that the scale of new buildings will change in the nominated change areas, and in those suburbs where 6 storey or more buildings are enabled this dominance will be a challenge for adjacent smaller scale existing building residents until such time as they are redeveloped. The effects of new development on the character of areas where larger or taller buildings is anticipated to occur is outside the scope of this study, although it is a related matter for WCC's consideration.

4.1.1 VIEWS

Views or outlook across Wellington contributes to amenity values ascribed to several areas of the city – this includes some of those signalled for intensification in the draft Spatial Plan. Although there are some specified view shafts in the city, the general loss of a view resulting from new development outside these areas is not a Plan consideration – a position that is supported by the established legal precedent that no one has a 'right' to a view. There is also a relationship between this attribute and the dominance amenity attribute.

4.2 STANDARDS AND GUIDELINES

With reference to the amenity attributes in Table 1 above consideration has been given to the nature of Plan provisions (principally rules, standards and guidelines) that will materially influence the level of amenity experienced. As noted previously, the study has looked to other centres (Appendix 1) for density-responsive rules, standards and guidelines recognising that there is an expectation that current Plan settings will need to change to enable density in response to the direction in the draft Spatial Plan and NPS UD.

The range of rules, standards and guidelines considered are shown diagrammatically in Figure 4 with variations of the recession plane in Appendix 2. They represent a considered response to the planning outcomes sought by the draft Spatial Plan and NPS UD but also reflect a general principle that provisions should not be introduced or applied in the absence of a clear objective or purpose.

The proposed provisions and associated rationale (ie do they deliver the objective/outcome sought) are set out in Tables below. These have been tested to the extent that they can in this study with basic modular forms as set out in Appendix 3A, with consideration to yield in Appendix 3B in terms of sunlight influence in Appendix 4 and on slopes in Appendix 5.

Drawing on the testing undertaken the following have been identified as influential considerations regarding the composition of developments and the settings that can be used in combination in a way that would, as far as possible, 'enable' intensification while providing a reasonable level of amenity.

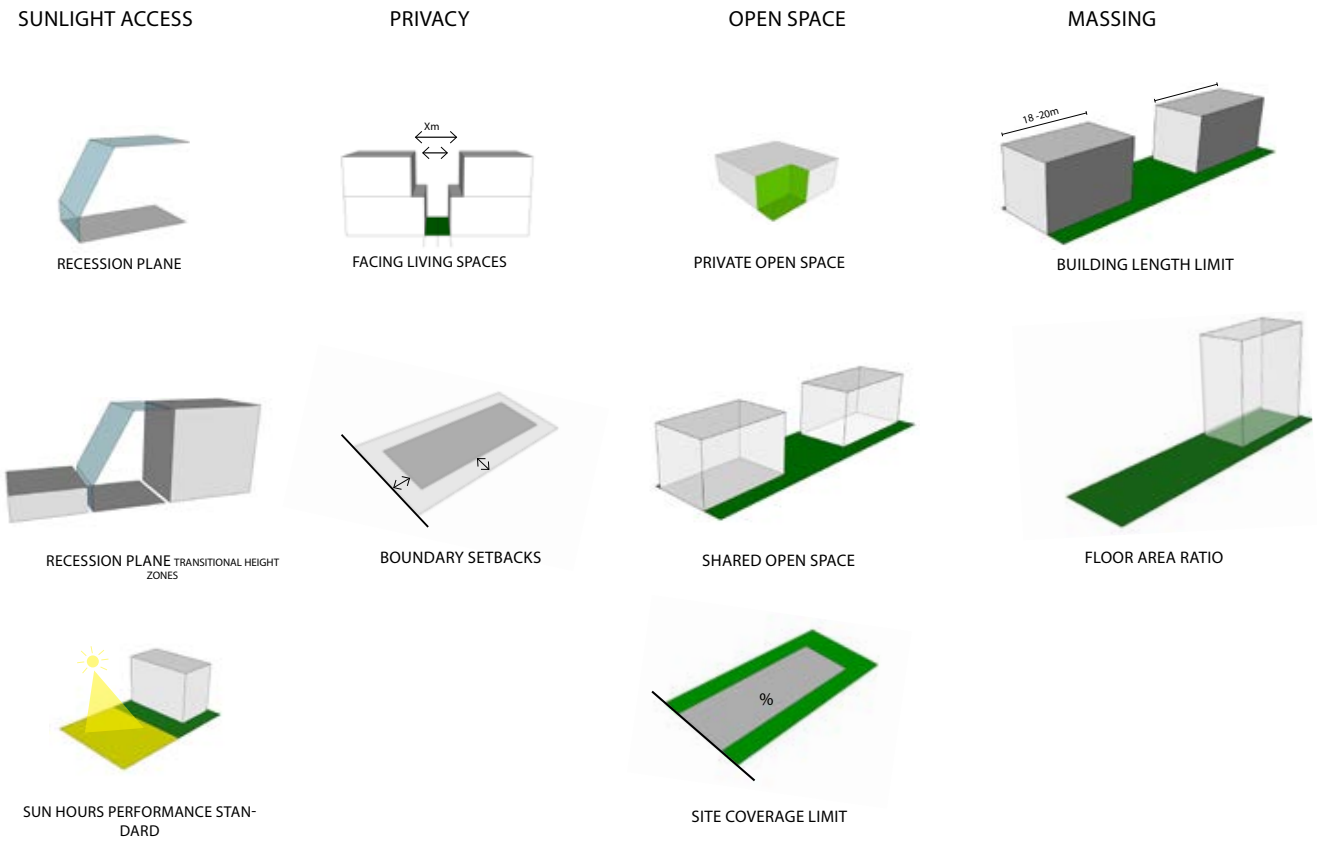

Figure 4: Typical Standards - Diagramatic Only

4.3 EXISTING SUBDIVISION PATTERN

The study has considered the existing subdivision pattern in three representative suburbs: Newtown, Mt Victoria and Johnsonville. These were selected as they are broadly representative of the characteristics of residential suburbs in the city in terms of topography, and age or period of development. These factors, in turn, have had a consequential influence on related aspects such as site size (typically bigger in later suburbs), relationship of buildings to streets (typically closer in earlier suburbs), relationship to adjacent buildings (typically closer in earlier suburbs), and on-site open space provision (typically larger in later suburbs).

The existing subdivision pattern is 'fixed' to the extent that further subdivision will be required to change site sizes. The site size is influential to the extent of development that can be provided with narrower sites (which are a majority in older suburbs) being limited and larger sites having greater potential for change in scale.

Figure 5 (produced using GIS analysis) shows that sites where change in height has been signalled in the draft Spatial Plan are typically rectangular in shape (being narrower than they are long), with this an influential determinant in the shape of associated buildings. Older buildings are usually longer in form with newer forms of development (which do not always demonstrate good amenity in design) often associated with the further subdivision of existing long sites (e.g. to put new units in what was previously the garden), or removal of an existing building and replacement with a linear layout that maximises the lengthy form of the site.

Figure 5 illustrates the width of sites in the representative suburbs considered. Along with their rectangular shape what the diagrams highlight is that many of the sites are also relatively narrow. On wider (sometimes by amalgamation) sites more variation in built form can be observed. In Mt Victoria and the draft Spatial Plan Type 3 areas (3-4 storey), for example, some 70% of sites are less than 12m wide with about 20% less than 8m wide – this is also typical in Newtown and the Type 4 areas (up to 6 storeys). By contrast, in Johnsonville Type 4B areas some 70% of sites are over 14m wide and 30% beyond 20m wide.

GIS analysis of the same studied areas shows that the majority of sites are more than 20 metres in length (more than 80%). Longer sites in combination with narrower widths tends to generate buildings which extend a long way back from street frontages. This, in turn, necessitates consideration regarding how reasonable amenity (including light and air, sun and access) can be provided, as well as how the effects of long buildings on side boundaries can be effectively addressed.

As noted later in this report, combining two sites to make a larger and wider site has a positive influence in relation to design flexibility as well as on-site and neighbour amenity.

However, this study has assumed that although site amalgamation may occur more with more 'enabling' Plan provisions providing an incentive, the requirements of the NPS UD are seeking that for existing single sites too there needs to be an enabling of density to the greatest extent possible.

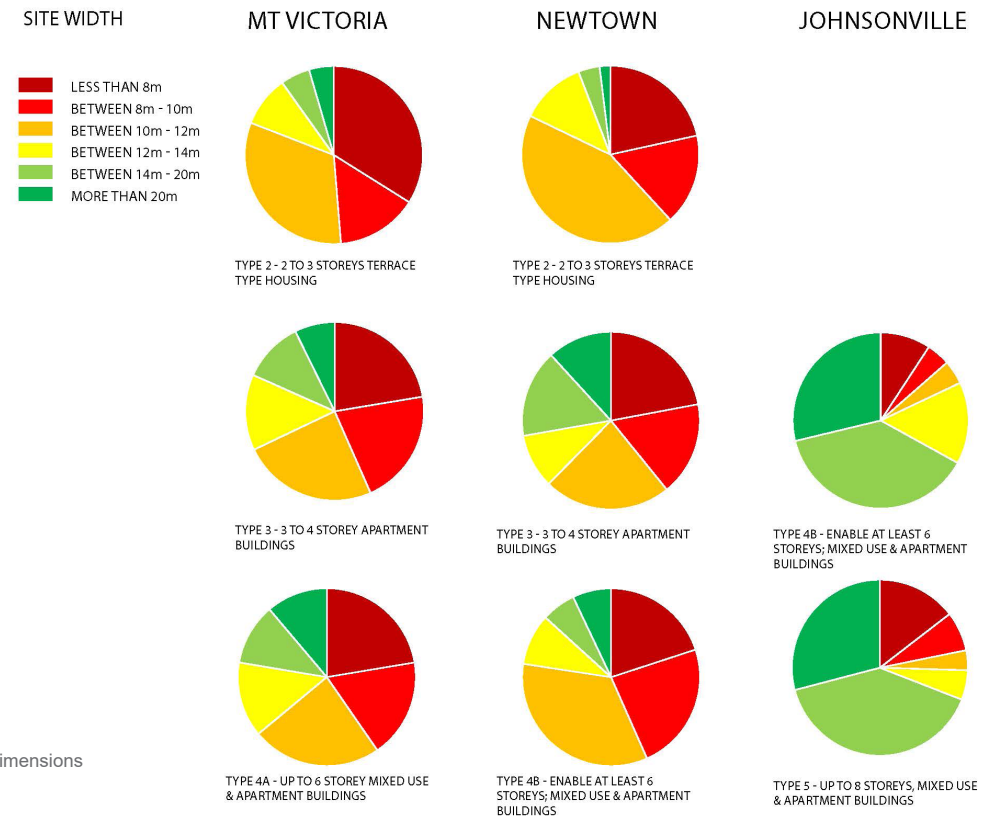

Figure 5: Site Dimensions

5.0 PROPOSED AMENITY PROVISIONS

Table 2 below has been produced to provide direction and guidance to help inform the review of residential settings in the Plan, noting that supporting objectives and policies are being separately developed by WCC.

The table contains a recommended package of bulk and location related standards comprising a mix of current and modified operative Plan provisions as well as proposed new ones. It should also be read in conjunction with Table 3 which sets out further recommended Design Guideline considerations for the Plan.

5.1 SUGGESTED APPROACH

SUNLIGHT AND DAYLIGHT

- Sunlight is known to be a physical well-being ingredient with various measures of 30-60 minutes of exposure of sun a day being referenced. In NZ exposure of unprotected skin to too much sunlight also poses a health risk.
- In designing a new development, or in considering effects on existing neighbourhoods, provision for each unit to have sun and daylight access to main living spaces and outdoor spaces provides for the amenity of occupants and users – it also affects energy use and efficiency.
- In Wellington there are topographical influences on sun access to both internal and external spaces - it may not be achievable for extended periods of time due to the site's position south of a hill or in a valley. Having elevation enables better access to sun, but may also expose the site to wind. The elevation offered by new buildings presents an opportunity of enabling sun exposure to upper floor shared open spaces or terraces in association with provision of sheltering elements.
- Some parts of the city may have public spaces or streets that offer greater sun access than individual sites and can provide a useful/desirable off site alternative.
- Another consideration for sunlight and daylight access is the period of use of the space. People may value open space with sun more during the times of the year when the space is useable and more daylight hours are available. The equinox period – Spring through to Autumn - will typically see more people spending time¬ out in open spaces as opposed to winter.
- It is typical in references to see sunlight being measured internally (eg living room) and externally (eg outdoor living space) to between 2 and 4 hours mid-winter, but with contemporary intensification references (eg Auckland THAB calibrated to equinox).

METHODS CONSIDERED	ADVANTAGES	DISADVANTAGES
a) Performance-based approach to providing for sunlight and daylight access based on a minimum requirement relating to identified internal and outdoor space. Each new development proposal would need to demonstrate via a shading analysis of modelled bulk and form: • The extent of shading cast by the development. • The level of sun and daylight afforded on-site residents and the surrounding area.	• Allows for variations in context and impact of sun light provision on a site-by-site basis. • Allows for development form to be designed to take advantage of the capacity of the site. • Has some potential to be used in conjunction with other methods.	• Requires additional technical capacity and capability for designers and WCC planners to test and analyse. • Imposes additional compliance costs (ie time and resources). • Is a new method that may be unfamiliar to developers, designers or planners. • Reduced certainty for developers and surrounding properties regarding the extent of development that might be expected on a site.

METHODS CONSIDERED	ADVANTAGES	DISADVANTAGES
b) Recession planes providing a development envelope or 'tent' over the site formed by a vertical boundary height and an angle inwards to the centre of the site. Development within this tent enables a measure of sun and daylight access to the site and surrounding area. Careful consideration needs to be given to height settings on boundaries and angles of recession. Current settings in Wellington are 2.5 m vertically, supplemented in medium density areas by variations in angle in relation to the northern aspect.	• Is familiar to District Plan users and supported by a legacy of practice which provides some confidence in its use as a tool. • Enables an prescribed extent of development without the need (assuming compliance with the measure used) to consider the effects of shading on surrounding properties. • Provides a level of certainty for surrounding properties regarding the extent of development that might occur on a site. • Provides greater certainty to developers regarding calculation of potential site development capacity. • Works in concert with other methods to also manage massing/dominance.	• Is not responsive to variations in context and therefore, with the same method, is likely to produce different levels of shading effect on surrounding properties depending on the context – this will favour some and disadvantage others. • Given the form defining nature of the envelope poor building form outcomes can be generated if not accompanied by design guidance.

PROPOSED METHOD	RECESSION PLANE WITH FOLLOWING SETTINGS	RATIONALE
Standard Settings • 8m on side and rear site boundaries with a recession angle of 60 degrees. No recession angle to the street frontage. • Extensions beyond the recession plane up to the maximum height of the area can be considered as a RDA (see explanation below) with non-notification where the effect on shading to adjoining property outdoor and main indoor living space: ◦ maintains 2 hours mid-winter internally and 4 hour externally; or ◦ is no greater than that experienced currently or generated by the compliance with the recession plane. Exceptions : Transitions Between Types 1 or 2 Areas and the boundary of other Type Areas, or Character Area boundaries and any other Type Areas • 5m on side and rear site boundaries with a recession angle of 60 degrees replacing the current 2.5m and 45 degrees at the boundary transition between higher and lower density/character areas. There is no recession angle to the street frontage.		The existing recession planes do not prevent shading to surrounding properties - some shading is a function of existing buildings shading one another, with no guarantee of absolute sun access protection. The proposed recession plane will still result in shading to adjoining properties, but there would only be a moderate difference compared with the current recession plane and a reasonable degree of sun access between equinoxes would be still be enabled. There are existing residential properties within the areas of change nominated in the draft Spatial Plan where buildings and adjacencies are similar to an 8m boundary height (2-3 storeys – note the existing building would not meet the existing recession plane requirements) and the effects of the proposed provisions relating to sun access and mass (see further below) are already relatively familiar. Although more density will be enabled on narrower sites (which are typically in more of the city older suburbs) than allowed under the current District Plan, this will likely cap out at about 3 or 4 storeys under the proposed recession plane settings given the constraining nature of the existing subdivision pattern (which the District Plan cannot require to change).

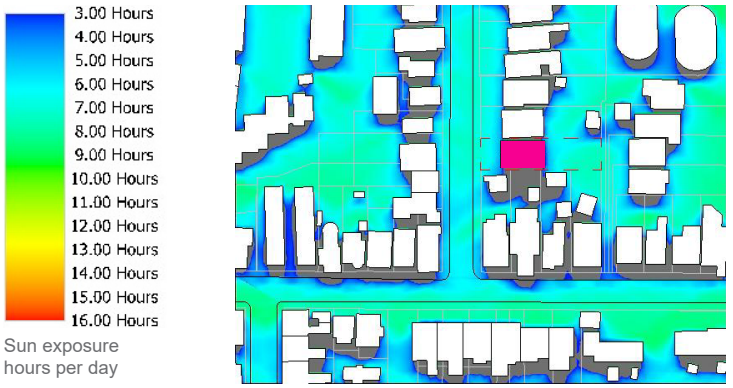

Figure 6: Existing Recession Plane. Mid Winter (north vertical)

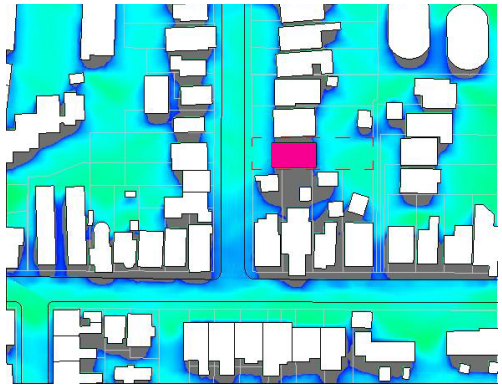

Figure 7: Proposed Recession Plane Mid Winter (north vertical)

Figure 10: Images from areas where draft Spatial Plan proposes increased density (2 storeys but close to 3 storey equivalent given floor to floor heights)

Figure 11: Images from areas where draft Spatial Plan proposes increased density (2 storeys but close to 3 storey equivalent given floor to floor heights)

The proposed setting will enable taller buildings on wider sites, but upper elements of the form will need to step away from boundaries to comply which will relieve the building mass at the boundary and regulate shading on surrounding properties.

The application of design guidelines for all multiunit development comprising more than 2 units will also have an influence on building form and enable sun access within the site to be appropriately managed. The exception rule applies to sites at the point of transition from a more permissive height to a lower height (eg existing, lower Type 1 residential areas (including character areas)). The expectation is that these lower height areas will not be subject to change to the extent experienced by Type 2 and above areas, and that current levels of sun access into outdoor or living spaces will largely remain. The 5m height limit will be sufficient for a 2 storey building within the development envelope on smaller sites and step up in height away from the boundary.

Consideration has been given to whether the sun access should be considered differently in different areas where change to height limits are proposed. This is not considered to be warranted as there appears to be no justifiable basis for differentiating the level of sun related amenity enjoyed throughout the city

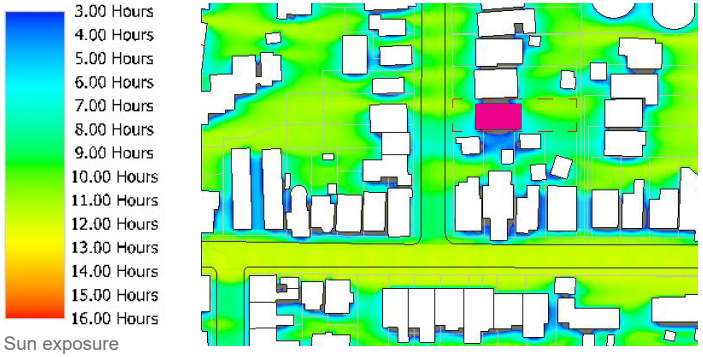

Figure 8: Existing Recession Plane September (north vertical)

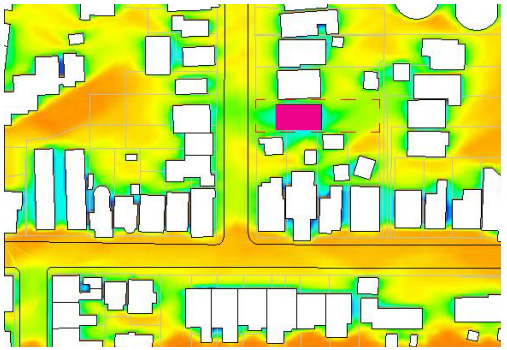

Figure 9: Proposed Recession Plane December (north vertical)

PRIVACY

- Visual privacy is the focus of residential amenity in this study. Aural privacy (noise) is managed in development design building standards and area wide in the neighbourhood setting by noise limits in the District Plan.
- People living in the city can reasonably expect to see others – both in neighbouring dwellings and in public places.
- The extent to which the privacy within your own house is affected by the proximity of someone in another can be manipulated to some extent by orientation and offsets of walls and windows, screens and shuttering or curtains and blinds or planting. However, a separation distance can provide some guidance to the design process.
- The multiple variations of designing for privacy suggest that this is a matter that could be addressed in Design Guidelines. At the time of writing this report proposed Design Guidelines had not been sighted. A basic standard is provided if the preference is to apply metrics to managing this amenity matter.
- The privacy between new units within a development and between new units and an existing dwelling are the subject of this measure.
- There is a counter to protecting privacy which is promoting community and social inclusion through maintaining contact. This can also influence personal safety through the passive surveillance that occurs when there are 'eyes' on the street for example. There are references[11] which suggest that tall residential buildings (beyond 6 storeys) disconnect people from the ground or street, resulting in a less desirable community outcome.

METHODS CONSIDERED	ADVANTAGES	DISADVANTAGES
a) Standard boundary set back – it is common for a side, rear or front boundary set back to provide space between buildings. Set-backs can be used to provide a degree of privacy separation between adjoining buildings, allow site access/ circulation or to address scale/dominance of buildings in relation to one another (the commentary is not repeated below under the dominance heading). Set backs in the order of 1-3 m are common.	• Is familiar to District Plan users and is supported by a legacy of practice which provides some confidence in its use as a tool. • Provides a level of certainty for surrounding properties and developers regarding the extent of development that might occur on a site. • Works in concert with other methods to also manage massing/dominance.	• Is generic and less reflective of differences in design and contexts. • Is relatively unresponsive to the relationship between buildings and habitable living areas or areas where privacy may be most valued.

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METHODS CONSIDERED	ADVANTAGES	DISADVANTAGES
b) Separation distance between buildings and habitable rooms (eg living room or private outdoor living space) - typically calibrated so there is a wider distance between habitable rooms, a lesser distance between habitable and non habitable rooms and less again between non-habitable rooms. Typically offsets between windows are also applyed.	• Is targeted to the interface distance between the windows of rooms where people might expect to spend day and night time. • Enables building design to be manipulated to suit the site specific context and can act to enhance the level of sunlight access to habitable rooms. • Is measured between buildings so is not related to an arbitrary boundary position and can respond to intensification transition by ensuring new buildings are sufficiently set back from the boundary to protect the privacy and outlook of future buildings.	• Requires an understanding of the internal arrangement/ positioning of habitable rooms within adjoining buildings. • May reduce the developable extent of a site depending on the separation distance/s proposed and the location of existing habitable rooms within adjoining buildings.

PROPOSED METHOD	PRIVACY SEPARATION DISTANCE WITH FOLLOWING SETTINGS	RATIONALE
Standard Settings/Design Guide • A standard of 6m between the windows of habitable rooms, and 3m between windows of habitable rooms and non-habitable rooms is proposed (no limit between non-habitable rooms). However, the intent of this standard could also be provided for more flexibly through Design Guidelines as a 'guide' if WCC elects to do so.		• There are multiple influences to achieving good visual privacy. The influences of offsets, screens, planting, and changes in floor levels are all potential design devices for managing privacy and with higher density development. • A standard setting is proposed which references to other precedents, but if WCC Design Guidelines are inclusive of some guideance on this matter then this could be an alternative form of method to use to reflect the multiple design devices in relation to privacy noted above.

DOMINANCE/SCALE		
• There is no clear definition as to what scale of development becomes dominating or provides a reasonable level of amenity. With the draft Spatial Plan intent towards intensification the expectation is that there will be an increase in building height and volume in identified residential areas. • References[12] that are directive towards urban form being delivered at a human scale suggest buildings no higher than 6 storeys.	• There will be a transitionary period when the scale of 'new' next to 'existing' buildings may be challenging until a greater proportion of an area is developed to a comparable scale. Because there are many sites implicated in the changes to height limits (for example, 4800 in the 3 areas tested in this study) it is likely that a considerable period of time will elapse before a demonstrable change in scale is evident. • Measures to address dominance or scale comprise a combination of factors, including recession plane, height, privacy separation, and open space provision.	• The scale and form of buildings will be influenced by the design guidelines, with the articulation of the building form managed by WCC planners and urban designers in conjunction with development designers. • The scale of buildings is also influenced by the size of the site (refer section 4 of this report). Narrower sites (of which there are many in the city) will only support smaller developments relative to larger sites. Although larger sites allow for larger buildings they also enable building scale to be moderated through more effective use of space and articulation of form.

METHODS CONSIDERED	ADVANTAGES	DISADVANTAGES
a) Site coverage – it is common to have a site coverage rule that requires 50% or more of the site to be open. Along with influencing the extent of on-site building mass and scale it also enables open living space on the site (referenced below).	• Is familiar to District Plan users and is supported by a legacy of practice which provides some confidence in its use as a tool. • Provides a level of certainty for surrounding properties and developers regarding the extent of development that might occur on a site. • Works in concert with other methods to also manage open space.	• Is generic and less reflective of differences within design and contexts. • Although open site area can be provided around the perimeter of a site this is likely to have little effect on the overall mass or scale of the building. • Reduces the development potential of a site and could be viewed as counter to the intensification direction in the NPS UD and the draft Spatial Plan.

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METHODS CONSIDERED	ADVANTAGES	DISADVANTAGES
b) Height limit – the draft Spatial Plan proposes a number of storeys equated to an anticipated height within residential areas across the city. Height limits are common within the references used in this study.	• Is familiar to District Plan users and is supported by a legacy of practice which provides some confidence in its use as a tool. • Provides certainty for surrounding properties and developers regarding the extent of development that might occur on a site. • Works in concert with other methods to also manage massing/dominance.	• Development may be deferred if the full development capacity of a site is unable to be realised. • Height limits are unlikely to be fully realised on all sites due to a combination of factors such as site size/ dimensions and other provisions proposed by this study. • Sloping sites frequently present interpretation issues concerning the measurement of heights rising from ground level across a slope. • Limits the potential of some larger sites to generate additional development yield by extending higher.
c) Floor Area Ratio – this method enables developable capacity based on a ratio of floor area relative to overall site area. In principle this allows building mass to be expressed as either long and lower or taller and narrower.	• Allows the form of the building to be expressed in different massing combinations. • Has a comparable precedent in the city, reflected by the building mass controls currently applied in the Central Area. • Responds well to sloping sites and releases the potential for taller, narrower buildings surrounded by more open space. • Provides certainty for surrounding properties and developers regarding the extent of development that might occur on a site and offers a relatively easy way to calculate development capacity.	• As it is an infrequently applied method in the NZ residential context the potential implications are less well known and understood. • Could impose additional administrative and compliance costs (ie time and resources).
d) Building Length – this method defines the maximum length of a building. It is typically expressed as a rule requiring a step back in a building elevation after a certain length to provide some 'articulation' to mitigate visual dominance.	• Limits the potential dominant 'wall' effect that uninterrupted building elevations on long sites can have on adjoining sites. • Provides a development opportunity on long sites to form two detached buildings separated by open space. • Allows for natural light penetration into new buildings at each end.	• Reduces the development potential of a site and could be viewed as counter to the intensification direction in the NPS UD and the draft Spatial Plan. • Imposes additional administrative and compliance costs (ie time and resources).

PROPOSED METHOD	PRIVACY SEPARATION DISTANCE WITH FOLLOWING SETTINGS	RATIONALE
Standard Settings • Area based building height limits aligned with those proposed in the draft Spatial Plan. • Building length maximum of 20m.		Height limits are a commonly applied standard. Although they can present challenges on sloping sites there are well practiced techniques to aid application and interpretation, including circumstances where sites are excavated to form a building platform.[13] Buildings length is proposed as an alternative to site coverage, particularly as its application (in combination with the open space measures outlined below) is more clearly targeted to the intent of amenity provision: • to manage scale; and • to provide on-site open space that caters for the amenity of residents, while also moderating the effects of building dominance on neighbours. 20m has been selected as a recommended measure as it would allow 'back to back' (10m deep) development on a site to occur and enable living spaces at each end of the buildings to access natural light. Additionally, most residential areas in the city (ie inner and outer residential) have sites which are longer than 20 metres, allowing for on-site open space to be accommodated - typically, this could comprise two building modules separated by open space. Whether dominance and scale should be addressed differently across residential areas has also been considered. This is considered to be unwarranted in terms of residential amenity, noting however that but there may be other reasons for introducing more nuanced measures (eg future character considerations). It is proposed that where a low height area and a higher height area or a character area share a boundary then there will be moderation of scale through the manipulation of the recession plane (refer recession plane measures above).

13 It is also noted that excavation is also likely other rules in the District Plan in regard to changing ground levels

OPEN SPACE		
• There is amenity provided on-site by an open space mix of private and shared space, together with the ability to offset this with public space in some circumstances. • On-site open space in new development will be influential to neighbouring amenity as it provides some visual relief and sunlight access.	• The quality of open space is important and well-designed open spaces are better than a large, badly located or designed open space - the Design Guidelines will be influential to the determination of good quality. There is an expectation in the measures proposed that sun access to open space will be provided during the equinox period (ie spring to autumn).	• An open space area is proposed based on the number of units and bedrooms provided. • Provision of green open space is important as it reflects the city goals and also provides for other non-amenity related outcomes such as surface water permeability.
METHODS CONSIDERED	**ADVANTAGES**	**DISADVANTAGES**
a) Site coverage – (also refer dominance measure above) it is common to have a site coverage measure requiring 50% or more of the site to be open.	• Is familiar to District Plan users and is supported by a legacy of practice which provides some confidence in its use as a tool. • Provides certainty to developers regarding the development to open space ratio expected on a site. • Works in concert with other methods to also manage scale/dominance. • Provides for other non-amenity based outcomes like on-site surface water permeability.	• Is an arbitrary, generic percentage of site area that is not responsive to the number of on-site residents or reflective of their open space needs. • Depending on the drafting and implementation of the measure may result in the creation of poor or useable amenity space (eg open space on the perimeter of a site). • Reduces the development potential of a site and could be viewed as counter to the intensification direction in the NPS UD and the draft Spatial Plan.
b) Open Space Ratio – based on a ratio of 5-8m^2 of open space per bedroom per unit, with further requirements to ensure reasonable levels of sun access between the spring – autumn equinox and that at least 50% is ground level 'green' space.	• Represents a proportionate response to the number of units/people on the site. • Likely to help moderate scale/dominance effects of taller buildings (assuming more units within) as a larger extent of open space will need to be provided. • Allows an opportunity for an optimal mix of shared and private open space to be provided to address multiple factors such as outlook, sun access and ground conditions/levels. • Provides certainty for developers regarding the extent of development that might occur on a site. • Works in concert with other methods to also manage massing/dominance.	• Relies on Design Guidelines to ensure good open space outcomes that benefit on-site amenity. • Reduces the development potential of a site and could be viewed as counter to the intensification direction in the NPS UD and the draft Spatial Plan. • Imposes additional administrative and compliance costs (ie time and resources).

PROPOSED METHOD	OPEN SPACE RATIO WITH FOLLOWING SETTINGS	RATIONALE
Standard Settings • Outdoor living space provided at 5-8m^2 per bedroom per unit depending on bedroom numbers, and unobstructed by driveways or parking or servicing areas. A minimum dimension setting is also proposed of 2m in any direction for open space. This provision would be guided further in the Design Guidelines to encourage that 50% is provided as ground level 'green' space. • The overall on-site requirements can be met on a unit by unit basis, or by a combination of private and shared open space, including roof gardens and terraces. • Note that provision of private open space with each unit also needs to have consideration to Design Guidelines for quality. In the event that good quality private open space cannot be provided (such as due to orientation or privacy) it is preferable that the open space is provided all as shared open space in reasonable proximity to the subject unit(s). • Consideration under the Design Guidelines of public open space as an offset to the provision on-site open space where: ◦ it is within a close walkable distance (5 minutes); ◦ provision of good quality on-site open space is limited by sun access, or may come at the cost of loss of other qualities such as topography or large trees.		Providing on-site open space amenity through private and/or shared space enables flexibility to be exercised. The use of Guidelines to steer the quality of open space provision is appropriate to the need for myriad site conditions and situations to be provided for. Application of some degree of variance in the site coverage/open space standards applied to the more open/less dense outer residential areas was also considered. However, given the expectation in the draft Spatial Plan that these areas (like Johnsonville and Kilbirnie for example) will become more urban over time similar provisions are proposed to be applied. This study has not sought to address the relationship to other objectives than residential amenity and if there are other objectives then WCC will need to consider these in determining the full suite of District Plan provisions being proposed. The matter of permeability has been raised as one example where, although not amenity related, the suggested guidance seeking 50% ground level open space to be 'green' for amenity reasons will have the dual benefit of providing a measure of permeability. If the objective is actually reduced stormwater runoff from each site, then permeability is one method to assist this, but others such as water retention on site by tankage, or by deeper roof gutters, are others.

ACCESS

- Access amenity relates to way-finding into and around multi-unit development. The long site dimensions in Wellington suggest that there is likely to be a greater frequency in future of side building entrances rather than ones that address the street frontage. Primary entrance visibility is important, as is circulation within the site such as to rear building modules or within the building itself.
- The width, visibility and lighting of accessways, along with other design attributes, strongly influence the sense of personal safety experienced. Narrow, long or poorly designed or lit accessways increase the risk of confrontation and antisocial behaviours.
- Access is also related to street frontage and the ability in mixed use, multi-unit scenarios to provide for the relationship of ground floor to street level access say for a publicly accessible activity.
- Access for car parking (where provided) or solid waste management/recycling will need to be considered relative to the relevant technical design requirements included in the District Plan.

METHODS CONSIDERED	ADVANTAGES	DISADVANTAGES
a) Minimum access widths to main entrances – particularly side entrances.	• Provides certainty for developers regarding the minimum requirements that apply. • Works in concert with other methods to also manage scale/dominance.	• Is generic and may be less responsive to differences in design and contexts, particularly in circumstances where a wider access requirement could be desirable
b) No standard, with access requirements informed solely through Design Guidelines.	• Is responsive to the conditions and allows the size of development and anticipated number of users to guide access considerations, including factors such as slope. • Works in concert with other methods to allow an integrated approach.	• Relies on Design Guidelines to ensure good access outcomes that benefit on-site amenity. • Creates uncertainty for developers regarding the effect on site developability.

PROPOSED METHOD	ACCESS IN GUIDELINES WITH FOLLOWING SETTINGS	RATIONALE
Standard Settings • No specific standards are proposed. Access will be informed by a direction in the Design Guidelines that provision should be made for a minimum 1.5m width, with scope for further consideration as to adequacy in relation to resident numbers, slope, length/distance from street.		• Providing flexibility in access design is considered appropriate to ensure that the variables associated with on-site design and integration of access within the overall form of the development is adequately addressed. • Catering for publicly accessible ground floor activities is also best addressed by the Design Guidelines given that the presence of this form of mixed use development will vary across the city.

STORAGE

- Storage amenity relates to how residents of multi-unit developments provide for their various on-site storage needs. Provision of a collective facility for waste management is appropriate for larger developments, while waste management to cater for ground level multi-unit situations is likely to be adequately addressed via kerb side collection. By contrast, vertical unit arrangements will require a collection system based on a dedicated service area.
- Provision of storage for other items such as bikes, sports equipment or bulky less portable items also requires consideration.

METHODS CONSIDERED	ADVANTAGES	DISADVANTAGES
a) Minimum storage area requirements.	• Provides certainty for developers regarding the minimum requirements that apply.	• Is generic and may be less responsive to differences in design and contexts, particularly in circumstances where a wider access requirement could be desirable.
b) No standard, with the storage requirements informed solely through Design Guidelines.	• Ensures a minimum level of unit/ site related storage is provided.	• Relies on Design Guidelines to ensure good access outcomes that benefit on-site amenity. • Creates uncertainty for developers regarding the effect on site developability.

PROPOSED METHOD	RATIONALE
Standard Settings a) No specific standards are proposed. Storage will be informed by a direction in the Design Guidelines relating to on-site provision of waste management and storage of bulky, less portable items.	• Providing flexibility in storage design is considered appropriate to ensure that the variables associated with on site design and integration of storage within the overall form of the development is adequately addressed.

5.2 ACTIVITY STATUS

Residential development involving a multi-unit format requires a more nuanced, site/context specific approach based on design guidance if reasonable levels of on and off-site amenity are to be achieved. Currently, multi-unit residential developments are treated as Restricted Discretionary Activities (RDA) in the operative Plan, and are subject to satisfying relevant design guidance and design related discretions.

This is considered to be a necessary and sufficient response and is recommended to be retained for multi-unit development of 2 or more units, subject to satisfying the proposed provisions outlined in Table 2. It is also anticipated that these provisions would work in concert with complementary Design Guides.

Where there is non-compliance with a multi-unit standard it is suggested that this should be considered on a limited notified basis. However, further consideration could be given to exempting any breach of the proposed recession plane standard where an applicant can demonstrate that a reasonable level of sunlight access is achievable on adjacent sites (e.g. 2-4 hours mid-winter).

In circumstances where there is a breach of multiple standards potential elevation to a discretionary activity should be considered.

5.3 CERTAINTY VS FLEXIBILITY

There is a consideration to be given to the extent to which the Plan provisions specify performance requirements or provide guidelines that enable some degree of judgement or discretion to be exercised.

It is well understood that designing and delivering good quality density needs a design which responds to the context, the site conditions, including shape and size, anticipated residents, and market feasibility. No one size fits all.

Consequently, increased emphasis on enabling more flexible approaches to achieving 'good' intensification needs to be considered. This, in turn, places a stronger onus on design quality and the application of design guidance, as well as design processes and review.

The extent to which this flexibility affects development certainty and feasibility calculations for developers requires careful consideration.

It is understood that in making site acquisition decisions expediency is important given the competitive nature of the property market (at least currently). Consequently, having a reasonably clear sense of the yield that would be enabled by Plan settings is highly desirable from an investment decision-making perspective, particularly as this will be a key determinant of whether the anticipated increase in density and development in the city will eventuate or not.

5.4 DESIGN GUIDES

The operative Plan provisions are supplemented by a suite of associated design guidelines. Of relevance to the consideration of residential amenity are the multi-unit guidelines. Table 3 below includes a number of guideline-specific observations and suggestions, noting that these will need to be further considered by WCC in light of the parallel review of the Design Guidelines currently underway.

Given the intensification outcomes sought by the draft Spatial Plan and NPS UD there is a clear need for a change of focus in the guidelines – from a current emphasis on maintaining consistency or 'fit' with existing area characteristics to actively reflecting and guiding the changes to the urban environment anticipated.

TABLE 3 DESIGN GUIDE ADJUSTMENTS PROPOSED

Guide Heading	Discussion
Character	
Landform	Need to increase guideline considerations as development will affect residential amenity in terms of visual scale. This includes: • Incorporating level changes within development, rather than as exposed retaining walls • Considering adjacent property development enablement in placement of retaining walls • Encouraging the 'stepping' of building modules on long sloping sites to reduce alteration of land form and the scale of the visual impact on neighbours
Vegetation	Mature existing trees can provide residential amenity through moderating scale and dominance of new development as well as privacy in between. The guidelines currently provide for this.
Height	Need guidelines to reference different heights assuming these transfer from the draft Spatial Plan to the District Plan. Need to include provision to enable additional height beyond the development envelope where it can be demonstrated that there is no additional loss of sun access to neighbouring properties as noted in Table 2.
Character	
Plan dimensions and siting	Need guidelines to reference that a different pattern of development is anticipated in future. The guidelines currently refer to a number of important principles which will mitigate development scale for neighbouring property including (in summary): • Expressing form of units • Offsetting in plan and vertically • Transitional forms and volumes • Use of set backs
Frontage sets backs	Need to respond to the different types of development by including: • Privacy for ground level residential development next to the street • Access and frontage activity in relation to mixed use development (such as businesses or other publicly accessible uses) next to the street The guidelines currently emphasise that frontage setbacks reflect the existing street context. This is an important principle to mitigate development scale and sunlight access –building alignment in conjunction with the proposed limit on building length will assist in some situations to enable open space to be provided at the rear of a site that enjoys a reasonable level of sun access.

TABLE 3 DESIGN GUIDE ADJUSTMENTS PROPOSED

Guide Heading	Discussion
Character	
Silhouette and Roof Form	Need guidelines to reference that a different pattern of development is anticipated in future. Need to include provision to enable roofs to be used as residential open space – greening of this space may also assist in mitigating neighbouring scale dominance. The guidelines currently include reference to a number of important principles which help mitigate the effects of development scale on neighbouring property including (in summary): • Modelling roof forms to reduce long horizontal lines • Use of set backs and recesses • Use of various materials
Façade Articulation	Need guidelines to reference that a different pattern of development is anticipated in future. Facade articulation is an important guideline in terms of residential amenity as it relates to the scale experienced by neighbouring properties. It is addressed in more detail in the guidelines under scale and complexity.
Materials	Need guidelines to reference that a different range of materials can be anticipated in future.
Site Planning	
Open Spaces	The guidelines currently seek to create positive open spaces between and around buildings. This is important to ensuring provision of good on-site open space amenity and sunlight access and to mitigate the effects of development scale. Need to include provision for a matrix approach as described in Tables 1 and 2. This will require guidelines directed towards: • Sizing of shared open spaces to suit resident numbers and needs • Designing to enable flexibility in the mix of uses • Positioning of access and routes through the site to activate and enable informal social interaction • Maintenance and management • Incorporation of green space • Designing for personal safety and security • Providing for sun access • Use of above ground surfaces such as roof tops for open space, including consideration of the need for shelter, green infrastructure (such as irrigation). Regarding the use of public open space as an offset to on-site open space provision, further guidelines that will need to be considered include: • Walkable (less than 5minutes) access to public open space that provides residential type open space amenity; and • Providing good quality open space on site is not possible – for example due to sun access, retention of landform or trees

TABLE 3 DESIGN GUIDE ADJUSTMENTS PROPOSED

Guide Heading	Discussion
Site Planning	
Sun light and daylight	The guidelines currently seek sun access to living spaces. Also need to include provision for sun access to living spaces as described in Table 2. The guidelines currently seek to manage effects on sun access resulting from future development on adjacent sites along with locating and modelling building forms to avoid unreasonable shading. These are important principles to mitigate effects of shading on neighbouring properties.
Car parking	Need guidelines to support EV and active mode support infrastructure.
Building Design	
Internal consistency and integration	The guidelines currently seek design integration. This is an important principle to provide greater legibility for residents in new developments.
Frontages to street	The guidelines currently seek a 'public face' to enable better integration of buildings into the street. This is an important principle to provide for the amenity of residents.
Scale and complexity	The guidelines currently seek a 'human' scale and visual interest. This is an important principle to provide for the amenity of residents adjoining new development, particularly regarding potential scale effects on amenity.
Space and Amenity	The guidelines currently seek legibility of internal wayfinding and reflect on room size and functionality as well as open space provision. This is an important principle to provide for the amenity of residents.
Building Design	
Privacy for internal spaces	The guidelines currently seek privacy in design through placement of windows and location of living spaces. This is an important principle to ensure a reasonable level of privacy is provided for residents. Need to include provision for proposed minimum separation distances in Tables 1 and 2, including: • Providing for sun access if separation is reduced • The use of screens, shutters and other devices to mitigate reduced separation distances Also need to include provision for privacy separation to living spaces on neighbouring properties.
Entrances and sense of address	The guidelines currently seek attractive, legible entrances. This is an important principle to provide for amenity of residents. Need to include provision for vertical circulation and encouragement to wayfinding, use of stairs, incorporating light, providing for community interaction.
Open Space Design	
Private and Shared Open space	Need guidelines to respond to the open space matrix proposed in Tables 1 and 2. (see above under Site Planning)
Site development and construction	The guidelines currently seek care to be exercised in designing retaining walls. This is an important principle to mitigate scale dominance in relation to neighbouring properties.
Service Facilities	The guidelines currently seek storage for waste and recycling and for laundry. These are important principles to provide for the amenity of residents. Need to include provision for resident storage of oversized or difficult to manoeuvre objects such as bikes.

In addition to the suggestions in Table 3 the following are also noted:

- Consideration should be given to adjusting the character guidelines in response to the expectation that changes to current character in identified areas is inevitable. The guidelines are currently directive towards maintaining existing characteristics while the draft Spatial Plan is strongly signalling that these areas will be subject to future change. Consequently, the future characteristics sought in these areas will require further consideration.
- The guidelines will need to respond to different residential types - terrace housing, apartments and also mixed-use developments across the different typologies set out in the draft Spatial Plan. In particular, it would be useful to have these various formats and their associated characteristics to be referenced and reflected in the guides. For residential amenity this may not vary significantly between the types but may need to be calibrated differently for some guidelines (eg mixed use developments will need more consideration of ground level activation and adjacency to streets than say a terrace house). Larger developments may also need compartmentalised internal 'neighbourhoods' to provide a greater sense of community.
- An additional set of design guidance in relation to Transitional Change should be considered to encourage a more deliberate, informed response to designing new development with the anticipated future context in mind. Although it is impracticable for new development to fully anticipate how adjoining sites will be developed, recognition of this need should be considered.

Key elements of a new guideline should include:

a) proposed building positioning to provide for mutually beneficial sunlight/daylight access to adjoining sites;

b) potential to share or 'borrow' open space outlook;

c) potential to generate semi-private or public shared open spaces;

d) potential to maintain privacy between developments on adjoining sites;

e) potential for new block connectivity and circulation routes

5.5 TRANSITIONAL HEIGHT BOUNDARIES

Where a height zone of more than 3 storeys shares a boundary with a lower height zone or one with identified character values (eg pre 1930 character areas) it is recommended that a similar recession plane to that of the current District Plan is used to manage the effects of inter-zone height transition on amenity – this will help to ensure that the built form of areas not earmarked for future intensification will remain relatively unaltered.

Testing has shown that a height of 5m on a shared transitional boundary combined with a recession angle of 60 degrees will enable some increased level of development on sites where greater density is anticipated, while moderating the overall effect on adjoining lower density or character sites. This is considered to be an appropriate response to address such circumstances given the lower levels of future intensification signalled in the draft Spatial Plan .

5.6 PROVIDING FOR BUILT FORM CHANGE OVER TIME

The aspiration for Wellington is that change to accommodate higher density will occur in a manner that facilitates greater housing supply, enables more people to live in the city and enhances affordability. However, the broad extent of the areas where increased density is signalled in the draft Spatial Plan means that it is unlikely that large scale, demonstrable change in the built form of these areas will be evident for some time.

The implications of this are that redevelopment of these areas will occur on a more sporadic, incremental basis, with the built form of existing neighbourhoods punctuated over time by taller/larger buildings (the mass of which may be dependent on the site size and the District Plan provisions employed).

Although this may affect the amenity previously enjoyed by neighbouring residents, the provisions set out in the Table 2 above are intended to ensure that a reasonable level of amenity is maintained. Inevitably it will be up to neighbouring residents to either choose to increase the utilisation of their own sites or on-sell to someone who will, thus continuing the cycle of change.

Additionally, to help minimise the affect that an initial development might have on realising a reasonable adjoining future development Table 2 outlines some targeted provisions aimed at addressing such circumstances (eg set backs for privacy or building length limits). Appendix 8 shows one example of how over time change in built form composition can occur in the test area with mutual benefit

5.7 USING OR APPLYING DIFFERENT RULES

In determining the nature and extent of any future changes to Plan provisions implementation is an important consideration. To this end two workshops with key WCC staff, including those involved in consenting and design review, were instructive in identifying considerations relevant to the development of future amenity provisions from an implementation perspective. These include:

a) Simplicity – the easier the provisions are to understand and apply the greater the potential that they will be more readily received by development proponents and their designers and consistently interpreted and implemented by consents staff.

b) Certainty – although there are benefits to enabling flexibility in the design process, a clear indication of the outcomes sought is typically easier for developers to work with in making development related investment decisions.

c) Capacity and capability – the effectiveness of relying on a more performance based approach to amenity will largely be contingent on the capacity and capability of developers to demonstrate compliance and WCC staff to implement it (e.g. sunlight access).

6.0 OTHER CONSIDERATIONS

6.1 DESIGN AND PLANNING PROCESSES

This report points to a need to consider a greater degree of flexibility in the application of design guidance over generic rules to enable increased utilisation of capacity while also ensuring that a reasonable (albeit potentially lesser for some) level of on and off site amenity is achieved. However, it is recognised that the effectiveness of such a regime will largely be dependent on the extent to which there is clarity concerning the design outcomes sought and consistency in the way it is implemented.

Consequently, the nature of the guidance provided will play a critical role as will the associated process of design review. Currently, most metropolitan (and many provincial) centres in New Zealand have adopted an independent panel approach to design review, thereby enabling greater design related capacity, objectivity, and practical experience to be directed to the review process. This is something that could warrant further consideration in the Wellington context.

6.2 DEVELOPMENT IMPLEMENTATION

A basic assumption of this study is that the future development required to realise the density anticipated will be undertaken on a site-by-site basis by 'developers', with these comprising investors/builders or companies with experience, capacity and the requisite financial support to purchase developable sites remove existing buildings and replace them with multi-unit buildings.

Currently there is no specific data available concerning the capacity of the Wellington development community to deliver the planned density. However, as an observation, it appears that there is a limit to the number of developers in the city, or New Zealand generally, who have the capacity and capability to build larger buildings, particularly as our residential building market has historically been more attuned towards greenfield development of 1 or 2 level timber detached houses.

This study has shown that better yield, and potentially (depending on design) better amenity outcomes, are able to be realised when site areas are large enough to enable buildings and open space to be more flexibly arranged to generate light, sun access, circulation space, storage, shared and private open space and for adjacent development over time.

Acquisition of multiple smaller sites, which predominate in the residential areas studied, are likely to be beyond the financial capacity of small to medium sized development companies or builders, particularly when combined with the further construction related investment required.

Matching the need for multi-unit developments to meet the draft Spatial Plan aspirations or NPS UD expectations with the capacity of the industry to deliver will take time to realise. However, large scale development precedents exist in the form of Kainga Ora, further supplemented by the powers and opportunities available under the Urban Development Act 2020. If Wellington is to realise the level of intensification anticipated over the next 30 years consideration will need to be given to more effective delivery models that closely align with contemporary development economics.

7.0 RESPONSE TO NPS UD

The study proposes that an appropriate response to enabling capacity and maintaining a reasonable level of amenity in applying the NPS UD in the Wellington context is to:

1. Change the operative District Plan provisions to enable higher density in the areas identified by the draft Spatial Plan, with all multi-unit development over 2 units being a Restricted Discretionary Activity.
2. Manipulate the mix of District Plan standards to:
    - Enable increased development capacity by upscaling the development envelope
    - Enable increased development outside the envelope based on sun access related performance measures to adjoining sites
    - Enable increased site coverage by removing the current coverage maximum and replacing it with an on-site open space requirement based on unit numbers
    - Enable increased development by not requiring provision of on-site car parking
3. Maintain reasonable residential amenity (which includes an acknowledgement that the integration of new development forms into existing residential neighbourhoods is likely to be an incremental process) which is proposed to be provided by:
    - The development envelope parameters which the study shows enables increased development to the draft Spatial Plan heights where sites are larger and will, dependant on topographical conditions and existing built form which already shades some areas, allow for at least 4 hours of sun to adjoining properties within the spring - autumn equinox period.
    - A development envelope which transitions the

height of new development where there is a zone or height change from taller to shorter, and for larger sites will rely on site width and design guidelines to moderate built form.

- The addition of a privacy set back guide which is widest between facing habitable rooms both within and between development and existing dwellings.
- A building length limit which will enable on-site natural light into the buildings as well as reducing potential adjacency impacts associated with lengthy walls.
- Incorporating a number of additional attributes into the Design Guidelines, including: storage, access, open space, potentially privacy (if not in standards) and consideration to the enabling of adjacent future new development.

4. Recognise that the NPS UD requires District Plans in cities across NZ to enable development capacity targeted to city and metropolitan centre zones, their edges and walkable distances of rapid transit stops which, as a 'blanket' policy, can be reasonably expected to be influenced by:
    - The existing urban form of the place including lot pattern and dimensions (which in the Wellington context represents many narrow sites in the targeted suburbs). Despite the height allowed the full development capacity of narrower sites is unlikely to be realised unless there is lot amalgamation.
    - Market conditions, development economics and development pace which will take time to transform existing urban areas.

APPENDIX 1 COMPARATORS RESIDENTIAL AMENITY

On-site Attributes	**Wellington Current**	**Auckland Unitary Plan Terrace Housing and Apartments Buildings Zone**	**New South Wales**	**Others**
Sunlight Access and Daylight	Outdoor 3hrs mid winter Indoor Living 4hrs mid winter 9am-3pm	Outdoor 4hrs Equinox (22 Sept) Indoor Living 3hrs direct sunlight between 9am and 3pm in mid-winter Required setbacks for daylight	Shared Outdoor 50% direct sunlight 2 hrs between 9am and 3pm mid winter Indoor Living 2 hrs direct sunlight between 9 am and 3 pm at mid winter	Nelson – 1.5hrs sun to every site 12pm winter, or 2.75 hrs sunlight before 11am and after 1.45pm Tauranga 2hrs mid winter onto main living space floor
Privacy and separation between buildings	Guidelines rather than a measure	Design Manual: 12m between main living rooms Outlook space - dimensions required Balconies and outdoor spaces towards street or to back yard. Avoid orientation directly over side or rear boundaries.	Up to 4 storeys 12m between habitable rooms/balconies 9m between habitable and non-habitable rooms 6m between non-habitable rooms 5-8 storeys 18m between habitable rooms/balconies 12m between habitable and non-habitable rooms 9m between non-habitable rooms	Hamilton – no separation required where adjoining buildings are attached Upper floor balconies 5m set back from boundary PNCC 3m b blgs separation Rotorua Med Den Living No max site coverage Tauranga – outlook space 6m min dimension
Outdoor living space	35m2 open space 10m2 balconies	At ground level 20m2 Above ground level at least 5m2 (1 bed) with 1.5 min dim at least 8m2 (2bed)	Floor space ratio: 3 storeys: 1:1 6-7 storeys: 2:1 9-12 storeys: 3:1	

	Multi-unit shared open space – no specified measure		Communal space minimum 25% area of the site Minimum width 3m	
Site Open Space/Developable Area	50% site coverage	Unitary Plan: Max building site coverage 50% Landscaped area: at least 30% of the site		Dunedin – Building Length -20m New Plymouth 30m within 10m of boundary KCDC – 1500m2 site min area for a medium density Tauranga – site density bonus after 1050m2 Building length max 15m then needs a recess of 3x3 Queenstown Max blg length 24m or30m in high density above ground floor
Internal		Living space with an outlook -a minimum dimension of 6m in depth and 4m in width principal bedroom of 3m in depth and 3m in width other habitable rooms minimum dimension of 1m in depth and 1m in width.		

Neighbour Attributes	**Wellington Current**	**Auckland Unitary Plan**	**New South Wales**	**Others**
Sunlight / shading	Height limits	Recession plane: 8m + 60deg		Christchurch

	Recession Planes – 2.5m and recession plane – varies in some areas relative to north	Setback 2.5m + 45 deg for site adjoining lower density	Where an adjoining property does not currently receive the required hours of solar access, the proposed building ensures solar access to neighbouring properties is not reduced by more than 20% Sunlight access to neighbours properties minimum of 4 hours	Daylight recession plane 2.3m above ground level at boundary. The angles applied vary according to zones Queenstown Recession planes – various dimensions Hamilton – in Residential Intensification Zone – recession plane only applies adjacent to lower density interfaces. Has height limit though.
Privacy		Outlook space required - 6m in depth and 4m in width (from principal living room), 3m deep and 3m wide (from a principal bedroom), and 1m deep and 1m wide (all other habitable rooms).	Guidelines for minimum distances between habitable rooms as separations – related to heights – 6m-12m	
Dominance in scale	Height Limits Recession Planes – 2.5m and recession plane – varies in some areas relative to north 50% site coverage Some boundary set backs	Height limit (16m typically) No site coverage limit	Requirement to respond to context in guidelines	Queenstown – max building length 24m/30m Site coverage 70% high D and 45% med D Hamilton site coverage 50%

APPENDIX 2 - RECESSION PLANE VARIATIONS CONSIDERED

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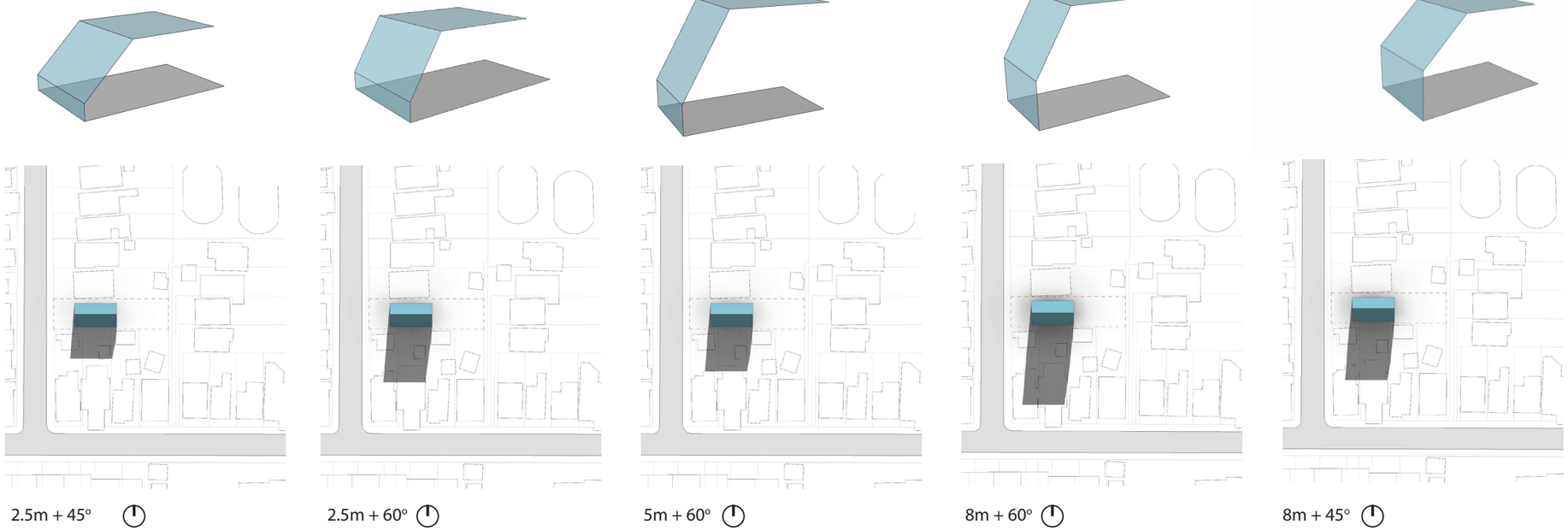


2.5m + 45°

2.5m + 60°

5m + 60°

8m + 60°

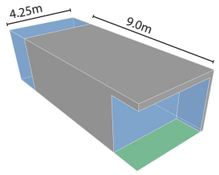
8m + 45°

COMMENTS

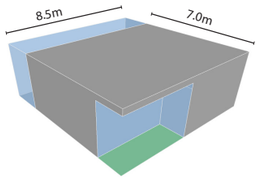
- All tests are mid-winter and sites are orientated to north

APPENDIX 3A - RESIDENTIAL DEVELOPMENT TEST MODULES

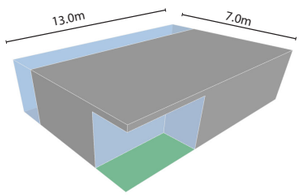
Boffa Miskell



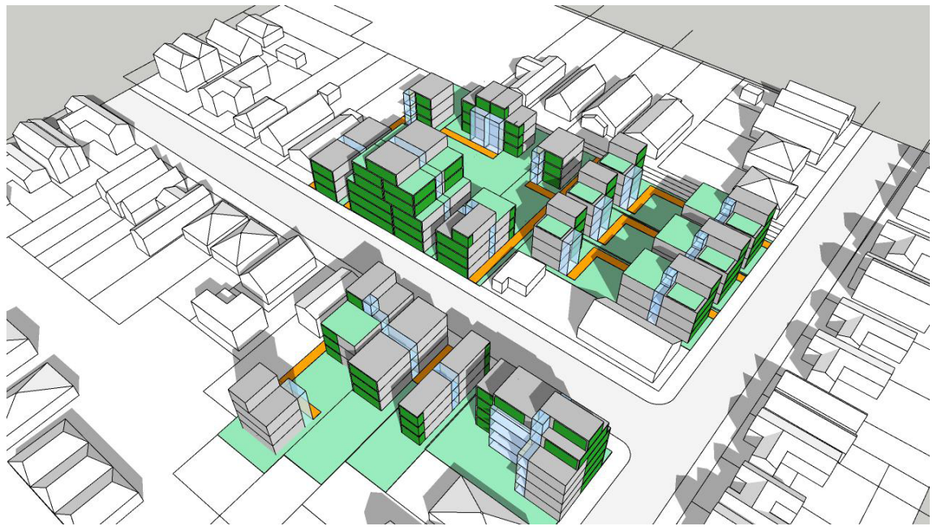
1 BEDROOM UNIT 38m²



2 BEDROOM UNIT 60m²



3 BEDROOM UNIT 91m²



EXAMPLE OF DEVELOPMENT BLOCKS OVER MULTIPLE SITES OVER TIME - WITH PROPOSED PROVISIONS

ACCESS
SHARED OPEN SPACE
PRIVATE OPEN SPACE

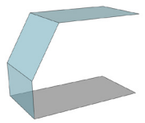
COMMENTS

- For residential development there are repeatable modules used in standard building forms.
- These modules are not intended to be construed as an architectural design, but are for test fit purposes only.
- Modules for 1-3 bedroom units are shown here. The module for the 3 bedroom unit can be configured for a more generous 1 or 2 bed unit.
- The modules shown here are relate able to multi-unit development design in Wellington City.
- The modules can be assembled in various configurations to form development blocks. These modules have been used to test configurations that are possible within sites of various sizes and in response to development envelopes generated by different bulk and location standards.

APPENDIX 3B - RESIDENTIAL DEVELOPMENT TEST MODULES IN RELATION TO YIELD

Boffa Miskell

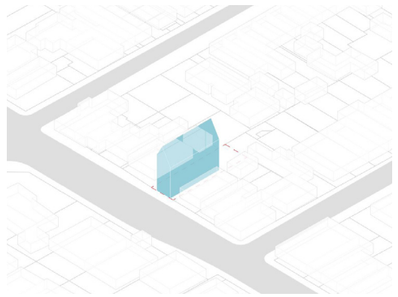
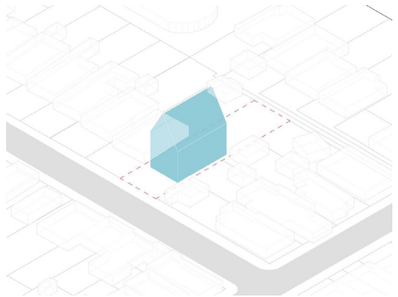
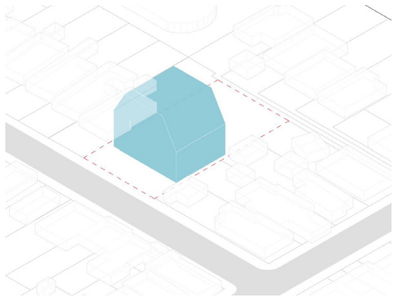
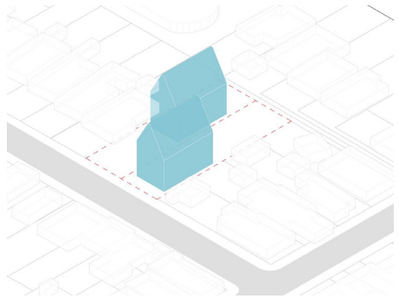
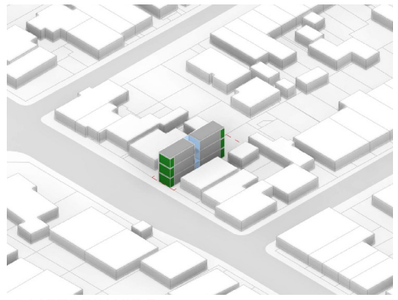
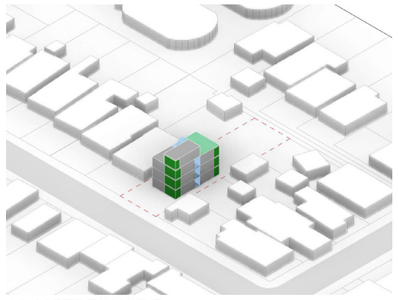
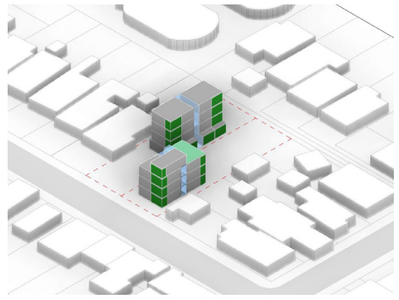
TEST: PROPOSED PROVISIONS



8m boundary vertical and 60 degree reccession plane

building length limit
2m side boundary set back

MODULE FIT

	1	2	3	4
				
				
SITE WIDTH	8 METRES WIDE 216m²	13 METRES WIDE 640m²	26 METRES WIDE (2 X 13M - joined) 1,280m²	2 X 13 METRES WIDE (side by side) 2 x 640m²
HEIGHT ACHIEVED	approx height 9.3m - 3 storeys	approx height 12.4m - 4 storeys	approx height 18.6m - 6 storeys	approx height 12.4m - 4 storeys
YIELD	Potential # of units: 1 Bed-room 6; 2 Bed-rooms -; 3 Bed-rooms -; Total 6	Potential # of units: 1 Bed-room 1; 2 Bed-rooms 6; 3 Bed-rooms -; Total 7	Potential # of units: 1 Bed-room -; 2 Bed-rooms 18; 3 Bed-rooms 6; Total 24	Potential # of units: 1 Bed-room 5; 2 Bed-rooms 12; 3 Bed-rooms -; Total 17
CAPACITY (if 6 storey allowed) UTILISATION	width + length limits yield	width limit height - back unit add poss.	width allows height - could go higher	same as 2, but shows amenity from offset

COMMENTS

- With the tested recession plane parameters, a building taller than 4 storeys can only be achieved if the site is wider than typical in inner suburbs.
- Those suburbs with wider sites (eg Johnsonville) could achieve 6 storey capacity utilisation with this type of recession plane.
- There is a side boundary set back shown which allows side entry to the building.
- Feasibility will have a relationship to capacity utilisation, but will also be influenced by the value of units generated which will vary between suburbs.
- Shading diagrams (Appendix 4) show that:
  - the existing 2.5 and 45 degree recession plane does not protect 4 hours amenity sun to neighbouring property mid-winter
  - by the equinox (September) there is at least 3 or more hours sun amenity sun to neighbouring property

APPENDIX 4 - RECESSION PLANE TESTS- HOURS OF SUN EXPOSURE PER DAY

Boffa Miskell

13 METRES WIDTH
EXISTING CONTROLS (2.5 M + 45 DEGREE)

8 METRES WIDTH

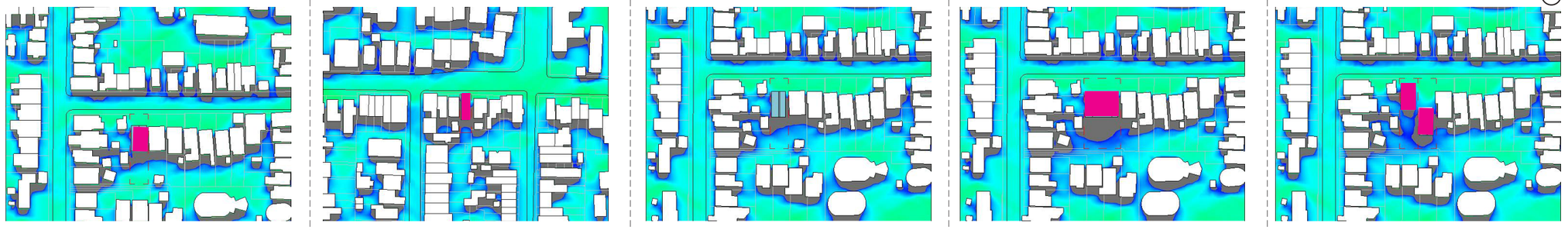
13 METRES WIDTH

26 METRES WIDTH (POTENTIALLY BY AMALGAMATION)

2 X 13 METRES WIDTH

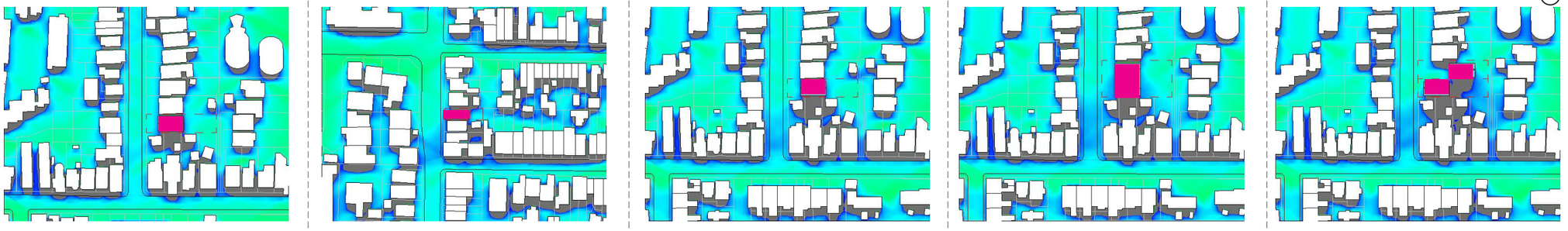
NORTH SOUTH ORIENTATION

MID WINTER (21 JUNE)



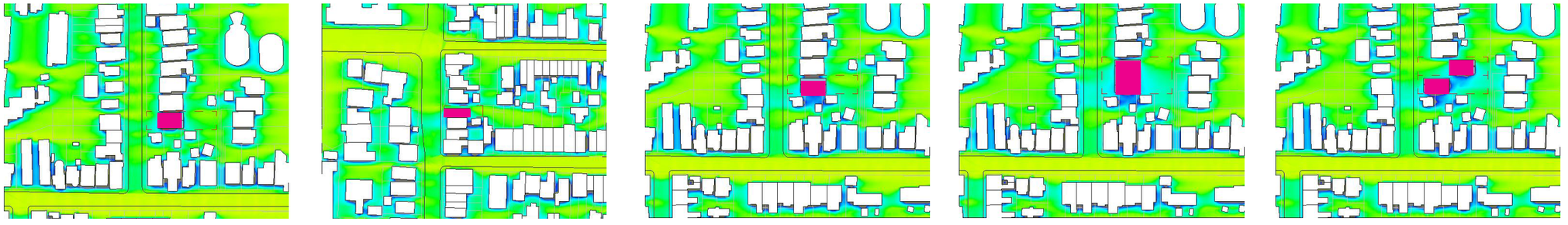
EAST WEST ORIENTATION

MID WINTER (21 JUNE)



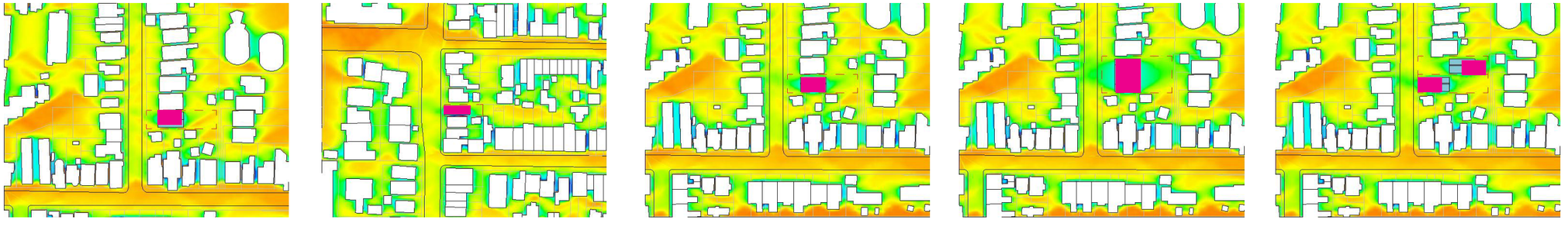
EAST WEST ORIENTATION

EQUINOX (23 SEPTEMBER)



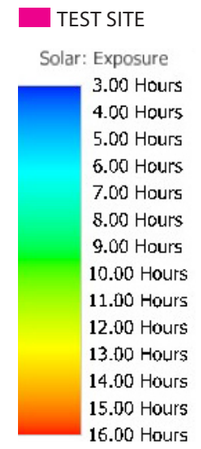
EAST WEST ORIENTATION

MID SUMMER (21 DECEMBER)



COMMENTS

- Except for the existing control test, all building envelopes generated by a recession plane 8m vertically at the boundary with a 60° incline inwards.
- The building envelope assumes a setback of 2m on the side of access and 1m on the other.
- The building envelope has a maximum building length of 18m.
- The recession plane is capped at 6 storey height (18.6m).
- The existing controls do not protect 4 hours sunlight access to adjoining sites mid-winter for all sites.
- At the equinox and through to summer 4 hours sunlight is provided with the recession plane.
- The diagrams show that there is only a marginal difference of shading impact between the current situation and the tested recession plane scenarios.
- The tests show existing buildings genenerate their own shade. No account for vegetation or landform has been made in this tests. Refer to Appendix 5 for



APPENDIX 5 - TESTS OF AREA HEIGHT CHANGE INTERFACE AND SLOPES

Boffa Miskell

TEST

2:1 floor area ratio plane + recession plane
building length limit
small side boundary set back

MODULE FIT

SITE WIDTH

HEIGHT ACHIEVED

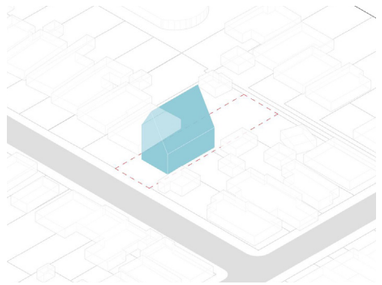
YIELD

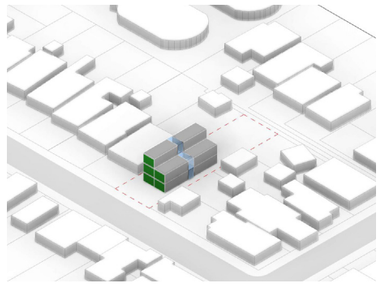
CAPACITY (if 6 storey allowed) UTILISATION

EAST WEST ORIENTATION

MID WINTER (21 JUNE)

1 HEIGHT INTERFACE - RECESSION

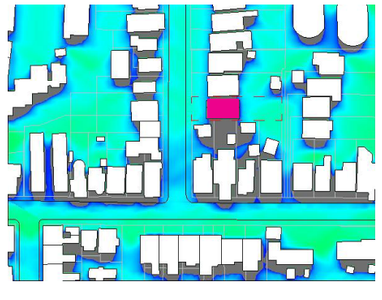




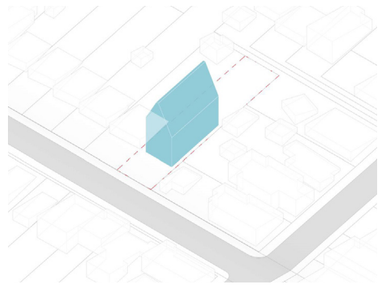
13 METRES WIDE 640m²

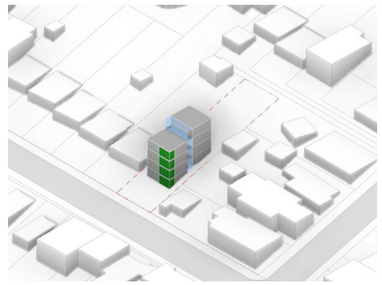
Potential maximum height	9.3m - 3 storeys			
Potential # of units	1 Bedroom	2 Bedrooms	3 Bedrooms	Total
	10	-	-	10

envelope limits yield - ok at interface?



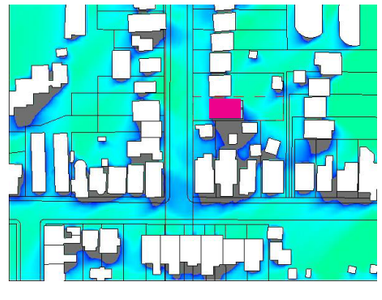
2 RECESSION PLANE SLOPING SITE



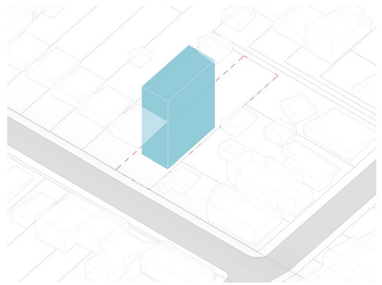


Potential maximum height	12.4m - 4 storeys			
Potential # of units	1 Bedroom	2 Bedrooms	3 Bedrooms	Total
	-	8	-	8

slope with recession limits yield

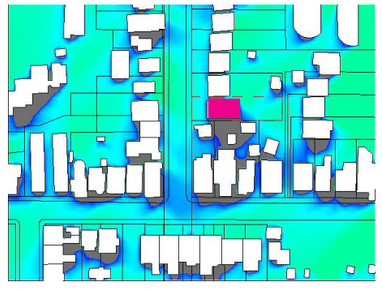


3 FLOOR AREA RATIO SLOPING SITE

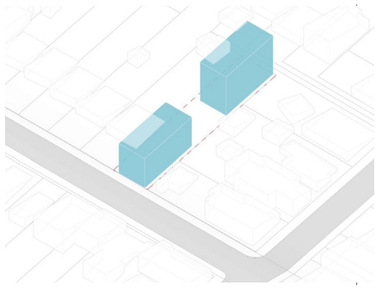


Potential maximum height	21.7m - 7 storeys			
Potential # of units	1 Bedroom	2 Bedrooms	3 Bedrooms	Total
	-	14	-	14

FAR allows good yield

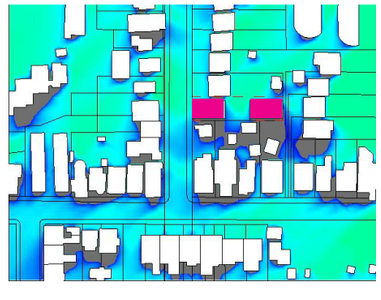


4 FLOOR AREA RATIO SLOPING SITE - 2 BLOCKS



Potential maximum height	9.3m (3 storeys) + 18.6m (6 storeys			
Potential # of units	1 Bedroom	2 Bedrooms	3 Bedrooms	Total
	-	18	-	18

same as 3, but shows FAR split



COMMENTS

- Interface transition generates reduced yield. The sun access to adjoining property is still less than 4 hours mid winter (refer to shade diagram below) .
- The FAR would enable buildings higher and taller (than potentially 6 storeys as per the test) but with more ground level open space.
- FAR is more enabling on a sloping site than the recession planes tested.

TEST SITE