Plan Change 14

Technical Report - Urban Design

Design for Increased Building Height and Density – Commercial Zones

Christchurch City Council

Technical Report

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1 Introduction

1.1 Background

The National Policy Statement on Urban Development (NPS UD) requires that Councils in Tier 1 cities, of which Ōtautahi Christchurch is one, enable increased development capacity in commercial zones. As such Christchurch City Council are required to make changes to the operative Christchurch District Plan, primarily through increased building height, and this is the basis of proposed Plan Change 14. The NPS UD also seeks the delivery of well-functioning urban environments. A high quality urban area can be considered an element of a well-functioning urban environment, and urban design a means to both establish and to evaluate this quality through the provision of design principles, and provisions that support these.

In association with the NPS UD, National Planning Standards apply consistent nomenclature and intent. The commercial zone names have been realigned to meet these standards as follows:

Operative District Plan	***Plan Change 14***
Commercial Central City Business Zone	City Centre Zone **(CCZ)**
Commercial Central City Mixed Use Zones	Central City Mixed Use Zones **(CCMUZ)**
Commercial Core Zone (District Centre)	Town Centre Zone **(TCZ)**
Commercial Core Zone (Neighbourhood Centre)	Local Centre Zone **(LCZ)**
Commercial Local Zone	Neighbourhood Centre Zone **(NCZ)**

These zones sit within the framework of the District Plan that contributes to the overall urban form of the city, described within Chapter 3 – Strategic Directions, and recognises the hierarchy of centres approach. In effect this provides for a graduation in the scale, form and extent of activity in commercial centres across the city, with the central city having primacy. Also recognised, is the role of commercial centres as focal points for community and commercial activities, and the centres' importance in respect to city identity, amenity and liveability, and consequently the importance of urban design, which contribute to well-functioning environments.

In addition to the NPS UD, the Resource Management (Enabling Housing and Other Matters) Amendment Act also requires Tier 1 Councils to enact the Medium Density Residential Standards (MDRS). These will apply across most of the city's residential zones, and in effect provide a baseline for development. Where appropriate, and to achieve consistency, consideration has been given to these standards in respect to residential activity in the commercial zones, for example the provision of outlook standards and private outdoor living space.

1.2 Report Scope

The NPS UD directs Councils in Tier 1 cities to enable increased development capacity in commercial zones. This is promoted primarily through an increase in building height, and an enabling approach by activity status. The most significant proposed increases in height are within the Central City, and more specifically the City Centre Zone.

The focus of this technical report in relation to Plan Change 14 is the impacts of increased building height, scale and massing, including impacts of density and design quality, across specified commercial zones, and including residential use. It considers the impacts of additional building

height well beyond that anticipated within the post-earthquake environment of Ōtautahi Christchurch.

The scope of this technical report is limited to the commercial zones of the city where the impacts of increased building height will be most significant, and provides design solutions to address these. Many of the commercial zone provisions are proposed to remain, and as such are not considered in this report in detail.

Minor amendments required to existing District Plan provisions to enable further development capacity, while achieving consistency across zones or areas, are included, although to a lesser extent. This includes reference to TCZ, LCZ, NCZ and residential provisions, and opportunities to enable increased residential capacity, which is also required through the NPS UD.

1.3 Objectives

In respect to urban design and the scope of work required to address the intent of the NPS UD, the following objectives and policies are identified, with consequent issue statements. The analysis and recommendations for subsequent amendments to the District Plan are prefaced on these.

Objective	***Policy***	***Issue Statement***
15.2.4 Urban form, scale and design outcomes	15.2.4.1 Scale and form of development 15.2.4.2 Design of new development	Issue 1: Urban Form *Enabling a legible city form, and ensuring the impacts of high-rise building can be effectively managed.*
15.2.4 Urban form, scale and design outcomes 15.2.6 Role of the City Centre Zone 15.2.7 Role of the Central City Mixed Use Zone	15.2.4.2 Design of new development 15.2.6.1 Diversity of activities and concentration of built development 15.2.6.2 Usability and adaptability 15.2.6.3 Amenity 15.2.6.5 Pedestrian focus 15.2.7.1 Diversity of activities	Issue 2: Central City Environment *Supporting the vitality and quality of the central city.*
15.2.4 Urban form, scale and design outcomes 15.2.6 Role of the City Centre Zone	15.2.6.3 Amenity 15.2.6.5 Pedestrian focus 15.2.7.1 Diversity of activities	Issue 3: Public Realm *Maintaining use, comfort and quality of the public realm.*
15.2.3 Office parks and mixed use areas outside the Central City 15.2.6 Role of the City Centre Zone 15.2.8 Built form and amenity in the Central City Mixed Use Zone	15.2.3.2 Mixed use areas outside the central city 15.2.6.4 Residential intensification 15.2.8.1 Useability and adaptability 15.2.8.2 Amenity and effects 15.2.8.3 Residential development	Issue 4: Mixed Use and Residential Development *Managing the impacts of higher density living for occupants, and ensuring effective transition to high quality residential use.*

15.2.10 Built form and amenity in the South Frame	15.2.10.2 Residential development	

1.4 Methodology

The methodology included evaluation of the likely change, and the impacts of this change and potential solutions, primarily in relation to increased building height. The key tasks were as follows:

1. Background review:
    - Analysis of the Ōtautahi Christchurch context, including existing development scenarios and local case studies;
    - Review of the operative District Plan and other local authority plans and practice within Aotearoa New Zealand;
    - Associated research including the Quality Design Outcomes research into residential development outcomes within the high and medium density residential zones, including mixed use zones in the city;
    - Plan Change pre-notification submissions; and
    - Review of international research and approach to city form and building height.
2. Expert advice and modelling:
    - Development and modelling of built form scenarios using specialist architecture expertise;
    - Research and modelling of local climatic conditions and impacts relative to built form scenarios.
3. Identification of potential impacts.
4. Identification and evaluation approaches to manage impacts where necessary.
5. Review and application of provisions to ensure consistency across zones where necessary.

In addition to the formal aspects of the methodology noted above, consideration was given to the matters raised by design and development professionals through information sessions and presentations. This has further informed both the approach to and design solutions recommended.

1.5 Summary of Recommendations

Zone	***Descriptor***	***Recommendation***
City Centre Zone	Building Envelope	• Introduce building base and tower approach • Retain existing road wall height (21m) and building base (28m) • Allow a 50% increase in road wall height for corner sites. • Increase building height - 90m in City Centre Zone - 45m adjacent to Cathedral Square and for Victoria Street • Introduce maximum tower dimension (40m) and tower site coverage • Introduce tower separation standard

		• Introduce upper floor setback (10% of height for internal boundaries; 7m for street boundaries)
	Assessment Matters	• Building design • Wind effects
	Permitted Activity Status	• Small buildings (subject to new built form standards)
	Residential Activity	• Introduce consistent standards and assessment
Central City Mixed Use Zones	Building Envelope	• Introduce building base and tower approach • Retain existing height as road wall height (17m) • Increase building height (32m) • Introduce setbacks above 17m height
	Residential Activity	• Introduce consistent standards and assessment (Frontage treatments, Outdoor living spaces, Site Coverage, Setbacks) • Introduce communal open space and access standards
	Site Layout	• Amend landscape standards and include tree-planting requirement in landscape strips. • Parking to be behind the building line of the principle building.
	Activity Status	• Introduce restricted discretionary activity status for large scale developments.
Mixed Use Zones (outside Central City)	Comprehensive Residential Development	• Introduce comprehensive residential development standards
	Landscape	• Amend landscape standards
Other Commercial Zones	Residential Activity	• Introduce consistent standards and assessment (Glazing, Outlook spaces, Outdoor Living Space)
	Commercial Activity	• Introduce consistent standards – glazing and access

2 Urban Context

2.1 The Role of Centres in a Well-functioning Urban Environment

The commercial zones form a network of centres in Ōtautahi Christchurch. These centres are focal points for activity and experienced by people on a daily basis, the Central City in particular. As such the centres are a defining characteristic of the structure of the city, contributing significantly to how it functions, and how it is seen and is experienced, on many levels.

Ensuring high quality design of the city's centres is integral to realising the substantial social, economic, cultural and environmental benefits of a high quality, well-functioning environment. As well as the direct benefits of good urban design[1], a sense of civic pride and identity is a key social outcome which creates further economic benefits. The quality of our urban environments, and the contribution they make, results from both public and private investment in the streets, spaces, buildings and features of each centre.

The Central City, as the primary centre of Ōtautahi Christchurch and the sub-region, contributes significantly to civic identity, and national and international recognition of the city. Past and more recent post-earthquake public and private investment and recognition of the natural and cultural context, has resulted in a highly identifiable place, with increasing social and economic vibrancy.

The Otākaro Avon River, with high quality public space adjacent, combined with the fine grained and engaging architecture of the Terrace development, is an example of the value-add of public and private investment in high quality design. In combination, active and interesting buildings and spaces have been created, that draw attention to the natural features of the city, and create a highly identifiable place.

Figure 1: The Terraces (source: Kelvin McMillan).

[1] The Value of Urban Design, CABE/DETR (2000)

2.2 Commercial Centres and Urban Form

Urban form, and the way this is influenced and managed, is integral to ensuring a high quality, well-functioning city. It is of particular importance for the contribution to identity, sense of place and legibility.

Urban form is the evolution of the physical relationship of people occupying a place, over time. The identity of a city is embodied in its built environment at a range of scales and, in the context of this work, includes:

- The city wide networks and systems, including the response to the city's natural and biophysical context;
- The structure of the streets and spaces;
- The type and concentration of land use;
- The scale, form, massing and detail of buildings;
- The quality of the public and private realm.

The city continues to evolve and develop, through decisions made, through public and private investment and the design and use of space.

In Ōtautahi Christchurch, the overall form of the city is in part defined by its hierarchy of commercial centres, within which the city centre has primacy, set within the context of its natural environment, and more specifically the outstanding natural landscape of Te Poho-o-Tamatea/the Port Hills, sea and estuary, rivers and the Canterbury plains.

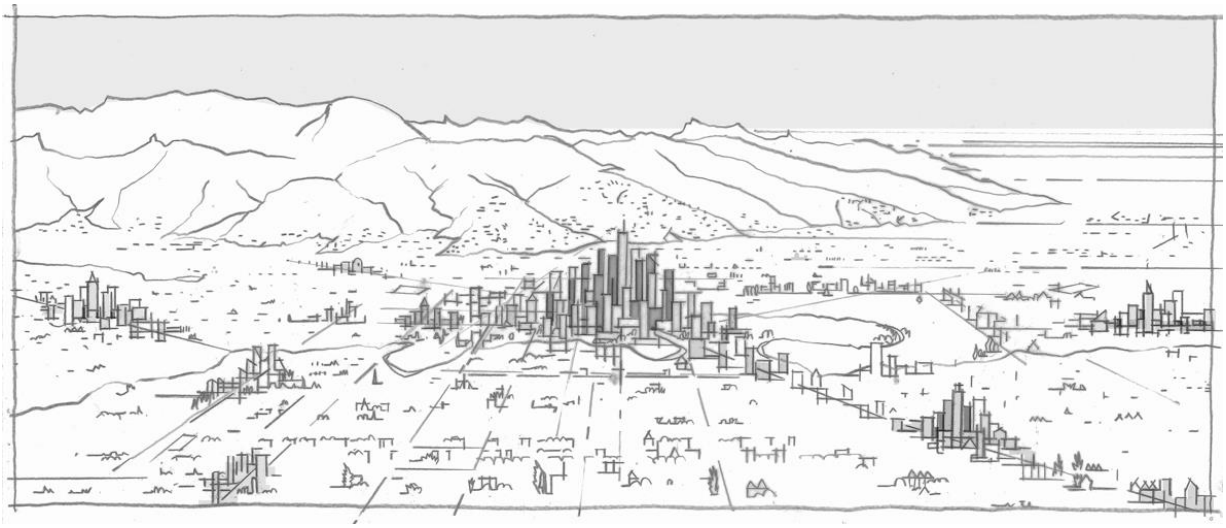

Figure 2: Visualisation of Ōtautahi Christchurch future urban form.

Urban form is most obviously expressed through the scale, legibility and activity within each area of the city and more specifically each commercial centre. These centres are categorised in accordance

with the hierarchy expressed in the National Planning Standards[2], noting there are no centres considered to meet the definition of Metropolitan Centre.

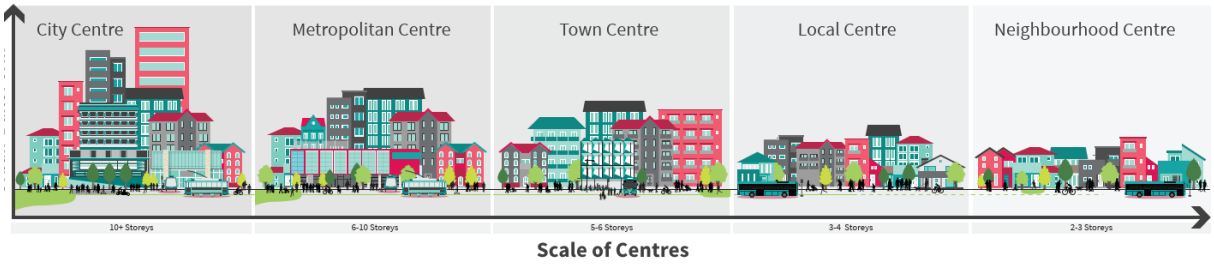

Figure 3: Hierarchy of Centres including building height[3].

2.3 Central City Built Form

The discussion of urban form is principally focussed on the central city as a result of the degree of change envisaged through Plan Change 14 and the potential impacts and issues arising. The context for the central city urban form, and aspects that contribute to a well-functioning central city, include:

- The Otākaro Avon River corridor, a wide, in part naturalised and high quality pedestrian promenade, highly legible and distinctive;
- Significant public spaces, notably Whiti-rea Cathedral Square, Victoria Square, Tākaro ā Poi Margaret Mahy Playground and Cranmer and Latimer Squares;
- The East and South Frames, including lanes and yards, which define the city centre edge in conjunction with the Otākaro Avon River;
- Hagley Park, a significant public open space of heritage, social and environmental value, with views to and from the central city;
- The street grid, oriented to the cardinal points of the compass, with an east-west focus and diagonal streets with cultural significance for Ngāi Tūāhuriri. North-south streets have views of Te Poho-o-Tamatea/Port Hills and the diagonal axis creates small and intimate triangular public spaces (known as the Heritage Triangles).
- A built form of predominantly low to mid-rise, with well-designed buildings and activated street environments.

The Canterbury earthquakes significantly altered both the physical form of the city, and impacted upon the city's communities. Pre-earthquake a bell curve built form was evident, with a defined central city with buildings clustered together, and building heights reducing at the fringes. This shape is no longer discernible, with few of the high-rise pre-earthquake buildings still standing.

Following the earthquake sequence, extensive consultation was undertaken with the community into the type of city people wanted, including the height of buildings and other aspects of form such

[2] National Planning Standards, MfE, 2019
[3] Hierarchy of Centres – Urban and Built Form Descriptors, Boffa Miskell, 2022

as transport and greenspace[4]. In association with advice on economic viability, capacity analysis and other matters, this led to the vision expressed in the Christchurch Central Recovery Plan or a consolidated central city core [5], with lower rise buildings, improved connections and more greenspace. The current District Plan provisions reflect this, with a 28m height limit in the core. One of the key reasons for limiting building heights was to generate a critical mass of development and activity in the rebuild process[6], rather than absorb capacity through a small number of large buildings.

As a result, at present the central city is developing as a mid-rise city of predominantly 3-6 storey buildings, with some exceptions including pre earthquake buildings, as illustrated below (Figure 4). Development is dispersed within the core, although it can still be quite high density. Taller buildings may be built from time to time, but the city is largely maintained at a lower height. This is in contrast to the expectation of the NPS UD to significantly increase development capacity through building heights.

The tallest existing building in Ōtautahi Christchurch is the 23 storey Pacific Tower, at 73m to roof height and 86m to the top of the antenna. Other taller buildings have heights between 10 and 20 storeys. These buildings stand apart from each other in what is otherwise a low-rise city.

Figure 4: Two pre earthquake central city high-rise buildings, noting also the extent of vacant sites in the foreground.

Outside of the central city core, the operative District Plan provides for a gradual transition of height through Victoria Street and the CCMUZ, both of which have 17m height limits (lowering to 14m in adjacent residential areas).

Aside from height, the existing and anticipated form of development within the CCMUZ is considerably different to the CCBZ. The CCMUZ are predominantly former industrial areas which are expected to transition to higher value uses, including residential developments, which are now

[4] Share an Idea community engagement, Christchurch City Council, 2011 (Central City Plan Technical Appendices)
[5] Christchurch Central Recovery Plan Te Mahare "Maraka Ōtautahi", 2012
[6] Economic and other technical advice, Draft Central City Plan 2011 (Central City Plan Technical Appendices)

appearing, albeit containing no or limited commercial activity. They include a mix of building scale and styles.

However, the built character and public space of these zones is largely industrial in nature and does not at present support the quality of environment that anticipated with increased density and changes in use, more specifically residential activity.

2.4 Built Form in Other Commercial Centres and the Mixed Use Zone

There are some 150 commercial centres across the city. Descriptions of the intent of each of the centres is provided both within Plan Change 14 (Chapter 15) in respect to the scale and nature of activities, and in respect to every centre built form type[7]. For the most part there is limited change proposed in respect to building height and associated built form provisions in respect to these centres such that it impacts on urban form.

There is however a more consistent approach needed, as discussed within the introduction to this report, to the application of the MDRS built form standards, and to ensure consistency where it relates to matters such as Crime Prevention through Environmental Design (CPTED) to support activity within the centre.

The exception to this is the MUZ (outside the central city), where a significant change in use to focus on predominantly residential activity is proposed, within walking distance of the central city. Currently these areas comprise predominantly low-rise industrial development, albeit with significant variation in the scale of activity, from small individual buildings to entire blocks. It is anticipated that within these areas, while industrial activity will continue in the short to medium term, it will transition to predominantly residential use over the longer term.

As with the CCMUZ the built character and public space of these areas is largely industrial in nature and does not at present support the quality of environment that anticipated with increased density and changes in use, more specifically residential activity.

2.5 Built Form Descriptors

For the purposes of describing form in regard to scale of the city, the following is referenced within this report in respect to building height:

Low-rise:	1 to 3 storey	Low to mid-rise:	4 to 6 storey
Mid-rise:	6 to 8 storey	Mid to high-rise:	8 to 10 storey
High-rise:	10+ storey		

[7] Commercial Centres NPS UD: Urban Design and Built Form Descriptors, Boffa Miskell 2022

3 Issues

3.1 Issue 1: Urban Form - Enabling a legible city form, and ensuring the impacts of high-rise building can be effectively managed.

3.1.1 High rise versus mid-rise urban form

The NPS UD requires that the Council increase development capacity. Given the degree of change anticipated, this will fundamentally change the form of the city, through the layout, height and massing of building across the city, for both residential and commercial activities.

A higher-rise and more intensive urban form has the ability to change the way that a city looks, feels and functions. It can affect the way the city is perceived, in both positive and negative ways, including city identity and legibility, as previously discussed. For instance some places are renowned for their high-rise buildings and skylines, with New York being an obvious example of this. Other places are known for a consistent mid-rise form, which is prevalent throughout Europe, for example across much of Barcelona, Turin and Freiburg.

The most substantive change to height anticipated through the NPS UD, and which have the most significant impact in respect to city-wide form, will result from the proposed changes the central city zones. Irrespective of demand for high-rise buildings as a response to shortages in capacity, the driver for high-rise buildings may be a preference suitable to a specific use, such as a hotel, rather than being driven by the cost of land and construction.

The current central city low and mid-rise built form and design has been largely successful so far, in encouraging and resulting in human scale activity, attractive and activated streets and a good level of environmental comfort in public space. Development of this scale and form would continue to support an urban form that compliments the natural and built characteristics of the city, with the exception of the visual impact of leaving existing high-rise buildings isolated.

The operative District Plan reflects the community's preference following the considerable trauma and upheaval of the Christchurch earthquake sequence. Large-scale changes to heights represent a change in direction from the city form that was anticipated in the Central City Recovery Plan (CCRP).

The Council needs to implement the NPS UD but also it is also important to respect/recognise the drivers identified in the CCRP and the subsequent District Plan. This includes sensitivity to local circumstances, including the natural form and context of the city, the quality of public realm and level of public investment, and the opportunities that may be created by more intensive mid-rise development.

3.1.2 Visual impacts of high-rise buildings

There is considerable opportunity for redevelopment of under-utilised and vacant sites within the central city, particularly around Cathedral Square and to the south and east of the city within the CCZ. The extent of these opportunities in association with the scale of development from high-rise building, has the potential to reshape the skyline of Ōtautahi Christchurch and overall legibility and identity of the city.

High-rise buildings can be widely visible in the cityscape, from longer distances and from all directions. In effect they can claim sightlines and draw attention away from, or conflict with, more

important aspects of the setting, including cultural and landscape values, for example in Ōtautahi Christchurch, from Te Poho-o-Tamatea, the Port Hills.

In addition, a high-rise building can have significant visual mass, meaning it captures peoples' attention within a view. The height of buildings is significant in both absolute and relative terms. High rise buildings that form part of a cluster can be absorbed into a greater mass of buildings which can reduce the individual prominence of high-rise building, with likely variation and contrast between the buildings. A high-rise building that sits within a cluster may not be obtrusive in itself as a result. However, the same building may stand out if it is located amongst predominantly mid-rise buildings, and the visual dominance and prominence can be more acute if the building is isolated.

In addition to height, to an extent, the dominance of high-rise buildings can be managed through design, to help complement or blend the building into the predominant built form, and addresses nuances resulting the context, as well as being more proactive in ensuring design quality outcomes.

Even if not visually dominant, tall buildings will usually be prominent within the cityscape. The massing, form, scale and appearance, including more detailed design of the roof, facades and at the street level, all contribute to how well or poorly tall buildings address their context.

For the purposes of explanation, visually prominent in essence is when a building is noticeable and draws attention to it, but unlike visually dominant, is not overbearing within the context.

The design of a building, and more specifically the upper levels of tall buildings, including roof form, is of particular importance in managing the impact from distant and mid ground views. Dominance can be reduced by variation in the form, visually breaking the large building form into smaller elements and giving the building a finer grain of detailing.

Variation can also contribute to visual interest of a prominent building. It can be achieved in a number of ways, such as:

- Building modulation, which may include steps in plan or changes in building form and large scale features, contributes to the extent of variation that may be seen, particularly from a distance.
- Articulation (a smaller scale of detailing that may include variation in cladding or colour, small features or some "push-pull" of the facade).
- A fine grain of detailing (e.g. windows, fins and architectural features) applied as an additional level of detail.

3.1.3 Visual impacts of roof forms

The top of a high-rise building is very visible in the cityscape, and landscape context of the city more widely. Within Ōtautahi Christchurch the peaks and forms of Te Poho-o-Tamatea Port Hills provides a recognisable and visually soft backdrop to the city. A built form comprised of blunt-top buildings (Figure 5) can create a harsh skyline which affects the city as a whole. Where the top of buildings is fettered, for instance by setbacks or an architectural roof-form (Figure 6), this can create a more interesting and softer cityscape.

Further, rooftop plant such as air-conditioners and lift over-runs which area common in commercial and high-rise residential buildings, if visible can result in similar impacts to poorly conceived roof forms, reducing the visual quality of the cityscape. Roof top plant can be especially prominent for

high buildings. Integrating the roof plant within the roof form, rather than covering or hiding it behind screens is largely more effective in the buildings contributing to the city scape and skyline.

Figure 5: The upper levels of the building are graduated to provide a more visually interesting roof form.

Figure 6: Buildings with a blunt roof form.

3.2 Issue 2: Central City Environment - Supporting the vitality and quality of the central city.

Building form and design directly affects, and impacts upon, the quality, vitality and enjoyment of the city for people. These effects can be positive to adverse, and experienced from changing perspectives including close up, from afar, from street level, or at height. All contribute to the quality and experience of the city. In addition to height, aspects such as the width of buildings and continuity of street walls can help determine the quality and character of the public space.

Key descriptors have been articulated for each of the Ōtautahi Christchurch centre types, with a future focus[8]. The central city is described as "the pre-eminent centre within the Canterbury Region, representing the heart for business, tourism, cultural, civic, residential and education functions". It is anticipated that as such the central city should have the "highest urban amenity, with landmark buildings that are highly articulated and visually appealing, with a focus on contributing to a high-quality pedestrian environment". That the "built character reinforces human scaled elements, architectural quality and form", with "building that provides a continuous edge and sense of enclosure", engage at street level and are easily understood in, amongst other matters.

3.2.1 Coherence and engagement of the street wall

The existing streetscape in the Ōtautahi Christchurch central city has some variability in building height but predominantly comprises groupings of buildings of 3-5 storeys and 5-7 storey depending on location. The consistency in the street wall and building height creates a sense of visual order in the street form, particularly when experienced from street level, creating a harmony and scale that people can readily engage with. The extent of articulation and modulation also contributes to the potential level of coherence and engagement for users of the street.

This consistency is created by the street wall height as well as the overall height of buildings, and design qualities discussed later in this section in regard to visual interest. It is further emphasised through design decisions such as upper floor setbacks where the height exceeds 21m.

Figure 7: Cashel Mall, looking to the north east, has a strong street wall.

[8] Commercial Centres NPS UD: Urban Design and Built Form Descriptors, Boffa Miskell 2022

Figure 8: Charlotte Street, Brisbane, Australia. Street wall created by requiring a 3-storey podium with setbacks beyond this (source: Google Streetview).

Taller buildings, where the upper floors are not set back from the street, can have a significant visual impact and appear particularly noticeable as they break the rhythm of the street with the verticality of the building dominating and drawing the eye up, away from the horizontal form and interest of the streetscape. A coherent street scene is considered to be achieved by relatively consistent and modest street wall heights, with high-rise buildings set back so that they do not dominate the street wall.

However, if the towers join up, these can create a secondary street wall. This impacts the public realm by reducing the benefits of daylight, sunlight and views of the sky, which in densely built cities can only be obtained through the space between towers. They can also be a source of street enclosure and come to dominate the street by looming above the height of the street wall.

Figure 9: Market Street, Philadelphia, USA. Canyon effect created by high-rise buildings ascending directly from the street (source: Google Streetview).

3.2.2 Visual articulation and blanks walls

Blank walls, lacking visual articulation, can have a significant impact on the quality of a streetscape, the level of engagement and in respect to CPTED, depending on their location.

A particular issue that occurs when a building is built to, or close to the site boundary, is the need for fire-proof walls to abut the boundary of the site. In order to meet the requirements of the building code such walls must be solid, with few or no windows. Consequently these walls do not provide visual interest if they are visible from the street or other public spaces, and can appear very dominant within the street scene, or as viewed from adjacent buildings.

The construction of these walls is an accepted practice in the central city, but as noted is of a low to mid-rise scale, with fairly consistent adjacent building heights lessening the potential impact. The walls generally disappear from sight when neighbouring sites are developed, and if there are fairly consistent building heights, and similar setbacks these walls will not be widely visible. In addition, given the relatively drawn out redevelopment of the central city, in many instances these walls have decorative features to offset the impacts of an otherwise blank wall.

For high-rise buildings, it is more likely that these blank walls will not be built out, and their impact will be more widely visible, with a detrimental impact on both the streetscene and the cityscape.

In their reviews of central city built form, local Council's in both Sydney and Melbourne identified blank walls as a particular issue with both mid and high-rise buildings. In both cases, the recommended solution was to ensure that the buildings are set back from boundaries.

Figure 10: Flank walls with varying facade treatment in Ōtautahi Christchurch.

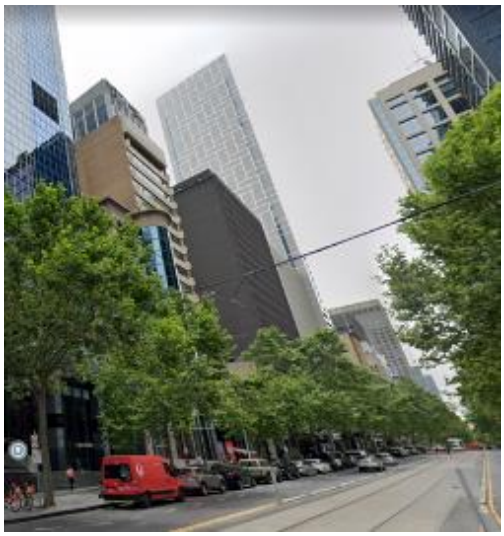

Figure 11: Collins Street, Melbourne. High-rise buildings with prominent flank walls (source: Google Streetview).

Design in respect to the lower levels of a building, as discussed previously, impact upon the level of engagement and visual interest within the streetscene, as well as other factors such as CPTED. Another issue that can occur with high-rise buildings is a reduction in visual quality of the lower levels of a building. This is primarily as a result of the internal use, most often car parking, resulting in active uses migrating up the building, and minimal articulation of the levels of car parking.

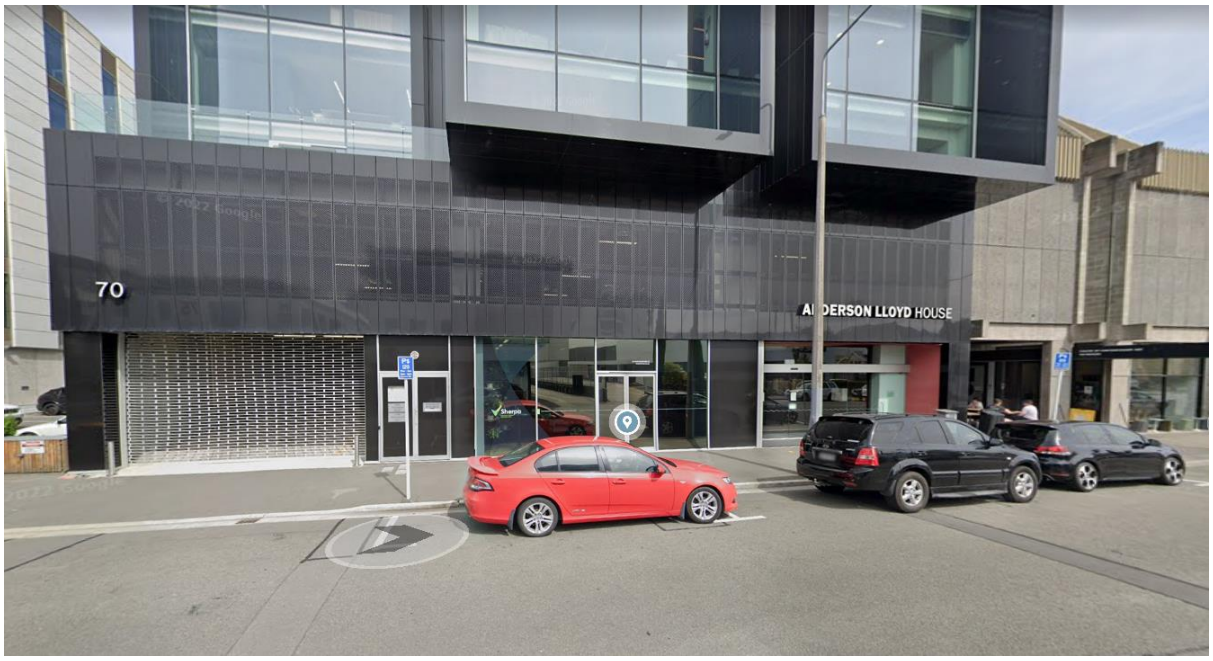

Figure 12: A low-rise local example, but relatively well managed in respect to the combination of glazing, textured elements and modulation above.

Further, in association with car parking, the scale of the vehicle access at street level is emphasised, resulting in lower levels with few or no windows. This leads to a lack of street activation and visual interest, impacting on the streetscene. Again, this was a commonly occurring outcome in the Sydney and Melbourne case studies.

Figure 13: Riparian Plaza, Brisbane. Lower levels are utilised for car parking reduces the extent of engagement from street level experienced in respect to the building adjacent.

3.3 Issue 3: Public Realm Maintaining use, comfort and quality of the public realm.

High-rise building can affect the level of environmental comfort in public and private space, through impacts such as increased shading and by deflecting and concentrating high speed winds.

3.3.1 Access to sunlight and daylight on the street and other public spaces

Solar access within the street corridor makes the city more pleasant and attractive as a place for people to spend time. This is desirable in its own right but also makes a wider range of activities possible. This includes outdoor dining and markets, or just sitting or lingering in public space. In the summer months the central city streets are notably busier than in the winter months, which is attributable to more favourable climactic conditions.

Ōtautahi Christchurch is more affected by solar access (or lack of) than many other comparable cities. It has a relatively cold climate, compared to Auckland or Melbourne for instance, so sunshine is relied on for warmth, aside from the positive physical and psychological benefits that access to sunlight provides. Ōtautahi Christchurch has high annual sunshine hours, in comparison to other temperate cities, for instance Seattle, Vancouver or London, meaning that access to sun brings benefits for a large proportion of the year. As a result, access to direct sunlight is something that directly improves the usability of space in the central city. Higher sun angles in spring, summer and autumn provide more solar access than in the winter.

Solar access is currently managed through a street wall height of 21m and a recession plane of 45 degrees. This street wall height generally allows for good light access, including direct sunlight access to street level throughout the summer.

Figure 14: A solid street wall along Durham Street, Christchurch, of mid-rise buildings.

Where high-rise buildings are prevalent, access to sunlight at street level will be primarily achieved via gaps between buildings. Recession planes at higher heights do not provide sun access because the sun will not for the most part penetrate above the building line. The impacts of shading from individual high-rise buildings may therefore be relatively confined, depending on mass and density.

However, when the high-rise buildings are tightly concentrated, they may block opportunities for sun access throughout the day and potentially for much of the year.

Individual high-rise buildings may also impact on the comfort and quality of key open spaces within the city, such as Cathedral Square, Victoria Square and the Otākaro Avon River corridor depending upon the orientation of development. These locations provide significant open space, and have, or are anticipated to have, a high standard of public realm, developed to encourage and support public use and enjoyment. These areas would be more impacted by overshadowing than other public spaces within the city as a result.

3.3.2 Impacts on the use of Cathedral Square

Cathedral Square has historic significance and is the pre-eminent open space in the central city. It is recognised as a heritage item in its own right, as distinct from the Cathedral, and was established in 1850 as part of the original Edward Jollie plan for the city. Given its central location, cultural and historical significance, Cathedral Square has a high overall significance to the city, more so than any other individual urban public space within Ōtautahi Christchurch.

Over the years there has been considerable investment in the physical quality of the space, to maximise its value to city residents and reflect it importance and the changes in use surrounding it. This emphasis continues, as expressed in a commitment to ongoing improvements in the Square in the Council's budget (which has $9 million committed in the Long Term Plan) and strategies.[9]

Access to sunlight for most of the year is an important component of the functionality of the Square. It allows for year round use of the space both for public events and is a factor in attracting activation to the edges of the Square through spill out uses such as cafes, particularly at the south and east interfaces.

The area surrounding Cathedral Square has historically had lower height limits than elsewhere in the city, predominantly to manage the impacts of shading. For instance, the 1993 City Plan included a line over which buildings were not permitted to shade the Square (Figure 15).

[9] Whiti-reia Cathedral Square Out Long Term Vision, Regenerate Christchurch, 2018.

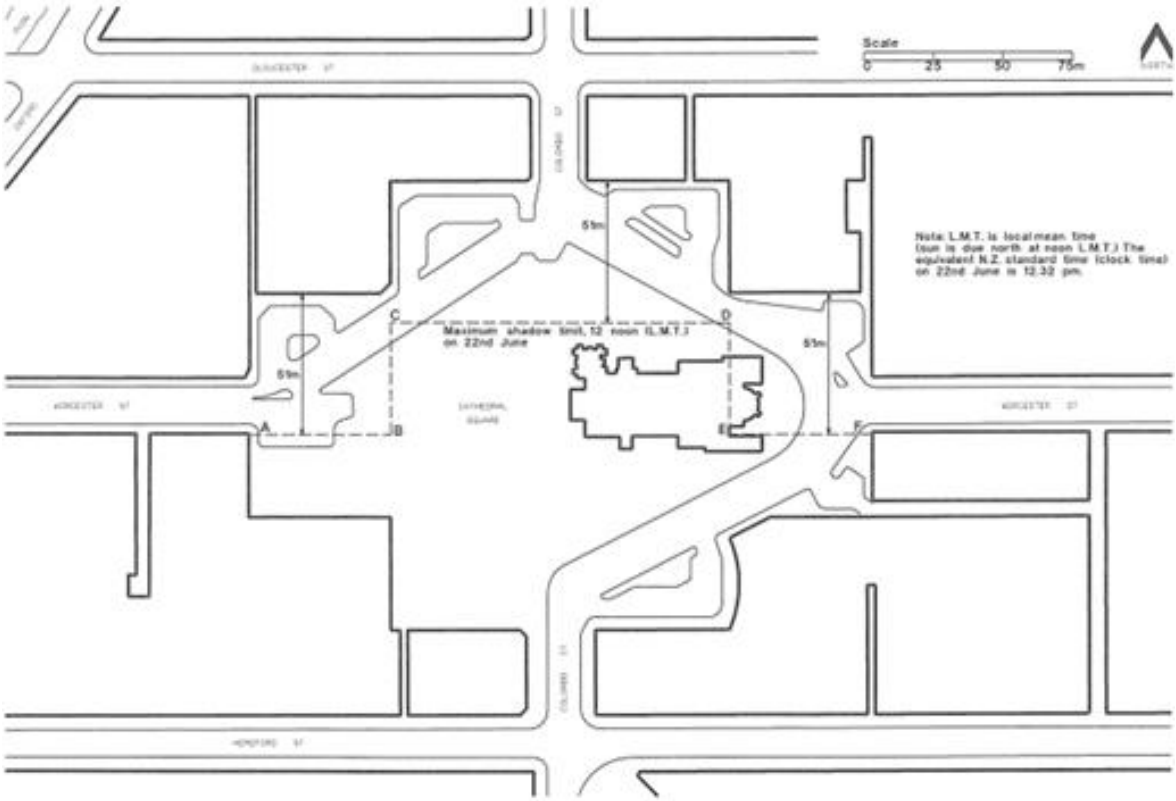

Figure 15: Christchurch City Plan Appendix 1: Central City – Cathedral Square sunlight admission to important pedestrian areas.

3.3.3 Wind impacts of high-rise building

The quality of the environment is important, especially in places where people gather and spend time. This includes the public spaces in the centre including the river, squares and streets.

In Ōtautahi Christchurch there is a background wind speed of 4m/s that blows for nearly half the time[10]. At speeds higher than this, streets can become uncomfortable places. Buildings will have both positive and negative impacts on ground level wind conditions. Buildings can both channel wind and divert higher speed, higher altitude winds to ground level. This can create uncomfortable spaces for people, and there is also a risk of occasional dangerous wind conditions. These effects can be mitigated by building design. Modelling of Christchurch conditions by Meteorological Solutions[11] shows that there is a risk of a deterioration in ground level conditions from high-rise buildings of around 30m high; and a high risk of unsafe conditions from 90m high buildings, through the generation of dangerous wind gusts.

[10] Technical Advice for Wind Assessments for Christchurch City. Meteorological Solutions, 2022
[11] ibid

3.4 Issue 4: Mixed Use and Residential Development - Managing the impacts of higher density living for occupants, and ensuring effective transition to high quality residential use.

3.4.1 Issues related to outlook and natural light

Daylight access and outlook are both important to the liveability and amenity for occupants and neighbours, particularly in more urban areas such as the central city and town centres, and are impacted upon through the proximity and design of buildings.

Ensuring a base level of amenity is desirable in itself and encourages a range of activities in the city, including apartments and short-term accommodation, which support a 24 hour city and contribute to liveability and vibrancy.

High-rise buildings have a more extensive impact on outlook, and consequentially to daylight access, than mid-rise buildings because they obstruct views to all aspects – up, down and across, and more importantly reduce daylight and outlook from these directions.

Whilst people in inner city areas, both working and living, will make compromises for the sake of the advantage of the location, access to some natural light provides psychosocial and amenity benefits, as well as contributing to energy efficiency. Access to natural light is different to direct solar access, which may be more challenging to provide for in a highly built up urban environment.

The issue of access to daylight is one that is a recurring theme in the Sydney[12] and Melbourne[13] studies. Both have a large residential population in their central cities, who contribute to the vibrancy and liveability of these places. Research in respect to both cities has found that internal light and outlook were compromised by the types of development that were taking place. Ōtautahi Christchurch has a similar ambition to increase the number of central city residents.

3.4.2 Residential amenity and design quality in commercial zones

This section discusses the specific issues related to the provision of residential amenity in developments in commercial areas, including the potential trade-offs between public provision and private provision of amenity.

New residential development is anticipated in all commercial zones in Ōtautahi Christchurch, either as part of vertical mixed use developments (likely to be developments with ground floor commercial activities and upper floor residential), or as standalone residential developments in mixed-use zones.

Good design may be more important in commercial areas where there is a greater propensity for land use conflicts between the many different uses that co-exist, that can impact upon the amenity and quality of life of commercial zone residents. This is true in the central city and suburban centres, with a mix of commercial and residential uses, and the mixed-use zones where the predominant uses are industrial and residential uses.

Reserve sensitivity impacts are more likely and extensive in areas transitioning from industrial to mixed-use activity, and more specifically residential use, than for example a mix of residential and

[12] City of Sydney, 2016 *Erection of Tall Buildings in Central Sydney*
[13] Hodyl and Co, 2016 *Central City Built Form Review: Synthesis Report* (Melbourne City Council)

office use. Impacts from industrial use may include noise and other nuisance effects, odour or air pollution, use of heavy transport, and light pollution from activity or signage to name a few.

The existing environments of the CMUZ and MUZ are generally of low quality and lack public space amenity, except where more recent interventions such as the South Frame lanes and yards have been developed. These primarily industrial areas, and more particularly the MUZ, are characterised by no to minimal landscape amenity in the streets, with wide fully paved street corridors, limited access to local public spaces, and variable quality of building and shared boundary walls. CPTED has not historically been factored into site layout and design, with little consideration given to pedestrian users of these areas.

As such, the design quality of any new development, and more particularly residential development, will need to mitigate and be managed within these parameters. For areas transitioning from industrial to residential use, there is a risk that they will become low-quality residential areas that do not meet the aspirations of the plan for residential areas more generally.

3.4.3 Residential development in the central city

New residential development is key to a vibrant central city, and the Council has various strategies to increase the number of residents living in this area[14] (usually referred to as the area within the Four Avenues). A longstanding target is that there should be 20,000 people living in the central city (up from around 8,000 now).

In the last five years, there has been a marked increase in the amount of development in the central city. Progress is being made towards realising the Council's target, and the development of residential activities in the Commercial zoned areas is an important component of this.

Each zone of the central city has different characteristics and issues to manage. If design quality and a relatively consistent level of amenity for residents is to be achieved a nuanced approach may be required in respect to some aspects to raise the bar in some areas, while consistency is needed in respect to a baseline to manage other impacts, for example outlook. Examples in respect to the variability of issues for each zone or sub zone is noted below:

- The CCZ has a very high level of amenity due to its high quality public spaces and wide range of facilities, but has the potential to have greater impacts on daylight and outlook as the result of the potential for much higher-rise buildings.
- The CMUZ (South Frame) is close to the central city and includes a number of smaller scale public spaces that provide amenity, but these may be easily overshadowed by larger scale building.
- The CMUZ generally has very low public space amenity, with limited landscape and open space, large industrial blocks and a generally more potential for reverse sensitivity or nuisance impacts.

3.4.4 Low Quality Residential Development in the Mixed-Use Zone

The Council has conducted monitoring of residential building in the CMUZ[15]. This has shown that built outcomes have not always achieved a satisfactory (basic) standard of design and sometimes are of a poor standard. A variety of issues were identified including safety concerns, poor quality access,

[14] Project 8011 – Central City Residential Programme, Christchurch City Council
[15]Design Outcomes Research Christchurch City Council

lack of privacy and an under-provision of usable outdoor living space. The quality of design resulting was not equivalent to developments in medium density residential zones of the city. Outcomes were very variable, indicating that the regulatory framework has not resulted in consistently good outcomes.

There is therefore a risk of creating lesser quality residential areas in the commercial zones than other areas of the city, through the lack of appropriate design consideration. Good urban design is a key element of a well-functioning urban environment[16] and this applies to all locations where people live.

It was noted that in the CMUZ, there is more scope for very poor outcomes to eventuate. Some of the issues identified in the research were:

- Poor quality communal space;
- Buildings and sites with a basic functional appearance more in keeping with an industrial area;
- Poor site layout which impacts on many aspects of the site and building design, including the size, privacy and usability of outdoor living space;
- Developments without a clear entry or access to the site;
- Issues related to Crime Prevention Through Environmental Design (CPTED).

Figure 16: A recent residential development in the CMUZ, where poor site layout results in vehicle access and parking dominance, minimal landscape quality, and no clear residential entry.

3.4.5 Residential development in the Mixed-Use Zone (outside the central city)

The MUZ lies at the boundaries with, and in walking distance of, the central city. Some of the areas have established services and facilities, and the potential to transition to high quality urban neighbourhoods over time. Broadly, this MUZ is the industrial area from Charleston in the east to Addington in the south west. At present the MUZ is characterised by extensive industrial activity,

[16] Page 2, https://environment.govt.nz/assets/Publications/Files/Well-functioning-urban-environments.pdf

ranging in size, quality and impacts, but is largely a low amenity, low quality environment, with some exceptions in respect to some of the more fine grained industrial building.

As noted the MUZ is very diverse in development form, but less so in terms of the extent of the potential for reverse sensitivity effects of industrial uses on residential neighbours.

Sydenham in particular has potential to develop as a distinctive and liveable urban neighbourhood if the transition is effectively managed. As well as access to the city centre, it has good access to local facilities, both commercial in the Sydenham town centre and recreational in the form of various parks in the area.

Sydenham also has quite an interesting character in parts, derived from older industrial buildings. There may be some potential to re-use smaller character buildings, which would contribute to visual interest and an alternative urban character.

The area includes large street blocks, which are a barrier to good levels of connectivity in respect to pedestrian permeability. However the large parcels offer an opportunity for comprehensive development to manage the issues of transition, and create more energy efficient, low carbon neighbourhoods.

Issues of development quality that are evident in the CCMUZ (discussed below) are also likely to apply in these areas unless appropriate regulation is in place. Furthermore, the impact of the current industrial use may result in defensive site layouts which internalise amenity, or the orientation of buildings to avoid undesirable reverse sensitivity impacts. Whilst this may help residents in the short term, it can entrench an inward-facing and poor quality environment.

4 Potential Approaches

The previous section identifies the issues that could occur with more intense commercial and residential development within the Central City and Mixed Use zones. There are potentially multiple methods to manage the issues, and vice versa one method may be utilised to manage multiple issues. As such they are considered holistically below. Consideration has been given to achieving an appropriate balance between efficiency, effectiveness and viability, and certainty and flexibility, in achieving the desired design outcomes.

Plan Change 14 is focused on enabling development as a result of the NPS UD. As such, and in conjunction with the analysis undertaken, the status quo with some additions was considered the most effective approach at this time.

The first sections below, 3.1 and 3.2, consider the use of built form standards to manage the building envelope. Section 3.3 considers the use of assessment matters.

Residential activities have different requirements to, and are impacted by, non-residential uses. As a result, a more specific activity-centred approach is suggested in section 3.4. In some instances this involves changes to the building envelope, or additional standards or assessment matters.

4.1 Urban Form

4.1.1 Central City

Given the existing environment, there are a number of potential cityscape scenarios that could result from new building construction, which would impact on the form and function of the city, including in respect to visual appearance and the level of environmental comfort. These include:

A A Cluster of Towers or Isolated Towers

A traditional bell curve city form results in part from a cluster of towers concentrated in the city centre, graduating in height to a lower-rise suburban area. This is a result of a level of consistency in height in the centre and in the rings of lower-intensity neighbours that surround it.

Positive impacts of this form are regarded as:

- A legible urban form that allows the shape of the city to be easily read, when viewed from outside of the central city, and seen within its landscape context –Te Poho-o-Tamatea / Port Hills and the Canterbury Plains, the rivers and open space.
- A sense of place created by an engaging skyline comprised of a collection of buildings, each of which is a component of the city form, rather than individual towers being the focus.
- A cluster is an efficient pattern of building and concentrates activities within the central area to maximise economic and social vibrancy.

Figure 17: Sydney Tower Cluster is horizontal in form despite the height of individual buildings.

Tall buildings that sit outside of a cluster of similar scale buildings are a highly visible element of the skyline on their own. These buildings will always be prominent, and if poorly designed, will be detrimental to the skyline and the image of the city, and potentially impact on the highly valued landscape context of the city[17].

In Ōtautahi Christchurch, given the lower rise post-earthquake rebuild and remaining vacant sites, the risk resulting from the visual impact of isolated towers could be significant.

However, new buildings of a similar height to the existing tall buildings would relate well to the scale of the existing buildings. They would help to fill in the gaps in the skyline and appear as part of an integrated mass.

Enabling buildings that effectively bridge the height gap would create a more horizontally oriented urban form and could make a positive contribution to the skyline.

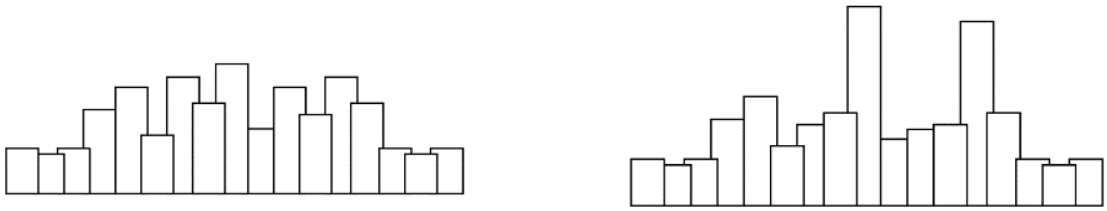

Figure 18: Coherent scale of tower cluster (top) compared with dominant individual towers (bottom).

B Towers that are dispersed or massed

The proximity of towers is a determinant of environmental quality and visual impacts discussed in depth in the sections that follow, as well as a source of form and identity. Some different options for city form have been considered:

- A more dispersed pattern of towers with greater separation, such as is common in Canadian cities, provides for views and better conditions on the ground. However, maintaining the separation distances means that the overall density of towers is low and options for

[17] Ōtautahi Christchurch City Landscape Study 2015, Boffa Miskell and Christchurch City Council

redevelopment are limited. For instance, Toronto requires a separation of 25m between towers[18].

- A more tightly massed form with a lower degree of separation which compromise the aspects described above, but provide more capacity and ease of development. This latter form is common in Australasia (for example in Auckland) and smaller separation distances of 10-12m are common. This scenario has the potential to create a more enclosed street scene, including greater adverse impacts in respect to environmental comfort due to shading and wind tunnel effects, as well as visual dominance resulting from the scale and impact of building on public space.

Due to the pace of redevelopment and likely low uptake of tall high-rise buildings[19] in Christchurch it is considered that a massed form is unlikely to eventuate and the density of towers will remain quite sparse. For this reason, it is considered that the focus should be on managing localised impacts and that requiring towers to contribute to the more restrictive dispersed tower scenario is not justified, because it is likely to eventuate anyway.

Figure 19: Toronto skyline of dispersed towers.

Figure 20: Melbourne skyline of massed buildings.

[18] City of Toronto 2013 – Tall Building Design Guidelines, pp52
[19] Christchurch Central City and Suburban Centres (PC14) Economic Cost Benefit Analysis, Property Economics, July 2022, pp14

C Sensitive and Peripheral Locations

There are some areas in the city where very tall buildings are not considered to be appropriate, due to either the impact they would have on the environmental comfort of certain important public spaces, or because they would not support a consolidated urban form. These areas are:

- Sensitive locations: Cathedral Square and New Regent Street
- Peripheral Locations: Victoria Street

Sensitive Locations

Parts of the central city are more sensitive to the potential adverse impacts of tall buildings, notably key public spaces and particularly those with cultural or heritage value, principally Cathedral Square and New Regent Street.

In these locations, a high level of public amenity attracts people to use the space, resulting in vibrant spaces that contribute strongly to the city's sense of place. The maintenance of a high level of environmental comfort (and a good quality visual environment) in these areas has a city-wide importance which must be considered along with the benefits of clustering, vitality and potential economic impacts of taller buildings. This may be achieved by reducing height limits in the area adjoining public spaces.

In considering this potential reduction in heights, the impact on urban form should be considered. For instance, lower heights around Cathedral Square, at the centre of the city, would potentially create a drop in intensity at what may be a natural location for some of the highest density. New Regent Street is more peripheral would be less notable.

However, as discussed in A above, a tightly massed tower cluster in Christchurch's large City Centre is unlikely and the impact of localised reductions in height limits may not be very noticeable in the actual built form.

Other locations have been considered in relation to whether they should be treated as sensitive locations, but it is not recommended that they should. These are:

- The Otakaro Avon River Corridor. This space is wide and generally orientated north-south (meaning some sun access is guaranteed), or east-west (with limited heights expected on the north side due to zoning or heritage buildings). Whilst it may be partly shaded by development, it is unlikely to be affected by a cumulative level of built form that undermines its environment.
- Latimer and Cranmer Square are not adjacent to the Central City Business zone and will not be affected by buildings above 10 storeys.

Peripheral Locations

The Central City Business Zone is not a compact shape. It is distorted in the north-west where it follows Victoria Street, a ribbon development of office, retail and entertainment activity. This reflects the historic commercial use of the street, rather than its status as part of a consolidated and compact CBD. Victoria Street has never been zoned for tall buildings and its current CCB zoning (with a 17m height limit) reflects its status as a mid-scale extension of the core and a transition between central city activity in the core and the inner suburban residential areas beyond the four avenues.

Buildings along Victoria Street suffered significant earthquake damage and many were demolished, with sites now redeveloped to predominantly 4-7 storeys in height. Given the limited opportunity remaining for development, new tall buildings in the Victoria Street area would effectively be dispersed and detached from the core of the central city, rather than clustering with other taller buildings. As a result any taller buildings would be highly visually prominent within this context.

4.1.2 Development Layouts in the Mixed Use Zones

Block and site layout define the urban structure and outcomes for a neighbourhood, and the resultant urban density and quality. Some development layouts lend themselves to a more intensive urban environment, such as that expected in central areas. The use of certain typologies could assist in managing the impact of the variety of activities expected within mixed use and high density areas.

There are four possibilities for development types that collectively function to manage impacts of the variation in activities across an area, within a street block, or between sites.

A Perimeter Blocks

Perimeter blocks are a conventional way to provide dense urban development. Buildings are located around the perimeter of a street block, enclosing internal open space within the block. On individual sites, buildings are located at the front of the site, with a strong public front – providing an active and interesting frontage through the use of pedestrian access points including lobbies and individual entrances to units, and street facades with a high level of glazing. The architectural response may provide coherence or have individual buildings expressed. Private space is located at the rear, and the buildings may be built across the full width of the site. This pattern of development, widely used in Europe and North America, creates a strong street frontage and allows good solar access and borrowed amenity for buildings and units within the block (borrowed amenity is that which is shared between sites, such as open aspect and clusters of planting or trees near boundaries).

Because a perimeter block form provides rear open space and orientates outlook over a central courtyard, or a deep rear setback, it manages the impacts of developing in transitioning areas (i.e. from industrial to mixed-use) in a much more logical manner than orienting development perpendicular to the street, as is currently found in many of the city's inner city and central city areas. Consequently, a perimeter block typology is effective even if the block is not continuous and provides a building layout that works in both the current and future context. It is also flexible enough to allow for uses to transition in use over time. For example, ground floor workshops or commercial accommodation may transition to residential uses. This is a pattern evident in the well-known perimeter blocks of Barcelona.

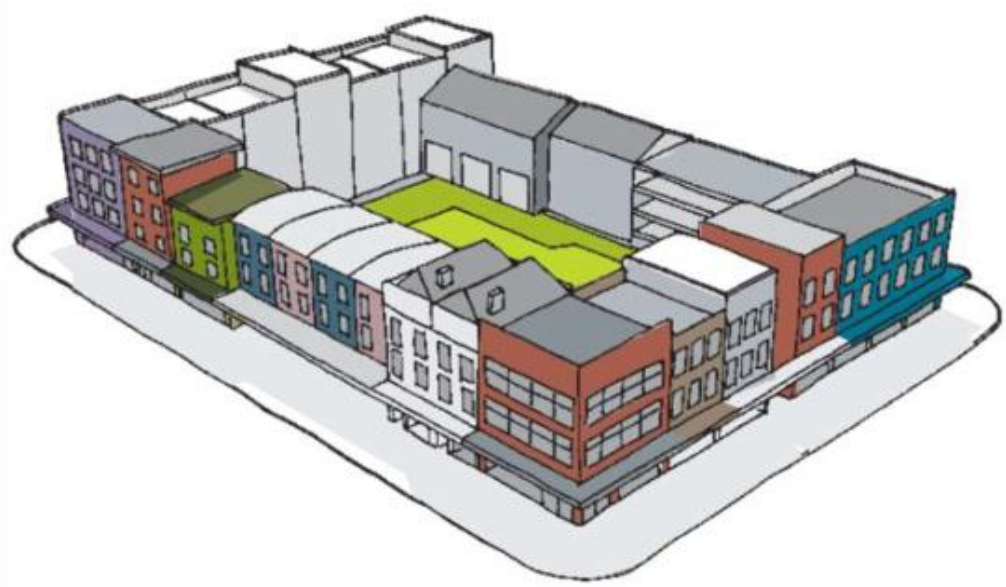

Figure 21: Perimeter block development whereby an interior courtyard is created by buildings oriented to the street.

B Centred Development

A conventional alternative to a perimeter block form, and most often seen in Ōtautahi Christchurch currently, is where the mass of the building is located perpendicular to the street, centred along the length of the site, depending on the site shape and dimensions. As a consequence open space is located to the boundaries of the site, often along the side.

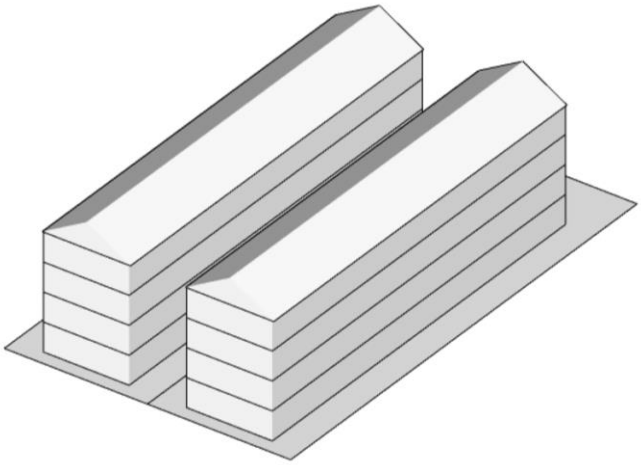

Figure 22: Centred development with outlook to boundaries.

Traditionally a development envelope is created using setbacks and recession planes. Recession planes are less effective with taller buildings (because the sun-angle is below the height of the building for much of the year), and the development form has other potential drawbacks. It can create privacy issues with neighbours because glazing, balconies and consequently outlook is likely to be concentrated to the side boundaries. Activation of the street is also limited as the narrow end of the building provides limited built frontage to the street. It is also an inefficient use of the site.

This form of development works best for smaller scale developments that are less intrusive for neighbours. It does not support more comprehensive development that seek efficient use of land and a higher level of both certainty and quality in respect to site layout.

C Residential Towers

The final typology discussed is residential towers. Tower buildings best suit the central city zones where higher heights are anticipated and the form would sit well with the surrounding commercial environment, where residents are provided with the amenities of the city. In other areas, where these trade-offs are not so apparent, then a lower rise and better co-ordinated form is recommended.

In less dense environments, without good access to services and amenities, tower buildings have some drawbacks:

- They can create impacts on neighbours (e.g. overlooking and shading) especially if built near the boundary.
- They can be expensive to build.
- They have visual impacts (as described in 2.1 above).
- They are not necessarily an efficient use of land. Densities are not as high as might be expected and are often matched by other layouts with moderate height and better integration between sites which also offer better amenity outcomes.
- They are associated with poor mental health[20], especially for those residing on upper levels.

It is recommended that perimeter block typologies are encouraged for mixed-use areas, particularly where the end result is expected to be a transition to predominantly residential areas. This particularly applies to the former industrial areas proposed for re-zoning to mixed use.

4.2 Building Envelope Controls

This method includes a range of setback, recession plane and height controls depending upon the circumstances. The benefit of including a building envelope is that it sets the expectations for development at an early stage. This provides clarity and certainty for developers, neighbours of development and the public as to what is anticipated in a particular environment.

The discussion in section 4.1, in the context of the NPS UD, concluded that the most appropriate city form would allow dense mid to high rise buildings in the City Centre, with careful management of effects. The building envelope should be set to ensure that effects are managed both individually and cumulatively, but noting that some increases in height and density should be readily enabled, at least on larger sites.

The following outlines the proposed building envelopes. The reasons behind the various aspects of the building envelopes are explored later in the report.

[20] See for instance Larcombe D; Van Etten, E; Logan A; Precott, L and Horwitz, P (2019): *High Rise Apartments and Urban Mental Health – Historical and Contemporary Views* Challenges 10(2)

A Central City

In respect to the City Centre zone, the most appropriate package of District Plan controls for managing the building envelope are considered to be:

- A height limit for the base of the building (the lower storeys). Within the City Centre zone the existing height limit is 28m and this is proposed to continue for the building base. For buildings 28m or below, a similar level of development control is proposed to current District Plan provisions i.e. built form standards in conjunction with urban design assessment.

- Road Wall height. A continuation of the existing road wall set at a height of 21m is proposed to continue as this has been successful at maintaining an appropriate level of amenity at ground level for users of the public space.

- An overall (upper) height limit. This would be in addition to the existing 28m height, i.e. the tower above the base height, with a proposed maximum height of 90m. The intent is to provide certainty of the extent of anticipated built form and to avoid significant adverse effects on the city's urban form.

- Upper floor building setbacks. These would apply above 28m and require that buildings above that level should be set back from internal and street boundaries, again to enhance the street environment for people, but also to allow for daylight access and outlook for residential units.

- Tower separation. This is primarily aimed at existing towers or where two towers are proposed on the same site. It would require that separation distances between these towers be similar to what would be required if they were developed on adjacent sites, to manage solar access and views of sky, and building dominance.

- Maximum tower dimension. As with tower separation, this is intended to manage the bulk of buildings at height. Existing towers within the central city mostly have a dimension of less than 40m.

B Mixed-Use Zones

The height and intensity of building in these zones is expected to be less than in the Central City. As a result, a slightly different envelope is proposed for the Central City Mixed Use Zones:

- A height limit for the base of 17m and an overall height limit of 32m
- Upper floor building setbacks of 6m above 17m for internal boundaries
- Maximum Tower Site Coverage of 50% (for the part of the building above 17m).

In the Mixed Use Zone (former industrial land), the following is proposed:

- A maximum height of 15m
- A front setback of 3m

In both zones, different envelopes apply to residential development, in recognition of the different characteristics and requirements of residential and commercial buildings.

C Other Commercial Zones

Amendments to height to implement the National Planning Standards and NPS-UD.

4.2.1 Road Wall Height and Building Base Height

The building base is the lower storeys of the building, usually occupying most of the site and potentially being built to the boundaries of the site. In the current District Plan built form controls, the base can occupy 100% of the building envelope in the City Centre.

The street wall height is the height permitted adjacent to the street. In the City Centre this is currently 21m, with a 45 degree recession plane into the site from the street.

This section applies to the CCMU and City Centre Zones, which have additional height compared to other commercial zones.

Proposed Controls:

Zone	Operative Plan	Recommendations
City Centre Zone	21m Road Wall height with a 45 degree recession plane 28m Building Height	21m Road Wall Height with a 45 degree recession plane. An increase in road wall height to building base height for corner sites (28m). 28m Building Base Height
Central City Mixed Use Zone and Central City Mixed Use Zone (South Frame)	17m height limit	17m Road Wall Height 17m Building Base Height

Benefits of the Proposed Control:

In relation to a coherent and engaging street wall:

- a consistent scale of building at the street edge. A 1:1 ratio between the height of the street wall and the width of the street, which provides a balance between openness and enclosure.
- clear delineation between the street wall and taller elements above; and
- A human scale without excessive enclosure.

In relation to sunlight and daylight:

- Allows some access to sunlight in the street corridor throughout the year.
- Improves daylight access

In relation to wind a street wall diverts downdrafts away from the footpath, as shown below:

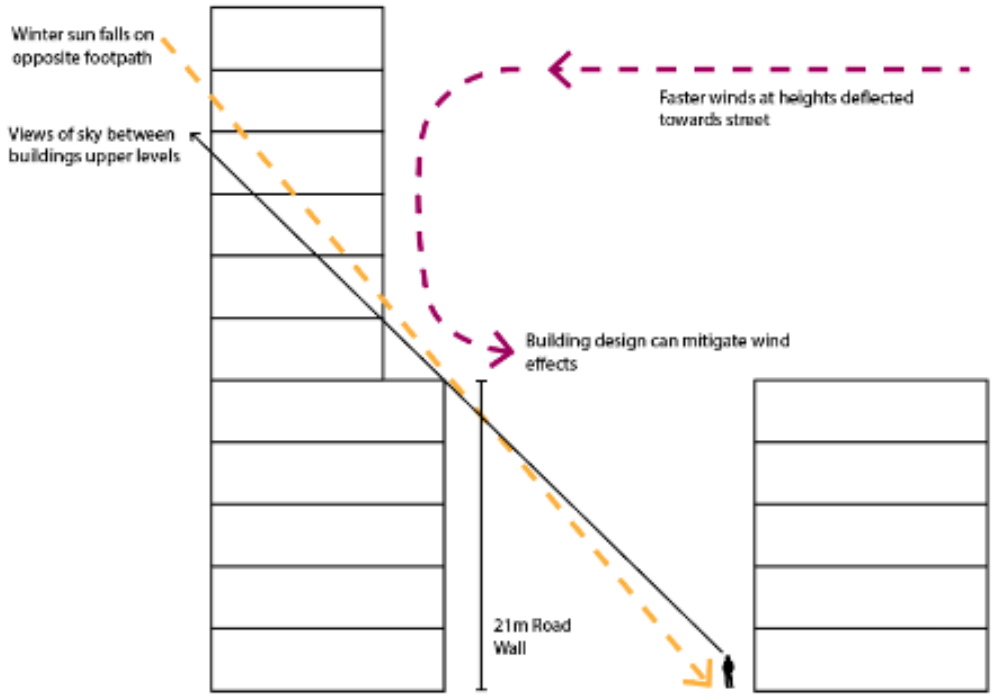

Figure 23: Some benefits of a road wall height - Solar access can be assisted through road wall heights and gaps in the buildings, whilst downdrafts are deflected away from ground level.

Discussion

Central City

In the central city, it is proposed that the current road wall height and recession plane is retained and that the building height becomes the building base height (with separate controls for any tower elements built above this height). The proposed height of 21m with a recession plane would:

- **Relate to the established scale of built form**, generally 3-5 storeys,. This would provide for new development to slot into the existing street scene unobtrusively, with the primary visual element being the base of the building, relating well to the street and adjacent buildings. Taller built elements (towers) would then be located back from the street.

- **Promote access to sunlight and daylight.** Modelling road wall heights (without towers) illustrates that the existing 21m road wall height allows sunlight to fall on the far side of the street (assuming a street width of 20m), as follows:

    - For East-West Streets, sun falls for the majority of the day, 6 months of the year. At the equinox, the shadow tracks the street boundary from 8.30 to 5.30. In the winter (past the equinox), the sun would not reach the street at all, whilst in the summer, it would fall further within the street corridor.

    - For North-South Streets, sun falls on the street for 2 hours 45m (shortest day) and 4 hours 45 minutes (equinox).

- The tables below show the impact of recession planes on the amount of sunlight received on key dates:

Recession Plane	45	60	90 (i.e. none)
Winter Solstice	2hrs 50mins	2 hrs 40mins (-10mins)	2 hrs 15mins (-35mins)
Equinox	4 hrs 40mins	4 hrs 10 mins (-30mins)	3 hrs 40mins (-1hr)
Summer Solstice	6 hrs 30mins	5 hrs 50mins (-40mins)	5 hrs 5 mins (-1hr 25 mins)

Amount of sun falling on the street corridor per day (North-South Street)

Recession Plane	Days with Sun
45	181 (21 September-21 March)
60	162 (30 September-11 March)
90	139(13 October – 1 March)

Number of days with sun falling on the street (East-West Street)

- The tables show that removing the road wall recession plane would have a significant impact on both east-west and north-south streets, with at least an hour less sun on each summer day (a reduction of almost a quarter) on the north-south streets, and 42 fewer days with sun throughout the year on the east-west streets.
- A reduction to 60 degrees would represent a less significant loss of sunlight (by approximately half the amount stated above).

The current District Plan road wall height rule includes a recession plane at 21m rather than a setback, which would create a clearer distinction between the base and the tower and more strongly emphasise the street. However, it was not considered appropriate to reduce the developable volume of the base as this would be less enabling for some types of building

An alternative approach would be to increase the height of the road wall to compensate. However the change in height would be incongruous with the moderate height of existing buildings and therefore not achieve its purpose in terms of coherence. It would also not achieve the level of sunlight and daylight access shown above. For this reason, it is proposed to retain the 21m height and the recession plane.

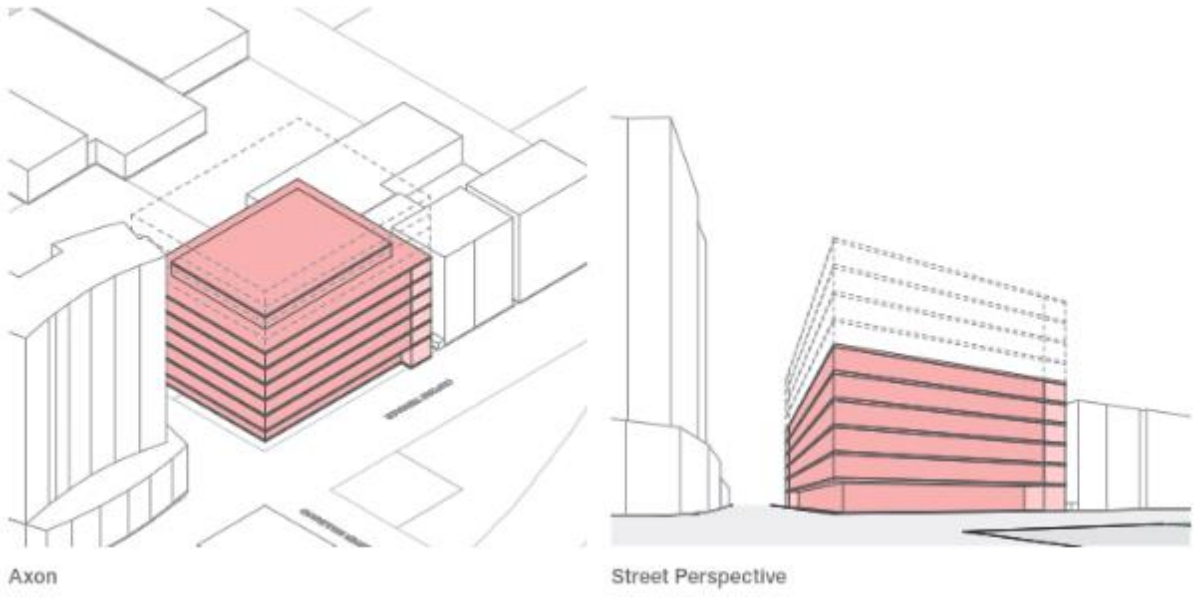

Figure 24: Modelling of the road wall height illustrating integration with existing building heights.

Central City Mixed Use Zones

These areas have a very eclectic character and this is likely to continue in the medium term, with a variety of lower scale of buildings being the dominant building type. Retaining a road wall, with a small setback above the existing height will ensure that taller buildings have reduced visual dominance effects on the street environment in particular.

The proposed approach is to retain the existing height limit in the CCMUZ as a trigger for assessment, but to allow for greater height as a restricted discretionary activity to manage any visual and amenity impacts.

So far, there are few buildings in the zones that reach maximum height due to the types of activity within the area. However this is likely to change as the opportunity for residential activity is taken up.

An increase in height was considered above the existing 17m, but was not proposed. The permitted site coverage is very high and in a mixed use environment, buildings built across the majority of the site may have adverse visual effects to the street environment and neighbouring sites, which can be addressed by setbacks to the street and internal boundaries. Unlike the City Centre, a widespread adoption of higher buildings is not expected, meaning that tall base buildings may be isolated and visually prominent.

Corner Sites in the City Centre

The Architectus analysis recommended more flexibility in the road wall height for corner sites in the City Centre. This would:

- Allow more ability to respond to the corner in terms of legibility. Corner sites are often landmarks.
- Recognising that some potential adverse effects are reduced at corner sites. For instance there is more space for sunlight to be received and these sites can also visually absorb taller forms more easily.
- Enable more capacity and development options for those sites.

For these reasons, it is recommended that an increase in road wall height is permitted around the corner. This increase should relate to the corner and not simply to areas close to the corner i.e. it should wrap the corner and not be detached from it.

An increased height for the road wall at corners is common in other cities. An example of this approach is Melbourne, where corner sites may have twice the street-wall height of mid-block sites.

There is also the issue of horizontal scale to consider. If a site is particularly long or wide, then a very large building could result which would be dominant in the streetscape. A maximum extent from the corner of 30m is recommended for the relaxation in road wall height.

In considering the scale of a road wall height increase, the following was considered:

- How the building will relate to the scale of the 21m road wall

- How the building will relate to the existing scale of buildings. The city is newly rebuilt and the existing buildings will be in place for many years to come. The new road wall exemption should not visually dominate the existing form of 3-6 storeys.
- How the building would relate to the public space. The road wall is the main mechanism to manage the impact of the vertical scale of tall buildings. Although corners have more space to absorb these taller forms, they should still maintain a comfortable level of enclosure and not be dominated by tall buildings. The building will also be visible from within the street (ie the other side from the corner).
- Tower setbacks would apply above 28m, which would manage the impact of the taller building on neighbouring sites, along with design assessment matters.
- Avoiding a complex building envelope.

An increase of 100% would be 42m or roughly 12 storeys. This would be a tall building in the context, amongst the tallest in the city at present. Doubling the road wall height is likely to lead to buildings that are quite dominant of neighbours even if they are built to the permitted road wall height. In the Christchurch context, with modest street walls, these buildings would risk appearing especially dominant and for this reason, this option is not recommended.

An increase in scale of the road wall of 50% would allow for a height of 31.5m without a setback, similar to the current permitted height (28m) and almost the same as the proposed maximum height in the zones adjacent to the central city (CCMU and HRZ). Whilst taller than most buildings in the central city, this scale of increase would still relate visually to the existing buildings and the modest scale of street wall (often between 3 and 5 storeys).

The second option is preferred, but would create a complex building envelope with several different heights for different built elements, especially on wider sites where the increased height would cease to apply 30m from the corner. For this reason, it is recommended that the street wall and recession plane does not apply to corner sites, allowing some extra flexibility on these sites.

4.2.2 Building Height

Proposed controls:

Zone	Operative Plan	Recommendations
City Centre Zone	28m	90m *(28m building base height, and 21m road wall height)*
Cathedral Square	28m	45m
Victoria Street	17m	45m
Central City Mixed Use Zone	17m	32m *(17m building base height)*
Mixed Use Zone	15m	20m

Benefits of the Proposed Controls:

- Enable additional development capacity (residential and commercial), while managing the effects of high-rise buildings (including wind, shading, and visual dominance)
- Integrate existing and future high-rise buildings into the city form
- Maintain high quality public realm
- Recognise the sensitivity of specific locations
- Recognise the centres hierarchy through the urban form, including the primacy of the city centre and importance of design quality
- Recognise the importance of landscape and cultural context to the city

Discussion

City Centre Zone

The NPS-UD is premised on a centres based approach. The central city has primacy within the hierarchy of centres in Ōtautahi Christchurch. Policy 3 of the NPS UD directs that in city centre zones district plans enable '*building heights and density of urban form to realise as much development capacity as possible, to maximise the benefits of intensification.'*

A range of building heights have been considered, including unlimited height. The proposed height for the Ōtautahi Christchurch City Centre Zone is 90m. This is based upon analysis to evaluate alternative heights and consider the impacts and benefits in relation to the urban form of the city, and the range of issues outlined earlier.

The following matters are considered relevant to building heights in the central city, and are also covered within the issues section:

1. **Integrated urban form and skyline:** Introducing new high-rise buildings of a similar scale to the existing high-rise buildings (50m-80m) in the city centre will help create a cluster of buildings of similar heights and more coherent form for the city as a whole.

2. **Isolated buildings:** Current demand for high-rise buildings is limited and if built, are likely to be constructed over a period of many years. Therefore individual buildings may be prominent for quite some time, in relation to the surroundings.

3. **Building dominance:** There is no specific height at which buildings could be considered dominant within the city centre, however heights of 50-80m are similar to the existing high-rise buildings and would contribute to their integration into the skyline.

4. **Shading:** High-rise buildings can create substantial shading. However, over a certain height (depending on the scale of the space that is shaded) additional height would not have a significant impact as most of the available sunlight within a high-rise urban environment comes through voids between the buildings. Shading has therefore not been a key consideration in determining heights, and increases in the building setbacks will in part compensate for additional shading from high-rise buildings. The exception is Cathedral Square as a key public space in the city, which is detailed below.

5. **Wind impacts:** Wind impacts increase substantially with height, as detailed in technical advice from Meteorology Solutions prepared for PC14. Modelling shows impacts are greater at 90m than at 30m, and that high-rise buildings risk creating dangerous gusts at ground level. Whilst it may be possible to manage effects through mitigation, at 90m or greater the creation of dangerous wind conditions may not be feasible to mitigate.

6. **Visual Quality of Buildings:** The existing tall buildings are not necessarily well designed or visually interesting in themselves, for instance, they often have little modulation or articulation. If they formed part of a cluster, the shape and form of individual buildings is less important as they are a component of a larger form. For the reasons listed in section 2.2, good design is critical to support city form, sense of place and identity.

7. **Development capacity:** Capacity within the central city and the economic cost implications of building heights limits have been considered within the Property Economics advice prepared for PC14. While no height limit may be encouraged from an economic perspective, this advice recognises that there may be non-economic reasons (including urban design) for height limits, and that the implications of a 90m height threshold would be very low.

The following illustrations show the existing city centre form and potential impact of development on the skyline.

Figure 25: Modelling of the current Christchurch skyline.

The current city skyline has a small number of taller buildings, which are prominent in the skyline. A continuation of the current height or a modest increase would not integrate these existing buildings into the skyline, and would not be consistent with the approach required by the NPS UD.

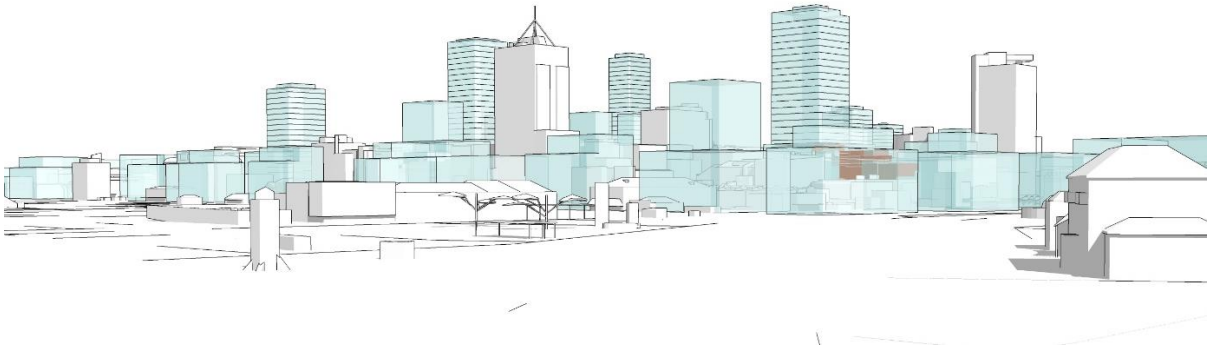

Figure 26: Modelling of the Christchurch skyline with some moderate height buildings and some tall buildings up to 90m.

An increase in height to 90m would enable buildings at a height that would relate visually to the existing built form. It would also manage the potential for individual buildings to be dominant, whilst allowing significant increases in capacity. Maintaining a connection to the city centre existing form is regarded as an important element in the establishment of the future city form.

Whiti-reia Cathedral Square

A maximum height limit of 45m is proposed for some sites adjoining Cathedral Square.

Shading analysis has been undertaken as part of the Plan Change 14 process and is summarised below[21]. This demonstrates that there would be significant shading over the majority of the square if buildings of 90m in height were constructed on its fringes. Shading effects would be substantially reduced with a 45m height limit. The analysis also identified that heights would only need to be

[21] Lower Height Limits: Victoria Street and Cathedral Square Qualifying Matters

lower for the sites immediately surrounding Cathedral Square and not for the wider area, in particular the southern and eastern edges where mid-day and afternoon sun falls.

Under the Christchurch City Plan (1995), height limits were reduced around Cathedral Square to 45m (from 80m). This recognised the significance of the Cathedral and importance of Cathedral Square as the heart of the city and principal civic open space.

A height limit of 45m would enable additional height above the current 28m, while managing impacts on environmental comfort. It would also respect the significance of the Cathedral, the character and heritage values of the space.

Figure 27: Shown here at 2.30pm, 90m buildings shades much of the Square on the equinox (left), whereas there would be much less shading from 45m high buildings (right). Note the impact of gaps between the buildings.

A potential area for lower height limits is:

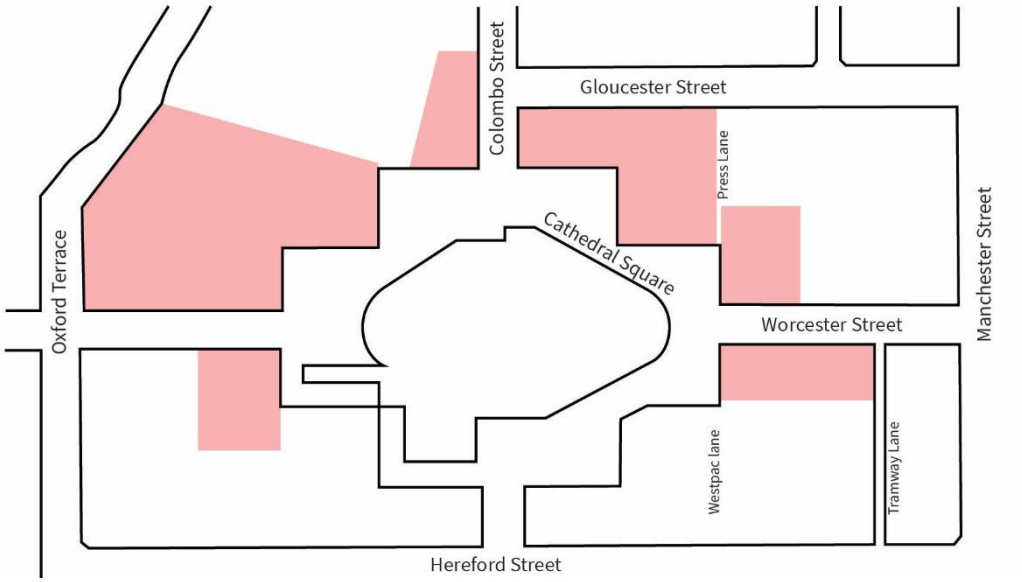

Figure 28: Sites where a 45m height restriction is recommended.

Victoria Street

A maximum height limit of 45m is proposed for Victoria Street.

A range of alternative heights have been considered, with modelling and analysis undertaken to consider the following[22]:

1. The impact of Victoria Street's built form on the consolidated form of the central city and associated legibility impacts, and potential dispersal of activity.
2. The effects of increased height on the surrounding residential areas.
3. The likely length of any period of change given the limited availability of sites due to substantive post-earthquake rebuilds.

Other amenity effects such as the pedestrian experience at street level were considered to be addressed through the City Centre Zone built form standards, including street wall height, and are equally applicable to Victoria Street.

The findings of the analysis noted the following:

- A 45m height limit would be significantly taller than surrounding residential heights of 32m, but not so much that it would be visually dominant.
- A 60m building height would appear out of proportion in relation to the residential context and form of existing development.
- The ribbon nature of the street reduces the opportunity for a consolidated form or cluster of taller buildings to establish, increasing the risk of isolated visually dominant buildings, if there is a higher height limit.
- Although transition between a height of 45m for Victoria Street and 90m for Central City would be quite evident, this would reinforce the primacy of the City Centre zone and not be more significant than the transition proposed to the remainder of the city surrounds.

The High Density Residential zone surrounding Victoria Street will allow for 32m high buildings. Development of these sites could help absorb taller buildings to some extent. However, as with the commercial area, much of the adjacent residential area has been renovated or recently redeveloped. As such there is limited opportunity for large scale apartment buildings in the area, particularly when the availability and affordability of land elsewhere in the city is considered and preference for townhouse forms. In addition, both land fragmentation and age of housing within the area will also likely limit wholesale residential redevelopment in the coming decades.

It is acknowledged however, that the area to the west of Victoria Street is likely to be more attractive for high density residential development than to the east because of the proximity to Hagley Park. A recent consented retirement village[23] provides for 5 to 8 storey (max 25m in height) buildings across two sites. This would help to integrate taller buildings into the cityscape, but not very tall buildings of 60m or more (which would be at least double the height of neighbouring buildings).

Overall, there is a risk of visual dominance from both 60m and 90m buildings because of the contrast with existing and planned built form. The isolated and ribbon nature of the street makes this less appropriate and manageable than in a compact consolidated core area, and the advantages of

[22] Lower Height Limits: Victoria Street and Cathedral Square Qualifying Matters
[23] RMA/2020/673

greater height is less apparent than in the central area. There is also a higher risk of isolated and visually dominant buildings being established that would be prominent in their own right, with fewer opportunities to integrate them into a consolidated mass of towers. This risk is increased by the lack of opportunities for redevelopment within the Victoria Street area.

For these reasons a 45m height limit is recommended for Victoria Street.

The study produced views of each scenario from above and Hagley Park, where views of the tall buildings will be quite apparent. The views are as follows:

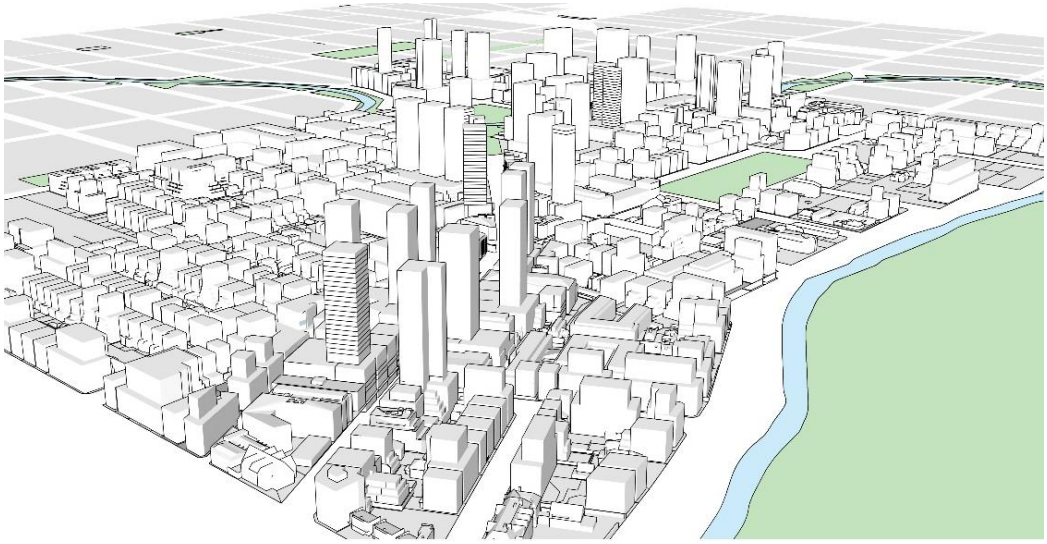

*Figure 29: **90m:** An extension of central city in form. Strong contrast in built form with the surrounding existing and future context.*

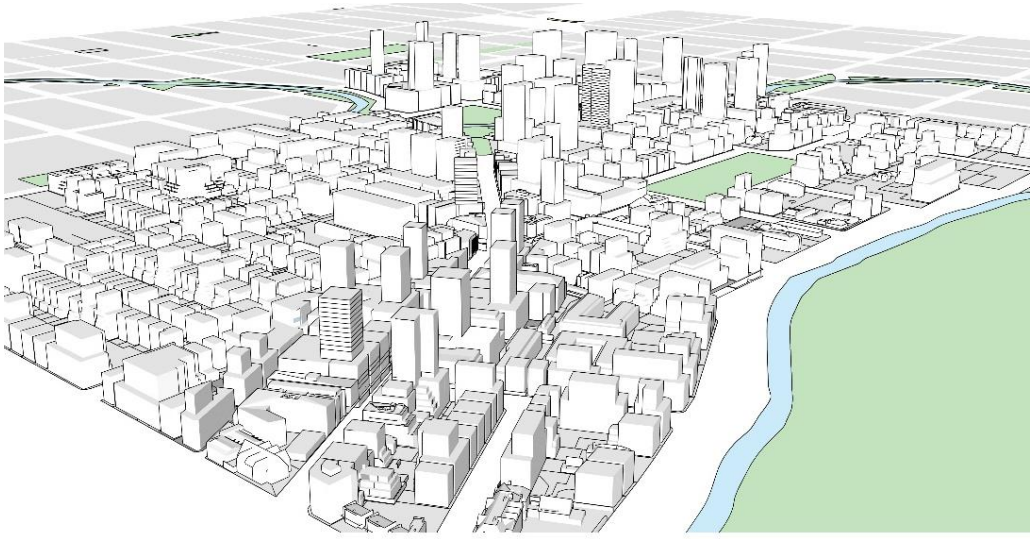

*Figure 30: **60m:** A good level of height transition between the surrounding residential and the Central City 90m form.*

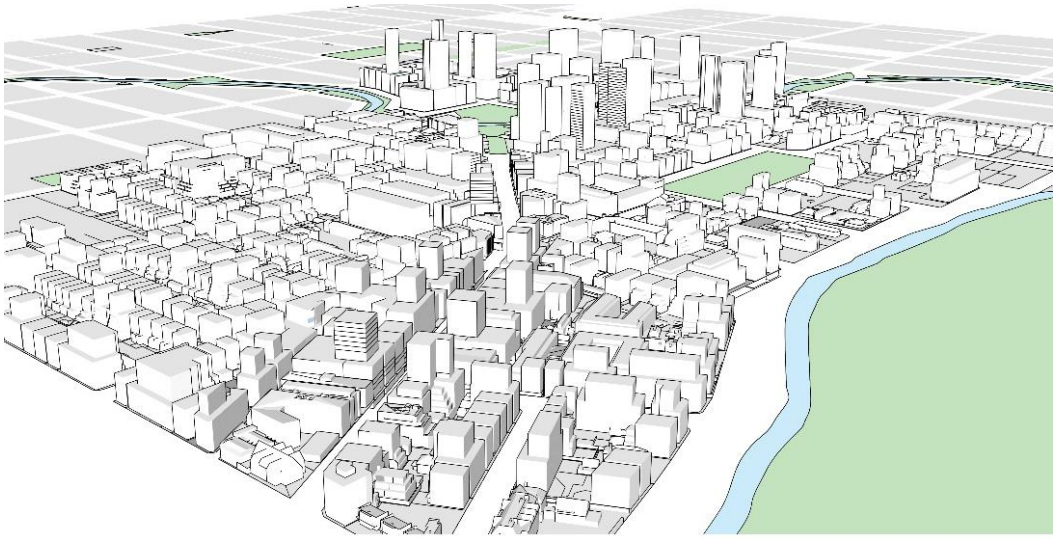

*Figure 31: **45m:** A lower level of buildings integrate with the Victoria Street surrounds, and the central city stands out more prominently.*

Central City Mixed Use Zone

A number of factors are relevant to the consideration of increased building heights in the CCMUZ including:

- **Integrated Urban Form:** Mid-rise buildings contribute to a transition from the suburbs towards a more intense urban core. Whilst moderate height (for instance of up to ten storeys) would contribute to this transition, Sporadic tall buildings in this area would adversely impact the skyline and city form;
- **Continued presence of low height buildings:** The mix of activities means that there will continue to be many low-rise buildings in the area. Most demand is expected to be for low to mid rise buildings in the short and medium term meaning that there is an increased risk of isolation of tall buildings in this area;
- **Building Dominance:** Because of the generally modest scale of building expected, any tall buildings may be visually dominant, especially on the periphery of the area (away from the central city);
- **Shading, Privacy and wind:** Taller buildings in residential areas create more intense impacts on the living environment (shading, privacy and wind);
- **Development Capacity:** The highest intensity of use is expected in the central city and taller buildings on the fringe may compete with this (as described in the Property Economics report);
- **Visual Quality of Buildings:** Because taller buildings are prominent, the management of visual quality is important (but can be managed by other Plan provisions, especially if the change in scale is modest).

These factors generally point to a moderate scale of building in the mixed-use zones. The NPS UD requires buildings of at least six storeys in walkable catchments, which forms a baseline for a height limit for areas close to the central city. However, some additional height is considered appropriate and desirable in areas closest to the City Centre Zone, where it will integrate with the change in scale

expected in that area. Whilst taller buildings may occur in the City Centre, they are not expected to be common in the foreseeable future, so a modest step is considered most appropriate. A height of 32m (10 storeys) is therefore proposed to:

- Integrate with current low-rise form
- Provide plentiful opportunity for development
- Provide a step between the low-rise and mid-rise residential areas and the taller buildings of the City Centre
- Retain the primacy of the central city

There are some areas that may be more suited to taller buildings. Te Kaha, the multi-use arena precinct, is one area because of the height and bulk of the proposed building. Taller buildings around the stadium would help to integrate it into the built form of the city and reduce its visual impact. Provision can be made for taller buildings in these areas through policy direction, assessment matters and future neighbourhood planning.

Mixed Use Zone

The above discussion describes a step in height provided by a ten-storey CCMU zone to the central city. As described, the NPS UD requires a height of six storeys. It is expected that the mixed use zone would transition to a predominantly residential area over time. It is in many ways equivalent to the High Density Residential Zone, in its location and expected intensity of use. In line with this and following the direction in national policy, a height of 6 storeys (20m) is recommended in this zone.

4.2.3 Tower setbacks and Separation

Definitions:

Tower setbacks and separation are aimed at ensuring a degree of separation between buildings and respond to the issues identified in the previous section. A tower comprises the upper levels of a tall building that are set back from the property boundaries. The following controls relate only to the upper floors of buildings, above the permitted height for the zone.

Proposed controls:

Zone	Operative Plan	Recommendations
City Centre Zone	N/A	Front Boundary Tower Setbacks to be 7m. Internal Boundary Setbacks above 28m to be 10% of the total building height. 12m separation between towers on the same site.
Central City Mixed Use Zone and Central City Mixed Use Zone (South Frame)	N/A	3m setback from the street boundary. 6m setbacks from all boundaries.

Benefits of the Proposed Controls

1. Reducing the visual dominance of upper floors when seen from the street, by setting them back behind a street wall;
2. Avoiding secondary street walls above the road wall (which result from adjacent towers being joined together). A side setback ensures that this does not occur by requiring a degree of separation between them.
3. Creating visual interest by ensuring that buildings do not abut boundaries with blank or superficially detailed firewalls. If buildings are located at the boundary, there are few options for high quality cladding because of fire regulations. Gaps overcome this issue and provide certainty that side walls will not be built out in future. This ensures that there is a functional use for glazing into the future.
4. Ensuring that there are gaps between the towers, allowing for through views of sky and managing the density of tower development generally.
5. Managing environmental comfort because gaps between buildings are the principle way that sun can reach the ground in cities that are dominated by tall buildings. Gaps are also essential in dissipating wind (rather than concentrating it on the street).
6. Ensuring outlook and sunlight access within each building.

Discussion

Tower setbacks address a number of the issues identified and are a key method to manage the impacts of tall buildings by ensuring a degree of separation. However, tower separation and setbacks might impact on viability by reducing the buildable area, potentially making buildings more difficult or expensive to construct. The balance of costs and benefits is discussed below.

City Centre Zone

Front Tower Setback

Front setbacks between the base and the tower particularly contribute to:

- Coherent Street-scene (allowing the street wall to be dominant in views, to maintain a human scale).
- Impacts on the public realm (sunlight and daylight access, enclosure and views of the sky and management of wind).

Front setbacks would be in part dictated by the recession plane for the street wall, which ends with a 7m setback at 28m. One option would be that the tower rises from this point – in effect a 7m front setback. This would have the benefit of being consistent with the existing practice and the rest of the rules.

Reductions in the setbacks below 7m could be considered but a rule specifying a reduced setback would undermine the effectiveness of the recession plane, not just in tall buildings but in every case

(because if a tower set closer to the street than 7m can breach the recession plane, then there is no reason that any upper floor should not).

A 7m setback is considered appropriate to visually separate the building base from the tower and is consistent with other cities. The Melbourne report[24] includes a comparison of street setbacks from cities around the world and notes that they range from 3m (certain wide streets in New York and Singapore) to 10m (Perth). A setback of 10m was adopted for Melbourne[25] with discretion for it to be reduced to 5m.

In their report, Architectus discuss the option of zero setbacks for towers on corners to allow for design flexibility. In consideration of these factors, it is proposed to allow for increased flexibility by increasing the street-wall height at corners. This allows for mid-rise buildings to be built to the corner, but tall (and more imposing buildings) would need to be setback, at least at upper floor level. This is discussed in full in 4.2.1.

Tower Internal Boundary Setbacks

Increasing the distance between towers would help to manage each of the issues outlined above, with the exception of the first (reducing the visual dominance by setting upper floors behind a street wall).

For some issues, (2 and 3 in the above list) a basic setback of 4m from internal boundaries would be sufficient to ensure an adequate degree of management. This would overcome the need to build firewalls suitable for a common boundary and allow a range of cladding materials to be employed. It would also be enough to visually separate the towers and prevent the appearance of a continuous street wall.

However, for tall or bulky buildings quite large distances would be required to resolve some of these issues. For example, good solar access, avoiding shading, would require that there are significant clear areas (voids) above the street-wall to ensure that there was sunlight on footpaths for a good proportion of the day and a proportion of the skyline that was not occupied by buildings. The impact of wind also increases with height and increased setbacks will help to filter it.

Similarly, the degree of internal daylight access is related to the scale of built form overall and would be reduced more by taller buildings.

The impact of setbacks on development potential is an important consideration. For instance, large 6m setbacks would take a more significant proportion of a smaller site and would in some circumstances affect the viability of development overall (it would not be worth building a tall building on a narrow site because the floorplates would be too small).

Another consideration is whether the setbacks should apply at 28m height. The impacts increase with height, so breaches of the setback rules at 30m will not be as significant as for taller buildings (of, for instance, 60m) because they will not be as widely visible.

The Architectus analysis found that 6m setbacks would generally allow a reasonable development to take place on a larger site (for example 50m x 40m). This generally demonstrates that large development can be accommodated with the setbacks on larger sites.

[24] Pp102

[25] Schedule 10 to Clause 43.02 Design and Development Overlay, Melbourne Planning Scheme

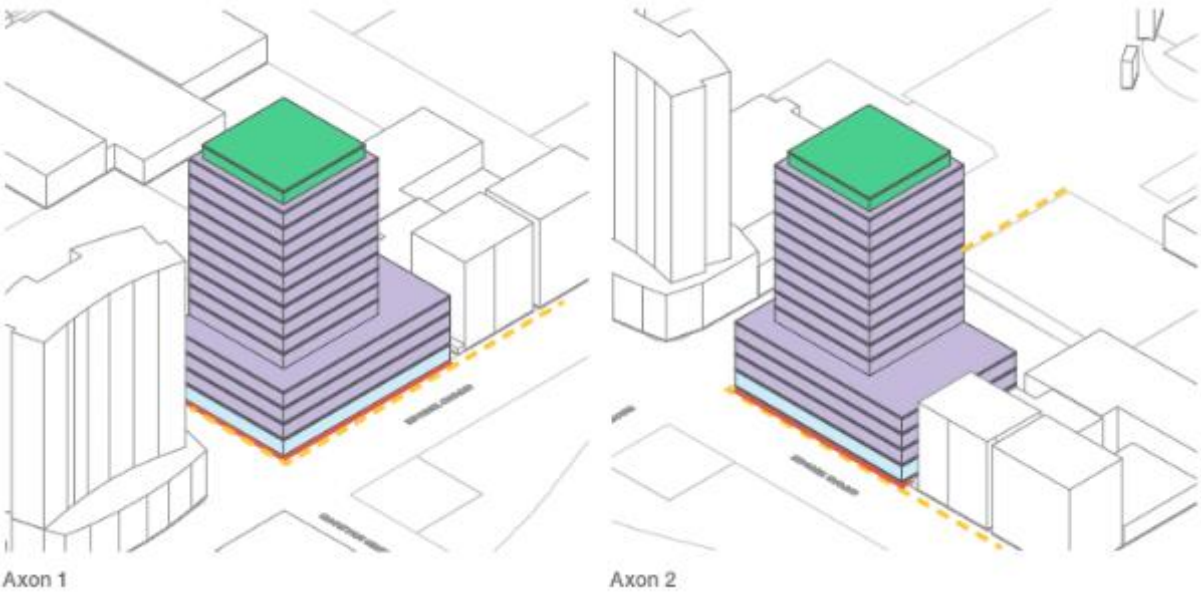

Figure 32: Modelling of a tower building on a large site, with setbacks.

From the above discussion, a number of options have been considered:

1. **Setbacks to be 4m with 8m tower separation.**
   The 4m setback achieves an improved outcome in managing the identified effects compared to no setback. It resolves the visual impact issue of flank walls and allows some light into building interiors. It will at least partially resolve a number of other issues (allowing some views of the sky and contributing to reduced levels of visual dominance). However, daylight penetration to the ground would be limited, especially from tall buildings that blocks out more sky, and the setback would not be in proportion to the impact of taller towers

2. **Setbacks to be 6m with 12m tower separation.**
   A 6m setback would be quite effective at managing the issues, allowing for visual separation between the towers, avoiding the perception of a secondary street wall and allowing for some daylight penetration to street level. As for the smaller setback, it would remove the driver for blank walls and generally reduce the visual dominance of towers by allowing for through views of the sky or other buildings in the cluster. The drawback with this option is that it may discourage medium height buildings which have reduced impacts compared to taller ones.

3. **Setbacks in proportion to height.**
   Because the impacts of tall buildings increase in proportion to height, applying increasing setbacks to taller buildings would manage the level of impact effectively.

   The effects are created by the massing as a whole (not simply the increase in massing at a certain level). Consequently, the setbacks should apply to the whole tower form, rather than reduce with height as in a recession plane. This could be implemented by means of a formula (for example setbacks above 28m are 1/10th of the building height).

Option 3 is considered the best option overall, requiring the whole of a larger tower to be further setback from boundaries in proportion to the height and the impact created. In practice this may mean that such buildings require a larger site, but this is due to the increased impacts that these buildings create. It would allow for medium height buildings to be built more easily, whilst also managing the increased impacts of taller buildings.

Tower Separation

The use of setback rules will ensure that there is some separation between towers on adjacent sites. However, there may be instances where two towers are constructed on the same site. To avoid the matters discussed above, these should have a similar degree of separation to towers built on adjacent sites. Two options were considered:

1. A simple separation rule, that towers should be 12m apart.

2. Calculating the separation using a formula based on the setback being a combination of 10% of tower height for the two towers, similar to the recommendation for setbacks. For example:

    - Tower 1 height 50m (would require a 5m setback)
    - Tower 2 height 60m (would require a 6m setback)

    In this case the combined separation would be 11m.

Both the approaches are considered appropriate, but the advantage of the simple rule is that it is easy to understand and apply. However, if set too close, it would lead to more visual dominance from tall towers; and if set further apart it may lead to inefficient use of sites.

A pair of tower on a larger site will inevitably have more space around them (because they will be subject to the setback rules on all sides) and as a result the risk of dominance is considered low. For this reason the simple rule is recommended.

Setbacks in the Mixed Use Zones

Tower Internal Boundary Setbacks

In the CCMU and CCMU(SF) zones, upper floor setbacks of 6m are proposed. These are in proportion to the scale of building in the zone and would take into account the other building form controls (the lower road wall and height limit and 50% site coverage for upper floors). They would allow for slightly higher levels of sunlight access and outlook to what is proposed for the City Centre Zone. This is a recognition of the nature of the zone, with lower overall amenity and accessibility and the expected transition to a more residential area.

Smaller setbacks were considered for the mixed use zone for upper floor buildings, for instance 4m. The reason these were not recommended is that the mix of uses for taller buildings is expected to include a high proportion of residential activities, both on upper and lower floors. These are particularly affected by the impact of tall buildings on adjoining sites, especially from overshadowing and overlooking. Including upper floor setbacks helps to manage these impacts.

Figure 33: Potential Setbacks for Central City Mixed Use Zone (Architectus)[26].

Tower Street Setbacks

A street setback would make a contribution to reducing dominance of tall buildings by setting towers back from the predominant street wall. This may be quite inconsistent along the street if the ground floor is setback (which is recommended for residential developments), instead of being built to the boundary. As a result it is recommended that the setback should apply to upper floors in relation to the base, rather than the street, in order to create a street wall and to reduce the visual dominance of the upper floors.

4.2.4 Tower Dimensions and Site Coverage

Tall buildings can be visually dominant as a result of their bulk. This is a result of the width of the building as much as its height – for example a continuous medium height building of 12 storeys can be imposing, in part because there may be little visual relief and separation of the built form. Setbacks are designed to address this issue on separate sites, but a large site could be developed with a bulky building which may have a significant impact on its own.

Central City

Existing taller buildings in Christchurch usually have a maximum horizontal dimension of 40m (above the base). This includes the tallest buildings (Crown Plaza and Pacific Tower) and the Distinction Hotel. These slender buildings allow views of sky and solar access around the sides of the building.

The bulk of buildings on medium sized sites would be managed by setbacks, but for larger sites, bulky towers or medium height buildings may result (eg 10 storeys). A maximum tower dimension

[26] Ibid, pp22

would require either that there was careful management of bulky buildings (via a consent process), or that larger buildings are split into two separate towers in order to meet the standard.

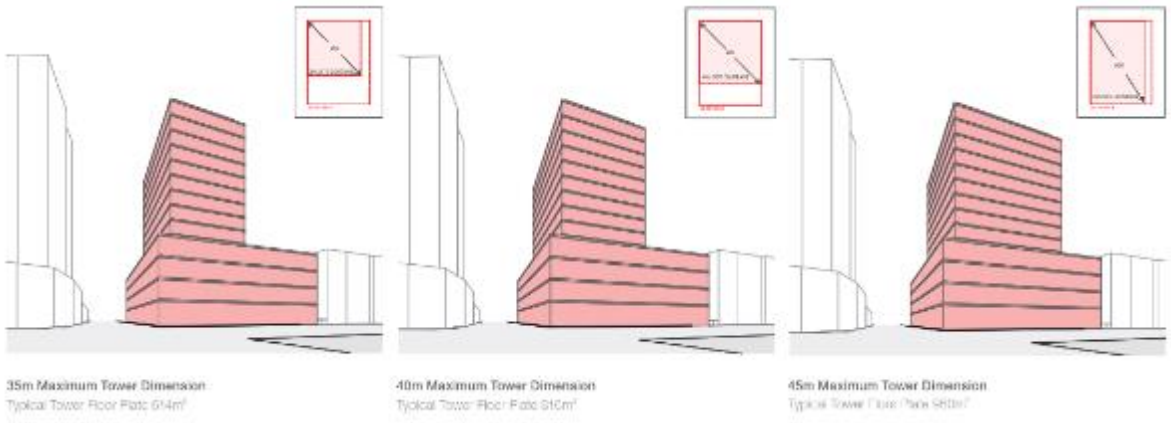

Figure 34: Modelling of Tower dimensions (Architectus) [27].

The construction of such tall bulky buildings is likely to be infrequent, but if developed they would have an outsized impact on the immediate area and the wider cityscape. The proposed tower dimension allows for a usable floorplate of a size that is not often exceeded (around 800m^2). It compares with similar cities, for example Toronto has a maximum floorplate of 750m^2.

An alternative method of managing this issue would be to include a site coverage control, potentially a maximum of 50% over the 28m height threshold. This would also manage the bulk of buildings and ensure that the amount of open space around the site increased in proportion to the tower.

Comparing the approaches, site coverage is more restrictive than a tower dimension on sites less than 2000m^2, but less restrictive on larger sites (which are expected to be more unusual). It is also a less direct way to control the impacts (which are as much to do with the bulk of buildings in themselves as opposed to the proportion of site that is built). As a result, a tower dimension is recommended.

Central City Mixed Use Zones

In the Mixed Use zones, mid-height buildings of 6-10 storeys are expected rather than towers of 8-30 storeys. This more modest scale of development relates better to the street, and there are fewer concerns about visual dominance and the impact on longer views, for instance.

Taller buildings in the mixed use zones are also likely to be predominantly residential, because the size of commercial tenancies is restricted. This will bring with it a set of assessment criteria which require space to be set aside for ground floor landscaping and outdoor communal space, as well as an expectation for solar access. This is in itself likely to limit visual impact at height. Furthermore, 4m setbacks at height will also tend to reduce the bulk of buildings on most sites.

However, there are a number of large sites in these zones. Setbacks are unlikely to reduce the impact of bulky buildings on these sites because they will only create gaps at the edge of the site. In this situation, a site coverage limit would manage the overall bulk of the building. A tower

[27] Architectus Pp11

dimension is not considered necessary because the height is low in relation to the City Centre zone – there will not be the potential for bulky building at height.

4.3 Floor Area Ratio

Introducing a Floor Area Ratio was considered as part of this plan change, but has not been recommended.

Floor Area Ratio is often used as a way to manage density in commercial zones. It is not a built form control as such, but is used to set the quantum of development on the site and indicate to the market a reasonable expectation of development density. The FAR limit is often used as a trigger for the negotiation of higher quality buildings or value capture so it is not an absolute limit.

The current rules in Ōtautahi Christchurch (assuming 7 storeys are built) would allow for an FAR of just under 7 because there are no setbacks or other restrictions on site coverage. An international comparison of FAR is shown below[28]. This was created during the Melbourne Central City Built Form Review (which noted very high FAR amongst new buildings and proposed an 18:1 control for Melbourne).

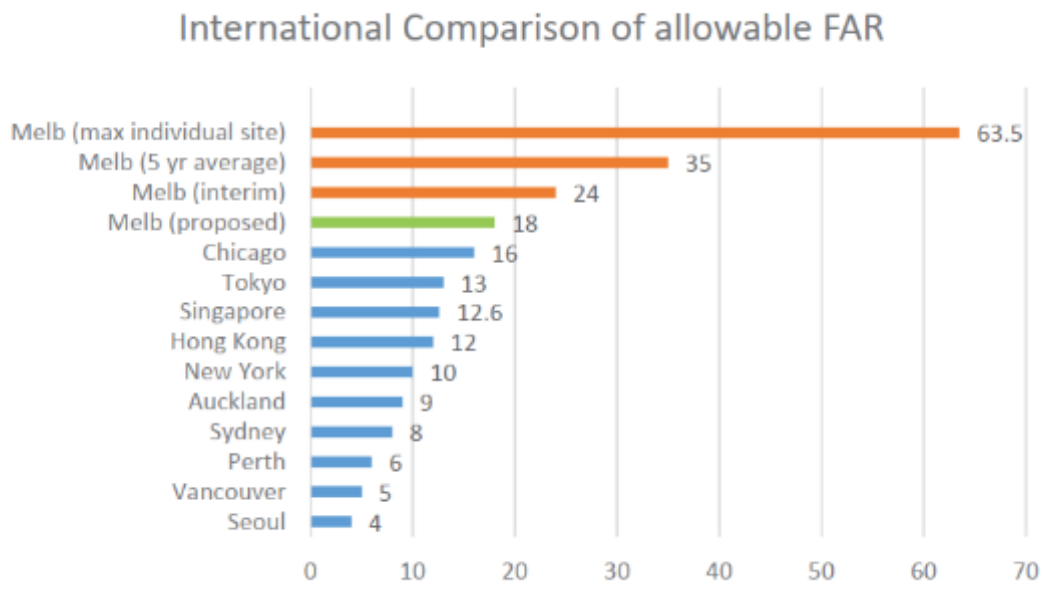

Figure 35: International Comparison of FAR (prepared for Melbourne Central City Built Form Review).

[28] Central City Built Form Review: Synthesis Report, Hodyl and Co, 2016 (Melbourne)

Modelling of the proposed built form standards is shown in the diagram below, for a 2000m2 site and a 1050m2 site (a common 21m wide site).

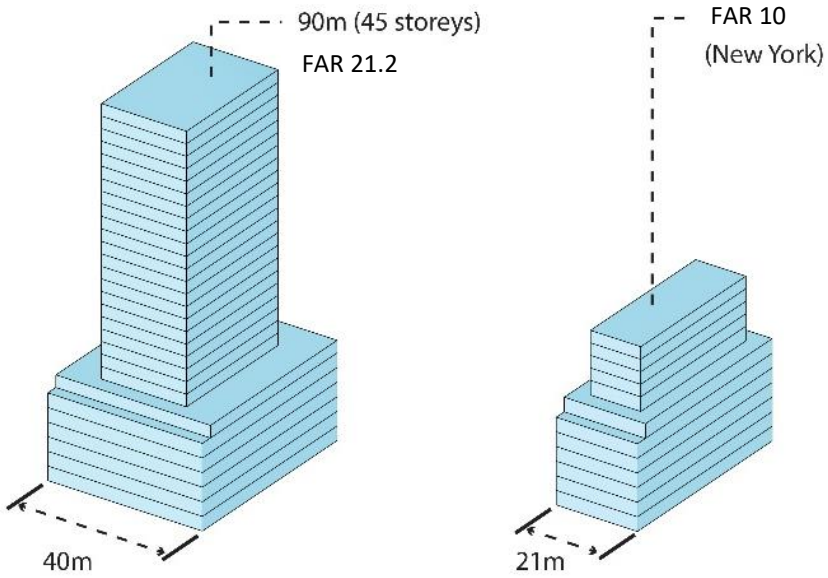

Figure 36: Modelling of Ōtautahi Christchurch Development Envelopes and Floor Area Ratios for a 2000m2 site (left) and a 1050m2 site (right).

These show that FAR could be over 21 for the large site and 10 for the small site. The former is greater than any of the comparison cities used in the Melbourne Review, whilst the latter is around average amongst the cities (equivalent to New York), despite the small size of the site (development is restricted by the setbacks, which increase with height).

It would be harder to establish towers on sites narrower than 20m because the width of the floorplan would likely become uneconomic to build. The FAR would therefore drop to 7 for narrow sites, which is more than Perth (and slightly less than Sydney). Whilst there would be room for negotiation in those cities for increased FAR, some increases in height above the limit are likely to be granted in Ōtautahi Christchurch, for instance with reduced setbacks.

It is worth noting that the cities in the comparison were capital cities, equivalent to Auckland, rather than regional cities, which would be expected to have less intense floor area ratios due to less intense demand. The proposed rules for Ōtautahi Christchurch would place it amongst the most enabling cities in the world, despite its relatively small size and lower level of demonstrated demand for tall buildings or central city floorspace in general.

A FAR control has not been recommended because it is considered that the built form controls manage the envelope effectively, and the base allows for a generous starting point. A mid-range FAR (such as 10) would risk introducing inflated development expectations for small sites that could not be met through the envelope, or artificially limiting the development of larger sites.

4.4 Permitted Status for some Small Buildings in the City Centre Zone

The following built form standards are recommended to apply only in the City Centre Zone, for sites with a width of 21m or less. Buildings on these sites that comply with the standards would have permitted status.

Proposed controls:

Zone	Operative Plan	Recommendations
City Centre Zone	N/A	Built frontage: 100% Min/Max height: 11m/21m No vehicle access Separate residential access to street (if residential is provided) Minimum glazing to street: 75% (ground floor) / 30% (upper floors, per floor) Ground floor street frontage to be split into bays 8m wide or less.

Benefits of the Proposed Controls

1. Allows an easier consenting process for low-risk proposals (small buildings with well activated facades).
2. Ensures the buildings are designed with a high level of visual interest and street engagement.

Discussion

Small mid-block buildings on small sites without vehicle access are of low risk in respect to impacts on the city centre environment. It is considered that these can be effectively managed with built form standards, to reduce the need for resource consent processes.

Small buildings provide vertical articulation by virtue of their scale, and with the addition of standard matters including setbacks, glazing, pedestrian access and weather protection where important, will provide a level of certainty to the outcome, without disrupting continuity or engagement with the street.

Corner sites should be excluded as they contribute substantively to the legibility and view shafts of the central city, and as such require careful design management.

Vehicle access, as noted above, is also excluded as its provision can undermine the quality of a street or public space, including reducing active street frontage, creating voids within the building facades and safety issues, both in respect to moving vehicles and in regard to CPTED matters. A study in Sydney[29] of 15 small sites found a very strong correlation between vehicle access and poor street

[29] City of Sydney, 2016 *Erection of Tall Buildings in Central Sydney*

activation. For this reason it is recommended that vehicle access does not have permitted status in the plan (and impacts are managed through the consent process).

Taller buildings have more widespread impacts and the potential for more intense impacts locally and consequently do require more scrutiny to manage their impacts. Built Form Standards can be inflexible and lead to unexpected outcomes, as well limiting the opportunity to look more broadly to design alternatives that assessment rather than standards can provide.

Suggested built form standards for a narrow mid-block building, and rationale for this are as follows:

- Maximum width of site or site frontage: 21m. This ensures that the standards only apply to small buildings. This achieves variety along the street by ensuring that it is comprised of a number of distinct buildings, and that if a relatively monotonous outcomes results for any individual building, it is confined to a small portion of the street amongst a variety of built outcomes.
- Built frontage: Requirement to build to the street boundary for 100% of the site frontage.
- Minimum /maximum height: Minimum height of 11m and maximum height of 21m. To support the continuity and definition of the street wall. Transitions to higher levels introduce an additional area of complexity that may not be managed well by reliance on built form standards.
- No vehicle access to site for the reasons outlined above.
- Where residential use is included in the building's mix of uses, a separate residential access must be provided from the street or lane. This is to ensure safe passage to the street from the front door, as well as activation of the street or lane, avoiding convoluted and potentially dangerous access for instance through narrow external passages or via service yards.
- Ground floor articulation – if the building is wider than 10m then the ground floor shall be split into bays of no more than 8m wide, separated by an external wall or pillar of at least 0.3m in width. This ensures a layered approach to design at ground floor, to create a level of visual interest, in association with glazing and the maximum building width.
- Transparent glazing: Minimum of 75% on the ground floor between 0.5 and 3m height on the primary street façade to ensure continuity of the commercial edge and provide for visual interest and safety. A minimum of 30% otherwise where adjacent to other publically accessible space.
- Evenly distributed glazing – each façade to have a minimum of 30% glazing for each floor above ground level. This also relates to ensuring a degree of coherence, that there are not areas of the building with blank facades. Evenly distributed glazing is also more likely to create a visually coherent façade and ensure visual interest within the building facades. The exception is where the building abuts adjacent buildings forming the street wall.

The diagram below shows how this is proposed to work, and the built outcomes it would encourage.

One concern with this approach is that it could lead to fully glazed frontages, which would comply, but can be flat and plain, offering little interest or definition. The risk of this is tempered because the rules would only apply to narrow buildings and the 8m bays would apply to buildings over 10m in width. Over the course of the street, it is still expected that some variation would occur.

Initially, a 15m site width was considered, in line with the Sydney recommendations[30] and common site widths in Christchurch. However, it was found that there were few sites of this width, and that a common width was around 20.5m. Consideration was given to whether this was an appropriate site width to achieve the level of interest and verticality in the street. Although there is some risk that wider buildings may not have the same level of visual interest, and that this would not be mitigated by regular changes in form through the construction of different buildings, it is also considered that the risk is acceptable in the context of a changing street scene and the matters that are provided (such as a basic level of glazing).

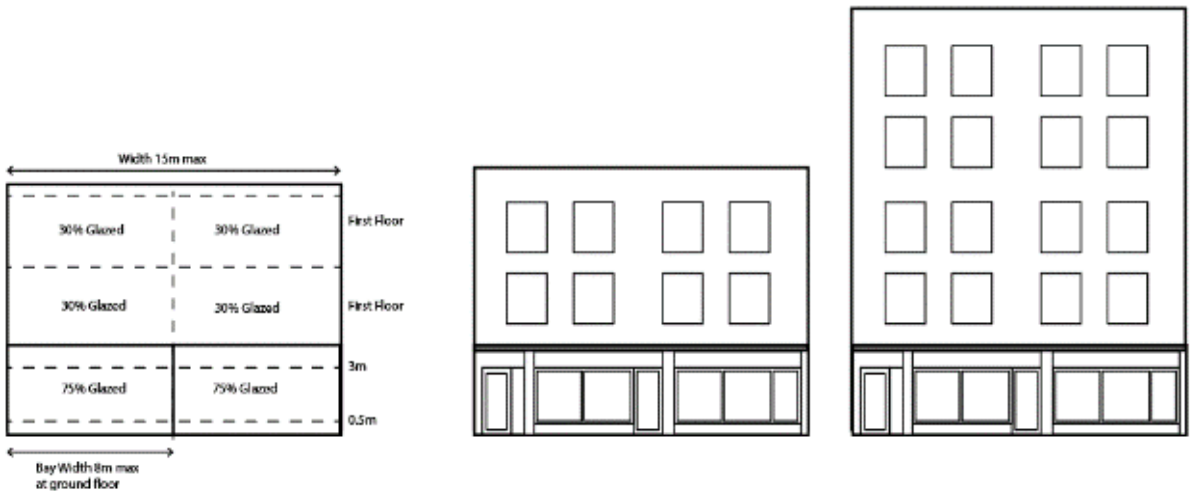

Figure 37: Illustration of proposed small lot built form standards and expected building response.

[30] ibid

4.5 Site Controls in the Mixed Use Zones

4.5.1 Landscaping in the Mixed Use Zones

Proposed controls:

Zone	Operative Plan	Recommendations
Central City Mixed Use Zone	2m landscape strip where building not built to the frontage, and 5% of site area landscaped (can include perimeter landscaping).	3m landscape strip where building not built to the frontage, and 5% of site area landscaped (can include perimeter landscaping). 1 tree for every 250m^2 of site area. 1 tree per 10m of perimeter landscaping and 1 tree for every 250m^2 of site area. Root spaces (1.5m * 1.5m) and canopy spread areas (4m * 4m)
Central City Mixed Use Zone (South Frame)	2m landscape strip where building not built to the frontage, and 5% of site area landscaped and 10% landscaping (in addition to perimeter landscaping). 1 tree per 5m of perimeter landscaping.	3m landscape strip where building not built to the frontage, and 5% of site area landscaped and 10% landscaping (in addition to perimeter landscaping). 1 tree for every 250m^2 of site area. Root spaces (1.5m * 1.5m) and canopy spread areas (4m * 4m)
Mixed Use Zone	1.5m landscape strip where building not built to the frontage.	3m landscape strip where building not built to the street frontage. 1 tree per 10m of perimeter landscaping.

These rules are proposed in response to the issue of the poor level of amenity of the general environment described in 3.4.

Benefits of Proposed Controls

- Increased environmental quality for people living, working and passing through the areas
- Supports transition of mixed-use areas from industrial zones to a high quality living environment

Discussion

Although the zone is for mixed use and a residential character is not expected, the quality of the general environment is a significant issue, and a higher quality living environment is important because of the number of residents present and expected in the zone.

The increasing uptake of residential development also results in an increase in the number of people who use the streets. Some areas are also important routes to inner suburban areas (for example to Phillipstown via Ferry Road or to Sydenham). Whilst the use has traditionally been industrial, the quality of environment does not reflect the importance of these streets as part of the movement network and the increasing emphasis on active transport.

Landscaped areas

It is proposed to include increased landscaping requirements in the Mixed Use zones, to match those in the South Frame, being 10% of site area. There are a variety of activities present in these zones, although buildings tend to be residential or industrial with some provision of car parking. In both these instances, some landscaping is beneficial to either the occupants, given the somewhat harsh appearance of the environment, or to mitigate the impact of more industrial type activities on the street scene.

A 5% requirement was considered (as in the existing Commercial Central City Mixed Use Zone) but has not been recommended because it does not provide a substantial landscape component that would offset the built appearance of the zone.

Landscape Setbacks

Landscaped setbacks of 3m are proposed where buildings are not built to the street front. This would provide a substantial amount of landscaping biased towards the front of the site and establish a higher quality character more suited to a mix of uses.

This is greater than in a residential zone, but the quality of the mixed use zone is also less than in a residential zone (and with dense development may support a high number of residents). As outlined in section 3.4.2, the opportunity to change the environment is limited by the existing street form.

Tree and canopy spaces

To offset the harsh environment and be consistent with and compliment the transition to a mixed use environment, tree planting is recommended at the rate of 1 tree per 250m^2 of site area.

Trees are an important component in changing the physical environment from its current basic functional state suitable for industrial use, to a more typical city environment which supports a range of uses, further supporting emissions reduction and mitigating the impacts of climate change.

Trees provide many benefits including:

- Provide shade in summer
- Remove pollutants from air and water
- Contribute to a more walkable, liveable and sustainable city
- Create greener, vibrant and more enjoyable neighbourhoods
- Improve urban ecology and help mitigate climate change

- Provide engaging community, recreational and social spaces[31].

Trees require a certain minimum area to be able to flourish, both for roots and the canopy.

Whilst roots can extend under hard paving, they do need access to aeration and water, and require a minimum area for this and an appropriate soil medium to thrive. An area of 1.5m x 1.5m is generally enough for small and medium trees, but medium to large scale trees, which will have the most impact in these areas, require a greater area, and as such the full 3m is proposed to allow for this and to assist with under planting.

To flourish and achieve maturity, a small to medium tree of the scale intended should be planted in an area where it has enough space to grow. In practice, the minimum area is 4m x 4m, which will allow the canopy of a small canopy tree, or a small columnar tree.

4.5.2 Location and Management of Car Parking

Proposed controls:

Zone	Operative Plan	Recommendations
Central City Mixed Use Zone	Outdoor Storage or Servicing to be behind the principle building and screened by 1.8m high landscaping or a fence.	Outdoor Storage, Servicing and Parking to be behind the principle building and screened by 1.8m high landscaping or a fence.
Central City Mixed Use Zone (South Frame)		
Mixed Use Zone	Outdoor Storage or Servicing to be screened by 1.8m high landscaping or a fence.	

Benefits of proposed controls:

- Increased environmental quality for people living, working and passing through the areas.
- Supports transition of mixed-use areas from industrial zones to a high quality living environment.

Discussion

If car parking is located in the front of the site it disrupts the relationship between the building and the street by creating areas of hard surface, and dominating views of the building, and reducing the potential for activation and overlooking from a building to the public space of the street. Whilst frontage landscaping can assist in improving its appearance, its purpose is to disguise and mitigate the parking activity taking place on the site, and can result in less safe areas for users of the site and the street. Even if well landscaped, large areas of parking do not create a lively and engaging street scene.

As with commercial or industrial sites, car parking does not create a positive threshold for residential development, and would not provide an effective semi private transition, or provide amenity, to the public space of the street. Whilst in residential areas, some visible parking is characteristic, this is in

[31] Christchurch City Council Urban Forest Plan

the context of the much higher levels of general amenity and is usually offset by higher levels of planting overall.

To improve the amenity, safety and activation of the street in the mixed use areas, car parking should be well integrated within the site layout, and located to the side or rear of the primary buildings on the site, or be accessed via a rear laneway. It is recommended that rule and accompanying assessment matter restrict parking to behind the front building line (if external) and so that it does not occur in the front 10m of the building (if internal)

4.6 Wind

Proposed Control

Zone	Operative Plan	Recommendations
City Centre Zone	Assessment matter	For buildings greater than 30m in height: Buildings shall not result in cumulative wind speeds within 100m of the building for more than 5% of the year greater than: 4m/s on footpaths or public spaces; 6ms/ on carriageways; and additionally shall not result in wind speeds exceeding 15m/s for more than 0.3% of the year.

Benefits of the proposed control:

The proposed control would ensure maintenance of the comfort and safety of public space.

Discussion

Various scales for the assessment of wind exist, with broadly similar outputs. The London LDDA scale has been used for Christchurch wind modelling as recommended by Meteorological Solutions[32], as a basis for assessment of wind impacts. It categorises places as suitable for various activities depending on the average speed of the wind, for a certain period of time (refer to diagrams below)

At present, the wind speed in the public spaces and footpaths of the city indicates that they would mostly fall into either the "occasional sitting" (4m/s) or "standing" (6m/s) categories. This acknowledges that there is a background wind in the city, but that the city centre is usable (and pleasant) most of the time.

A 4m/s wind speed cannot be obtained over the whole city, but as much as possible the conditions on these spaces should be maintained and faster 6m/s winds be channelled into the road. The assessment should show that the current conditions should be maintained.

[32] ibid

A 5% incidence has been used in Ōtautahi Christchurch (as opposed to a 2% incidence sometimes used) to acknowledge that strong winds blow for much of the time in the city.

A Gust Equivalent Mean measurement has been used for wind speed, rather than an average. This is a calculated value based on the gust speed (which is more determinative of environmental comfort than a raw average).

The scale also includes dangerous winds which might blow for short periods of time but could have serious consequences. These sometimes occur even where the 5% wind speed is within the acceptable threshold. It is also recommended that these are managed in the assessment (so that they do not occur).

Some areas (notably Cathedral Square) do not at present have the level of wind comfort that would be desired, but this can change over time. For instance the Square may be more sheltered by buildings in time, and as more trees are planted, which is an effective way to mitigate the impact of wind at ground level.

The London LDDC standard for existing building scenario, added 30 m buildings, and added 90 m buildings (using maximum of mean and GEM wind speeds)

A	2.5 m/s	< 5%	Frequent Sitting
B	4 m/s	< 5%	Occasional Sitting
C	6 m/s	< 5%	Standing
D	8 m/s	< 5%	Walking
E	8 m/s	> 5%	Uncomfortable
S	15 m/s	> 0.022%	Unsafe

Figure 38: Wind Modelling shows existing conditions at the Hereford Street / Colombo Street intersection (top); and the potential impact of a 30m or 90m building at the north west corner.

4.7 Use of Assessment Matters

Bulk and location standards are widely used in planning because they are easy to understand and provide greater certainty than assessment matters as to the outcomes anticipated. Bulk and location standards can be used to shape development, providing triggers for further assessment. However they are not be absolute limits on the amount or form of development. Relying purely on bulk and location requirements for buildings rarely creates the best overall outcome. Every design scenario cannot be anticipated for every site, for example irregular shaped sites could have significantly reduced development envelopes under some circumstances.

Assessment matters provide the opportunity for greater recognition of the context and nuance that might be applied to individual developments. Further they provide the ability to add more specific design intention that can further mitigate building bulk, or address specific design issues.

4.7.1 High-rise Buildings in the Central City

The use of built form standards has been discussed in earlier sections of this report to manage building height. The building envelope provisions suggested for the various zones are aimed at managing the fundamentals of the building mass and form so that more detailed design matters should be simple to address.

However, standards to define a building envelope are a relatively crude mechanism to apply in isolation and would not in itself be enough to ensure that high quality design, commensurate with that expected for the central city environment, is achieved.

Proposed Provisions

Use of a combination of building envelope standards and assessment matters to manage the visual impacts of high-rise building and effects on the public realm.

Benefits of the Proposed Provisions

The following benefits of the combined approach of building envelope standards (discussed earlier within this report) and assessment matters:

- Provide for a complementary transition between the low to mid-rise buildings and high rise buildings through the use of the street wall height in combination with more considered approach to the design detail that impacts on the quality and use of the street.
- Diminishes the impact of the high-rise towers through the use of setbacks, and design elements which reduce the visual bulk of the buildings.
- Consistent road wall height reinforces the relationship and scale of building with the public space of the street.

Discussion

The operative District Plan includes some assessment matters for the design of buildings. However, high-rise buildings are more widely visible in the city-scape, as well as having the potential for more intense impacts locally. Because of this, they require more careful management via design controls.

An alternative is the application of building envelope standards alone. This provides a far greater degree of certainty for the developer i.e. only a quantitative assessment applies, but not to the community in regard to the quality of the outcome.

In respect to both however, quantitative standards alone do not provide the flexibility for the developer either, such that building envelope standards can be challenged or trade-offs applied if better design outcomes are achieved through the design quality proposed. However, there is also the risk that designers attempt to manage effects through superficial means such as sacrificial windows or shallow façade treatment, rather than creating a functional building that works with its setting.

As such to provide both certainty, and the design quality that retains architectural integrity, assessment matters should address the following:

1. For visual impacts, ensuring that:
    - Through the use of the street wall, high rise buildings complement low and mid-rise building. The street wall should be the primary visual element of the building when seen from street level. Building elements that comprise the street wall should be well-designed and contribute to the comfort, vitality and interest within the street.
    - Bulk above the street wall is well managed, potentially through conventional architectural means like glazing, modulation and articulation, applied such that it reduces the impact of the scale of the building.
    - The building considered as a whole has been designed to contribute visual interest.
    - The impacts of rooftop plant and servicing are well-managed so that they are integrated into the roof-form as a whole and are not prominent when seen from the ground or at a distance.
2. To manage impacts on the public realm:
    - That important public spaces (e.g. the Otākaro Avon River, Cathedral Square) are not shaded by high-rise buildings, individually or cumulatively and that there is some access to sunlight at street level.

4.8 Residential Activities

The Plan Change proposes an increase in the amount of residential activity that can take place in the commercial areas due to the additional height and density proposed. As a result, some changes are recommended that will apply across the commercial zones, relating to increased residential use in those areas and based on the MDRS.

The Mixed Use zones are former industrial zones where residential activities have been permitted, but the area does not support a good quality environment that could be described as well functioning. The most significant impact of the NPS UD changes in the mixed-use zones is likely to be the opportunity to develop more intensive residential buildings. Section 3.4.4 notes that there are issues with the quality of residential developments currently being built in the mixed-use zones and describes the need to transition the environment to one that supports residential activity.

The proposed changes to residential development in the commercial areas are as follows:

- Some amended built form standards in Commercial zones, aimed at providing a consistent framework for development, in accordance with the level of density permitted
- Changes to built form standards in the mixed-use zones, in combination with restricted discretionary assessment larger developments (more than 3 units). These are intended to

contribute to the transition of these areas from a utilitarian industrial environment to one that supports a mix of uses including residential.

- A new assessment framework for comprehensive development in some areas currently zoned for industrial use.

4.8.1 Built Form Standards – All Commercial Zones

Proposed controls:

Zone	Operative Plan	Recommendations
City Centre Zone Town Centre Zone Neighbourhood Centre Zone Local Centre Zone Central City Mixed Use Zone Central City Mixed Use Zone (South Frame) Mixed Use Zone	3m setbacks for windows and balconies. Minimum balcony sizes as follows: CCB: 5m^2 balcony, of total outdoor living space of 10m^2 CCCMU and SF: 10m^2 balcony of 20m^2 in total. Suburban Centres: 6/10/15m^2 (1/2/3 bedrooms)	Glazing: 20% per floor for facades facing a street Outlook spaces: 4m*4m for living rooms, 3m*3m for bedrooms Minimum Balcony Sizes and dimensions: City Centre: 8m^2 balcony, of total outdoor living space of 10m^2; Mixed Use Zones: 8m^2 balcony, of total outdoor living space of 20m^2; Suburban centres: 8/10/15m^2 (1/2/3 bedrooms)

Benefits of proposed controls:

- Ensure a good standard of indoor and outdoor living environments for residents
- Provide some passive surveillance to centres to contribute to a sense of safety for potential residents and passers-by.

Discussion

Three built form standards are proposed across the commercial zone and missed use zones. These are aimed at managing the potential for increased residential activity in the areas, as well as achieving a degree of standardisation across the zones. These are discussed below:

A Glazing

The MDRS specifies a minimum 20% glazing for facades facing a street. This would be expected to achieve both a level of surveillance across a neighbourhood and some visual interest in the front façade. The expectation for residential in commercial areas is that it be applied to each storey of the building, rather than across the whole façade. This is to:

- support external design attributes such as visual interest across the facade.
- ensure passive surveillance from upper floors.

The intent for glazing would not be achieved if, for instance, it was provided only at the ground floor through shop display windows.

Passive surveillance is especially important in a commercial centre, and particularly adjacent to public or shared space. These areas are where crime is concentrated, because they provide increased opportunities for it. Whilst having more people living in the centre is beneficial, the need for good oversight is an important component of making a centre feel safe for residents, especially at night. Ensuring that glazing is provided on all levels increases the length of time a space is likely to be overlooked, as well as the number of eyes on the street.

B Outlook Spaces

The provision of good sunlight and daylight access is an important part of ensuring that housing has a high level of internal amenity. Outlook spaces are proposed as follows:

- 4m x 4m for living rooms (the same as the MDRS)
- 3m x 3m for bedrooms (MDRS requires a 1m x 1m space)

The equivalent MDRS provisions are 4m x 4m for living rooms and 1m x 1m space for bedrooms whilst the Operative district plan requires a 3m boundary setback for windows and balconies.

The MDRS provisions were developed in the context that they would apply to housing with relatively low heights in relatively lower density zones i.e. suburban rather than urban areas. The living room outlook spaces of 4m x 4m for living rooms would provide a basic level of light access for occupiers, even in commercial areas where shared amenity and outlook will be limited. However, the 1m x 1m bedroom outlook will not be effective because there is a risk that windows would be almost entirely built out in a future environment by buildings with high site coverage and zero setbacks. It is for this reason that an outlook space of 3m x 3m is proposed for bedrooms.

The Sydney and Melbourne studies[33] both highlight poor access to light in commercial areas as a particular concern regarding the living environments created in the city centre, citing significantly compromised residential amenity.

Although there has been little development of mixed-use buildings in other commercial zones, the same conditions exist in these areas as in the central city, especially in the Town Centre zone, which have the potential for more height. These areas also have a lower standard of general amenity than the residential zone, in part due to the general environment and in part due to lower amenity requirements for site development. Residents are consequently more reliant on internal amenity. As well as the benefits of standardisation, there are good amenity reasons to ensure that a reasonable level of outlook is provided in these areas.

C Balcony Size and Dimensions

The MDRS specifies a minimum dimension of 1.8m for balconies, with a minimum size of $8m^2$. This is a sufficiently wide dimension to be usable for everyday needs but is not generous. In commercial areas, it is proposed to maintain this size, with the following exceptions:

[33] City of Sydney, 2016 *Erection of Tall Buildings in Central Sydney*
[33] Hodyl and Co, 2016 *Central City Built Form Review: Synthesis Report* (Melbourne City Council)

- In the suburban centre zones, larger balconies are required for larger apartments, for instance a 3 bed apartment requires 15m^2. This takes into account occupancy and is necessary because there is not always good amenity in these areas.
- In the City Centre zone, 10m^2 is proposed as a minimum for outdoor living space, with the option for 2m^2 to be provided communally. The 2m^2 additional area (above the standard 8m2) means that larger developments may provide ground floor communal areas which provide space for trees and larger planting as well as more variety.
- In the mixed use zones, the balance of 20m^2 is expected to be provided as communal space, with 8m^2 provided as a balcony. This will provide a high level of general amenity in these developments and is discussed in detail below.

4.8.2 Built Form Standards – Central City Mixed-Use Zones (Residential Activity)

Proposed Controls

Zone	Operative Plan	Recommendations
Central City Mixed Use Zone	Maximum Fencing Height: 2m (if at least 50% transparent) or 1.2m (otherwise) Minimum ground floor outdoor living space 20m^2	Front Setback: 3m Max Fencing Height:1m for 50% of frontage; 1.5m or 1.8m for remainder Outdoor Living Space location (not in the front setback if on ground floor) Minimum size of outdoor living spaces: 20m^2 (4m dimension on the ground floor) Site Coverage: 50% Minimum Side Setbacks: 4m; except for side boundaries within 21m of a street boundary (0m minimum setback)
Central City Mixed Use Zone (South Frame)	Maximum Fencing Height: 2m (if at least 50% transparent) or 1.2m (otherwise) Minimum ground floor outdoor living space 10m^2	

Benefits of Proposed Controls

- Reinforce the street edge and contribute to the amenity and safety of the street, while lessening the impacts of high-rise building
- Ensure passive surveillance of the street to provide for a safe pedestrian environment
- Ensure engagement with and activation of the street, and greater consideration of the quality and safety of shared access for residents
- Ensure a good standard of indoor and outdoor living environments for resident

- Offset reverse sensitivity impacts of adjacent industrial activity
- Diminishes the impact of the high-rise towers through the use of setbacks, and design elements which reduce the visual bulk of the buildings
- Consistent road wall height reinforces the relationship and scale of building with the public space of the street
- Balance the extent of building on the site to the provision of open space to reduce the impacts of building dominance and ensure outlook and access to sunlight and daylight.

Discussion

A combination of new built form standards are intended to manage both reverse sensitivity impacts of the transitioning zones from industrial to residential use, while contributing positively to a higher amenity and safer public and private spaces. In addition a degree of standardisation is proposed to ensure consistency across all residential activity in terms of outlook and private outdoor living space.

Frontage Treatments

In common with other zones, the design outcomes research[34] identified that the street front for mixed-use developments was sometimes poor quality, due to prominent fencing and a low level of glazing; or creating issues with privacy for residents.

Where the Mixed Use zones differ from residential zones is the low quality of street environment, with wide and busy roads, few street trees and a more vehicle dominated environment typical for a former industrial zone. This street environment is reinforced by industrial type buildings, car parking and signage, which do not create an interesting or engaging street scene, and overall the environment is harsh.

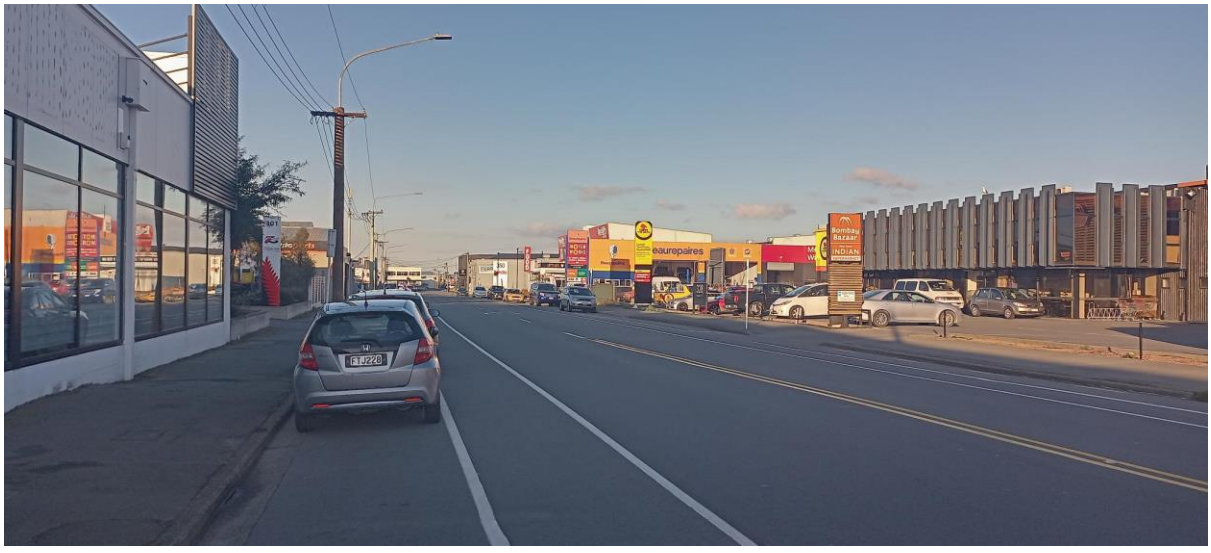

Figure 39: The CCMU zone has little amenity within the public space of the street.

In order to manage the impacts of this environment, the frontage of residential developments is especially important. Good treatment of the frontage will reduce the impact on residents and help

[34] Christchurch City Council (2020) *Medium and High Density Housing in Christchurch Urban Design Review*

to transition the areas over time so that they are more consistent with a good residential environment.

The need for this stems from the increased presence of people in the area, as well as the impact on residents in their homes.

Front Setbacks

A key aspect of this process is that there should be some space for trees to grow in the front setbacks. Trees will soften the appearance of the street in general as well as providing for some visual richness and access to nature. They are an effective way to manage the transition from the very basic attributes of the present environment to one that supports a resident population.

In order to support tree growth, a setback of 3m is needed to allow for a degree of canopy spread, without causing nuisance to residents. This would be sufficient to allow a medium size tree with a 6m wide canopy to be planted behind the boundary and to spread to the front wall of the house. Whilst trees are often planted in 2m setbacks in residential areas, there is a risk that they will interfere with the house which may lead to them being removed or reduced because there is not enough room for them to reach a natural shape. The larger setback will also provide more separation between the house and the street which will allow for more privacy within the houses.

Whilst Council could plant more street trees (and may do so in some areas) in practice it is constrained by the cost of doing so in an existing street, and competition for space from underground servicing. Relocating kerbs to provide space for tree-pits and planting is also an expensive process. Whilst Council may be able to fund a street upgrade program, it has not done so and to upgrade all the streets in the various mixed-use areas would be prohibitively expensive. The only realistic way to provide a street environment appropriate to residential use is to ensure that it is provided onsite at the time of redevelopment.

Fencing

Fencing blocks views to housing and landscaping and would reinforce the harsh appearance of the street. Tall front fencing is also associated with higher rates of crime because it aids concealment, as well as reducing street surveillance.

The current fencing rules in the CCMUZ allow fences to 2m high with 50% transparency. In the Design Outcomes Research[35] this rule was found to be problematic because the transparent fencing was often screened, for occupants' privacy. For the residential zone, a new proposed approach allows for solid fencing for half the width of the site (excluding access), with the rest of the site to be open or low fencing.

[35] Christchurch City Council (2020) *Medium and High Density Housing in Christchurch Urban Design Review*

Figure 40: Open frontage with fenced outdoor living space to the side.

Location of Outdoor Living Space

The location of outdoor living space in front of housing adjacent to the street creates a conflict with the creation of an open and interesting streetscene, because of the strong desire of residents for privacy in these spaces. This encourages the screening of frontages, which is widely seen around the city.

In the mixed-use zones, with the lack of amenity and hard physical environment, these spaces are needed to create a transition between the public realm and the residential activities as well as to contribute to the improvement of the street environment over time. The use of the space for outdoor living conflicts with this purpose.

Outdoor living space is sometimes placed at the street front but it is not usually essential that it is. The mixed-use zones generally have the advantage of wider sites than found in residential zones, with more flexibility in site planning. Whilst there can be advantages to placing outdoor living space at the front of the site in terms of solar access for sites south of the street, it can also often be located at the side of units. There is also often a price to be paid in terms of privacy and noise in mixed-use areas, which means that the front of the site is not a particularly pleasant environment for residents.

There is also a risk that with a 3m front setback, this will be used for outdoor living regardless of orientation, leading to outdoor living spaces on the south boundary next to a busy street with no privacy. This will not achieve the intent of higher quality street frontages.

Size of Outdoor Living Spaces

20m^2 of outdoor living space is currently required for each residential unit. This can be provided half as a private balcony, regardless of whether it is above ground, and half as a communal space. This is inconsistent with the rest of the plan and the MDRS where a larger space is required on the ground

floor. In practice it has led to situations where the only outdoor space provided is a small setback next to the carpark. This is a very low standard of provision.

Figure 41: These units have outdoor living spaces in front that comply with current CCMU requirements but are not very usable and lack privacy and amenity.

Current residential zones in Christchurch require a 4m dimension outdoor living space if provided on the ground floor. This helps to allow for some separation between dwellings and helps to create space for solar access. It also allows for planting around the edges of the space – a typical usable area for a patio is 3m x 3m which allows for a dining table and circulation.

The MDRS requires a dimension of 3m. Whilst this allows for a patio, it does not allow for good light access where there are taller buildings such as those expected in the mixed-use zones.

Unlike residential zones, there are no recession planes in the mixed-use zones. A 4m dimension of outdoor living space would to some extent make up for this by providing outlook and sun access through the individual site layout. It would also provide for a better quality, more usable space.

Figure 42: A 4m wide outdoor living space allows room for a patio and some narrow planting strips.

It is currently standard practice in consent processing to allow for some of the outdoor living space to be provided as a communal space, usually the excess area once the minimum dimension has been applied[36]. It is recommended that this rule is retained for private upper floor balconies. The cumulative area of additional outdoor living space for larger buildings can create a high quality shared space.

If a large development occurs, then some shared amenity on the site makes a strong contribution to the quality of development, for example by created a "third space" – a semi-public area for residents which creates a transition between the home and the exterior. This would result in many of the qualities of a residential environment but in microcosm (on the site rather than the neighbourhood), and would offset the visually harsh nature of the setting (generally dominated by hard surface).

There is only a 10% landscape requirement proposed for the zone, which includes residential units. In the case of residential developments the landscaping provided should be around communal areas, for example it may be located in front setback areas and in association with driveways. This means that it should be in addition to that of private areas such as outdoor living spaces). The purpose of the (relatively small) landscape requirement is to ensure public and communal amenity, as for any site in the zone. Many residents will also choose to landscape private areas, but these are not necessarily visible from the public realm and therefore are not contributing to the wider amenity of the development or the area to the same extent as more visible landscaping.

[36] See for instance rule 14.5.2.5 in the Christchurch District Plan

Site Coverage

For developments that are predominantly residential, a site coverage limit of 50% is proposed. This would match that within the High Density Residential zone.

A site coverage limit ensures that there will be some separation between buildings somewhere on the site, potential space for planting and views of the sky. A high quality of residential dwelling does require that there is some access to the sun which can only be provided by openness around the building. This is somewhat different to a commercial or industrial building where larger floorplates with reduced access to the sun are more accepted.

Moderate site coverage will also help to manage the dominance of built form across a site and neighbourhood. It also helps to manage overlooking and maintain space on the site for other uses, such and outdoor living and servicing. These matters are important components of a residential living environment.

Increases in site coverage can often result in compromises in the allocation of space at ground level. There is competition for space for parking, servicing, landscaping, outdoor living and for living space. This can result in ground floor spaces that are unsafe and unpleasant, for example with narrow passageways and entrapment spaces, or dominated by vehicle infrastructure and servicing. Often the root cause of these issues is the amount of development on the site rather than any particular design or site layout issue.

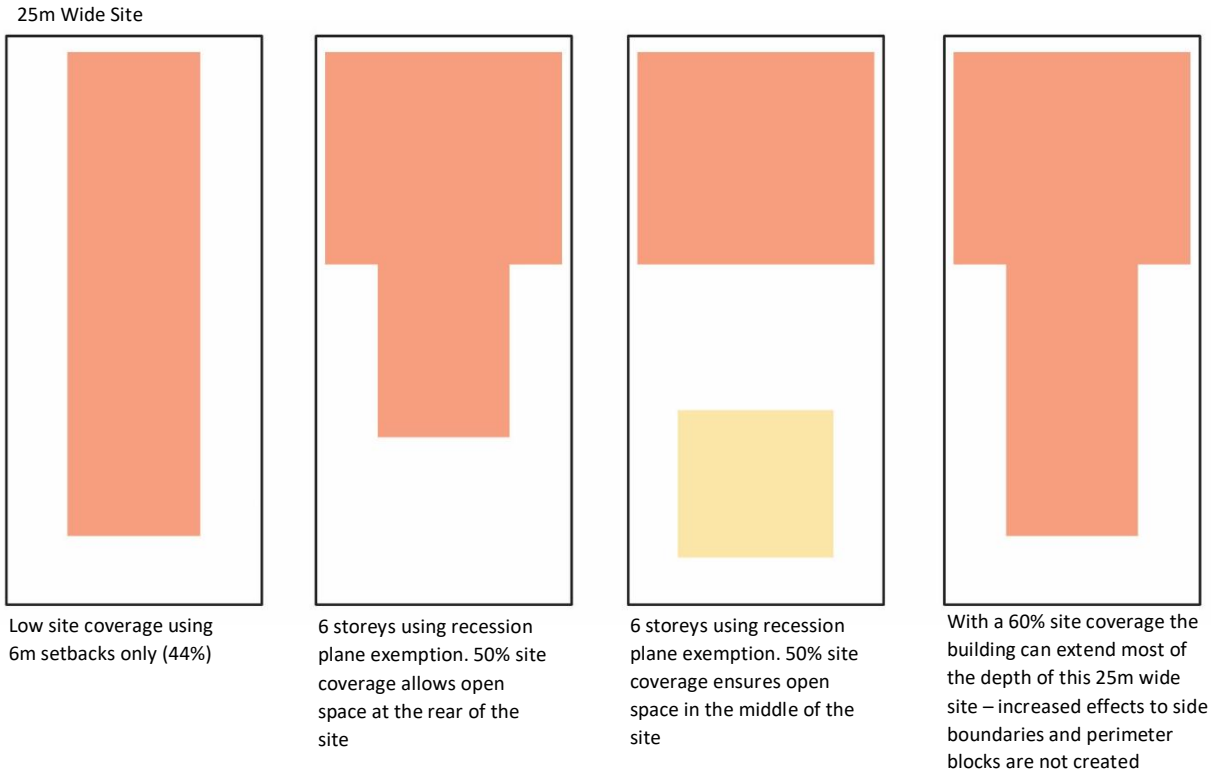

Figure 43: Limiting site coverage on a wider site to 50% ensures there is some openness within and around the site. The recession plane exemption encourages this to be at the rear of the site and the two rules together facilitate perimeter block development.

The absence of site coverage in the Mixed Use zones is to allow for flexibility for non-residential uses. These uses include commercial activities with larger floorplates, such as showrooms, and are derived from the previous industrial use of the site. Whilst it is intended that these uses continue to operate in the zone, there is also an intention to provide for a high quality living environment over time. As a result it is only recommended that site coverage limits apply to predominantly residential developments.

Including a site coverage limit is consistent with the concept of providing for a perimeter block style of development because it encourages development to the front of the site (to take advantage of where the footprint is most efficiently deployed). It is also a way to manage the quality of residential developments whilst not impacting on the commercial development potential of a site. It assists with the transition to a more high quality environment in general, with high density residential characteristics.

Side Setbacks

As described above, residential development requires a degree of space and separation. This is most easily achieved by ensuring building separation at the boundaries in the form of a conventional setback. A 4m setback for ground floor buildings is consistent with other proposed rules (outlook spaces) and allows for a moderate amount of light penetration and some direct sunlight into the space at least some of the year. It also benefits neighbouring sites and will assist in transitioning to a higher quality environment.

Section 3.1.2 discusses the advantages of different development layouts and the advantages of perimeter block typologies. In order to enable this form of building, it is recommended that:

- building setbacks do not apply to the front 21m of the site (to allow 18m of building depth on the boundary)
- residential buildings can be attached to neighbours in this zone.

Above the road wall height level, 15m in the Mixed Use zone and 17m in the Central City zones, a larger 6m setback is proposed. This is in recognition that higher levels will create increased enclosure and obstruct sun access, and have the potential to create privacy impacts on neighbours.

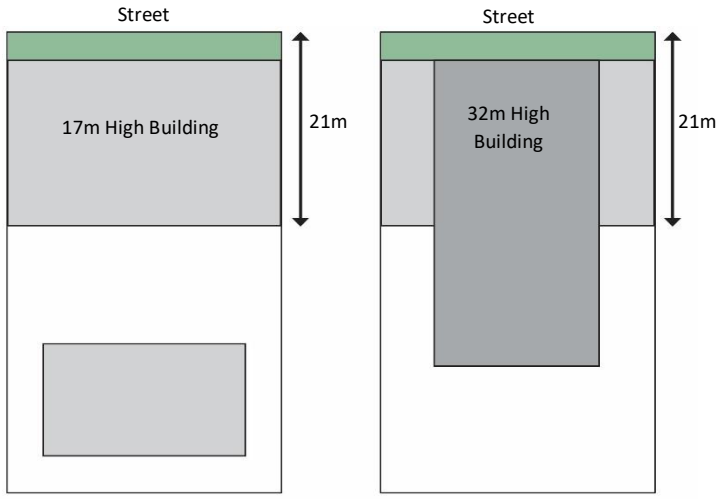

Figure 44: Building footprint on a mixed use site showing coverage of different building levels.

4.8.3 Mixed Use Zones – Inclusion of Residential Design Principles

The Design Outcomes Research[37] shows a clear link between the quality of outcomes for multi-unit complexes and whether or not an urban design assessment was carried out, both across zones (with the different rules in place) and time.

In order to improve outcomes it is recommended that urban design assessment is included for larger developments of more than 3 residential units in the mixed-use zones. Urban design assessment allows for a holistic view to be taken of a development rather than reliance on a set of criteria that can struggle to deliver outcomes given the wide set of circumstances which must be anticipated. This is particularly the case in a mixed-use environment where the surrounding form and land-use is not predictable.

As well as being consistent with other zones, an allowance for 3 units would allow for ancillary residential use, for example a caretakers (or owners) flat at an industrial premises.

The Residential Design Principles are a well-established and comprehensive set of assessment matters that are used in the operative District Plan. They appear well understood, albeit have some areas where their intent can be tightened, but have been demonstrated to achieve a satisfactory standard of urban design and residential amenity.

Proposed Provisions

The retention of a refined set of Residential Design Principles.

Benefits of the Proposed Provisions

- Standardised approach to the assessment of multi-unit residential development in the city.
- At least satisfactory residential design outcomes achieved.

Discussion

The Design Outcomes Research[38] noted that there were variable outcomes in the Commercial Central City Mixed Use zone sample. These outcomes are related to the low level of regulation in the zone, which does not require good outcomes, as well as being a result of some of the issues created by the harsher general environment (which encourages inward facing development). These issues are addressed in the design principles, which are aimed at ensuring a well-rounded consideration of the development in its context. The recommendation of the Design Outcomes Research[39] was that the Residential Design Principles be applied for residential development more generally, and in particular in the Mixed Use Zones.

At present, the only exception to the use of the design principles would be the City Centre zone. The reasons for this are:

- There is less evidence that the assessment framework is resulting in poor outcomes. The Design Outcomes Research was not undertaken in that zone, principally because there were no recent large scale developments completed at the time of the research. Of the three large developments completed since the research was undertaken, the typologies are

[37] Christchurch City Council (2020) *Medium and High Density Housing in Christchurch Urban Design Review*
[38] ibid
[39] ibid

different to those in other zones and the findings of the report may not be relevant to the City Centre Zone.

- The risk of poor outcomes is considered to be lower in the City Centre zone. There is already (and will continue to be) assessment of the built form via the urban design assessment matters. This includes a requirement for an active street scape with residential not generally permitted on the ground floor fronting the street. The higher standard of public amenity in the City Centre means that there is always high quality open space within a short distance.

4.8.4 Comprehensive Housing Development

The provision of standards and assessment matters to provide for future focussed comprehensive housing development as the predominantly industrial area on the southern and eastern fringe of the central city transitions to residential use.

Proposed Provisions

A comprehensive package that includes a combination of built form standards.

Zone	Operative Plan	Recommendations
Mixed Use Zone (Comprehensive Housing Precinct)	Nil	• 20m height limit • Min. site size 2000m^2 • Min 25m street boundary width • Min 4 storeys and 25% building footprint and 50% of street frontage is apartments • Max car parking ratio of 0.25/unit • 10m wide pedestrian access requirements • Additional standards related to glazing, outlook and open space • Application of the Residential Design Principles.

Benefits of the Proposed Provisions

- Reduction in the potential for reverse sensitivity effects from adjacent industrial uses.
- Provision of on-site amenity commensurate with expectations across other commercial and residential zone.
- Provision of well-connected future focused low, emissions neighbourhoods.
- Certainty in the development envelope.

Discussion

The discussion in Section 3.4 outlines the opportunities, and difficulties, in the transition through redevelopment, of the industrial areas to residential use around the fringes of the central city, more specifically including areas of Charleston, Sydenham and Addington. The conclusion was that far greater management is required to effectively achieve this given the existing environmental

constraints of these areas. The intent of the transition is from largely low grade industrial use to high quality, safe and attractive low emissions residential neighbourhoods.

In response, Council has carried out an analysis[40] of how to best manage new residential development. The report recognises:

- The industrial nature of the areas and the potential reverse sensitivities that may occur when providing for residential activity. As such it is recognised that small scale piecemeal redevelopment of sites is unlikely to manage these effects and deliver high density, high quality outcomes.
- The need to reduce the necessity to borrow amenity from side or rear boundaries, given these industrial areas typically include buildings built right to the boundary, and an absence of trees and landscaping.
- The policy direction to reduce greenhouse gas emissions including through small-scale building reuse, innovative forms of residential living, and more walkable neighbourhoods, which includes increasing permeability for active transport.
- The advantages of maintaining consistency with other zones, specifically through using the Residential Design Principles where possible.
- The importance of the provision of large scale open space in environments that are not currently well served by public open space, or which is not easily and safely accessed given the quality of the industrial street environment.
- The opportunity that is provided by such a large area of transition to residential use and therefore the need to maximise that opportunity through the use of minimum heights and efficient development types.

A comprehensive approach is a key part of this transition as it ensures that sites will be large enough to achieve an appropriate level of amenity on-site, without relying on levels of neighbourhood and public realm amenity which will not be present in the short term at least. The minimum size and dimension are critical to achieving this. Further to the above matters, the report recommends[41]:

A series of built-form standards to codify recommendations into the District Plan. Similar built form standards to the Central City Mixed Use Zones to manage issues such as outlook and passive surveillance. This includes:

- Glazing
- Outdoor Living Space of 20m, not to be located in front of the unit.
- The street interface to be managed by a 3m landscape setback and perimeter blocks enabled through zero side setbacks at the front of the site.
- Internal setbacks otherwise of 4m.

This approach is aimed at shaping the form of development in the industrial areas in recognition of the current state of the environment and the achievement of a future high quality residential environment.

As with other areas, built form standards will set a baseline for development on the site, with assessment matters to establish the layout functions as intended. The site size and dimensions

[40] Plan Change 14 – Mixed Use Zone – Provisions Modelling Report, Christchurch City Council, July 2022
[41] ibid

proposed will ensure that suitable sites are assembled, although smaller sites can be considered through an assessment pathway.

The Residential Design Principles are a comprehensive framework for the assessment of residential development. As such they are proposed as the basis for assessment in this zone. However, given the different nature of the environment compare to a residential zone, some additional consideration is required. Specifically this is aimed at the intention to transition to a high density residential environment whilst managing the effects of the current industrial context.

It is also noted that the area is within the walkable catchment of the Central City, and provides a substantive opportunity to support initiatives that address climate change and housing choice. As such this is recognised through the further matters below.

Suggested additional matters should consider:

- The extent to which alternative forms of housing and / or a range of housing types and sizes, are provided, particularly mid to high rise apartments, that meet a diversity of future occupants' needs at the densities anticipated for the zone.
- Whether the development prioritises active and low carbon modes of transport for example by linking with existing and planned cycle routes, providing shared parking areas, plentiful secure bicycle and micro-mobility storage and EV charging facilities.
- Whether energy efficient, environmentally sustainable and low impact urban design initiatives are applied and used in the development.

5 Conclusion

The analysis in Section 2 considers the impact of increased development density, commercial and residential, across the Commercial Centre and Mixed Use zones of the city. The analysis particularly focusses on areas where the greatest level of change is expected: the introduction of high-rise buildings in the City Centre Zone; and, greater height and density in the Mixed Use Zones, including the opportunity for comprehensive housing development. The impact of additional height and density on other Commercial Centre Zones is also considered, although the degree of change in these areas is not as significant.

The analysis in Section 3 proposes a response to these issues in these zones, while recognising the strategic intent in respect to the city's urban form. The response proposed increases building height in the various zones, considers how buildings might be clustered to respond to the city context, but with it proposes a nuanced approach to achieve quality design outcomes. This includes the means to ensure the comfort and vibrancy of public space, through the application of assessment matters.

In all cases, the existing District Plan building envelope standards were used as a minimum from which more development is proposed to be enabled, than is currently provided for in the operative District Plan. Again this more directly applies to the City Centre and Mixed Use Zones. More modest increases are proposed in the suburban Commercial Centre Zones, which were already more consistent with the direction of the NPS UD.

Consideration has also been given to how the predominantly industrial area outside of the central city can transition to predominantly residential activity over time, to accommodate larger numbers of residents in a high quality environment.

Further changes are also suggested to create greater consistency across the commercial zones in respect to residential amenity, and more specifically outdoor living and outlook space, commensurate with that of the MDRS as a baseline.

Overall the intent of the proposal is to provide for more, high quality development in the commercial zones of the city, such that Ōtautahi Christchurch remains a well-functioning urban environment.