

Plan Change 14

Section 32: Part 4, Appendix 8

Technical Report: - Comprehensive Housing Precinct

Urban Design Analysis of Provisions

Christchurch City Council

Technical Report

Date: 16 February 2023
Version: v01
Author: Nicola Williams
Peer reviewed: Ceciel DelaRue & Kirk Lightbody

DISCLAIMER:

Christchurch City Council has taken every care to ensure the correctness of all the information contained in this report. All information has been obtained by what are considered to be reliable sources, and Christchurch City Council has no reason to doubt its accuracy. It is however the responsibility of all parties acting on information contained in this report to make their own enquiries to verify correctness.

This document has been prepared for the use of Christchurch City Council only. Copyright © 2022 by Christchurch City Council

Contents

Comprehensive Housing Precinct in the Mixed Use Zone	3
1. Introduction	3
2. Purpose	4
3. Precinct Context	4
4. Policy Framework	5
5. Methodology and Assumptions	6
6. Findings	7
7. Recommendations.....	11
8. Conclusion.....	17
Appendix A: Relevant Objectives and Policies	17

Comprehensive Housing Precinct in the Mixed Use Zone

1. Introduction

The National Policy Statement on Urban Development (NPS-UD) directs the Christchurch City Council (The Council) to enable greater commercial and residential development in specified locations of Ōtautahi Christchurch, including within the walkable catchments of the central city and the smaller centres of Sydenham and Addington.

It is proposed to rezone existing Industrial General Zones (IGZ) that are within the walkable catchment of the Central City (**Figure 1**), and that are not required for future industrial needs, to a Mixed Use Zone (MUZ), in conjunction with a Comprehensive Housing Precinct. The latter includes areas of Sydenham, Addington and Charleston/Lancaster (See **Figure 2** below).

Currently these areas are primarily occupied by industrial and service activities and lack the amenity that might be anticipated for residential activities, including basic landscape and streetscape qualities. As such, a ‘density-done-well’ approach is proposed to ensure that comprehensively designed developments provide high quality on-site amenity as well as functionality, to offset reverse sensitivity effects and lack of amenity resulting from the industrial character. Other key design moves include contributing to a safe and walkable neighbourhood, housing diversity and the reduction of greenhouse gases.

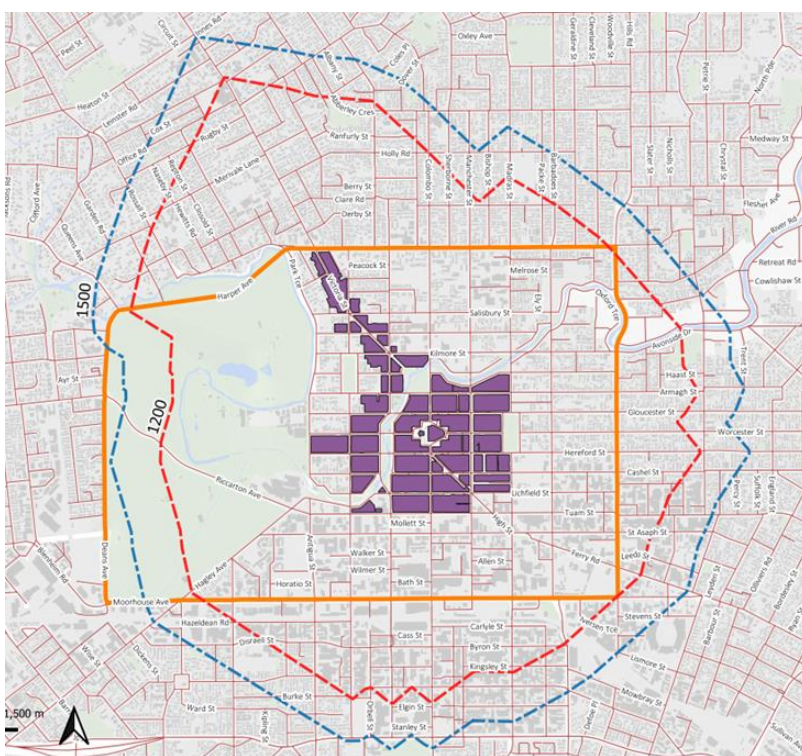


Figure 1 – 1200 and 1500m walking catchments of the City Centre Zone

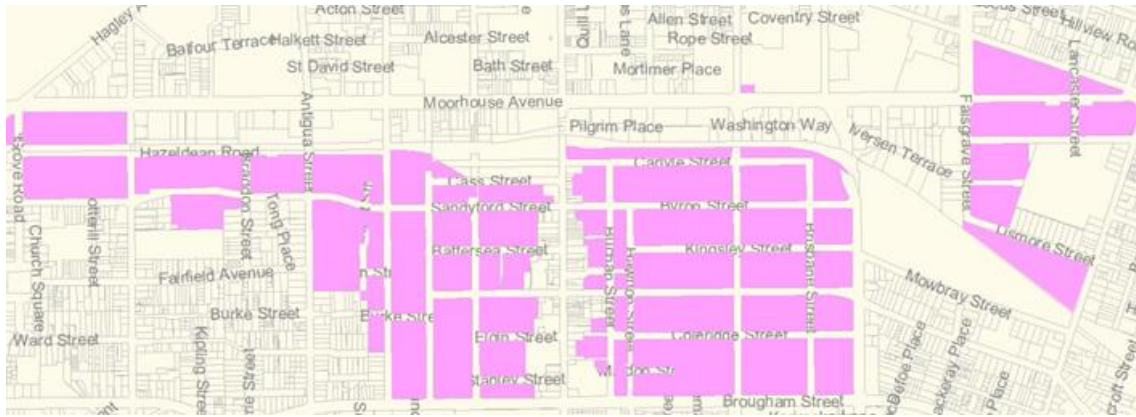


Figure 2 – Comprehensive Housing Precinct, located over the Mixed Use Zone

2. Purpose

The purpose of this report is to identify and analyse proposed District Plan provisions that support the transition of areas from industrial activity to high quality, high density residential activity, through the provision of a Comprehensive Housing Precinct within the Mixed Use Zone (MUZ).

3. Precinct Context

The NPS-UD seeks to enable well-functioning urban environments and, as part of this, considers the efficient use of urban land within close proximity to City Centres. Sydenham and parts of adjoining areas, have been identified as capable of accommodating high quality, high density residential growth. The areas strategic qualities include:

- Maximum distance of 1.5km from the southern edge of the Precinct to the City Centre Zone (CCZ), with an average walking time of 5 to 10 minutes to the Central City from most of the Precinct;
- A large part of the Precinct being within a 400 metre walking catchment of the Sydenham Town Centre and / or Addington Local Centre with associated amenities.
- Frequent and direct buses along Colombo Street, Lincoln Road and Ferry Road to the Bus Interchange in the Central City;
- Major Cycle Routes (MCRs) to and through the area, located on dedicated alternative corridors to the bus routes. These include the Quarryman’s Trail (Spreydon / Antigua Street to Parakiore - Metro Sports); The Little River Link (Halswell to Church Corner and Addington); and the Heathcote Express in the east (The Tannery to Lancaster Park to the Ara Institute);
- Good proximity to Mass Rapid Transport routes being investigated. Housing in the Precinct would likely add to the business case for this investment¹;
- Generally flat topography which supports active modes of transport. North – South roads that cross the Main Trunk Line are all at grade, with the exception of the Colombo Street Bridge with an incline of approximately 1:20.
- The street grid is relatively regular which makes the area easy to navigate; and

¹ <https://greaterchristchurch.org.nz/spatial-planning/mass-rapid-transit>

- The area offers impressive views south from all south-bound streets (and from upper levels of development) to the Port Hills, Ngā Kohatu Whakarakaraka o Tamatea Pōkai Whenua.

4. Policy Framework

The recommended provisions were developed and analysed with the policy context as their basis. Policy 15.2.3.2 *'Mixed use areas outside the Central City'* seeks to support the transition from IGZ to MUZ within close proximity of the Central City, into high quality residential neighbourhoods by enabling comprehensively-designed, high density residential activity. Growth of retail and office activity in the MUZ is proposed to be limited to support the primacy of the Central City, and to ensure the viability and clustering effect of commercial activity in the established network of centres. In addition, to achieve policy direction to ensure greater housing diversity, lower cost forms of housing and density uptake, a minimum number of storeys and apartments as a development type, is included within proposed provisions.

The proposed policy recognises the industrial nature of the areas proposed for rezoning and the potential reverse sensitivities that may occur when providing for residential activity. As such it is recognised that generally small scale piecemeal redevelopment of sites is unlikely to effectively manage reverse sensitivity effects on-site and deliver high density, high quality outcomes. Rather development of scale is required. It is also recognised that many of the sites/blocks within the IGZ areas are substantive and have the potential to impact on the future form and function of the area as a whole, including on transport options.

To capture the opportunity and manage effects, the provisions include a focus on the size and dimensions of the site, while addressing options to achieve safe and legible site layout, and high quality on-site amenity through communal open space. In combination, a good site layout and onsite amenity, reduce the need to borrow amenity (privacy, outlook, daylight/sunlight, views to landscape) from side or rear boundaries. The pattern of industrial development, where sites typically include buildings built alongside the side boundaries, provides a clue to continue this pattern to minimise reverse sensitivities.

Other policy direction is to reduce greenhouse gas emissions including through small-scale building reuse, innovative forms of residential living, and more walkable neighbourhoods, with a focus on perimeter block development. Higher densities, safer and more engaging streets, as well as limiting onsite parking and providing ample internal and external storage for bikes and scooters, provides an environment where people are more likely to choose to walk, scoot or cycle for local trips.

Lastly, these provisions have also been informed by research about quality intensification and monitoring of quality outcomes in other zones, particularly CCMU. The provisions also seek to maintain consistency with outcomes in other residential zones. As such reference is made to the Residential Design Principles in Chapter 14 of the District Plan.

5. Methodology and Assumptions

The proposed provisions have developed through an iterative design process, informed by case studies, best practice examples, learnings from consented residential and mixed use development, and development scenarios and modelling.

Specifically, the design process for the development of the provisions (minimum standards and assessment matters) included:

- I. Review of relevant master planning work including the Sydenham Master Plan², and learnings from the redevelopment of the South Frame (Central City Mixed Use – South Frame).
- II. Calculating the size, and block perimeter (circumference of all four sides) of all the blocks within the Precinct, and assessing the general walkability of the Precinct;
- III. Case study analysis including eight consented developments being reviewed against draft standards to determine site quality pre requisites for enabling high quality, high density development. The case study sites spanned a range of Central City Mixed Use, Residential Central City and an Enabled Development Mechanisms over suburban zones.
- IV. Development of bulk and location scenarios to determine key moves for transitioning to a perimeter block style of development. This included determining:
 - a. The size and width of a site capable of high quality, medium-high density development;
 - b. The extent and dimensions of communal outdoor open space minimums;
 - c. Minimum proportion of apartments proposed³;
 - d. Maximum length of building along the side boundary;
- V. Consultant architectural modelling of the provisions. The design brief objectives included testing to the draft provisions ‘to the maximum’ and also to ‘do their best work’. Numerous scenarios were developed on typical mid-block and corner sites. Findings were provided to assist in refining the minimum standards and corresponding assessment matters.

² <https://ccc.govt.nz/the-council/plans-strategies-policies-and-bylaws/plans/suburban-centres-master-plans/sydenham-master-plan>

³ Apartments can yield 4+ x households in the same amount of space than townhouses.

6. Findings

Learnings from the regeneration of the post-quake response to large blocks – the Central City Mixed Use South Frame - included:

- i. Three to six storey housing in a range of typologies has been consented and constructed in the South Frame, including apartments, indicating a shift in appetite for living in higher amenity (The Greenway and four x Great Yards), mixed use, urban neighbourhoods.
- ii. Terraced housing with ground floor private outdoor living spaces towards the street resulted in compromised privacy and a poor street edge experience, given solid fences (or transparent fences with makeshift privacy screens in behind) are installed to seek privacy for occupants.
- iii. Council's review of quality built outcomes identified that the residential developments without an urban design review produced poorer amenity outcomes⁴;
- iv. The majority of developers rarely provide for trees onsite and natural (pervious) surfaces in outdoor spaces unless specifically required to;

Block sizes and walkability. Numerous blocks currently include block perimeter lengths (sum of length of all block edges) of over 600 metres⁵. Whilst the area has a good fundamental grid, the grid is not inherently permeable or convenient to walk through. Given the need to reduce greenhouse gas emissions, further connections through larger blocks are required as a pre requisite of transitioning to a well-functioning, walkable, mixed use (predominantly residential) neighbourhood. Please refer to the *Comprehensive Housing Precinct Development Plan* in Appendix 15.15.12 – 15.15.13 in the proposed provisions.

The case study analysis found that medium density development of four to six storeys, the sites that achieved a high quality living environment included 10% communal outdoor open space. These open spaces were also of a shape (ratio) and quality that offset the relatively smaller private balconies within each apartment.

The preliminary bulk and location investigations demonstrated that standard 17 metre sites resulted in piecemeal developments and limited site layout options, that could not actively front the street. Additionally, they could not contribute to good densities or good quality of life outcomes. Conversely, medium width sites of approximately 25 metres, could establish buildings which could yield approximately 4-5 apartments per floor to front the street. Over time this pattern of development could contribute to a perimeter block style of development throughout the Precinct

Further to the learnings above, studies⁶ have shown that a perimeter block style of development offers an appropriate high density, medium scale form of development, with

⁴ Christchurch City Council (2020) *Medium and High Density Housing in Christchurch Urban Design Review*.

⁵ Less than 600 metres is the best practice recommendation for maximising choice and convenience for active transport modes; [Rule #1: Block Size – The Urban Form Standard](#)

⁶ [The residential perimeter block: principles, problems and particularities | Allies and Morrison](#)

good levels of onsite amenity from a centralised communal open space. Compared to the podium and tower building form, the transition to a perimeter block avoids the issues of reduced visual privacy across shared side boundaries, the potential visual bulk or coherence of towers as well as longer shadows caused by towers. The latter can be an issue in the Christchurch context where the equinox and winter sun angles are notably lower than Wellington or Auckland⁷.

Key parameters for quality, compact development include:

- Dense and medium scale building forms up to 6 storeys maintains sunlight on the southern side footpaths in winter to invite walking as a modal choice, as well as contributes to a comfortable human scale;
- Maximising development fronting the street to provide for safety from passive surveillance, and engaging and interesting experiences whilst walking, cycling and scooting;
- Prioritising onsite privacy through the management of the side boundaries and orienting windows and balconies either solely to the street or inwards into the central communal green space. This avoids borrowed outlook across neighbouring sites, and mitigates smell and noise through the provision of fire walls down side boundaries;
- Quality of life and encouraging higher density living without 'losing' onsite amenity relative to lower density suburban living. A high standard of onsite amenity provided through the minimum 10% communal green space standard. This provides a quality outlook for apartments and terraces facing inward into the site, as well as a comfortable space for residents.

⁷ Equinox sun angles down the length of the country include: Auckland = 53.2°; Wellington = 48.8° and Christchurch 46.6°.

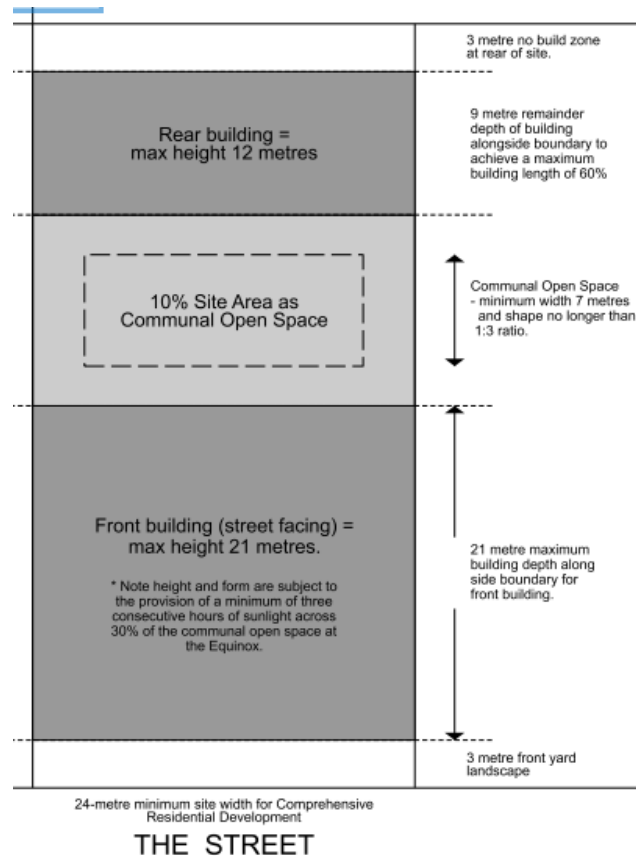


Figure 3 - Bulk and location plan illustrating the combination of the main standards to facilitate active frontage and a perimeter block style of development.

The consultant architectural review tested the draft provisions and key findings included:

- I. That the site width could be reduced to 24 metres wide redevelopment sites, which may pick up additional sites from 25-metres that do not need to assemble with their neighbour before redevelopment;
- II. That the height of buildings alongside the street be increased to 21-22 metres to accommodate a possible ground floor commercial activity, and or a rooftop balustrade;
- III. That the length of building along the side boundary to 21 metres was sufficient and 60% site depth in total allowed for an inner building of terraces or single aspect walk up apartments;
- IV. That achieving 3 hours of *consecutive* sunlight across 30% of the communal open space is difficult to achieve for sites located on the southern side of a street given the minimum height of front building then of four storeys (located on the north side) .
- V. 10% accessible apartments (excluding terraces) were easy to design into the floor plans with apartments with lift access, but note these would need slightly over the 45sqm minimum area for a 1-bedroom in the District Plan.
- VI. Developments could feasibly develop on smaller minimum site sizes than 2,000sqm;
- VII. Densities upward of net 230 dwellings per hectare, and more on corner sites were possible under the proposed provisions;

VIII. South facing apartments could be in the range of 15-22% when maximising yield and designing single aspect apartments off a central core and corridor.

In reference to south-facing apartments, the best and worst case scenarios for south facing apartments resulted in between 15-22% of apartments. The High Density Zone and Central City Mixed Use Zone do not include requirements for a maximum percentage of south-facing apartments, so in maintaining consistency across the zones, a maximum has not been included in this Precinct. In lieu of no maximum however, this does emphasise the central importance of the design quality, overall 10% size, shape, sunlight access and interface conditions of the communal outdoor living space. This communal outdoor living space needs to work hard to provide a range of sunny and comfortable spaces for all residents, particularly those who may have apartments facing south and not receive sun on their balconies for much of the year.

In light of the predicted site densities upward of 230 dwellings per hectare for a mid-block site, the size of the communal outdoor living space, is of great importance to offset the higher intensity of living. Approximately 200sqm provides a high quality and spacious green outlook that accommodates a range of active and passive activities.

Overall, coordination across the medium density zones has resulted in a number of alignments to address quality compact outcomes. For instance, the 21 metre length of development permitted along the side boundary for front buildings; 3 metre landscaped front yard and 10% communal open space are aligned between these zones.

7. Recommendations

Minimum Built Form Standards for the Comprehensive Housing Precinct

The recommended standards below work together to achieve the objectives and policies of the zone. As such, reducing one standard may cause impacts on other inter-connected standards.

Standard	Rationale
<i>Streetscene and perimeter block development</i>	
<p><i>a. A site of no less than 2,000m² with a minimum road boundary width of 24 metres.</i></p>	<p>Wider sites and zero lot line boundaries allow apartments to actively front the street.</p> <p>25 metres was initially identified as a good site width to provide for perimeter style block development. However subsequent testing determined that a 24 metre wide site would provide sufficient space for approximately four x 6 metre wide single aspect apartments fronting the street, and a row of walk up apartments or terraced houses within a rear building.</p> <p>A 2,000sqm minimum site size provides for a communal open space of 200sqm (10%), sufficient to meet the needs of a higher intensity living. This includes space for mature trees, a range of spaces for passive and active recreation, as well as sunny spaces between the Equinoxes of September to March in particular. A minimum 2,000sqm site size also provides for the ancillary activities needed to make compact living work which includes a variety of spaces for communal bin areas, enclosed bike boxes, space for cargo bikes, electric bike and scooters as well as charging points, bike maintenance areas, and potentially small quantities of mobility / car share parking and manoeuvring.</p>
<p><i>b. Buildings shall be located across the full extent of the site frontage adjacent to the street, except if/where needed to provide for access.</i></p>	<p>Buildings along the full street frontage, with the exception of access and any fire requirements for particularly deep sites, results in apartments fronting the street with balconies and windows. This supports passive surveillance opportunities and a perception and actuality of personal safety. This is particularly important in this transitional Precinct where current industrial uses are generally vacated after hours, so there are less people initially around to be the ‘eyes on the street’.</p>
<p><i>c. The minimum building setback from an internal boundary shall be:</i></p> <ul style="list-style-type: none"> <i>i. no setback for the first 24-metres measured from the road boundary, and up to a maximum length of 60% of the site depth; and</i> <i>ii. 4 metres in depth for the remainder of the internal boundaries.</i> 	<p>Allowing for a 3 metre front yard setback, 21 metres is a workable length of building along the side boundaries that can accommodate two rows of single aspect apartments (either side of the core / corridor) and balconies, as a maximum yield option.</p> <p>A maximum building length of 60% along the side boundary allows for 40% sunlight access into the core of the site, as well as the front and back interfaces. 60% building length also enables a secondary, smaller rear building at the back of the site to develop to its full width, maximising yield and diversity of typology.</p>

<p><i>d. All internal site shared pedestrian accessways, shall have a minimum width of 3 metres including planting. The width for pedestrian access shall be clear of any fencing, storage or servicing, except security gates, where necessary.</i></p>	<p>A minimum 3-metre wide pedestrian accessway provides for safe passing widths between two people along a long accessway. All bins, sheds and services need to be outside of this 3 metres so that sufficient space for safe passing, landscaping and lighting can be provided. This also ensures safe sightlines (CPTED consideration) through to the backs of the sites, where a second building may be located at the rear of the site.</p> <p>Note - this width may also need to be slightly wider subject to FENZ requirement for site depths over 70 metres.</p>
<p><i>e. Buildings fronting a street shall include at least 20% glazing on each floor of the building.</i></p>	<p>20% provides good opportunities for visual interest (life behind the building), daylight / sunlight access and passive surveillance. This rule is consistent with other zones including the MDRZ.</p>
<p><i>f. A minimum distance of 12 metres shall separate any front and rear buildings on the site by at least 12 metres, except for accessory buildings less than 2.5m in height, which must be located at least 1 metre from any other building.</i></p>	<p>At least 12 metres between buildings provides for a minimum 7 metres wide communal open space, plus a 1500mm wide footpath each site, as well as a minimum 1-metre min privacy (landscape and lighting) buffer alongside interfaces to ground level terraces and apartments.</p>
<p><i>g. At least 50% of the ground floor of the built development shall be living area.</i></p>	<p>This standard seeks to discourage extensive at grade car parking which can impact onsite amenity. It also discourages extensive leasable commercial space which would ideally be located in local centres. Maximising living areas gives effect to the NPS to enable strategic urban areas to maximise housing opportunities.</p>
<p>Housing diversity</p>	
<p><i>h. Apartments adjacent to the street shall be provided, including:</i></p> <ul style="list-style-type: none"> - to a minimum of 4 storeys in height; or - to a minimum of 3 storeys for sites located on the south side of a street. <p><i>Apartments shall form at least 50% of the total building footprint.</i></p>	<p>Locating the main and tallest building closest to the street, and enabling up to 6 storeys, transitions sites towards a perimeter block form of development. The minimum 4 storey height directs developers to focus on apartment developments for the front building. This assists in increasing the density and housing diversity of the site, in comparison with the numbers achieved on the same space for terraced housing.</p> <p>For sites located on the south side of an east-west street, testing indicated that 3 hours of consecutive sun between September 21 to March 21 could not be achieved over 30% of the communal open space with 4 or more storeys. Thus, a lower minimum height has been introduced to enable buildings on these sites to provide for the duration of sunlight onto the communal open space, to provide a high level of onsite amenity.</p>

	In the absence of a relevant NZ Standard, the metric of three hours is based on the New South Wales Apartment Design Guide ⁸ , as well as an analysis of the way the sun tracks across 30% centralised communal spaces in Ōtautahi Christchurch. This standard essentially provides a sunny space for residents to sit for approximately an hour (duration of a good read and a meal) before shadows fall across them.
<i>i. Apartments shall comprise of at least 50% of the building footprint.</i>	Well-designed apartment typologies are the highest and greatest residential use of these sites. The recommended standard therefore seeks to maximise this typology by directing developers and designers to include apartments for the majority of the building footprint. The assumption with ‘footprint’ is that apartment numbers will go up notably given the minimum number of floors required for this typology, This is in comparison to a fewer number of terraces or walk up apartments, or a hybrid of both assumed for any read buildings at the back of the site.
<i>j. Enclosed and lockable cycle storage shall be provided at a minimum rate of 1 space per bedroom and located adjacent to the communal open space.</i>	In responding to the objectives and policies around reducing greenhouse gas emissions, sufficient space for accommodating everyday active transport modes is to be provided. It also recognises that ‘car lite’ or car free development in this very accessible location will likely generate a greater demand for bicycles and micro-mobility, requiring sufficient space for their storage and charging.
<i>k. A minimum of 10% accessible residential units shall be provided in all apartment buildings.</i>	<p><i>“With around 24 per cent of people living with a disability, access to housing is at the heart of issues for disabled New Zealanders.”⁹</i></p> <p>In responding to nationwide statistics, and that accessible housing also provides for our ageing population, the standard includes a minimum of 10% of apartments with a lift core shall be provided for universally accessible apartments. Architectural testing resulted in the size of a single bedroom accessible apartment being similar to a typical well-designed apartment, so there was no discernible loss of yield as a result.</p> <p>Additionally the flat topography of Ōtautahi Christchurch here in this Precinct, renders an accessible journey from the street to the front door. Thus it is considered that there are few physical or economic barriers to providing for a diversity of housing here.</p>

⁸ <https://www.planning.nsw.gov.au/-/media/Files/DPE/Guidelines/apartment-design-guide-2015-07.pdf?la=en>
¹⁰ <https://ourauckland.aucklandcouncil.govt.nz/news/2019/05/lack-of-accessible-housing-a-key-issue-for-disability-advisory-panel/#:~:text=%E2%80%9COnly%20around%20five%20per%20cent,issues%20for%20disabled%20New%20Zealanders.%E2%80%9D>

<p><i>l. The maximum onsite car parking ratio shall be 0.1 across the Comprehensive Residential Development. Car parking onsite shall only be provided for in the following circumstances:</i></p> <ul style="list-style-type: none"> <i>i. A maximum of two car parking spaces for a residential car share scheme;</i> <i>ii. A maximum of one space per accessible unit</i> 	<p>In Christchurch, “The transport sector contributes 54% of our district’s greenhouse gas emissions, with 36% coming from road transport”¹⁰.</p> <p>Initial testing of an onsite parking ratio of 0.25 resulted in the extensive occupation of the ground plane with parking and manoeuvring space. The effect of this was a poor-quality interface to the communal open space with no interesting or active frontage to support a comfortable invitation to use the space. There is also little passive surveillance from the ground level to the communal outdoor living space, as well as along the journey in from the street, past the parking to the rear of the site. This is a key CPTED / safety consideration.</p> <p>In terms of the use of space on the ground plane, testing found it was difficult to also accommodate all the ancillary services such as bike storage areas and communal bins given the space required for car parking and manoeuvring (approx. 20sqm per typical car parking space).</p> <p>As a result, onsite parking for the purposes of private cars has been discouraged. This is offset by the opportunity for car-share parking spaces available for residents, as well as accessible spaces which could be tied by consent notice to the accessible apartments. Overall, this standard supports the planned growth and intensification outcomes sought for this zone and recognising the existing and future accessibility of this location by walking, cycling and public transport.</p>
<p>Outdoor living space (private and communal)</p>	
<p><i>m. At least 10% of the site must be provided for communal outdoor living space and include:</i></p> <ul style="list-style-type: none"> <i>i. a minimum dimension of 7 metres;</i> <i>ii. a ratio of no longer than 1:3;</i> <i>iii. include trees capable of maturing to 8 metres at a rate of 1 per 100sqm of open space.</i> 	<p>10% of communal outdoor living space has been identified in the case study analysis as the minimum metric to achieve a number of onsite amenities. These include the provision of mature trees capable of growing to 8 metres tall, sufficient space between buildings for sunlight and privacy, a range of spaces for active and passive recreation to cater for a range of residents’ (including children’s) leisure preferences. As previously noted, these amenities are highly important for more compact living options and particularly any south facing apartments.</p> <p>A minimum communal open space of 7 metres side provides for mature trees to spread their canopies, as well as provide usable width for outdoor seating in the sun (southern edge of the space).</p> <p>A shape factor or ratio of no longer than 1:3 has also been tested against a range of site sizes and found to provide for good flexibility in the design and usability of the space.</p>

¹⁰ [Otautahi-Christchurch-Climate-Resilience-Strategy.pdf \(ccc.govt.nz\)](https://ccc.govt.nz/assets/Uploads/Otautahi-Christchurch-Climate-Resilience-Strategy.pdf)

<p><i>n. Buildings shall demonstrate three consecutive hours of sunshine across 30% of the communal outdoor living space at the Equinox is provided.</i></p>	<p>Testing determined that rear buildings taller than 12 metres did not offer good solar gain into private patios and the communal open space.</p> <p>Three consecutive hours of sunshine at the equinox (providing for a span between September 23 to March 21) provides for a window near the middle of the day when the sun is warmest – an important consideration in Ōtautahi Christchurch.</p>
<p><i>o. Each residential unit shall be provided with an outdoor living space with a minimum area and dimension as set out in the following table, located immediately outside and accessible from an internal living area of the residential unit.</i></p> <ul style="list-style-type: none"> • <i>Any residential unit with a habitable room located at ground floor level = 16sqm and a 4m dimension</i> • <i>Any unit with habitable room located above ground = 8sqm and a 1.8m dimension.</i> 	<p>The dimensions of ground floor courtyards have been increased slightly from the Medium Density Residential Zone (MDRZ) 3 metre dimension, to a 4 metre dimension to improve the usability of the area for outdoor dining and manoeuvring around tables and chairs, perimeter landscaping as well as space available for a mature tree in natural ground.</p> <p>Please note that this zone is not constrained by the MDRS directions, however the 8sqm and 1.8m depth for balconies, which is consistent with other zones, is considered appropriate given the ‘top up’ amenity space offered by the communal outdoor open space.</p>
<p><i>p. Any ground floor outdoor living space shall not be located adjacent to the street.</i></p>	<p>For the purposes of ground floor apartments on sites located on the southern side of the street, locating outdoor living spaces adjacent the street typically results in solid fencing around them to establish a good level of privacy for residents.</p> <p>As such, solid fencing can compromise the ability to provide for passive surveillance and the actual and perceived safety of the street, via the minimum 20% glazing standard.</p>
<p>Residential Amenity</p>	
<p><i>q. Sites adjacent to a Medium Density Residential Zone, shall adopt the following recession planes 3 metres and</i></p> <ul style="list-style-type: none"> <i>- 60 degrees on the northern boundary;</i> <i>- 55 east / west boundary; and</i> <i>- 50 degrees on the southern boundary.</i> 	<p>Some MDRZ sites exist on the south and west interfaces of the Comprehensive Housing Precinct which may be adversely impacted by a zero-lot building up to 21 metres on the north or eastern side of the boundary. The recommended alternative MDRS standards have therefore been applied here.</p>

<p>r. The activity shall have a minimum net floor area excluding lobby and/or reception area per unit of:</p> <ul style="list-style-type: none"> i. Studio 35m² ii. 1 bedroom 45m² iii. 2 bedrooms 60m² iv. 3 or more bedroom 90m² 	<p>Standard provisions with other residential zones have been applied for consistency.</p>
<p>s. Each residential unit shall have an outlook space from habitable room windows, oriented over land within the development site or a street or public space, with:</p> <ul style="list-style-type: none"> i. a minimum dimension 4 metres in depth and 4 metres in width, for a living area. ii. a minimum dimension 3 metres in depth and 3 metres in width, for a bedroom. 	<p>These standards align with the outdoor space dimensions for ground floor habitable rooms, the 3 metre landscaped street setback and the communal outdoor living spaces between buildings.</p>
<p>t. Any bedroom shall be designed and constructed to achieve an external to internal noise reduction of not less than 35 dB $D_{tr,2m,nT_w+C_{tr}}$.</p>	<p>Noise levels as per the Medium Density Residential Zone.</p>
<p>Outdoor storage and service space</p>	
<p>u. Each residential unit shall be provided with:</p> <ul style="list-style-type: none"> i. a dedicated washing line area that is screened from public view, and ii. a single, indoor storage space of 4m³ with a minimum dimension of 1 metre. 	<p>4 metres³ provides for an internal space of approximate dimensions of 1 metre deep, 2.7 metres tall and 1.5 metres long. In encouraging people to adopt compact forms of living, sufficient space for sports equipment etc is needed.</p>
<p>v. A communal waste management area, shall be provided. These areas shall not be located between the road boundary and any building, adjacent to outdoor living spaces can be screened from the floor level.</p>	<p>Commercial and privately managed bin collection is more efficient on space than numerous individual bins per unit. This also results in a tidier and more accessible footpath as collection days as there are no bins on the street as such.</p>

8. Conclusion

The recommendations provide for a set of design led built form standards which respond to transition towards high density residential neighbourhoods within a 10-15 minute walk of the City Centre Zone. Specifically the provisions seek to contribute to an improved diversity of housing type, tenure and affordability and support a reduction in greenhouse gas emissions.

The proposed provisions also recognise the over-arching policy context and NPS-UD direction, with the Christchurch City Council's targets of achieving net zero greenhouse emissions by 2045 (with separate targets for methane), and to halve our emissions by 2030, from 2016-17 levels.

Architectural testing revealed densities upward of onsite 230 dwellings per hectare is possible through the proposed provisions. These densities can support the local amenities offered in the central Sydenham Town Centre and in the Central City, future streetscape upgrades, and public transport networks. The uplift from the current 15 metre height to 21 metres, recognises urban form, and seeks to offer an incentive for comprehensive development.

Appendix A: Relevant Objectives and Policies

15.2.3 Objective - Office parks and mixed use areas outside the central city

- a. *Recognise the existing nature, scale and extent of **commercial activity** within the Commercial Office and Mixed Use Zones, but avoid the expansion of existing, or the development of new, office parks*
- b. *Mixed use zones located close to the City Centre Zone transition into high density residential neighbourhoods that contribute to an improved diversity of housing type, tenure and affordability and support a reduction in greenhouse gas emissions.*

15.2.3.2 Policy – Mixed use areas outside the central city

- a. *Recognise the existing nature, scale and extent of retail activities and offices in mixed use zones outside the central city while limiting their future growth and development to ensure commercial activity in the City is focussed within the network of commercial centres.*
- b. *Support mixed use zones located within a 15 minute walking distance of the City Centre Zone, to transition into high quality residential neighbourhoods by:*
 - i. *enabling comprehensively designed high-quality, high-density residential activity;*
 - ii. *ensuring that the location, form and layout of residential development supports the objective of reducing greenhouse gas emissions and provides for greater housing diversity including alternative housing models;*
 - iii. *requiring developments to achieve a high standard of on-site residential amenity to offset and improve the current low amenity industrial environment and mitigate potential conflicts between uses;*

- iv. *encourage small-scale building conversions to residential use where they support sustainable re-use, provide high quality living space and contribute to the visual interest of the area.*
- c. *Avoid Comprehensive Residential Development of sites within the Comprehensive Housing Precinct that are identified in Appendix 15.15.12 and 15.15.13 unless the relevant shared pedestrian/cycleway, greenway or road connection is provided.*
- d. *For sites identified within Appendix 15.15.12 and 15.15.13 encourage the connection to facilitate convenient and accessible through block connectivity.*

15.2.4 Objective - Objective - Urban form, scale and design outcomes

- a. *A scale, form and design of development that is consistent with the role of a centre and its contribution to city form, and the intended built form outcomes for mixed use zones, and which:*
 - i. *recognises the Central City and District Town Centres as strategically important focal points for community and commercial investment;*
 - ii. *contributes to an urban environment that is visually attractive, safe, easy to orientate, conveniently accessible, and responds positively to anticipated local character and context;*
 - iii. *recognises the functional and operational requirements of activities and the anticipated existing built form;*
 - iv. *manages adverse effects (including reverse sensitivity effects) on the site and surrounding environment including effects that contribute to climate change; and*
 - v. *recognises Ngāi Tahu/ mana whenua values through landscaping and the use of low impact urban design, where appropriate.; and*
 - vi. *supports a reduction in greenhouse gas emissions.*

15.2.4.1 Policy – Scale and form of development

- b. *Reflect the context, character and the anticipated scale of the zone and centre’s function; by:*
 - i. *providing for the tallest buildings and greatest scale of development in the city centre to reinforce its primacy for Greater Christchurch and enable as much development capacity as possible to maximise the benefits of intensification;*
 - ii. *providing for building heights and densities within town, local and neighbourhood centres commensurate with their role and level of commercial and community activities;*
 - iii. *For Key Activity Centres and Large Format Centres, enable larger floor plates while maintaining a high level of amenity in the centre; and*
 - iv. *for comprehensive residential development in the Mixed Use Zone, achieve a high density scale of development that contributes to a perimeter block urban form; and*

- v. manage adverse effects on the surrounding environment, particularly at the interface with residential areas, sites of Ngāi Tahu cultural significance identified in Appendix 9.5.6 and natural waterways.

15.2.4.2 Policy – Design of new development

- a. Require new development to be well-designed and laid out by:
 - i. encouraging pedestrian activity and amenity along streets and in adjoining public spaces, to a degree that is appropriate to the location and function of the road street or space, and in Mixed Use Zones, to recognise and support the transition to pedestrian-friendly street environments;
 - ii. providing a principal street facing façade, or facades (where located on a corner site), of visual interest that contributes to the character and coherence of a centre;
 - iii. facilitating movement within a site and with the surrounding area for people of all mobilities and ages, by a range of modes of transport through well-defined, convenient and safe routes;
 - iv. enabling visitors to a centre to orientate themselves and find their way with strong visual and physical connections with the surrounding area;
 - v. promoting a safe environment for people and reflecting principles of Crime Prevention through Environmental Design (CPTED);
 - vi. enabling the re-use of buildings and sites while recognising the use for which the building is designed;
 - vii. incorporating principles of low impact design including energy efficiency, water conservation, the reuse of stormwater, on-site treatment of stormwater and/or integration with the wider catchment based approach to stormwater management, where practicable;
 - viii. achieving a visually attractive setting when viewed from the street and other public spaces, that embodies a human scale and fine grain, while managing effects on adjoining environments; ~~and~~
 - ix. providing adequate and convenient space for storage while ensuring it is screened to not detract from the site's visual amenity values;
 - x. increasing the prominence of buildings on street corners;
 - xi. ensuring that the design of development mitigates the potential for adverse effects such as heat islands, heat reflection or refraction through glazing, and wind-related effects;
 - xii. ensuring that the upper floors (including roof form and associated mechanical plant) are well-modulated and articulated to provide visual interest to the building when viewed from beyond the Central City or from adjacent buildings above; and
 - xiii. recognising the importance of significant public open space by maintaining sunlight access to, and managing visual dominance effects on, these spaces;
 - xiv. recognising that mixed use zones are in transition and require a high quality of residential development to be achieved to mitigate and offset the industrial nature and potential conflicts between uses within the zone; and
 - xv. for larger scale developments in Mixed Use Zones, provide for future access lanes, greenways and mid-block pedestrian connections, that will contribute to a finer grain block structure that supports walking.