



Memorandum

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Attention: Ann Rodgers | Principal Policy Planner, Central Otago District Council

Cc: Liz White, Consultant Planner

Reference: Medium Density Residential Zone Building Coverage Rule Memo

From: Tim Church, Partner | Urban Designer, Boffa Miskell

Date: 18th August 2023

Project No: BM191063G

Introduction

- Central Otago District Council is progressing through Plan Change 19 – Residential Zoning (PC19) to the Central Otago District Plan. PC19 involves rezoning new land for residential use, identifying some areas for future growth, aligning existing residential zoning with the proposed new zones, and includes new provisions for managing land use and subdivisions within the residential zones. The Medium Density Residential Zone (MRZ) is a new zone proposed that was included in the Vincent and Cromwell Spatial Plans to provide greater choice of housing types, help address housing affordability concerns and respond to demand for residential land in the District. The MRZ provides for higher density development in areas that are within a walkable distance of commercial areas or other key community facilities.
- Following the conclusion of hearing of submissions on PC19 on Friday, 26th May 2023, this memo relates to the request for Urban Design advice within Directions of the Central Otago District Council Hearings Panel Minute 4, as follows:

‘Several submitters have asked for the changes to site coverage performance standards in the MDZ Zone. The panel requests that staff to obtain urban design advice on design outcomes if site coverage were to be increased from 40% to 45%.’
- Boffa Miskell have been engaged by Central Otago District Council (CODC) to further test the Building Coverage performance standard in the MRZ. This is to demonstrate the typical on-the-ground outcomes, both for representative infill and comprehensive developments, that could be anticipated by two percentage options (i.e. 40% and 45%) and then to provide a recommendation on which option is considered to deliver the most appropriate outcome for the District from an Urban Design perspective.

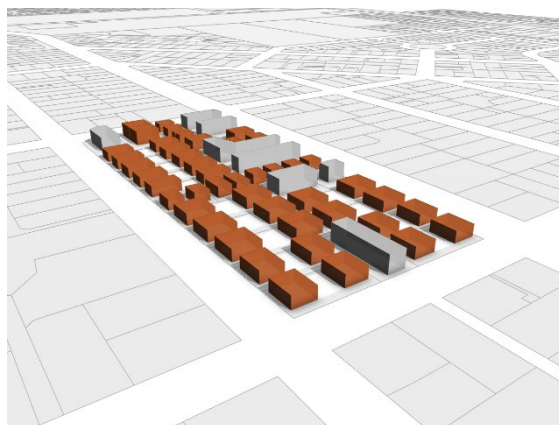
Methodology

- The proposed site coverage options were considered alongside other MRZ performance standards summarised below, alongside Height in Relation to Boundary rules.

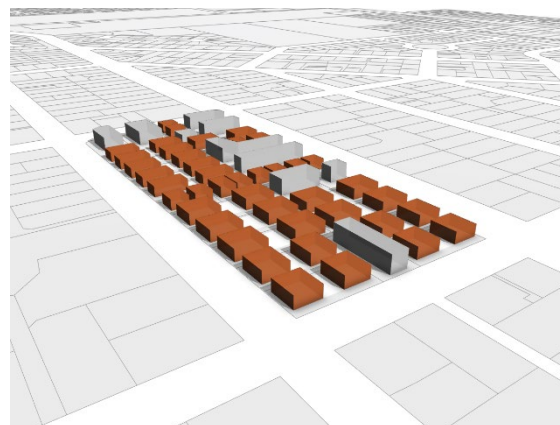
Zone	Height	Density: minimum site size.	Road Boundary Setback	Internal boundary Setback	Outdoor living	Landscape Area	Outlook
MRZ	11m / 3 storeys	200m ² (where connected to reticulated sewerage system. 800m ² if not connected)	2m	1m	30m ² . Min dimension of 4m.	30%	4 x 4m

5. To test the site coverage performance standard in the MRZ, model outputs we reviewed relative to the other performance standards above on infill (both minimum and aggregated lot sizes) and Comprehensive Residential Development scenarios, as outlined below:

- a) An automated 3D model produced in City Engine GIS software, based on existing lot configuration of a representative urban block in Alexandra. Testing entire urban block scenarios allowed visualisation of the individual and cumulative impacts of the site coverage options alongside other performance standards for infill development. Within this model, 40% and 45% site coverage scenarios were run to test outcomes that maximise building envelopes, resulting from permitted recession plane angles, height in relation to boundary (HIRB), setbacks and building height performance standards. Assumptions were made relating to 3m inter-floor storey heights (i.e. 2m allowance for foundation and roof pitch within the 11m building height) and an 8m minimum building dimension, based in-part on practical built form considerations and Urban Design outcomes sought through the Medium Density Design Guide. It is noted that building forms coloured brown achieved the building coverage and those coloured grey did not. Under the existing lot configuration within the block, a permitted three storey development cannot be readily achieved with typical lot sizes of approximately 1000m² or less (i.e. those already subdivided) without any aggregation of lots. As such, the graphic illustrates predominantly two storey developments with those not reaching building coverage maximums (i.e. grey blocks) more likely to then utilise a three storey built form.



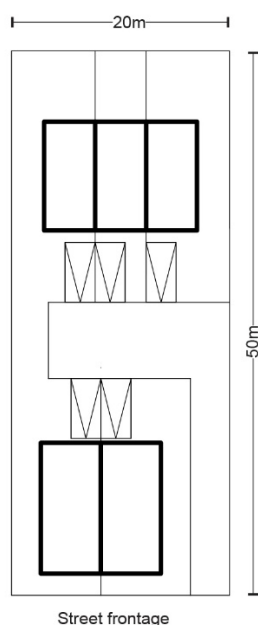
40% Building Coverage Scenario



45% Building Coverage Scenario

Figure 1: Automated 3D model outputs based testing the cumulative impact of MRZ developments that maximise building envelopes across a representative urban block (Note: building forms coloured brown achieved the building coverage and those coloured grey did not).

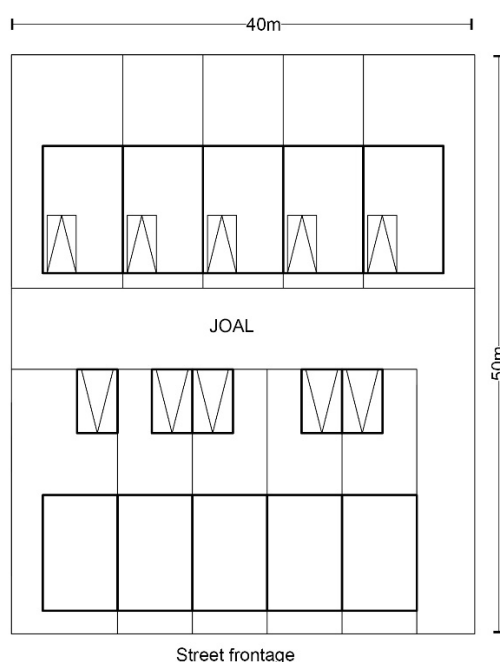
- b) A representative infill lot size of 1000m² (i.e. 20m x 50m) was tested with a high-level, 'best practice' medium density development design, based on applying all MRZ performance standards and Urban Design outcomes sought through the proposed CODC Medium Density Design Guide. Using a minimum site area of 200m² per unit allowed for division of the site into five units, comprising street facing semi-detached houses and rear terraced houses, with an overall 27% building coverage excluding garages and 39% including garages (Figure 2). It is noted that the greatest limiting factor to increasing the building coverage of housing was compliance with HIRB performance standards. However, the addition of either detached or integrated garaging at ground level would likely be one of the main reasons to increase in building coverage. It is noted that provision of double garages for all units would likely impact other performance standards and design guide outcomes as discussed further below.



Site Area:	1000m ²
Building Footprint:	272m ²
Building Coverage:	27%
or	
Building Footprint (five single garages):	392m ²
Building Coverage:	39%
or	
Building Footprint (two single and three double garages):	443m ²
Building Coverage:	44%

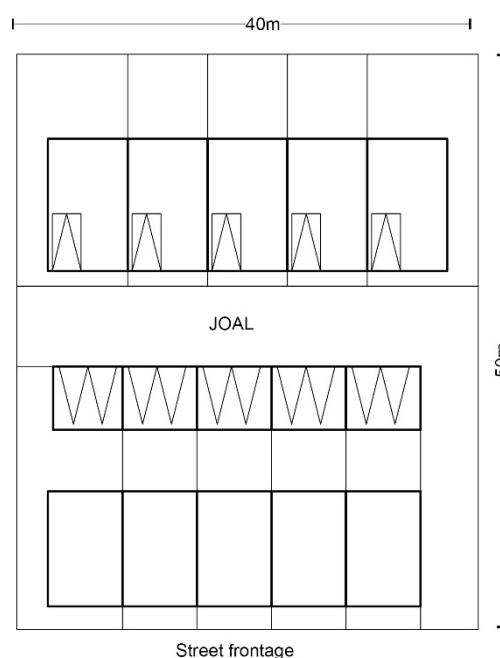
Figure 2: Representative infill lot size of 1000m² (i.e. 20m x 50m) to service five houses with a minimum site area of 200m² per unit based on applying all MRZ performance standards and Urban Design outcomes sought through the Medium Density Design Guide.

- c) Similarly, an aggregated infill approach comprising two lots with a representative 50m lot depth that allowed for the use of a terraced house typology. This approach utilised a Joint Ownership Access Lane (JOAL) accessway to service ten houses with a minimum site area of 200m² per unit with both 40% and 45% building coverage scenarios tested (Figure 3).



Building Coverage	40%
Site Area:	2000m ²
Building Footprint:	800m ²

40% Building Coverage Scenario



Building Coverage	45%
Site Area:	2000m ²
Building Footprint:	900m ²

45% Building Coverage Scenario

Figure 3: An aggregated infill approach comprising two lots with a representative 50m lot depth, utilising a Joint Ownership Access Lane to service ten houses with a minimum site area of 200m² per unit.

- d) Comparison of two variations of a semi-detached lot within a Cromwell development that are proposed to be consented under a Comprehensive Residential Development Master Plan, utilising publicly vested streets and lanes (Figure 4). This uses conceptually designed terraced house typologies to evaluate two building coverage scenarios similar to those being tested (i.e. 41% and 48%). The main difference between the variations is an accessible ground level bedroom and storage area (red box) representing an additional 7% building coverage.



Figure 4: Comparison of two concept stage variations of a semi-detached lot within a Cromwell development proposed to be consented under a Comprehensive Residential Development Master Plan, utilising publicly vested streets and lanes.

Discussion

6. Ms White's s42A Part 1 (Provisions) report provides an appropriate context for the anticipated outcomes of the MRZ, stating:

'40% was recommended so as to provide for a more open and spacious feel within the Central Otago context, with their testing identifying that a 50% building coverage would provide for potentially large and continuous built forms that in their view, would likely be too urban.' ... I consider 40% is appropriate to achieve the outcomes sought in the Central Otago context. While I accept that this limits the area a building can cover, I note that it is intended that this zone will provide for a range of housing options, including semi-detached dwellings, terraced housing and apartments, rather than a predominance of single storey detached houses. I also note, in response to submitter's comments that a higher limit can still achieve an appropriate amenity outcome, that the provisions allow a consent pathway for consideration of higher coverage, on a case-by-case basis. The 40% limit is therefore a threshold beyond which consent can be granted to proposals which still achieve the overall outcomes sought.' (para 190)

7. Given the MRZ is a new zone with very few examples of medium density infill or comprehensive residential development in the District, there is an opportunity to tailor the performance standards, including Building Coverage in a way that achieves an optimal balance between good urban form and recognising traditional character traits. These are not mutually exclusive with more historic residential areas closer to town centres often comprising compact built forms. Although, these were likely to have a more 'relaxed' landscape setting than found in metropolitan urban environments. This balance has been reflected in the draft Medium Density Design Guide prepared to complement the zone provisions.
8. While MRZ are typically located in more accessible areas to commercial and community facilities, it is also recognised that with higher levels of regional travel and lower levels of public transport services available there is currently a greater dependence on private vehicle mobility within the life of the District Plan. This is relevant to building coverage, as it is likely to necessitate a higher land take for garaging, which may also be important for residents with the District's climate extremes and storage of equipment for the wide range of recreational opportunities on offer.
9. The automated modelling illustrated in Figure 1 indicates that potential infill of existing lots without aggregation may result in redevelopments being predominantly two storey build forms and harder to maximise the available height limit of 11m or three storeys within the constraints of other performance standards. As such, when comparing the model outputs, an additional 5% building coverage appears appropriate to accommodate more built form at lower levels, without excessive loss of landscape coverage or sense of openness. It is notable, that with the model assumptions incorporated, the streetscene remains largely consistent between the two building coverage scenarios and that most built form variation occurs centrally within the site where any amenity changes would largely impact future occupants, rather than public and neighbours external to the site.
10. The relative difference between car parking and various garaging options on building coverage is reinforced in Figure 2, where a 'best practice' medium density development design, based on applying all MRZ performance standards and Urban Design outcomes sought through the Medium Density Design Guide. The most affordable and efficient use of a common car parking area likely to be is less than 30% building coverage. The addition of single garaging would potentially remain less than 40% and a mixture of single and double garaging less than 45%. However, double garaging for all units could push the building coverage to approximately 48% where it would likely increase the proportion of built form at ground level and encourage more garage access directly off the street, potentially compromising both streetscape and on-site amenity outcomes. A building coverage trigger for urban design assessment would be appropriate for issues like this.
11. Aggregation of two or more representative 1000m² lots in Figure 3 reduces HIRB constraints providing opportunities for three storey buildings with smaller footprints and more efficient accessway configurations to service the relatively deep lots. Similarly, the findings of this testing indicate very little difference in views from the street and greater internalising of amenity impacts.
12. Nonetheless, enlarging the building coverage to 45% could provide more flexibility for compact single storey houses, generous floor areas within two storey houses or for larger households within three storey houses. This is outlined in the comparative GFA to calculations by storey height below with a matrix of different options for distributing the available floor area also included Appendix 1:

Building coverage 40%

40% of 200m² site = 80m² floor area (1 storey house)
 160m² floor area (2 storey house)
 240m² floor area (3 storey house)*

Building coverage 45%

45% of 200m² site = 90m² floor area (1 storey house)
 180m² floor area (2 storey house)
 270m² floor area (3 storey house)*

**Note: the third storey may be slightly smaller to fit within height limits and HIRB controls.*

13. Figure 4 illustrates a concept design for semi-detached house under a Comprehensive Residential Development Master Plan and highlights the opportunity to effectively utilise publicly vested streets and lanes more efficiently. While this is a relatively generous medium density example, block sizes could be further tailored to optimise a 200m² lot size (or less, if supported by communal open space) where a terraced house typology could be more practically configured. The findings of this more refined design, indicate a 5% increase in building coverage is likely to represent a relatively modest addition to the built form on the site and still provides opportunities to generous architectural modulation of building facades.

Conclusion

14. Boffa Miskell have been engaged by Central Otago District Council (CODC) to further test the Building Coverage performance standard in the MRZ. This is to demonstrate the typical on-the-ground outcomes, both for representative infill and comprehensive developments, that could be anticipated by two percentage options (i.e. 40% and 45%) and then to provide a recommendation on which option is considered to deliver the most appropriate outcome for the District from an Urban Design perspective.
15. A more open and spacious feel within the Central Otago context remains an appropriate context for the anticipated outcomes of the MRZ, achieving an optimal balance between good urban form and recognising traditional character traits. This is reflected in the draft CODC Medium Density Design Guide prepared to complement the PC19 MRZ zone provisions.
16. While the urban form relationships of MRZ will incentivise more use of active travel modes, the constraints of more distant transport options, climate extremes and recreational needs across Central Otago are likely to remain during the life of the District Plan, where it may be appropriate to provide more flexibility for garaging options within sites. However, poorly locating or over-providing garaging (e.g. double garaging for all units) could decrease incentives for using other active travel modes and increase the proportion of built form at ground level, potentially compromising both streetscape vitality and on-site amenity outcomes. A building coverage trigger for urban design assessment would be appropriate for issues like this.
17. Findings of modelling infill redevelopment on existing lots, without aggregation, may result in predominantly two storey build forms. As such, when comparing the model outputs, an additional 5% building coverage appears appropriate to accommodate more built form at lower levels, without excessive loss of landscape coverage or sense of openness. Enlarging the building coverage to 45% could provide more flexibility for compact single storey houses, generous floor areas within two storey houses or for larger households within three storey houses.
18. Generally, the streetscene remains largely consistent between 40% and 45% Building Coverage scenarios and most built form variation occurs centrally within the site where any amenity changes would largely impact future occupants, rather than public and neighbours. The findings of more refined conceptual designs, indicate a 5% increase in building coverage is likely to represent a relatively modest addition to the built form on-site and still provides opportunities to generous architectural modulation of building facades.
19. In summary, an increase from 40% to 45% for the Building Coverage rule alongside other performance standards would likely result in appropriate built form outcomes that remain compatible with urban form, accessibility constraints and contextual outcomes anticipated for the MRZ from an Urban Design perspective.

Appendix 1: Potential Distribution of Floor Areas on an Aggregated Infill Site

A matrix outlining different options for distributing the available floor area between different storey heights and garage configurations. Note: boxes with a bold outline are likely to be more practical combinations:

Building coverage 40% of 200m ² site				
	Floor area with no garage OR including internal access garage	Floor area with separate single garage (single storey garage)	Floor area with separate double garage (single storey garage)	Floor area with separate double garage (2 storey – studio space above garage)
1 storey house	House: 80m ² Garage: NA Total: 80m²	House: 56m ² Garage: 24m ² Total: 80m²	House: 40m ² Garage: 40m ² Total: 80m²	NA
2 storey house	House: 160m ² Garage: NA Total: 160m²	House: 112m ² Garage: 24m ² Total: 136m²	House: 80m ² Garage: 40m ² Total: 120m²	House: 80m ² Garage: 80m ² Total: 160m²
3 storey house*	House: 240m ² Garage: NA Total: 240m²	House: 168m ² Garage: 24m ² Total: 192m²	House: 120m ² Garage: 40m ² Total: 160m²	House: 120m ² Garage: 80m ² Total: 200m²

Building coverage 45% of 200m ² site				
	Floor area with no garage OR including internal access garage	Floor area with separate single garage (single storey garage)	Floor area with separate double garage (single storey garage)	Floor area with separate double garage (2 storey – studio space above garage)
1 storey house	House: 90m ² Garage: NA Total: 90m²	House: 66m ² Garage: 24m ² Total: 90m²	House: 50m ² Garage: 40m ² Total: 90m²	
2 storey house	House: 180m ² Garage: NA Total: 180m²	House: 132m ² Garage: 24m ² Total: 156m²	House: 100m ² Garage: 40m ² Total: 140m²	House: 100m ² Garage: 80m ² Total: 180m²
3 storey house*	House: 270m ² Garage: NA Total: 270m²	House: 198m ² Garage: 24m ² Total: 222m²	House: 150m ² Garage: 40m ² Total: 190m²	House: 150m ² Garage: 80m ² Total: 230m²

* 3rd storey may need to be smaller to fit within recession planes