

1. EXECUTIVE SUMMARY

- 1.1. My name is Fraser Colegrave, and I am the managing director of Insight Economics. I have been engaged by Kāinga Ora-Homes and Communities (**Kāinga Ora**) to provide evidence in support of its primary submission (submitter #834) and further submissions (further submitter #2082 and #2099) on Plan Change 14 (**PC14**) to the Operative Christchurch District Plan (**ODP**).
- 1.2. My evidence assesses the economic effects of key parts of the Kāinga Ora submission. First, however, I set the scene by reviewing the city's housing market, where prices and rentals have risen rapidly since the 1990s, and where attached dwellings, like duplexes and terraces, have recently surged in popularity. Then, I explain that taller buildings are a natural market response to very high land values in places like CBDs and major centres. i.e. to maximise opportunities and improve viability
- 1.3. Kāinga Ora opposes the bespoke centre's hierarchy promulgated by PC14, which differs from the national planning standards (**NPS**). I agree and consider the PC14 approach to create additional complexity for little apparent gain while heightening uncertainty. Given that the NPS was designed specifically to unify planning provisions across jurisdictions, I do not consider that CCC has justified its planned departure from them, and therefore recommend reversion to the NPS defaults.
- 1.4. Kāinga Ora also seeks that the city's three largest (non-CBD) centres – Hornby, Papanui, and Riccarton – be reclassified as Metropolitan Centres under the NPS, not “large town centres” as per PC14. To test that proposal, I use Marketview electronic transaction data to compare the size and reach for those centres to others across the city.
- 1.5. The data show that the three centres generate much higher retail sales than all others in the city, except the CBD, so they naturally form their own group. In addition, the data shows that all three centres already serve vast (sub-regional) catchments, just like metropolitan centres.

- 1.6. Next, I compared the size of the three centres' zoned extents to Auckland's metropolitan centres, with all three falling comfortably within that range.
- 1.7. I also note that the Draft Spatial Plan recognises the higher-order roles and functions of the three centres, identifying them as priority areas for development connected by a proposed mass rapid transit system.
- 1.8. While I do not consider the proposed reclassification of those centres to pose a risk to CBD primacy and vibrancy, a cap of (say) 1,000m² on office tenancies could be used to keep top-tier firms – seeking large floorplates – in and around the CBD. That aside, I strongly agree with reclassifying the three centres as proposed.
- 1.9. The Kāinga Ora submission also seeks greater height in and around the CBD and other major centres. To examine that, I first benchmark the city's 10 tallest buildings to Auckland and Wellington. The average height in the city was only 55 metres, compared to 88 metres for Wellington, and 155 metres for Auckland. Overall, the city's buildings comprise relatively few storeys relative to its size and potential.
- 1.10. Next, I use economic theory to show that the optimal height of a building is found where the additional costs and revenues of the top floor are roughly equal. I then use that theoretical framework to show that binding height limits impose direct economic costs on developers and buyers, before citing recent local work clearly demonstrating the link between greater building height and improved financial viability.
- 1.11. I also identify the economic costs and benefits of enabling taller buildings. The benefits are agglomeration efficiencies, economic vibrancy, greater housing choice, improved housing affordability, more efficient land use, and better infrastructure efficiency. The key costs are reduced privacy, lost sunlight, and local network congestion.
- 1.12. Separate economic analyses completed for the NPS-UD and the MDRS both concluded that enabling taller buildings will have significant economic benefits for the city, while imposing relatively minimal costs. I agree with those studies and support their conclusions.

- 1.13. Overall, I expect greater height to have positive economic effects for the city, especially since it is starting from a low baseline. However, to be effective, the broader planning framework must also enable taller buildings that are technically feasible, financially viable, and market attractive. Mr Cleese elaborates on this point in his evidence, which I acknowledge and support.
- 1.14. CCC has identified various Qualifying Matters (**QMs**) that limit the geographic extent of the MDRS. The most significant, in terms of impacts on capacity, is the Low Public Transport QM (**Low PT QM**). I understand the reason for this QM but query its effectiveness because:
- (a) The city's spatial form, and thus future transport emissions, are already largely baked-in due to the existing population and economic activity. Growth will have only marginal effects.
 - (b) Cars account for only a small share of national CO₂ emissions in the first place, so policies aimed at curbing them will have little impact on meeting national targets.
 - (c) Car CO₂ emissions are falling quickly due to the accelerated uptake of electric, hybrid, and other low-emissions vehicles. Trying to reduce CO₂ emissions by micromanaging the spatial location of new jobs and homes is an unwise policy target.
- 1.15. At the same time, I am concerned about effects on feasible capacity, especially since CCC's estimates of same do not reflect recent, profound changes in development viability. The Low PT QM also reduces housing choice because it prevents medium density development in many suburbs, thereby restricting future spatial choice.
- 1.16. Finally, I address the proposed Tree Financial Contribution (**Tree FC**), which Mr Cleese and Ms Strachan cover in detail. I strongly agree with their analyses. In addition, I disagree with the tree FC from an economic perspective because it:
- (a) Increases the cost of development, inflates house prices, reduces affordability, creates uncertainty, and will likely deter city development (by pushing it to Selwyn and Waimakariri).

- (b) Is regressive, with higher impacts on lower value properties, and vice versa;
- (c) Unfairly requires future developers to remedy the supposed “wrongs” of previous developers; and
- (d) Overlooks the far more cost-effective option of increasing tree cover via the coordinated planting of public land at-scale.

2. INTRODUCTION

- 2.1. My full name is Fraser James Colegrave.
- 2.2. I am an economist and the managing director of Insight Economics, a boutique economics consultancy based in Auckland. Prior to that, I was a founding director of another consultancy – Covec – for 12 years.
- 2.3. I hold a Bachelor of Commerce (1st Class Honours) in Economics from the University of Auckland.
- 2.4. I have over 26 years' commercial experience, the last 23 of which I have been an economics consultant. During that time, I have successfully led and completed more than 600 projects across a broad range of sectors.
- 2.5. My main fields of expertise are land-use, property development, and infrastructure funding. I have worked extensively in these areas for dozens of the largest companies in New Zealand. In addition, I regularly advise local and central Government on related policy matters, and therefore understand the issues from multiple perspectives.
- 2.6. Current and recent clients include: Auckland Airport, Argosy Property, Arvida Group, Crown Infrastructure Partners, Fletcher Living, Foodstuffs South Island, Fulton Hogan, Kiwi Property, Kiwirail, Kmart, Neil Group, New Zealand Productivity Commission, Tauranga City Council, Todd Property, and Wellington City Council.
- 2.7. In 2007/8, I led a consortium of consultants helping Christchurch City Council (**CCC**) to assess various options for the Urban Development Strategy. In 2013/14, I was commissioned to peer review the Land Use Recovery Plan on behalf of Environment Canterbury. Later, I was

commissioned by CCC to assess the optimal size and staging of the Halswell Key Activity Centre (**KAC**).

- 2.8. Over the last two years, I have assessed 11 plan changes in Selwyn, and am now working on several submissions to Waimakariri District Council's Proposed District Plan. In 2022, I helped gain consent for the Ravenswood development, which is Waimakariri District's third KAC. I have also completed dozens of economic assessments for a range of other developments across Greater Christchurch, so I have a good working knowledge of the broader area.
- 2.9. I regularly appear as an expert witness on various economic matters before Councils, Boards of Inquiry, Independent Hearing Panels, the Land Valuation Tribunal, the Environmental Protection Agency, the Environment Court, the Family Court, and the High Court.

Code of Conduct

- 2.10. Although this is a Council hearing, I confirm that I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2023. I have complied with the Code of Conduct in preparing this evidence and agree to comply with it while giving evidence.
- 2.11. Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

Scope of evidence

- 2.12. My evidence addresses the following key elements of the Kāinga Ora submission:
- (e) Simplifying the centres hierarchy to align with national standards;
 - (f) Reclassifying Riccarton, Papanui, and Hornby as Metropolitan Centre Zones (**Metro Centres**);

- (g) Enabling taller buildings in strategic locations, particularly around the proposed metro centres, and within 1.20km of the City Centre Zone;
- (h) Removing the Low Public Transport Accessibility Area Qualifying Matter (**Low PT QM**); and
- (i) Removing the Tree Financial Contribution (**Tree FC**).

2.13. First, however, this evidence sets the scene by describing the housing market context for PC14 and explaining the economic rationale for taller buildings in areas like Christchurch City (**Christchurch** or **the city**)

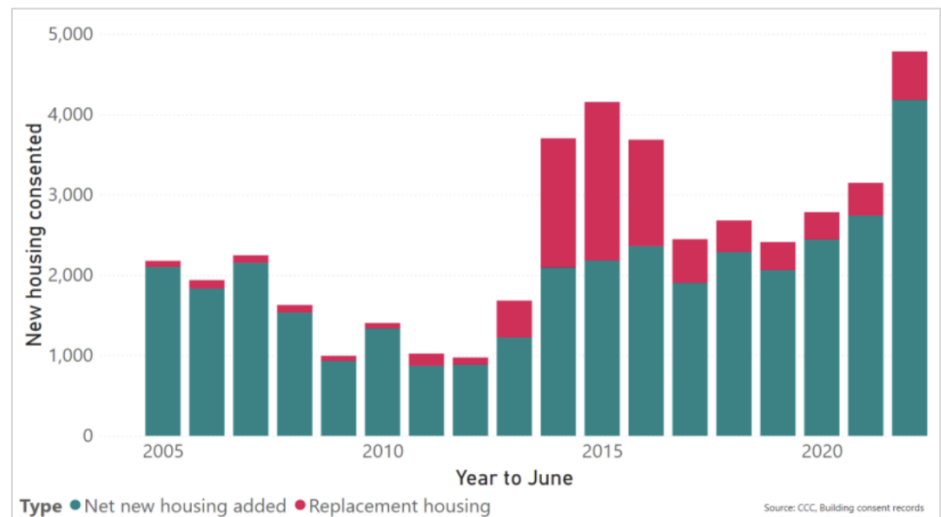
3. HOUSING MARKET CONTEXT

- 3.1. Christchurch is the second largest territorial authority (**TA**) in New Zealand, and the largest in the South Island by far. In fact, its estimated population of 390,000 in 2022 was three times the size of the next largest South Island TA (Dunedin, 130,000 people). Put another way, the city's 2022 population is the same as the next five largest South Island TAs combined.¹
- 3.2. Along with proximate parts of the neighbouring Selwyn and Waimakariri districts, Christchurch comprises the Greater Christchurch tier 1 urban environment under the National Policy Statement on Urban Development (**NPS-UD**).
- 3.3. Tier 1 urban environments represent the fastest-growing areas, where housing market pressures are greatest, and where there is the most acute need for compact and affordable dwellings in strategic locations.
- 3.4. However, Christchurch is unlike any other Tier 1 urban environment due to the earthquake sequence in 2010/11, from which it is still recovering. The Covid-19 pandemic also disrupted the normal flow of migrants into New Zealand, which caused the city's population – and other urban areas like Auckland – to temporarily stall.

¹ Namely Dunedin, Selwyn, Waimakariri, Tasman, and Invercargill.

- 3.5. Despite that, last year the city recorded its highest ever net addition to the housing stock.² This is illustrated in Figure 1 below, where the net dwelling increase in 2022 was 52% higher than 2021. Momentum in the CBD is also strong, with population growth and new home completions over the last two years reaching decade highs.³

Figure 1: Net Additions to the City's Dwelling Stock (green bars)

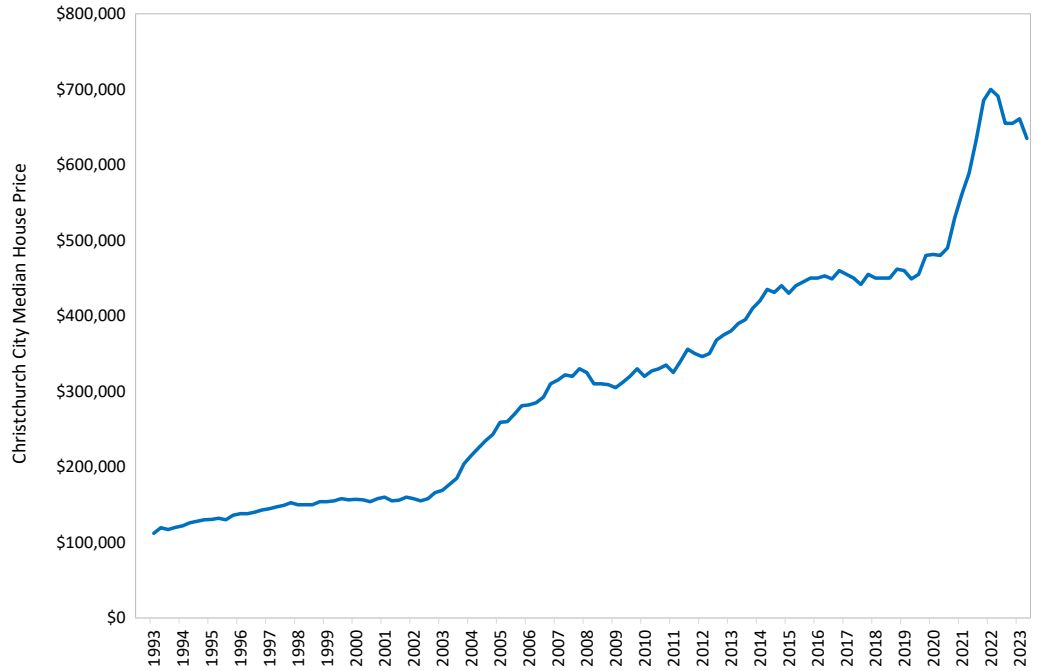


- 3.6. Figure 2 plots the city's median dwelling price over time. Despite a recent cooling, it has risen significantly over the last 30 years, from \$120,000 in 1993 to \$635,000 today (an annual growth rate of 5.7%).

² <https://ccc.govt.nz/culture-and-community/statistics-and-facts/facts-stats-and-figures/>

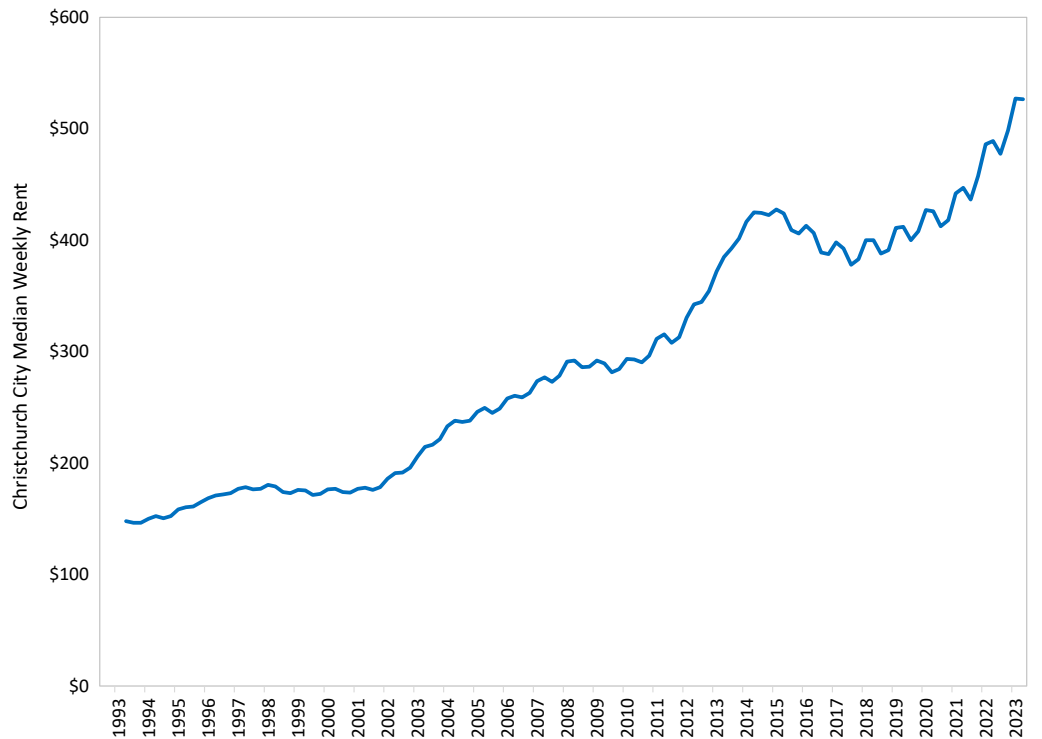
³ 2023 HBA, page 35.

Figure 2: Christchurch City Median Dwelling Price⁴



3.7. Weekly rentals have also risen, from an average of \$150 in 1993 to \$520 today – an annual growth of 4.2%. Figure 3 plots the trend.

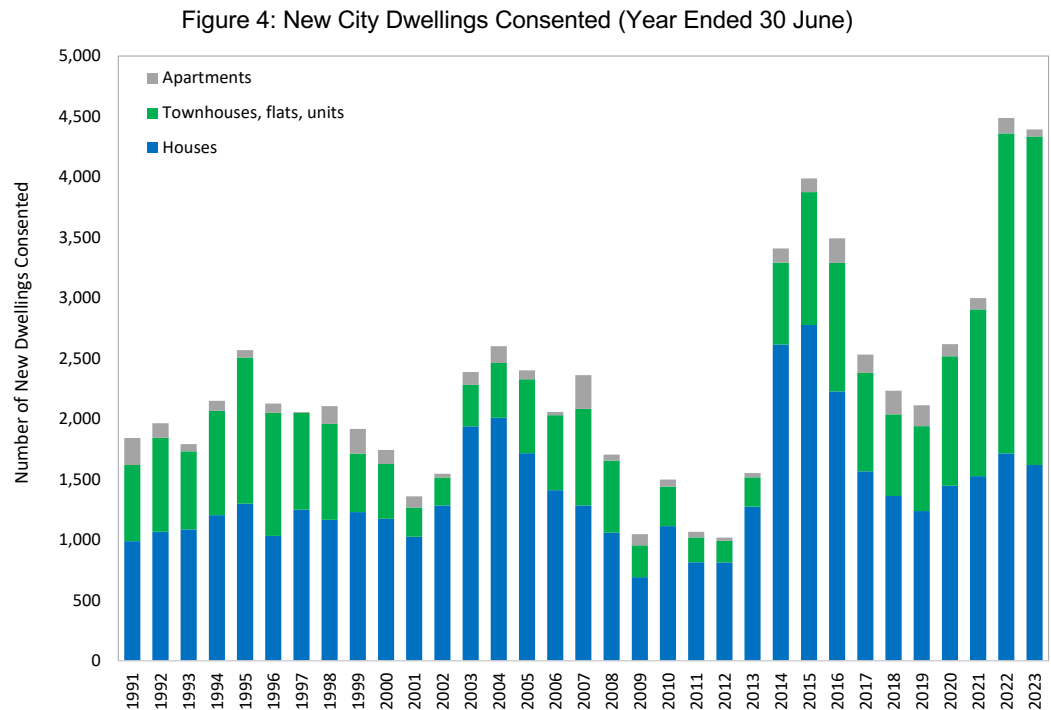
Figure 3: Christchurch City Weekly Rental Values⁵



⁴ Retrieved from <https://huddashboards.shinyapps.io/urban-development/>

⁵ ibid

- 3.8. The types of homes being built in the city is also changing, with a marked shift towards attached dwellings. This is shown below in Figure 4, where the blue bars represent stand-alone dwellings, and the rest represent attached dwellings (townhouses, duplexes, flats, and units).



- 3.9. Figure 4 confirms that attached dwellings have grown significantly in popularity. Over the last 24 months, they accounted for more than 60% of new dwellings consented, compared to only 18% ten years ago.
- 3.10. These smaller/attached dwellings, often in more central locations, will become increasingly important as the population continues to age and easy access to key services becomes a greater priority. In addition, they help reduce emissions and improve sustainability.
- 3.11. PC14 recognises this and aims to

“provide for the growth of housing and commercial centres in the best locations, to help address issues such as climate change and housing affordability. This means more houses close to our growing commercial centres, where there’s good access to services, public transport networks and infrastructure. Living within easy reach of work, school and

shops makes getting around easier and helps reduce transport emissions.”⁶

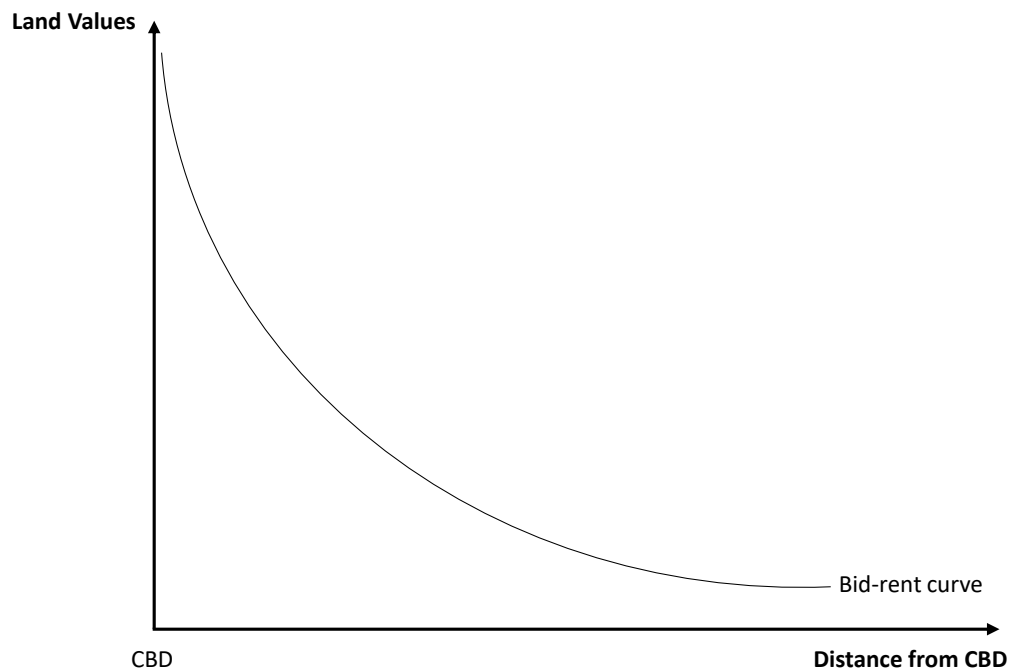
- 3.12. I agree with this statement. To draw people back to the city and reignite growth, CCC needs to take a highly enabling approach that encourages quality, compact developments in and around key centres. Further, since PC14 does not change the geographic extent of any centres, extra height is the only way to unlock more development potential within these economic hubs. I return to this point later.

4. THE ECONOMIC RATIONALE FOR TALLER BUILDINGS

- 4.1. Economics, like most disciplines, comprises many sub-fields. Urban economics is the sub-field concerned with market behaviours in urban settings, especially the location choices made by households and firms (to improve access and reduce transport costs).
- 4.2. Several theories have emerged to explain these spatial interactions between households and firms, plus the resulting impacts on urban property prices. The most well-known theory of this kind is the Alonso-Muth-Mills model (**AMMM**).
- 4.3. The AMMM predicts that households choose where to live by trading off commuting costs with the affordability and desirability of housing. Areas closest to the CBD have the best access to jobs and services, which is reflected in very high land values. Remote rural areas, on the other hand, have much lower access to jobs and services, which produces much lower land values. The AMMM expresses this hypothesised link between distance from the CBD and land prices in a so-called “bid-rent curve”, which is illustrated in the Figure 5 below.

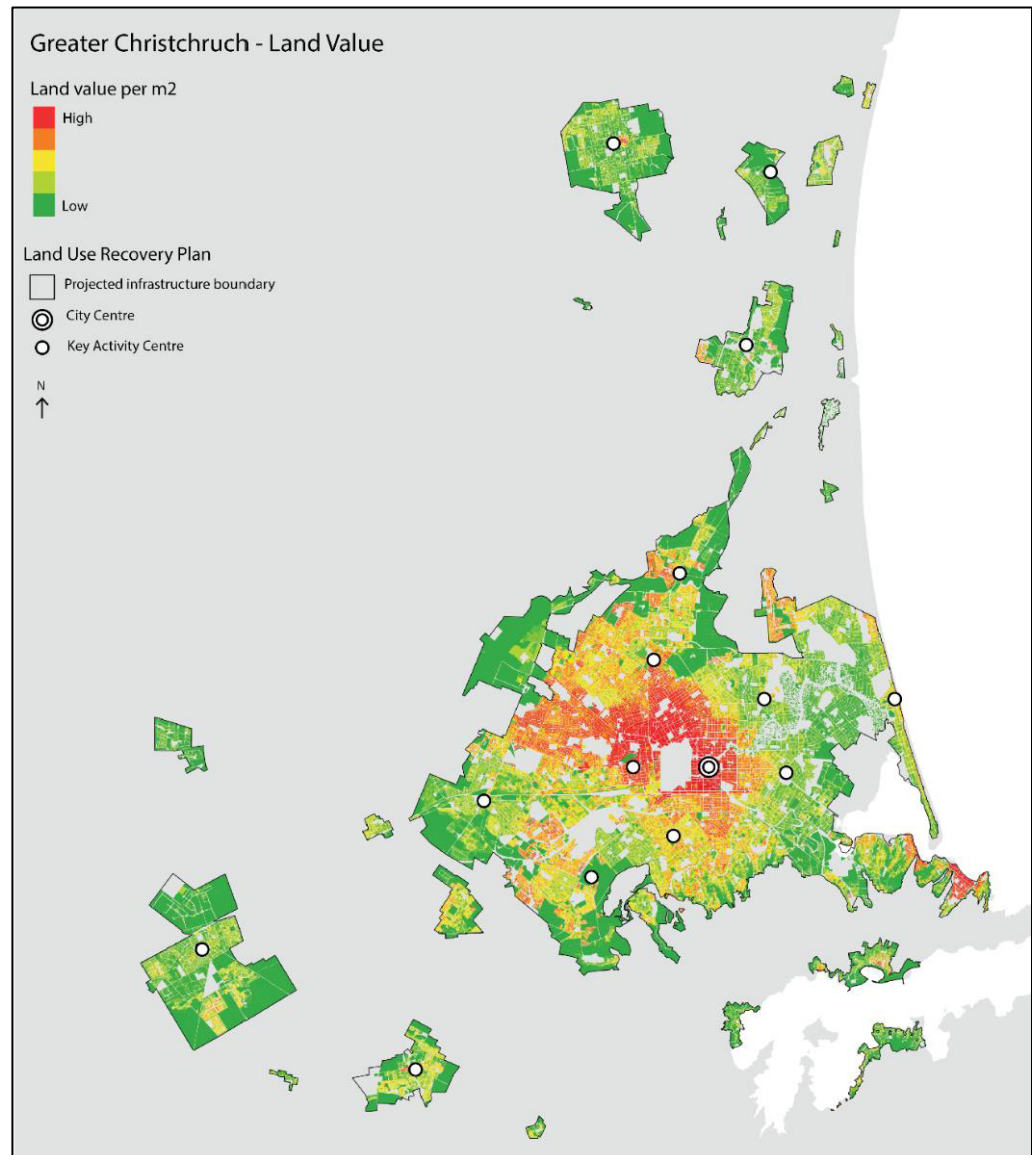
⁶ <https://ccc.govt.nz/the-council/plans-strategies-policies-and-bylaws/plans/christchurch-district-plan/changes-to-the-district-plan/planning-for-our-growing-city/>

Figure 5: Bid-Rent Curve (as predicted by the AMMM)



- 4.4. While some academics have challenged the AMMM's theoretical foundations, particularly its assumption of monocentricity⁷, its predictions about the spatial distribution of land values do broadly apply in many urban areas, including Christchurch.
- 4.5. This is demonstrated in the land value map below, which appears in the latest Housing Capacity Assessment (HCA). It reveals that land values are indeed higher near the CBD, and lower on the outskirts, just like the AMMM predicts. There are some anomalies, however, like Sumner, where high land values likely reflect other factors too. e.g. sea views.

⁷ Monocentricity means an area has only one major centre (i.e. the CBD). While this is obviously not true in expansive urban areas like (say) Sydney or Los Angeles, it is not unreasonable in Christchurch, which is relatively compact and where the CBD remains the primary focus for commerce and other economic activity.

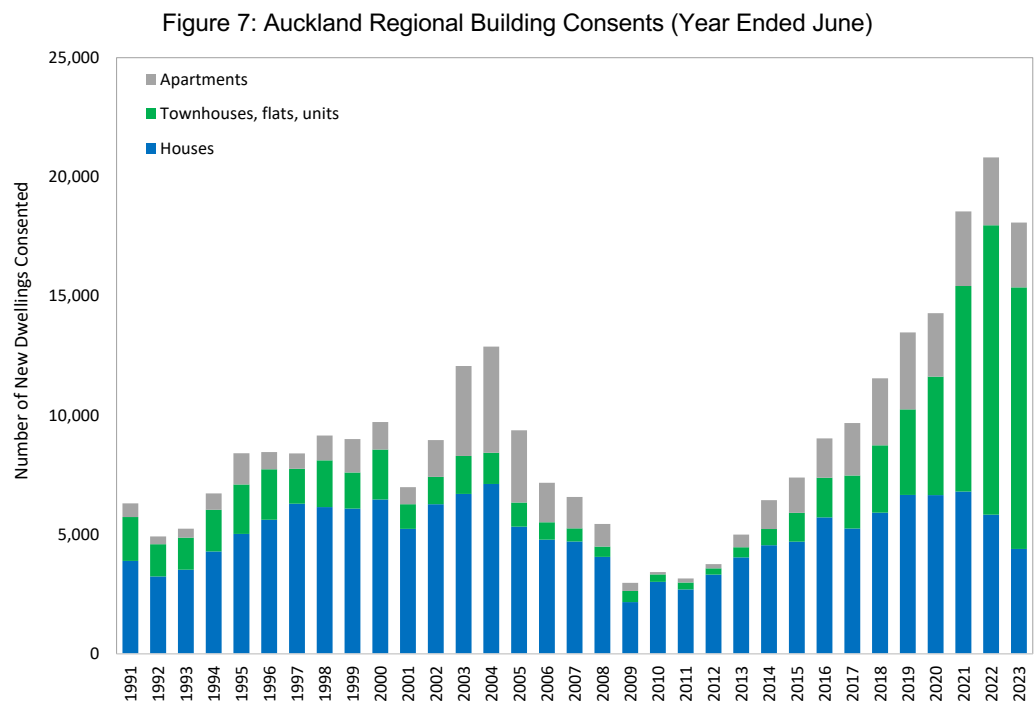
Figure 6: Map of Land Values Across Greater Christchurch⁸

- 4.6. Faced with very high land values in central locations, as per the map above, property developers must maximise yields to spread high land costs over as many dwellings – or as much floorspace – as possible. Otherwise, the final product will be too expensive, and the project will ultimately be a financial failure.
- 4.7. Moreover, with building coverage typically limited to 50% of net site area, often for purely practical reasons, the *only* way to increase yields in high values areas is to intensify and build taller. This is why the tallest buildings are usually found in places like CBDs and major centres.⁹

⁸ Greater Christchurch Housing Development Capacity Assessment, March 2023, page 22.

⁹ Planning rules are typically more enabling of height in such locations, too.

- 4.8. While it will take time for the market to adjust and make the best possible use of the greater building heights proposed by PC14, the Auckland experience provides a timely natural experiment into how things could work out in Christchurch over time.
- 4.9. In 2015, the Auckland Unitary Plan became operative in part. Amongst other things, it enabled much greater height in strategic locations. The market response was swifter than many expected, with a surge of higher density developments occurring across the region, even in places previously dominated by low-rise, stand-alone dwellings. This is shown in the graph of building consents for Auckland below, where the swing towards attached dwellings is evident from 2016/17 onwards when the new planning rules became operative.



- 4.10. This is the relevant economic and housing market context for PC14.

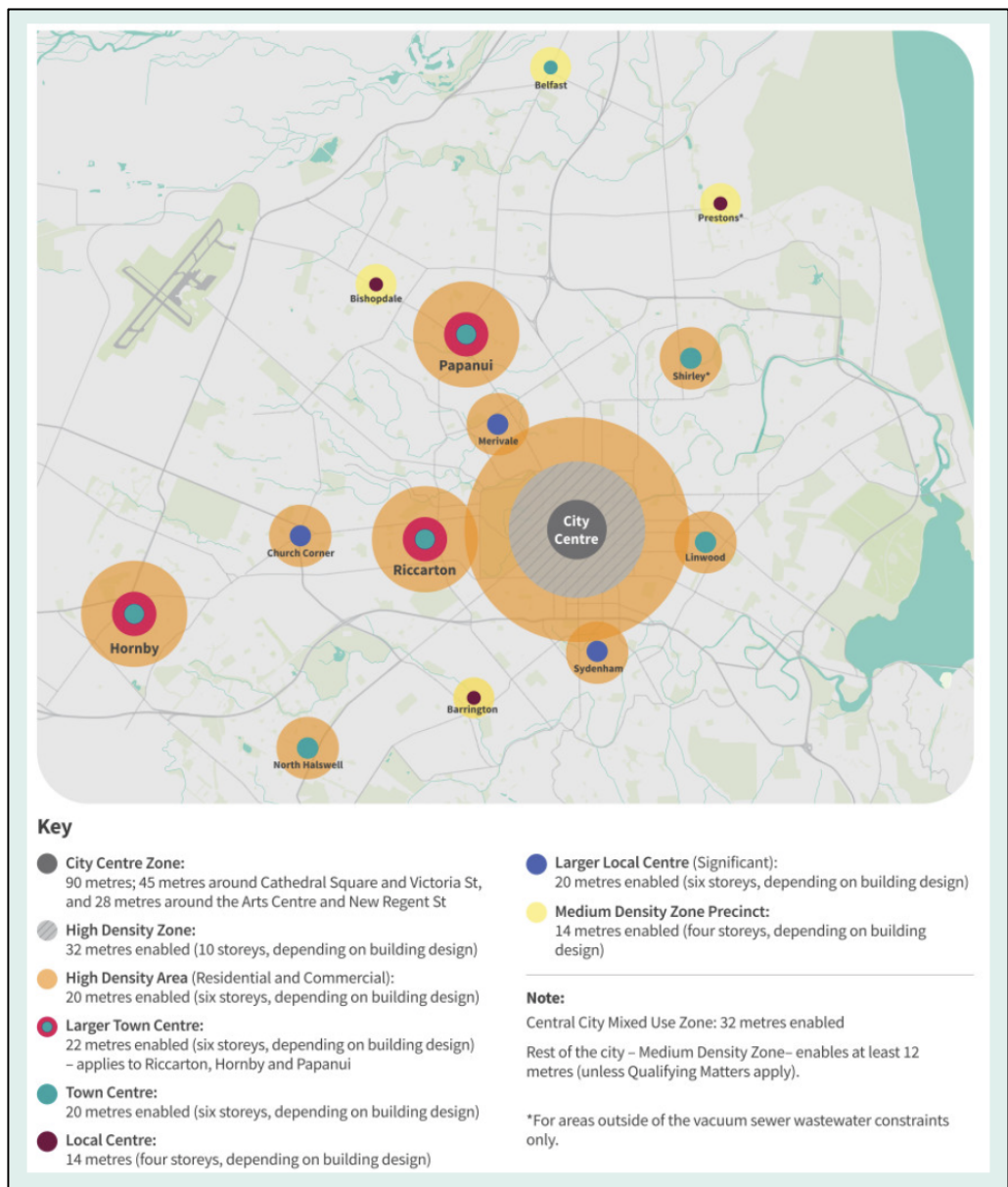
5. THE KĀINGA ORA SUBMISSION AND FURTHER SUBMISSION

- 5.1. I now turn my attention to key economic aspects of the Kāinga Ora submission, starting with standardising and simplifying the new centres hierarchy underpinning PC14.

ITEM 1: SIMPLIFY & STANDARDISE THE CENTRE’S HIERARCHY

- 5.2. PC14 adopts a “suburban centres” approach to intensification, which focuses growth in centres, plus the walkable catchments surrounding them. The extent of these walkable catchments, in turn, varies to reflect each centre’s size, plus its role and function within the wider network.
- 5.3. To implement this approach, CCC have identified a hierarchy of centre types, and assigned each of its centres to one of them. Figure 8 plots the largest centres comprising this reclassified network.

Figure 8: Map of Largest Centres in Reclassified Network



- 5.4. The map above shows that the city's new hierarchy includes the following centre types:
- (a) City Centre;
 - (b) Larger Town Centre;
 - (c) Town Centre;
 - (d) Larger Local Centre; and
 - (e) Local Centre.
- 5.5. In addition, while not on the map above, the new hierarchy also includes two other centre types, namely neighbourhood centres and small local centres. This brings the total to seven centre types, each with varying planning rules and thus development potential.
- 5.6. By contrast, the National Planning Standards (**the NPS**) identify the following five centre types.¹⁰

Table 1: Centre Types in the NPS

Centre Type	Description
Neighbourhood centre zone	Areas used predominantly for small-scale commercial and community activities that service the needs of the immediate residential neighbourhood.
Local centre zone	Areas used predominantly for a range of commercial and community activities that service the needs of the residential catchment.
Town centre zone	Areas used predominantly for a range of commercial, community, recreational and residential activities that service the needs of the immediate and neighbouring suburbs.
Metropolitan centre zone	Areas used predominantly for a broad range of commercial, community, recreational and residential activities. The zone is a focal point for sub-regional urban catchments.
City centre zone	Areas used predominantly for a broad range of commercial, community, recreational and residential activities. The zone is the main centre for the district or region.

- 5.7. The default hierarchy set by the NPS differs from the city's proposed new classification in two important ways. First, it excludes size-based

¹⁰ The town centre definition in this table assumes that the city is deemed a large urban area, because it differs between small and large urban areas.

subcategories, such as local centres vs larger local centres, or town centres vs larger town centres. In addition, the default hierarchy set by the NPS includes metropolitan centres, which do not appear in the city's hierarchy.

- 5.8. In my view, the city's more fine-grained, seven-layer centre's hierarchy creates additional complexity for little apparent gain, while also introducing subjectivity around the subclassification of certain centres into "larger" versions of their default counterparts.
- 5.9. I consider this additional complexity, and the resulting uncertainty, to be a potential deterrent to future investment in the city. Also, given that the NPS were introduced specifically to unify planning terminology and ensure consistency across jurisdictions, the onus is on CCC to demonstrate the benefits of its planned departure from them.
- 5.10. I am not aware of any justification for the city's specific approach to centre classification. Accordingly, I do not see the merits in it and recommend reversion to the defaults provided in the NPS.

ITEM 2: RECLASSIFY THE 3 LARGEST CENTRES AS METROPOLITAN CENTRES

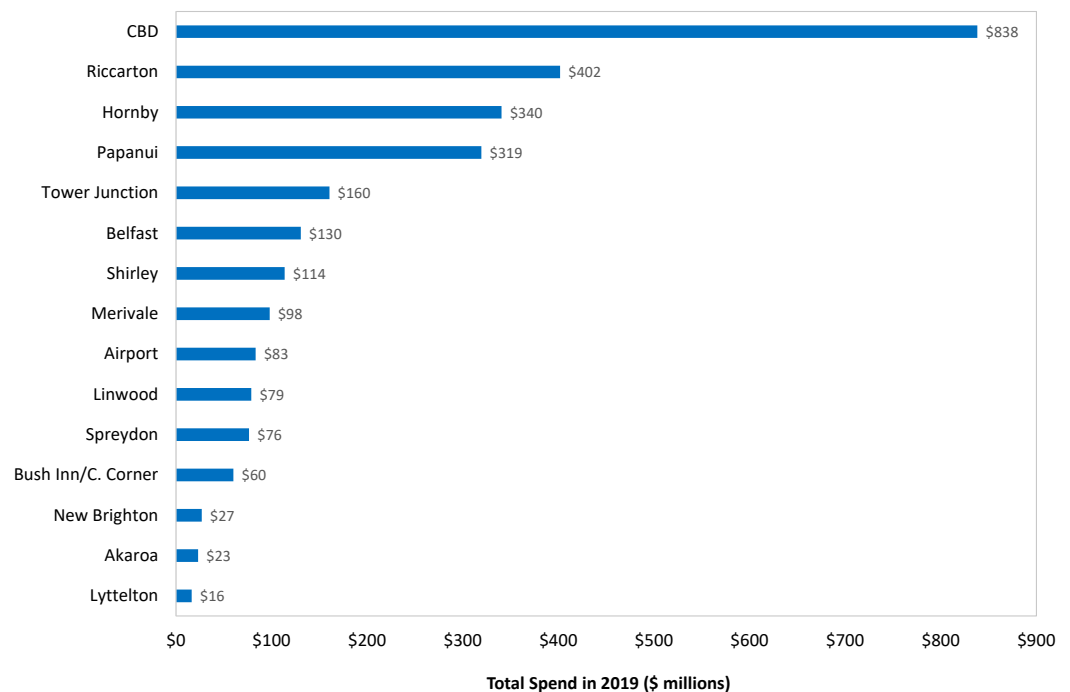
- 5.11. To begin, I note that metropolitan centres (**metro centres**) are defined in the NPS as "areas used predominantly for a broad range of commercial, community, recreational and residential activities. They are focal points for sub-regional urban catchments."
- 5.12. This is the same as the town centre definition for larger urban areas, which are a tier lower in the hierarchy, except that metro centres service sub-regional catchments, while town centres service only immediate and neighbouring suburbs. Accordingly, the most appropriate classification for the three largest centres outside of the CBD (**the three centres**) will largely reflect their current (and likely future) sizes and customer reaches.

5.13. To assess the attractiveness of the three centres, I used Marketview electronic transaction data¹¹ to compare their size and reach to others in the local network. While the data is from 2019, it does provide a reliable pre-pandemic baseline from which to start. It is also the latest data available to me, so I rely on it here.

5.14. Figure 9 compares the turnover of the three centres in 2019 to others nearby across the following store types:

- (a) Apparel, footwear, jewellery, and personal accessories
- (b) Cafes, restaurants, bars, and takeaways
- (c) Department stores and recreational goods
- (d) Groceries and liquor
- (e) Home, hardware, and electrical
- (f) Other consumer spending

Figure 9: Total Retail Spend by Centre in 2019 (\$ millions)



¹¹ Marketview sells detailed electronic transaction that enables the flows of expenditure within or between regions to be assessed. It is commonly used in retail analyses to identify the catchment served by a centre, and/or to consider the likely impacts of changes within the retail network.

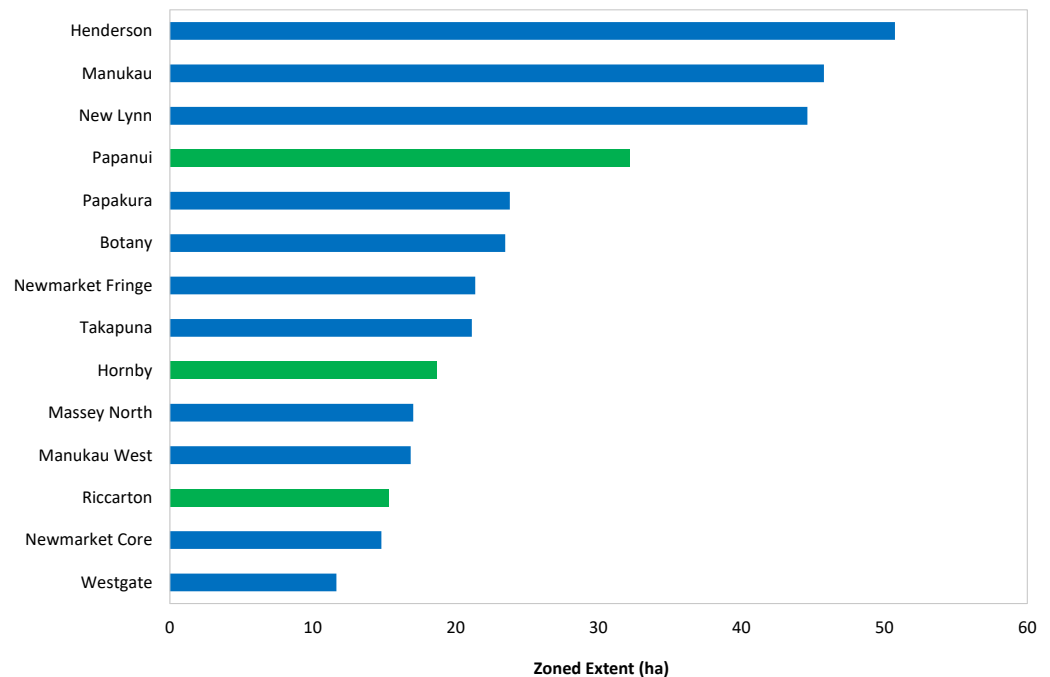
- 5.15. Figure 9 confirms that these centres have significantly higher turnover than all other centres, except the CBD. The lowest of the three (Papanui, with retail sales of nearly \$320 million) is double the next highest centre (Tower Junction, with \$160 million). In my view, this graph reveals a natural grouping of these three centres just below the CBD, but it doesn't determine whether their reach is more akin to a metro or town centre.
- 5.16. I then considered the catchments from which the three centres draw their trade, again using the same Marketview data from 2019. Table 2 presents the results.

Table 2: Origin of Retail Spend in 2019

Customer Origins	Hornby	Papanui	Riccarton
North-East Christchurch	5%	14%	9%
North-West Christchurch	12%	58%	31%
South-East Christchurch	3%	2%	7%
South-West Christchurch	36%	4%	20%
Selwyn & Waimakariri	30%	10%	13%
Rest of World	13%	12%	20%

- 5.17. Table 2 confirms that the three centres all service broad, sub-regional catchments, which best reflect the roles and functions of metro centres, not town centres. On that basis, I consider the proposed classification of these centres by Kāinga Ora as metro centres to be logical and reasonable.
- 5.18. To stress test that conclusion, I then benchmarked the size of the three centres' zoned land areas to the metropolitan centres in Auckland. Figure 10 presents the details, which I consider to provide a meaningful comparison. Clearly, the three centres all fit comfortably within the range, which reinforces their proposed metropolitan status in the Kāinga Ora submission.

Figure 10: Zoned Land Area of the Big 3 Centres vs Auckland Metro Centres



- 5.19. Unsurprisingly, the Draft Spatial Plan¹² also recognises the higher-order roles and functions of the three centres within the network. Indeed, not only does it identify each as priority development areas and articulate the unique opportunities for each (see appendix 1), but those three areas also form the preferred route for the proposed Mass Rapid Transit (**MRT**).
- 5.20. Based on the data and discussion above, and noting that the three centres already comprise the three largest Key Activity Centres (**KACs**) in Greater Christchurch, I consider them to be more like metro centres than town centres. They already fulfil diverse roles and functions for customers from diverse/sub-regional catchments, and these catchments will naturally grow over time alongside the population and economic activity.
- 5.21. Classifying the three centres as metros would also signal to the market that they are primed for significant development *now*. It would help provide the certainty needed to de-risk and stimulate private sector investment to complement significant, planned public expenditure. Absent that certainty, the market will likely adopt a “wait and see”

¹² Greater Christchurch Spatial Plan, Draft plan for consultation

approach, which would hamper realisation of the city's true potential and delay progress towards a more compact, urban form.

- 5.22. Accordingly, I support the proposed reclassification of Hornby, Papanui, and Riccarton as metropolitan centres under the NPS.
- 5.23. However, I am aware that the proposed reclassification might create a perceived competitive threat to the CBD. Specifically, if the three centres are classified as metropolitan centres and their height and density limits increased accordingly, some may fear that this will divert activity from the CBD. By that chain of logic, the proposed reclassification of the three centres might challenge CBD primacy and vibrancy.
- 5.24. I acknowledge this concern but consider the risk minimal. The city's economic potential is not static, it is dynamic. Thus, enabling and attracting taller buildings in the city's (proposed) metropolitan centres does not necessarily reduce the rate or quality of CBD development.
- 5.25. Rather, Christchurch competes with other cities across New Zealand to attract and retain top firms and talent, vying for a greater share of national population and economic growth in the process. The more attractive the city make itself for investors, firms, and families, the more likely it will prosper and sustain a higher growth trajectory than it would do otherwise. City growth is not a zero-sum game.
- 5.26. Enabling greater height in and around the three centres would also improve housing choice, and increase competition, consistent with NPS-UD imperatives.
- 5.27. But, if the Panel considers that reclassifying the three centres as metropolitan puts undue pressure on the CBD, an activity cap could be introduced. For example, a cap of (say) 1,000m² on office tenancies could be applied, like those that already apply elsewhere in the city. This would ensure that top-tier firms seeking large floorplates remain concentrated in and around the CBD.

- 5.28. Beyond that, though, I do not see any need for activity restrictions, because apartments are the only other likely use of the greater height enabled via the proposed reclassification.
- 5.29. Overall, I agree with reclassifying the three centres as per the Kāinga Ora submission.

ITEM 3: ENABLE MORE HEIGHT IN STRATEGIC LOCATIONS

- 5.30. Kāinga Ora also seeks the enablement of greater height in strategic locations, particularly in and around the CBD and other key centres. Below I analyse the likely economic effects of the Kāinga Ora relief via the following steps:
- (a) Review the current height of the city's tallest buildings and compare them to Auckland and Wellington to help set the scene;
 - (b) Use economic theory to explain how developers determine ideal building heights, and to demonstrate the impacts of binding height limits on project viability and economic efficiency;
 - (c) Identify the wider economic costs and benefits of taller buildings and summarise recent estimates of them for the city/sub-region; and
 - (d) Assess the overall positives and negatives of enabling greater height in strategic locations as per the Kāinga Ora submission.

Current Building Heights vs Other New Zealand Cities

- 5.31. To compare the size of the city's tallest buildings to those elsewhere, I first reviewed the 2023 Business Capacity Assessment (**BCA**).¹³ It includes the following table of average building heights across the city's commercial zones.

¹³ Greater Christchurch Business Development Capacity Assessment, page 79

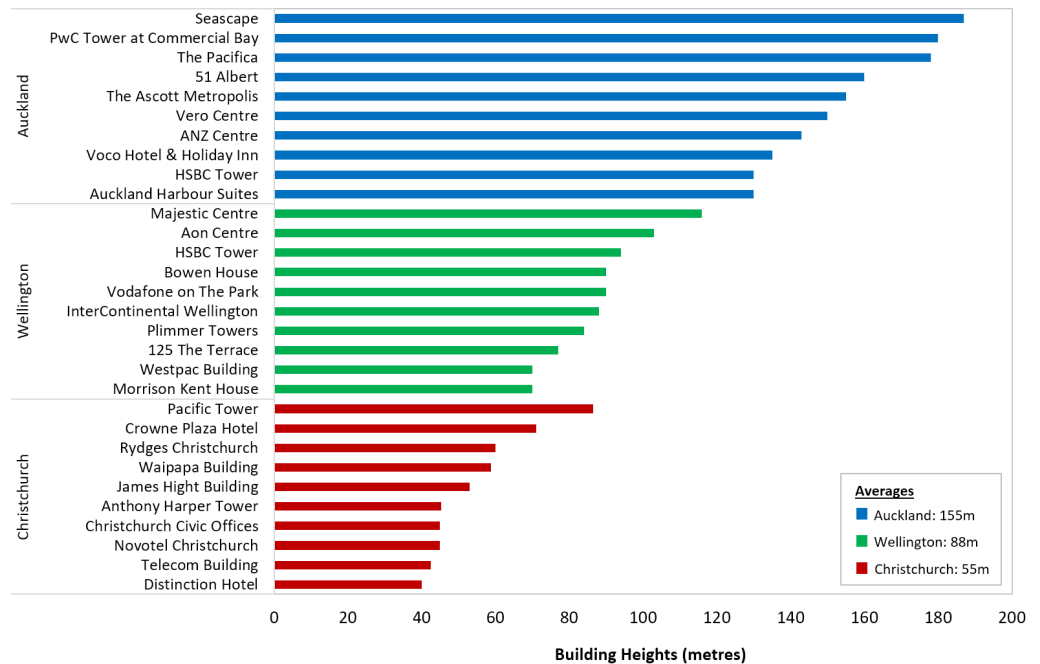
Table 3: Average City Building Heights (Storeys) by Commercial Zone

Operative Zones	EFM Area 1 (Inner city)	EFM Area 2 (Inner City Edge)
Commercial Central City Business	4.23	-
Commercial Central City Mixed Use	1.81	-
Commercial Central City (South Frame)	2.40	-
Industrial General	-	1.10
Commercial Office	-	2.25
Commercial Core	-	1.30
Commercial Retail Park	-	1.55
Total by Commercial Area	2.70	1.20

5.32. Table 3 shows that the average height in most commercial areas of the city is only about two storeys, except the CCCBZ, where it is just over four.

5.33. To put these figures in context, I identified the ten tallest commercial or residential buildings in each of New Zealand’s three largest cities, namely Auckland, Wellington, and Christchurch. The graph below plots the results, which confirm that Christchurch’s current tallest buildings are generally shorter than elsewhere. For context, the average height of the 10 tallest buildings in the city was only 55 metres, compared to 88 metres in Wellington, and 155 metres in Auckland.

Figure 11: Tallest 10 Buildings in NZ's Three Largest Cities



5.34. I acknowledge that this situation may reflect a potential reluctance to occupy higher floors following the earthquake sequence in 2010/11, but

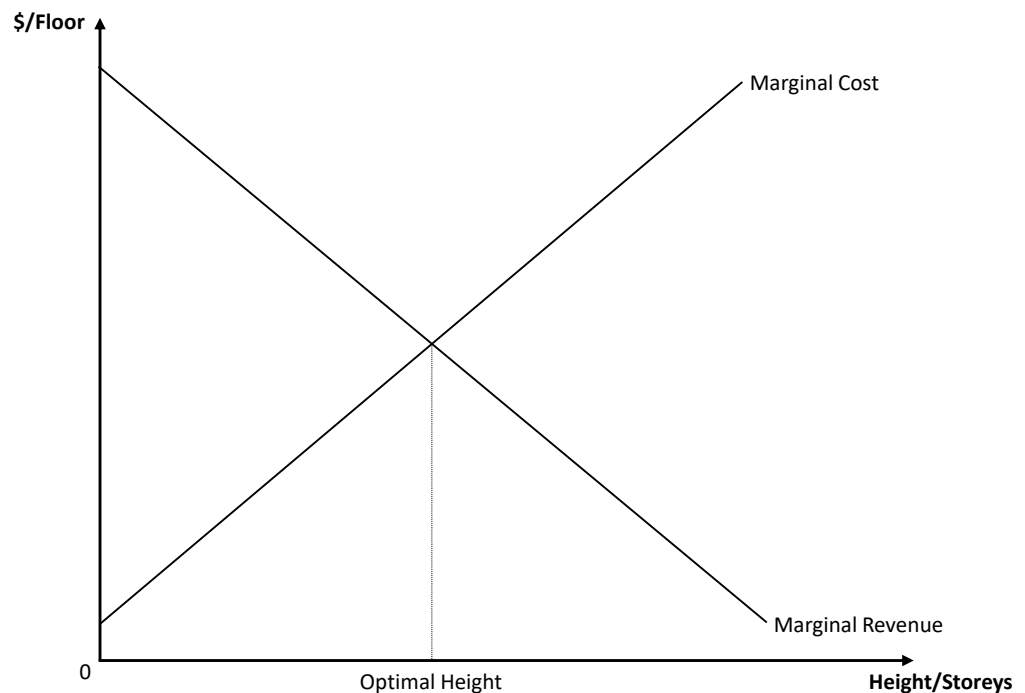
Wellington also faces seismic risk and it has only half of the city's population, yet it has generally built taller than Christchurch.

- 5.35. Overall, I consider the city's buildings to have relatively few storeys given its economic gravitas and potential to realise the benefits of greater height over time.

Economic Theory on Optimal Building Heights & Binding Limits

- 5.36. In financial terms, the optimal height of a building is the one that maximises the total return on investment over its expected useful life.
- 5.37. In microeconomic terms, the optimal (profit-maximizing) height is the one where the additional (or marginal) revenue of the top floor just equals the marginal cost of building it. This is depicted in the stylised diagram below (Figure 12), which displays marginal cost and marginal revenue curves for a hypothetical building development.

Figure 12: Equilibrium Condition for Optimal Building Height

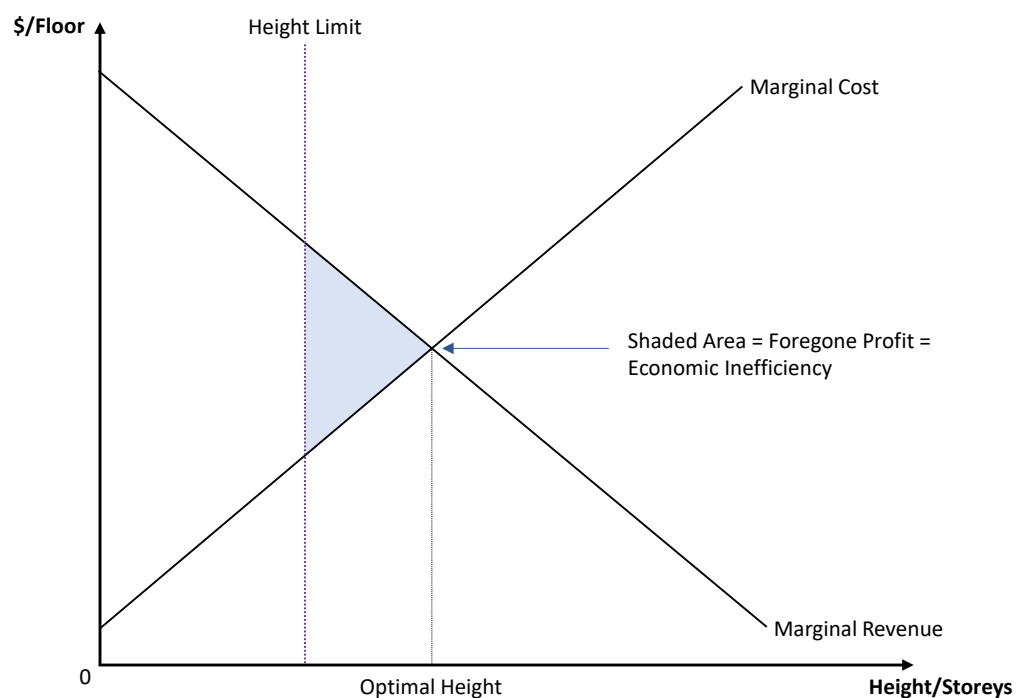


- 5.38. In Figure 12, the marginal cost curve slopes up because each additional floor typically costs more due to increased structural, foundational, access, and circulation requirements. The marginal revenue curve, however, slopes down because the additional revenue from each extra

floor is typically less than the last (not least because GFA per floor shrinks as buildings taper).

- 5.39. The intersection of these marginal revenue and marginal cost curves determines the optimal building height because:
- If built one floor higher than that, the extra cost of adding the last floor would exceed the revenue gained and thus be unprofitable.
 - Conversely, if built one floor lower than the optimum, money is “left on the table” because adding an extra floor would have yielded higher revenues than costs and thus boosted profits.
 - The optimal height avoids these lost opportunities and maximises the profitability (and hence economic efficiency) of the building.
- 5.40. I now use this framework to explain the impacts of a binding height limit, using Figure 13 below. In short, a binding height limit prevents the optimal building height being reached, which reduces land utilisation, lowers development profits, and reduces economic efficiency.

Figure 13: Impacts of Binding Height Limit on Profits and Productive/Economic Efficiency



- 5.41. If height limits bind development outcomes, as depicted above, consumers will also be worse-off due to so-called losses of consumer surplus from the additional floors/height foregone.
- 5.42. Consumer surplus equals the difference between what people would have been willing to pay for a good or service, and what they do pay. For example, if a family was willing to pay \$800,000 for a home, but they pay only \$700,000, the consumer surplus is \$100,000.
- 5.43. To the extent that height limits affect the rate of development, or the height/intensity of buildings, they will erode consumer surplus. Coupled with foregone development profits, these losses of consumer surplus represent the direct economic costs of height limits. There are also wider costs and benefits, which I summarise shortly.

Impacts of Height on Financial Viability

- 5.44. In areas like the CBD and major centres, height is essential to viability because it enables high land costs to be spread more thinly. This effect has been widely studied, both here and overseas. For example, a detailed analysis of residential construction costs by Deloitte in 2018¹⁴ estimated the costs of building different typologies in various locations, including Christchurch. It confirmed that taller buildings do indeed help to minimise costs and thus improve viability.
- 5.45. An analysis of financial feasibility within the High-Density Residential Zone (HRZ) of the city by the Property Group (TPG) shows the same.¹⁵ Although it found that higher-density typologies may not be viable in some locations until prices rise, it starkly demonstrates the link between height and viability. For reference,
- 5.46. Table 4 summarises the report's estimates of financial returns by building location, height, and quality.

Table 4: Estimated Return on Costs by Location, Height, and Quality

City Centre HRZ	Premium	Market	Affordable
4-levels	-13.3%	-12.8%	-25.2%
6-levels	-6.2%	-5.1%	-12.9%

¹⁴ Deloitte, Cost of residential housing development, December 2018

¹⁵ The Property Group, High Density Residential Feasibility Assessment, May 2022

10-levels	1.1%	2.4%	-5.5%
City Fringe HRZ	Premium	Market	Affordable
4-levels	9.1%	9.5%	1.4%
6-levels	12.6%	9.6%	1.5%
10-levels	15.0%	11.6%	3.7%
Outer (Local) Centre	Premium	Market	Affordable
4-levels	-15.5%	-14.8%	-23.0%
6-levels	-7.5%	-6.2%	-14.6%

- 5.47. Table 4 confirms that taller buildings improve viability in the local context, from which it follows that enabling greater height *will* boost the number of financially viable developments that can be delivered by the market over time.

The Wider Economic Costs and Benefits of Taller Buildings

- 5.48. The effects of enabling (and constructing) taller buildings are not just confined to developers and the eventual buyers/occupants of them. On the contrary, taller buildings in strategic locations can have important economic benefits (and costs) that form the policy rationale for enabling greater height in the first place.
- 5.49. The literature identifies several costs and benefits of enabling taller buildings (i.e. intensification).¹⁶ The most common are:
- (a) *Agglomeration and Economic Vibrancy*: Taller and higher density buildings foster economic vibrancy by concentrating residents, businesses, commercial spaces, and cultural institutions near one another. This concentration of activity can give rise to so-called agglomeration benefits that foster innovation, entrepreneurship, and collaboration via the sharing of ideas and labour pools. Agglomeration can also boost foot traffic for retailers and service providers, while helping to attract talent, investors, and tourists, enhancing a city's local and global competitiveness.

¹⁶ For example, see the PWC Cost Benefit Analysis for the NPS-UD, or the Cost Benefit Analysis of the MDRS by PWC and Sense Partners, whose results are summarised below.

- (b) *Housing Choice & Affordability:* Intensification via greater height increases dwelling choice and typically enables cheaper living options than would likely otherwise be provided via lower-density alternatives. These lower prices lead to a higher number of dwellings being built at lower costs, which increases consumer surplus.
- (c) *Efficient Land Use:* As noted earlier, taller and higher density buildings optimise the use of high value urban land. By constructing upwards (as well as outwards), cities can accommodate more people and provide greater amenities within the existing urban area, thereby avoiding the use of productive rural land. Greater building heights also translate into higher property values.
- (d) *Infrastructure Efficiency:* Building upwards in established areas (i.e. intensification) can help reduce infrastructure needs by consuming spare capacity within existing networks. However, equally, it may trigger upgrades in networks close to capacity, so the effects depend. Generally, though, intensification is thought to improve infrastructure efficiency, especially in relation to transport.
- (e) *Privacy, Sunlight, and Congestion:* As density increases, so too does the potential for adverse effects from living and working closer to one another. While the suite of effects arising from this situation varies, the most common are traffic congestion, noise pollution, loss of sunlight, and overcrowded public spaces. However, people who choose to live in higher density areas are typically aware of such effects and choose to live there anyway. Conversely, those who would likely be annoyed by such effects are less likely to live or work there in the first place. i.e. self-selection.

5.50. In 2020, PWC was commissioned to estimate the likely costs and benefits of intensification, as enabled by the NPS-UD. Table 5 below summarises their cost/benefit estimates by broad area.¹⁷

Table 5: Costs and Benefits of Intensification Enabled by the NPS-UD (Preferred Scenario)

	Auckland	Hamilton	Tauranga	Wellington	Christchurch	Queenstown
Consumer surplus benefits	1,817	83	256	21	73	40
Agglomeration benefits	4,766	204	573	361	462	109
External costs of urban growth						
Transport	-66	-9	-12	-1	-14	-4
Water / wastewater	-250	-24	-33	-10	-40	-7
Stormwater	-25	-2	-3	-1	-4	-1
Open spaces and community facilities	-20	-3	-4	0	-4	-1
Congestion	-576	-55	-75	-23	-92	-17
Overshadowing from tall buildings	-88	-4	-6	-6	-9	0
Blocked views from tall buildings	-91	-4	-7	-7	-9	0
Loss of peri-urban open space	-30	-4	-5	0	-6	-2
Air quality	-62	-5	-7	-3	-9	-1
Freshwater quality	-43	-4	-6	-2	-7	-1
Coastal water quality	-31	-4	-5	-1	-6	-1
Total external costs	-1,281	-118	-163	-55	-199	-35
Total benefits	6,583	287	829	383	535	149
Net benefits	5,302	169	666	328	336	114
Benefit-cost ratio (BCR)	5.1	2.4	5.1	7.0	2.7	4.3
Transfers to renters	20,131	1,116	2,008	670	1,363	792

Source: PwC analysis

5.51. Table 5 shows that the most significant benefits of intensification are estimated to be agglomeration, followed by consumer surplus. On the other side of the ledger, congestion and infrastructure implications are the key costs.

5.52. The overall result for Christchurch was \$535 million of benefits versus circa \$200 million of costs, yielding a benefit/cost ratio of 2.7. These numbers show that the intensification enabled by PC14 will likely deliver significant economic benefits to the city and its residents over time.

5.53. While not the focus of this evidence, the MDRS elements of PC14 will also reap significant economic benefits. This is demonstrated in Table 6 below, which summarises the estimated market impacts and economic benefits of the MDRS by area to 2043.¹⁸

¹⁷ PwC, Cost - benefit analysis for a National Policy Statement on Urban Development, Final report for the Ministry for the Environment, July, 2020.

¹⁸ PwC & Sense Partners, Cost-Benefit Analysis of proposed Medium Density Residential Standards

Table 6: Summary of MDRS Market Impacts and Economic Benefits

Total Dwellings	Auckland	Greater Hamilton	Greater Tauranga	Greater Wellington	Greater Christchurch
Without MDRS	691	160	105	237	269
With MDRS	803	183	122	265	302
% increase	16.2%	14.8%	15.8%	11.9%	12.2%
Price (\$000s)					
Without MDRS	\$1,404	\$1,119	\$1,395	\$1,092	\$880
With MDRS	\$1,275	\$951	\$1,213	\$917	\$799
% decrease	-9.2%	-15.0%	-13.0%	-16.0%	-9.2%
Pure Economic Benefits (\$m)	\$7,226	\$1,972	\$1,513	\$2,460	\$1,324

- 5.54. According to Table 6, the MDRS (as assessed in the CBA) could increase the number of dwellings in Greater Christchurch by 12% and reduce prices by 9%, generating \$1.3 billion of economic benefits to 2043. In this analysis, while not reported in the table above, agglomeration effects dominate benefits, while congestion and losses of views/sunlight are the key economic costs.

Overall Pros and Cons of Enabling Greater Height in the City

- 5.55. The discussion above shows that the city currently has relatively lower storeyed buildings, particularly given its role as the economic centre of the South Island. While enabling greater height is not a panacea for the economic issues that appear to be affecting the city's rebuild, it is an important way to encourage and enable greater density over time.
- 5.56. Not all developers will take up the opportunity of greater height because their optimal height may be lower than currently allowed. In other words, the current height limits won't be a binding constraint for all developers. However, the current limits will be binding for some, who will take up the opportunity of greater height, thereby improving economic efficiency and financial viability in the process.
- 5.57. Overall, I expect greater height to have positive economic effects for the city, especially since it is starting from a low baseline. To make it work, though, the city needs to understand the factors that influence location and ensure that they are properly addressed. These factors usually include safety, amenity, attractive streetscapes, neighbourhood character, separation from noise and air pollution, plus access to parks,

supermarkets, and workplaces.¹⁹ Access to transport is also important for some age groups, particularly older people.²⁰ This will become increasingly relevant as the city's population continues to age.

- 5.58. Providing greater height in and around centres will also help address an imminent shortfall of commercial floorspace capacity, which was identified in the 2023 Business Capacity Assessment (BCA). It states:

“Long term, the Christchurch area is estimated to require an additional 110 hectares [of commercial land] above the current zoned provision. Given the relationship between population and household growth and commercial land demands, it is appropriate that this additional commercial land provision be focussed in centres to serve residential growth areas including the central city, key activity centres, and new commercial centres which may be developed to support new suburban residential communities.”

- 5.59. I agree that a significant shortfall of commercial floorspace capacity is looming, but respectfully query how that can be addressed by providing additional land *in* centres, as suggested above. It is physically impossible to create more land in centres, with outward expansion and/or the identification of new centres the only option. Even then, 110 hectares of additional commercial land is enormous. For context, it is about seven times the zoned extent of the Riccarton centre.
- 5.60. Faced with this substantial lack of commercial capacity over the longer term, the best way to address it – in my view – is to enable much greater height in and around the existing zoned extents of commercial areas.
- 5.61. I acknowledge that CCC plans to rezone some industrial land to mixed use, which may help. However, redevelopment of existing industrial areas is usually a slow process, not least due to obvious conflicts between existing industrial uses and the higher amenity sought by newly-enabled commercial and residential uses.

¹⁹ See, for example, the results of the Living in Christchurch 2017-2021 surveys.

²⁰ Ibid.

- 5.62. Overall, I consider the extra height sought by Kāinga Ora to not only make sense from an economics perspective, but to also be a logical response to the need for additional commercial capacity over time.²¹
- 5.63. That said, enabling extra height in isolation will not have the desired outcomes unless the overall planning envelope is conducive to the types of intensification sought and enabled by PC14.
- 5.64. For example, the evidence of Mr Clease explains in detail how additional height will not necessarily result in taller buildings unless the overall rule package allows buildings that are technically feasible, financially viable, and market attractive. He produces mock renders that show how the proposed rule package proposed would create somewhat odd-shaped buildings, which I consider unlikely to be built. Overall, I strongly support Mr Clease’s analysis of the need for enabling rule packages overall, not just the enablement of more height.
- 5.65. I also note Mr Clease’s comments about restrictions on ground floor activities in the HDRZ within the walkable catchments of centres. I understand that ground floor uses in those locations are restricted to residential, apparently due to concerns about potential effects on the roles, functions, health, and vitality of centres.
- 5.66. In my view, providing for – but not requiring – non-residential uses on the ground floor of apartments is highly unlikely to challenge the primacy of centres, particularly higher order ones. Instead, they will provide for the needs of their immediate catchment. At the same time, having flexibility to use the ground floor for various uses will make developments more attractive overall, and potentially help spur them on. Indeed, some people prefer not to live at ground floor for privacy or security reasons, so permitting non-residential uses on the ground floor of apartments gives the market more options to work with.

ITEM 4: LOW PUBLIC TRANSPORT (PT) QM

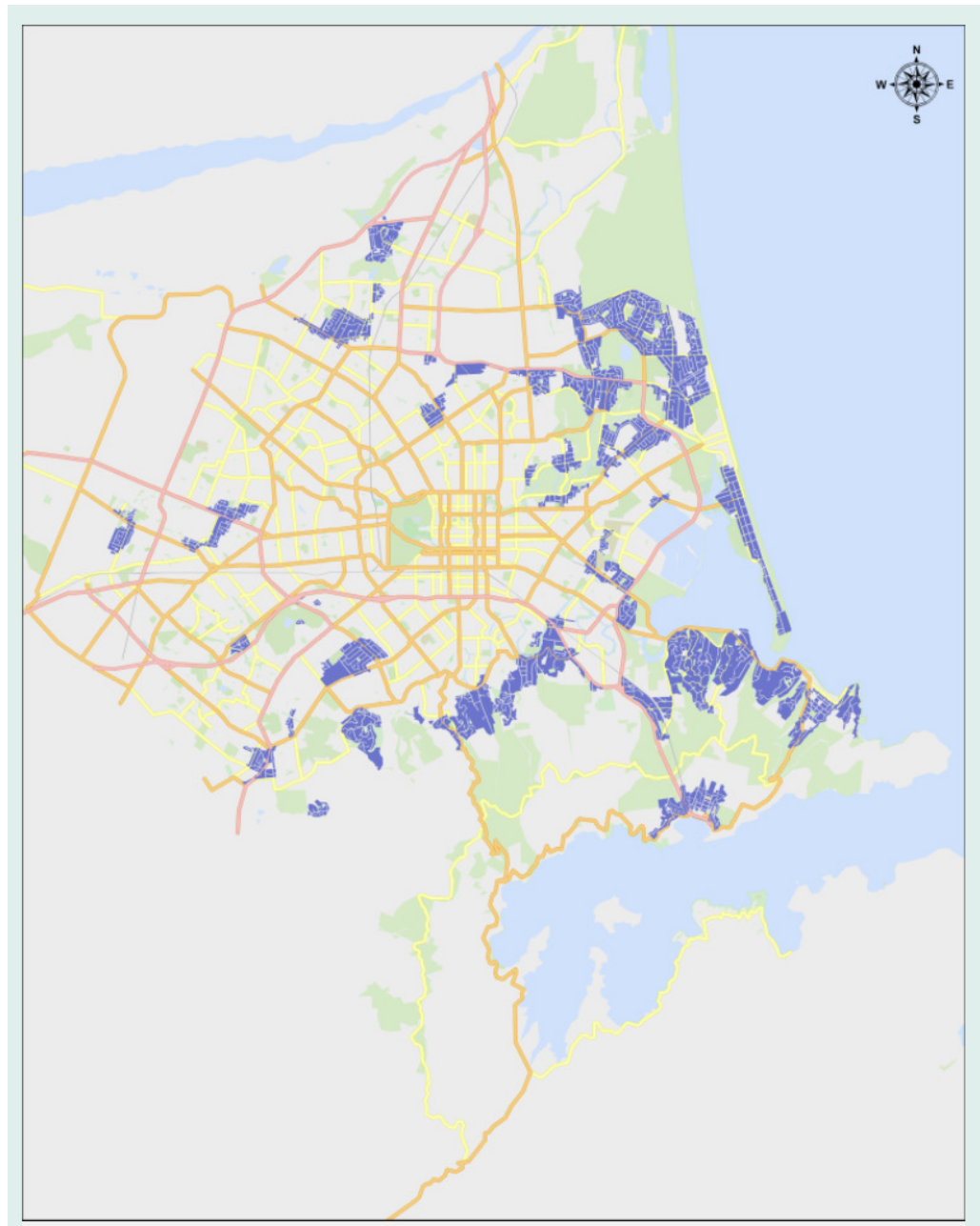
- 5.67. CCC has identified various Qualifying Matters (**QMs**) that reduce the geographic extent to which the MDRS would otherwise apply. The Low Public Transport QM (**Low PT QM**) is the most significant one in terms

²¹ This is also acknowledged on page 61 of the 2023 BCA.

of impacts on capacity, so I discuss it briefly below. It reduces feasible capacity by up to 34,000 dwellings.²²

- 5.68. In short, the Low PT QM restricts medium density development in areas with relatively limited PT in a bid to curb Greenhouse Gas Emissions (**GHG**). The map below shows spatial extent of this QM:

Figure 14: Spatial Extent of the Low PT QM



- 5.69. I acknowledge CCC's right to identify QMs, and I understand the apparent intentions for this one, but I query its effectiveness.

²² CCC Updated HCA (February 2023) PC14 Section 32: Part 1, Appendix 1.

- 5.70. First, the city’s spatial form, and thus its future transport emissions, are already largely baked-in due to the existing population and economic activity. Consequently, growth will have only marginal effects. This was a key finding of Auckland’s draft FDS, which noted that “most of Auckland’s future spatial form already exists and growth has limited influence [on transport outcomes and GHG emissions].”²³ This applies equally to Christchurch too.
- 5.71. Second, light passenger vehicles (i.e. cars) account only a small share of national CO₂ emissions anyway. This is illustrated in Table 2 below from New Zealand’s latest GHG Inventory.²⁴ It shows that cars produce only 8% of total (gross) CO₂ emissions, so policies aimed at curbing GHG emissions from that source will have relatively little effect on meeting emissions targets.

Table 7: Shares of Gross CO₂ Emissions by Group in 2021

Emitter Groups	CO ₂ Emissions Shares
Agriculture	49%
Manufacturing	8%
Energy Producing Industries	7%
Industrial Processes	6%
Other Productive Sectors	6%
Road Transport - Cars	8%
Road Transport - LCVs	3%
Road Transport - HCVs	5%
Other Transport	2%
Waste/Tokelau	4%
Fugitive Fuel Emissions	1%
Total	100%

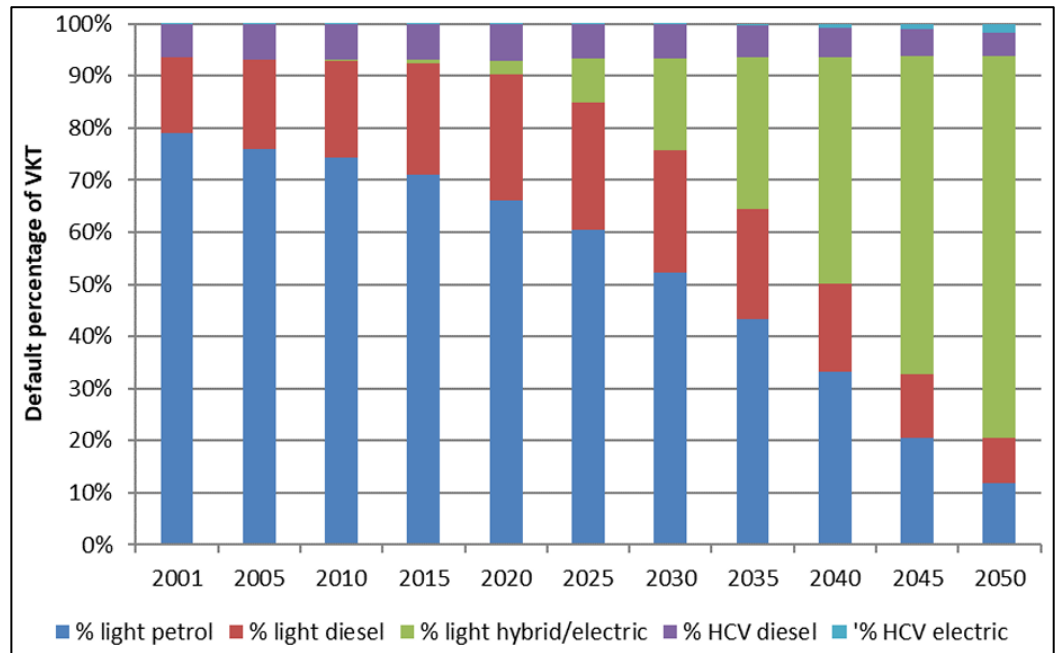
- 5.72. Third, car CO₂ emissions are falling rapidly due to the quick (subsidised) uptake of electric, hybrid, and other low-emissions vehicles. This is illustrated in Figure 15, which shows the share of national vehicle kilometres travelled (VKT) by vehicle type and energy source.²⁵ On that graph, note that the:
- Blue bars show the share of VKT by petrol-powered cars, and
 - Green bars show the share of VKT by hybrid and electric cars.

²³ Reference to the Auckland FDS.

²⁴ <https://www.mfe.govt.nz/climate-change/state-of-our-atmosphere-and-climate/new-zealands-greenhouse-gas-inventory>

²⁵ <https://www.nzta.govt.nz/assets/Highways-Information-Portal/Technical-disciplines/Air-quality/Planning-and-assessment/Vehicle-emissions-prediction-model/VEPM-6.3-technical-report-2022.pdf>

Figure 15: Historic & Projected Shares of VKT by Vehicle Type and Motive Power



- 5.73. Figure 2 reveals that reliance on petrol- and diesel-powered light vehicles is falling quickly. In 2011, they accounted for about 94% of national VKT. By 2050, petrol- and diesel-powered light vehicles are expected to account for only 20% of total VKT, with hybrid and electric vehicles accounting for most of the remaining 80%. Given this evolving trend away from fossil-fuelled cars, trying to reduce CO₂ emissions via the spatial location of new jobs and homes will have very little impact overall.
- 5.74. Further, according to recent research, travel demand management measures like road pricing and parking are more effective at reducing VKT than land use controls or mode shifts to PT.²⁶
- 5.75. The impact on dwelling capacity also concerns me. While I know that CCC's analysis shows there is plenty of feasible and realisable capacity to meet future demand, even with the QMs "in play", I have some reservations about that assessment.
- 5.76. Specifically, without going into too much detail:

²⁶ See, for example, the findings of this report:
<https://www.transport.govt.nz/assets/Uploads/Discussion/DiscussiondocumentHikinateKohuparaKiamaurioraaitewiTransportEmissionsPathwaystoNetZero2050.pdf>

- (a) The Housing Capacity Assessment (**HCA**) adopts an unusual approach to estimating plan-enabled capacity, working at the level of urban blocks, rather than parcels.²⁷
- (b) The feasibility assessment uses out-of-date data on costs and revenues (from late 2021 or early 2022)²⁸, which affect the timeliness of its outputs. Since then, building costs have continued to rise, while house prices have mostly continued to fall. Along with ongoing interest rate rises, ongoing cost and revenue changes in 2022 and 2023 have materially eroded profitability. Consequently, short-medium term feasible capacity today will be much less than the HCA suggests.
- (c) I also doubt that all feasible capacity is likely to be realised, as the HCA assumes, particularly since the feasibility modelling was designed to maximise capacity (not to reflect market needs and preferences).²⁹

5.77. Beyond that, the Low PT QM reduces housing choice because it prevents medium density development occurring in many (mainly) suburban areas, thereby restricting spatial housing choice in future.

5.78. For the reasons above, I strongly support removal of the Low PT QM.

ITEM 5: TREE FINANCIAL CONTRIBUTIONS (TREE FCs)

5.79. The Kāinga Ora submission also seeks removal of the Tree FC, the rationale for which is explained in detail in the evidence of Mr Cleese and Ms Strachan. I wholeheartedly support their analyses and, to avoid repetition, comment only on residual economic matters arising from the evidence of Mr Phil Osborne on this topic.

5.80. Mr Osborne's evidence summarises the economic costs and benefits of the proposed Tree FC. However, it does not demonstrate that the proposal is the most appropriate way to address the perceived issue, nor that the city's (supposed) relative lack of canopy cover is due to past development. Consequently, the case for the Tree FC is unclear.

²⁷ HCA page 46

²⁸ Reference to the 2023 Feasibility Update (section 32 report)

²⁹ *ibid*

- 5.81. More generally, the proposed Tree FC concerns me because it:
- (a) Will increase the cost of development while inflating house prices and reducing affordability. It will reduce the rate of development, forego profits, and reduce consumer surplus, thereby imposing material economic costs;
 - (b) Is regressive, with higher impacts on lower value properties, and vice versa;
 - (c) Creates uncertainty, which may delay or deter investment, e.g. displacing it to Selwyn and Waimakariri;
 - (d) Unfairly requires future developers to remedy the supposed “wrongs” of previous developers; and
 - (e) May cause double-dipping in tandem with CCC’s development contributions policy; and
 - (f) Overlooks the obvious – and arguably – superior option of increasing canopy cover via the coordinated, mass planting of public land at-scale. This would be far more efficient than the proposal by utilising cheaper public land and minimising plant acquisition and planting costs through economies of scale.
- 5.82. For these reasons, and for those identified by both Mr Cleese and Ms Strachan, I recommend removal of the Tree FC.

Fraser Colegrave



20 September 2023

APPENDIX 1: Spatial Plan Development Opportunities

Table 8: Priority Area Development Opportunities in Draft Spatial Plan

Centres	Development Opportunities Identified in Draft Spatial Plan
Riccarton	Develop the currently retail orientated areas of the Riccarton corridor for commercial development and business investment. There is the opportunity to extend knowledge-intensive services, high value jobs and innovative activity from the Central City, linking with the University of Canterbury, along the corridor; supported by high frequency public transport, and over time, mass rapid transit. There is also the opportunity to incentivise and provide for multi-storey townhouses and apartments, achieving average density yields ranging between 70 and 150 households per hectare.
Papanui	Build on this existing retail and service centre for north Christchurch to provide higher density residential (70 to 100 households per hectare), and address poor quality urban form through regeneration and significant brownfield redevelopment opportunities. The opportunity is to provide a stronger, higher quality northern service centre in Papanui, with high density housing linked by high frequency public transport.
Hornby	Transition the current poor quality urban form of Hornby, which has a wide mix of business and industrial activities, low density and poor quality residential, and low tree cover, into the second sub-regional service centre after the Central City. Hornby is strategically positioned in relation to Christchurch Airport and the western areas of Greater Christchurch. There is the opportunity for regeneration and significant brownfield redevelopment to enhance its urban form, support community integration, and provide a stronger and more integrated centre core with the transition of surrounding areas from industrial to high density residential (50 to 100 households per hectare).