BEFORE INDEPENDENT HEARING COMMISSIONERS IN CHRISTCHURCH

TE MAHERE Ā-ROHE I TŪTOHUA MŌ TE TĀONE O ŌTAUTAHI

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of the hearing of submissions on Plan Change 14 (Housing and Business Choice) to the Christchurch District Plan

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STATEMENT OF PRIMARY EVIDENCE OF PHILIP MARK OSBORNE ON BEHALF OF CHRISTCHURCH CITY COUNCIL

ECONOMICS:

QUALIFYING MATTERS

FINANCIAL CONTRIBUTIONS – URBAN TREE CANOPY

Dated: 11 August 2023

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EXECUTIVE SUMMARY

1. The purpose of this economic evidence is to provide context to the identified provisions of Plan Change 14 (**PC14**) in relation to:

    (a) the financial contribution provisions relating to urban tree canopy cover; and

    (b) the economic implications of various qualifying matters (**QM**s), namely those relating to the Residential Industrial Interface, Low Public Transport Accessibility Areas, the Airport Noise Influence Area, the City Spine Transport Corridor, Residential Heritage Areas, and Coastal Hazards and Tsunami Management Areas.

2. This evidence seeks to outline potential the potential economic costs and benefits associated with these provisions along with potential market outcomes.

Financial contributions for urban tree canopy

3. These provisions seek to manage the urban tree canopy, mitigating its loss due to development as well as contributing to the aim of a 20% canopy. While the overall benefits of the canopy are not limited to economic, improvements in amenity and to localised and city-wide infrastructure (such as by attenuating stormwater runoff) are likely to lower some long-term impacts and costs. Additionally, the identification of a financial contribution option that includes land provision increases the localised nature of benefits while avoiding increased utilisation of existing public land.

4. The potential for economic costs and potential market outcomes differ between the regulatory options provided for in PC14:

    (a) The **retention of trees** on sites is likely to have minimal cost associated with it aside from a potential reduction in site efficiencies. The market is, therefore, likely to favour this option, improving the competitiveness of sites with existing trees (and increasing the price of these sites relatively). While safeguarding existing tree coverage, this is likely to have a reduced level of contribution to increasing the overall city's canopy cover.

    (b) The **planting of trees** will also have a cost, both in terms of site efficiencies (which is likely to be significantly mitigated through the

existing landscape requirements, including those associated with new medium-density housing) and the tree cost (essentially 10% of the total financial contribution option). While implementation and management of the new tree planting and retention regime by the Council may be challenging, this option is likely to result in the lowest cost in terms of tree canopy outcome.

(c) The **financial contribution option** will be potentially the least favoured in the market. The financial impact on the market is likely to be material; an increase of approximately 8% of the final land value aspects means that those in the market who have no choice but to accept this option are likely to experience substantial increases in cost.

5. It is thus likely that options 1 and 2 will be favoured by the market where possible, leading to a reduced impact of the overall provisions.

Qualifying Matters: Residential Industrial Interface

6. This QM seeks to manage the effects between increasing residential development under the MDRS and 'effects-generating' activities such as industrial businesses. The identified interface area (40m from an industrial zone) would limit development within the medium-density residential zones (**MRZ**) to 2 storeys to limit the potential for noise effects and those reverse sensitivity impacts.

7. The industrial sector within Christchurch is fundamental to the city's economy, contributing around 36% of total GDP. The economic risk of reverse sensitivity to these activities is high and therefore represents a risk to the community's overall economic wellbeing and the competitiveness of the city as an industrial location.

8. Conversely, the potential economic impacts on residential development are likely to be low, with just over 1,400 feasible dwellings within the interface area, the development potential remains at the lower height with a range of dwelling typology options remaining on these sites.

Residential Heritage Areas

9. This QM seeks to safeguard the collective heritage and identity of specific areas around Christchurch. The identified areas constitute 1,350 sites and approximately an additional 1,668 feasible dwellings under the medium density residential standards (**MDRS**). This potential reduction in feasible

capacity represents approximately 1% of the total feasible capacity throughout the city under PC14.

10. While the loss in development varies significantly between areas, overall the loss of feasible capacity is unlikely to have a material impact on the city's housing market. The potential value of the heritage areas (at a total level), on the other hand, has the potential to reach millions of dollars per annum to the community.

Airport Noise Influence Area

11. The Airport Noise Influence Area is a QM that seeks to control intensification in areas that experience aircraft noise associated with Christchurch Airport at and above 50dBA Ldn. It is an existing QM, in the sense that aircraft noise at and above that level exists in parts of the city and provisions in the Noise Chapter prescribe building standards to manage the effects of noise from the Airport's activities (within an existing, albeit somewhat different, 50 dB Ldn 'Air Noise Contour').

12. The extent of the influence area results in a capacity impact that is one of the largest of the QMs assessed. Over 43,000 enabled dwellings are within the area, with nearly 12,000 of those being modelled as feasible. Again, it has been assessed that this does not undermine the ability for PC14 to provide sufficient feasible residential capacity to meet long-term demand.

13. The purpose of the QM is to safeguard the operations of the Christchurch International Airport, which contribute billions of dollars annually to the city and region while supporting tens of thousands of jobs. Given the businesses this infrastructure supports and the level of competition, both national and international, in this sector, a risk to the airport's operations would pose a very real risk to the regional economy.

14. A key economic consideration with regard to the approach taken through the Airport Noise Influence Area QM is the certainty provided by the provisions. While an assessment of effects and the conditions under the acoustic insulation standards would provide for appropriate conditions for individual consents, it is more difficult to manage the cumulative impacts generated by providing material residential development potential within areas where airport-related noise is elevated.

15. I therefore support the approach taken through the PC14 provisions in safeguarding this asset from increased residential intensification.

Coastal Hazards and Tsunami Management Area

16. Objective 3.3.6 in the Strategic Objectives Chapter directs the Plan to avoid new subdivision, land use, and development in areas where the risks from natural hazards are assessed as being unacceptable.

17. There are a number of economic considerations with regard to the impacts of this QM. The level of properties impacted is substantial, with coastal hazards impacting 4,680 feasible residential dwellings and the tsunami area impacting upon 9,868 dwellings. In addition, 475,000sqm of commercial space would be forgone. While neither of these capacity reductions undermines the ability of the city to meet future household growth expectations, they are a material reduction in the market's choices.

18. While the loss of life and wellbeing are crucial considerations in regard to management of these areas, there are potential economic impacts on property and business that have also been assessed. While at an aggregate level these are potentially massive, their extent is ultimately determined by the level of development that would be undertaken in these areas. An assessment of these relative costs between a 1:200 year and 1:500 year event threshold would suggest that the relative loss would be in favour of the smaller area. However, as identified in recent disastrous events, consideration must be had for the extent of time required for areas to recover from such events, and the detrimental impacts this has on the economy.

19. Given the catastrophic events outlined in the evidence of Ms Lane, the recovery process is likely to be long and have a substantial impact on the economy city-wide. Additional residential development is likely to not only increase the cost of damage to buildings, but also could result in a much-extended recovery time, exacerbating the economic costs associated the event.

20. Overall, I consider the extent identified within PC14 to represent an economically prudent position in an environment where residential options exist elsewhere.

Low Public Transport Accessibility Areas

21. The Low Public Transport Accessibility Areas QM identifies areas that currently have low access to public transport where the MDRS will not be applied (i.e. the existing Operative Plan zoning will be retained).

22. While there remain some issues with regard to the overall approach of this QM, the outcome is likely to be economically favourable in terms of an increased focus of residential development in areas that exhibit efficiency due to higher levels of accessibility (not only through public transport), greater amenity and potentially lower marginal infrastructure costs.

City Spine Transport Corridor

23. The City Spine Transport Corridor QM applies to properties that directly adjoin the identified four arterial roads and seeks to widen the setback from the road boundary from 1.5m to 4m in the residential zone and add a setback of 1.5m in the commercial zones where the road width is less than 24m. The rules also require that this land be used for landscaping, including a minimum of 1 tree for every 10m of site boundary length.

24. There are two distinct levels of impact with regard to this QM. In terms of residential development, according to the Council's assessment, the requirement is unlikely to have any material impact; the evidence of Mr Scallan indicates an impact of less than 100 dwellings. Overall, the provision is likely to result in a more conducive environment and potentially improve the overall property values. Additionally, the existing landscaping requirement can be met with limited additional impact, further mitigating the impacts of the provision on residential properties.

25. In terms of the affected commercially zoned sites this QM is likely to result in some economic costs and disruption over the short to medium term to affected commercial activities along the corridor. These costs, however, are likely to be mitigated over the long-term by greater locational amenity as well as the non-economic benefits outlined in the evidence of Mr Field[1].

INTRODUCTION

26. My full name is **Philip Mark Osborne**. I am an economic consultant for the company Property Economics Ltd, based in Auckland.

27. I have prepared this statement of evidence on behalf of the Council in respect of economic matters arising from specific QMs, and the provisions for financial contributions relating to urban tree canopy, included in PC14. That is, my evidence addresses:

1 Statement of primary evidence of William Field on behalf of Christchurch City Council.

(a) the financial contribution provisions relating to urban tree canopy cover;

(b) the Residential Industrial Interface QM;

(c) the Low Public Transport Accessibility Areas QM;

(d) the Airport Noise Influence Area QM;

(e) the City Spine Transport Corridor QM;

(f) the Residential Heritage Areas and Residential Character Areas QMs; and

(g) the Coastal Hazards and Tsunami Management Area QMs.

QUALIFICATIONS AND EXPERIENCE

28. My qualifications include Bachelor of Arts (History/Economics), Masters in Commerce, Masters in Planning Practice from the University of Auckland, and I have provisionally completed my doctoral thesis in developmental economics.

29. I have 20 years' experience advising local and regional councils, as well as central government agencies, throughout New Zealand in relation to economic impacts, industrial and business and residential land use issues as well as strategic forward planning.

30. I also provide consultancy services to private sector clients in respect of a wide range of property issues, including economic impact assessments, commercial and residential market assessments, economic costs and benefits and forecasting market growth and land requirements across all property sectors.

CODE OF CONDUCT

31. While this is a Council hearing, I have read the Code of Conduct for Expert Witnesses (contained in the 2023 Practice Note) and agree to comply with it. Except where I state I rely on the evidence of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from my expressed opinions.

SCOPE OF EVIDENCE

32. The purpose of this evidence is to summarise the key findings from my economic assessment of the high-level economic costs and benefits of the proposed financial contributions provisions relating to tree canopy cover, and the potential economic impacts resulting from the identification of the above QMs in the context of the MDRS and the other urban intensification mandated by the National Policy Statement on Urban Development 2020 (**NPS-UD**).

33. My evidence makes some initial high-level observations regarding PC14 and the intensification mandated by the NPS-UD, and then discusses the financial contributions and the QMs in turn.

34. My colleague Tim Heath is also providing economic evidence for the Council, addressing building heights in the city centre, other commercial centres, and surrounds.

35. In preparing my evidence I have read and am familiar with the relevant provisions in PC14, the section 32 reports and appendices, and the submissions.

HIGH-LEVEL COMMENT ON PC14 AND THE NPS-UD

36. PC14 has been driven by the implementation process of the NPS-UD which essentially seeks to enable greater intensification in cities – albeit not at all costs; objective 1 of the NPS-UD is that New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future. As a result, many of the proposed changes as part of PC14 are enabling in nature.

37. While local authorities have been tasked with managing land use activities, the extent and responsibility has, more recently, been targeted through central government directives. Both the introduction of the NPS-UD and the more recent Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 have provided Councils with the assignment of providing sufficient residential capacity and facilitating the MDRS while also providing for matters that make higher density inappropriate in an area, known as QMs.

38. Policy 3 is particularly significant in directing intensification (subject to the qualifying matters referred to in Policy 4).

39. From an economic perspective I strongly support the overall direction of the NPS-UD, including the consolidation of land use activities within a compact urban form, focussed within and around centres (and, ideally, also along key transport routes), as well as the provision of sufficient residential capacity to support and efficiently facilitate growth in each district. This approach has a number of economic advantages:

    (a) A compact urban form reduces the marginal cost of construction in terms of infrastructure such as urban roading and wastewater and water supply networks.

    (b) A compact urban form reduces the need for and cost of travel for residents to access employment, education, healthcare and services. That is likely to generate savings in resource use (e.g.: fuel or electricity) for trips that use private vehicles but also increases the likelihood of increased 'mode share' for active transport modes (e.g. walking or cycling).

    (c) Intensification within and around centres and along key transport routes reinforces travel efficiency. It increases the accessibility of employment and services and further improves the efficiency of the public transport network.

    (d) Improvement of land use efficiencies with regard to the extent of land required to meet demand, reducing the average site cost. This is more likely (than not consolidating land uses in a compact urban form) to result in lower priced residential options.

    (e) Increasing the diversity, viability, and comparative advantage of commercial centres.

    (f) In summary, intensification encourages and enables the sharing of infrastructure, services and facilities, which represents a more efficient use of resources.

40. The MDRS and the higher density residential activity encouraged by the NPS-UD seek to enable residential development capacity that, in turn, allows the market to offer greater choice in terms of the typology and locations for intensified residential development.

FINANCIAL CONTRIBUTIONS RELATING TO URBAN TREE CANOPY

Economic analysis

41. As explained in the section 32 reporting for PC14, the proposed financial contribution provisions for the urban tree canopy are motivated by the recent loss of tree canopy cover in Christchurch City[2], partly as a result of increased intensification and (re)development. The proposed provisions purport to avoid or mitigate / offset the negative impacts of further intensification and development, as encouraged by much of PC14, on tree canopy cover, as well as improve the current situation.

42. The provisions are further prompted by Christchurch City's relative lack of tree canopy cover when compared to other major centres in New Zealand. The Council is concerned that the lack of tree canopy cover in Christchurch City has led to various negative outcomes for the city including reduced biodiversity, increased stormwater runoff, reduced carbon sequestration, and increased heat island effects that have resulted in in negative amenity effects on the city[3].

43. In order to mitigate some of these effects and provide for greater levels of tree canopy city-wide, the Council has proposed a mechanism that requires development to either plant at least 20 per cent tree-canopy cover on a site, retain existing trees (or provide a mixture of retained and newly planted trees) to the same extent, or pay financial contributions[4] to help mitigate some of the negative effects caused to the city's tree canopy. I note that this 20 per cent aligns with the amount of landscaping required for residential development in accordance with the MDRS. Additionally, any development creating new roads will need to ensure that at least 15 per cent of the road reserve has tree canopy.

44. Both the section 32 report (as relevant to this topic) and the online calculator[5] provide an understanding of the potential level of financial contributions required if development is unable or chooses not to retain or plant trees to the necessary scale. This cost is based primarily on the size of the developed land area as well as the final land value per square metre,

[2] Christchurch District Plan PC14 – Tree Canopy Cover and Financial Contributions Section 32 Evaluation – Part 7, page 11.
[3] Evidence of Justin Morgenroth, 11 August 2023, paragraph 22.
[4] This payment will be utilised to fund both the planting of trees and the cost (associated value) of the land required to accommodate the trees.
[5] https://ccc.govt.nz/the-council/plans-strategies-policies-and-bylaws/plans/christchurch-district-plan/understanding-the-district-plan/tree-canopy-financial-contributions-calculator.

factoring in a discount for any retained or planted trees. This results in 2 components, firstly the tree cost estimated at a proportion of $2,037 (excl. GST) per 130sqm of tree canopy, and secondly the land cost required to accommodate the tree (approximately 38% of the tree canopy).

45. While the environmental, amenity and social benefits of appropriate tree cover are relatively obvious, it is important to understand three key economic aspects of the proposed provisions:

    (a) the potential economic costs associated with the provision;

    (b) the corresponding economic benefits; and

    (c) who is paying the cost and to what degree is it equitable.

46. The economic costs associated with the proposed PC14 provisions are relativity simple to identify but more complex in assessing in the total city-wide extent, since there are several factors that will likely mitigate their degree. Potential economic costs include:

    (a) **The proposed provision will increase costs for some residential (specifically) development**. As outlined above, any direct fiscal impact is likely to be in relation to the planting of appropriate trees while the financial cost associated with the contribution, when applicable, encompasses land values as well. The calculation utilised by the pricing calculator estimates this at approximately 8% of the realised land value.

    (b) **Impact on feasible capacity**: The above increase in the costs of some development is likely to have an impact upon the level of feasible capacity across the City. However, the level of impact is not expected to be proportionate across all types of development. An example is the impact upon greenfield development. The development feasibilities for greenfield are markedly different from brownfield infill or redevelopment. Greenfield land value costs are generally lower and reflect the potential for more civil works and site conditioning costs. This means that the proportionate land costs are generally lower. However, it is understood that the contribution for tree canopy is based on the developed land values ($/m). Because greenfield land is typically more expensive following subdivision and development (having previously been cheaper, relative to brownfields), this has the potential to materially impact the feasibilities for greenfield development

disproportionately to other such developments. While this would be the case if all development was expected to avail itself of the contributions route, it is more likely that greenfields development will have greater options to plant or retain tree canopy to meet this provision. As such, the financial contribution option could potentially have a greater impact upon redevelopment where planting and/or retention are not a viable option. It is expected that the average site cost, in terms of financial contribution has the potential to increase land costs by $20,000 per site. I consider that the proposed financial contributions provisions are likely to result in some reduction in feasible capacity for the city, though the extent to which this reduction is realised is not known and was not assessed as part of the section 32 cost benefit analysis. It is my understanding that Council is nonetheless comfortable with the residential capacity position of the city with the financial contribution provisions in place.

(c) **Impact on distribution of development**: As noted above, the financial contributions on tree canopies has the potential to alter the future balance of residential feasibilities and therefore impact on the spatial distribution of development. While the proportional level of any contributions is based on the underlying land values, and should therefore be a simple reflection of proportional cost, there is likely to be a greater impact on greenfield feasibilities and also on the nominal level of higher value land areas (again noting that these latter areas are less likely to be able to plant or retain themselves). This nominal increase could impact upon the level of risk developers are willing to take on.

(d) **Impact on affordability**: Overall the proposed financial contributions provisions have the potential to increase the costs of residential development, by up to 8% on the cost of land and additional costs of tree planting or retention across all development. This will impact upon the cost of housing as well as potentially impact upon choice (as per the potential for redistribution).

(e) **Distribution of Cost / Equity**: In assessing the potential economic costs of a policy it is important to understand the parties that are likely to bear the cost in relation to those that benefit. In relation to the urban tree canopy policy, the overall costs will primarily be borne by new home buyers (and, through competition, resales). It is therefore important that some degree of the ‘extent’ of the issues that the

improvement of the tree canopy would solve is linked to new residential development.

(f) **Other market impacts**: Certainty / saleability / duplicating open space cost: There are a number of more general issues may impact upon the suitability (economically) of the proposed policy, including the potential for increased uncertainty within the residential development market. The potential uncertainty could relate to when and whether conditions have been met for a site (which may affect 'on sale' value) as well as whether the inclusion of land for tree planting negates that land's value and has no inherent value and therefore is, in these cases, a potential doubling of open space reserve contributions.

47. As outlined above, there are likely to be both resulting economic benefits and factors of mitigation when considering the level and extent of these costs.

48. There are a number of existing factors that are likely to reduce the economic burden of these provisions, including:

(a) The requirement under the MDRS for residential development to provide landscaping over at least 20% of the land area, in respect of which the retention or new provision of the tree canopy will fulfil this obligation; and

(b) A significant proportion of the market is likely to be able to retain or plant trees to meet this provision in lieu of a financial contribution, thereby avoiding or reducing the direct cost.

49. These factors are likely to materially diminish the extent of the costs identified above at a city-wide level.

50. The potential economic benefits of contribution include:

(a) **Long-term enhanced amenity of the urban environment**: Trees provide a number of benefits that are attributable to a more localised catchment. Increased amenity through shading improves fauna as well as provides an intrinsic increase to property value.

(b) **Environmental infrastructures**: There are also wider community benefits of trees such as carbon storage and sequestration, stormwater runoff attenuation, and urban heat island mitigation.

(c) **Provision within a localised environment**: The economic benefits attributable to the provisions sought under PC14 not only provide for a contribution that would fund the proportional tree planting but also the value of the land required to plant the trees. This land value is based on the underlying value of the developed land by site and therefore provides for land for localised tree planting and so contributes to more localised benefits to that community.

(d) **Avoids consumption of current public land**: The funding of additional land through the financial contributions avoids the utilisation of current public land that may otherwise be utilised for both public activities and for the Council's own commitment to tree planting.

51. Overall, there are a number of material economic costs and benefits associated with the provision of tree canopies. While the benefits to the wider community are important and significant there is the potential for measurable impacts on the Christchurch housing market, although these are likely to be substantially tempered through the provision of trees within the market itself rather than opting for contributions. When essentially costing trees it is also important to consider the value of the existing canopy and the need to value and safeguard that.

Matters raised in submissions

52. I understand there are a number of general submissions concerned with both the appropriate nature of the financial contributions and the workability of the provisions.

53. The majority of the effects are likely to result from development conditions that require funding through the financial contribution options. I consider that the way in which the Council proposes to calculate these costs is indeed appropriate in that the financial contributions consider the real costs potentially borne by the Council and provide a proportional land value component which facilitates an appropriate level of distribution for tree provision.

54. With the introduction of new provisions (such as the financial contributions for urban tree canopy) the market often experiences some issues with the clarity of implementation that may create some uncertainty initially, however, while there may be unforeseen difficulties in the short-term (with such a new

provision) these can generally be addressed with improved education of the market with limited economic impacts.

55. Overall, there remain some economic concerns regarding the potential increase in costs that could impact upon affordability and choice, however these would need to be considered in relation to the wider non-economic considerations of the tree canopy provision.

QUALIFYING MATTERS – INTRODUCTION

56. In this section of my evidence I address specific QMs set out under PC14 that seek to limit the full introduction of MDRS in areas where intensification is considered unsuitable in terms of, in part, their potential economic impact. Below I identify the potential impacts of the QMs (on which I have been asked to comment by Council officers, I understand because of their larger scale relative to other QMs) in relation to economic matters and potential market outcomes, including the potential to meet the objectives of PC14.

Residential – industrial interface

57. PC14 seeks to limit residential development to two storeys (as opposed to three provided for in the MDRS) in medium (**MRZ**) and high (**HRZ**) density residential zones where the zone is within 40m of industrially zoned sites. The key issues this QM seeks to address are potential nuisance noise effects on residents, and reverse sensitivity (in the sense of residents' noise complaints leading to restrictions on industrial activity). In terms of the extent of this interface I defer to the evidence of Dr Jeremy Trevathan and the position of Acoustic Engineering Services provided in the Council's section 32 evaluation, which suggested that a reduction in the area of the interface (at least 15m identified as a scenario in the section 32 report) has an increased likelihood to expose residents to undue noise, and may lead to reverse sensitivity.

58. Reverse sensitivity is a significant concern for businesses throughout New Zealand. The increased pressure on land use activities has brought many into conflict with residential activities, particularly around noise, vehicle movements, and light-spill. The risk associated with reverse sensitivity is generally proportionate to the level of contending land uses affected.

59. In Christchurch, reverse sensitivity issues have the potential to meaningfully impact upon the City’s economy and community wellbeing. In 2022 there were over 67,000 industrial jobs within Christchurch that contributed 36% of

the city's gross domestic product (**GDP**). The economic wellbeing of Christchurch is based on the ability for these businesses to operate efficiently and for the city to be competitive in attracting and keeping this level of activity.

60. The economic costs associated with managing reverse noise sensitivity are essentially twofold. The limitation of residential development within the 40m area abutting industrial zones, to two storeys, will reduce the overall development capacity through both overall floorspace limitation and through a potential impact on feasibility. Additionally, this is likely to have some (albeit minimal given the extent of MDRS capacity throughout the city) impact on the relative underlying land value of the affected sites. The impact on development capacity has been considered in the evidence of Mr Scallan6. This indicates a total of 8,8707 impacted theoretical MRZ units as a result of the Residential – Industrial Interface QM, with an overall impact on 1,400 commercially feasible dwellings. In context this level of capacity represents just over 1% of the feasible MDZ residential capacity measured in Mr Scallan's evidence.

61. At a high level the economic benefits associated with this interface involve the safeguarding of industrial activity within the sites that abut residential zones that would otherwise have MDRS provisions applied. As identified above the industrial sectors within Christchurch City contribute significantly to the city's economy. The safeguarding of these sites for industrial businesses not only provides for the existing uses but affords certainty to the sector in terms of business operations.

Matters raised in submissions

62. There is little in the current submissions that raise particular economic concerns regarding this QM. There are a number of site-specific submissions that seek a nuanced approach to the interface, as well as a number that simply seek its removal. While there may be options available to manage the nuisance effects of industrial activities on the residential environment, and reverse sensitivity, it would be important that these provide similar certainty to the scope of industrial activities that could locate on these sites. Importantly, for efficient business land use and provision, it is not simply the risk that is presented by these conflicting activities, but rather it is

[6] Evidence of John Scallan, Table 4, 11 August 2023.
[7] Given that this QM simply limits residential development from 3 potential storeys to 2 it is anticipated that the potential impact on this capacity will be minimal to none.

the perceived risk that can have material impacts upon the efficiency of this industrial-zoned land.

RESIDENTIAL HERITAGE AREAS

Introduction

63. This section summarises the key findings from my economic assessment relating to the high-level economic costs and benefits of the proposed Residential Heritage Area (**RHA**) provisions, which are identified as a QM.[8]

64. In particular, my statement of evidence addresses the following matters:

    (a) The potential economic value and development capacity impact of the proposed RHAs.

    (b) The high-level economic costs and benefits of the proposed RHAs.

    (c) A response to higher-level economic issues raised in relevant submissions.

Overview of heritage provisions in PC14

65. The primary objective of the heritage provisions in PC14 (and of the heritage-specific plan change, PC13) is to better reflect aspects of the City's history and development through introducing residential heritage areas as a mechanism to protect buildings and features which, collectively rather than individually, are of significance to the City's heritage and identity. A further purpose is to simplify and clarify the rule provisions in light of the Council's experience in applying the pre-existing rules, to strengthen a small number of rules by requiring a higher category of consent, and to reflect changes in circumstances over time.

66. The plan changes propose 11 new RHAs across the city (shown in Figure 1 below).

67. RHAs are defined as neighbourhood areas with buildings and features that are collectively (rather than individually) significant to the city's heritage and identity that the Council wants to retain.

[8] "Christchurch City PC13 Heritage Areas and Sites Cost-Benefit Analysis" Property Economics, December 2022. This assessment is Appendix 4 to part 2 of the section 32 report for PC14.

68. The RHAs, which are proposed as a QM under PC14, are in the following 11 areas, with their locations and extent showing in the figure below. These areas were the focus of the economic assessment.9

(a) Inner City West;

(b) Chester Street East/Dawson Street (Inner City);

(c) Englefield Avonville (Inner City East);

(d) Piko/Shand (Riccarton Block State Housing);

(e) Heaton Street (Merivale);

(f) Church Property Trustees North St Albans subdivision (St Albans);

(g) Wayside Avenue 'Parade of Homes' (Burnside);

(h) Royal New Zealand Air Force (**RNZAF**) Station Wigram Staff Housing (Wigram);

(i) Macmillan Avenue (Cashmere);

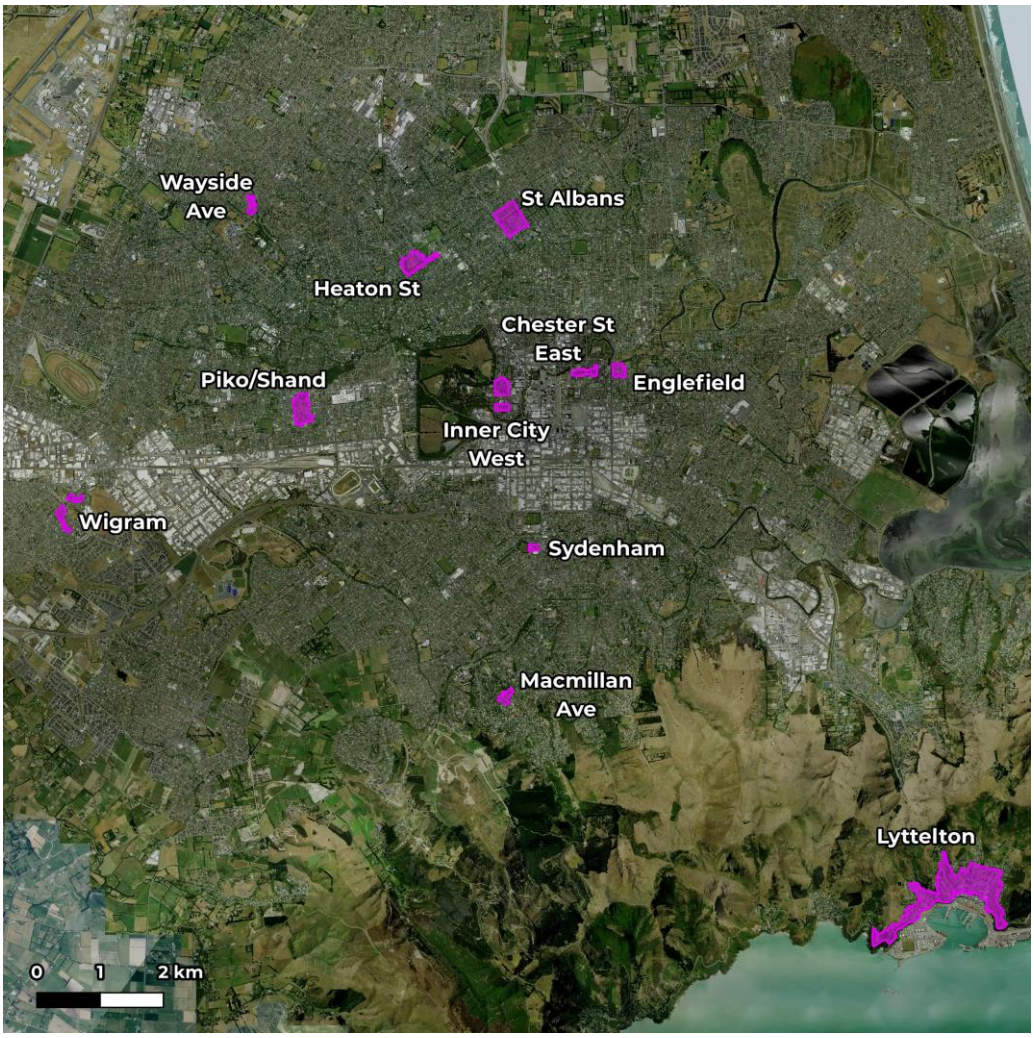
(j) Shelley/Forbes streets (Sydenham); and

(k) Lyttelton.

69. It is proposed that within the identified RHAs a resource consent would be needed for new buildings, additions or alterations to buildings, new fences, and walls higher than 1.5m, and to demolish or relocate those buildings considered most significant. The Council will assess all development proposals in terms of their effect on heritage values within the area.

[9] "Christchurch City PC13 Heritage Areas and Sites Cost-Benefit Analysis" Property Economics, December 2022.

Figure 1: PC13 Proposed Residential Heritage Areas (RHAS)



Source: Christchurch City Council, LINZ

70. In terms of the efficiency and effectiveness of applying new activity rules and built form standards for RHAs to new properties, and protection of new heritage items, the following considerations are mentioned in the section 32 report[10] (page 101).

    - *There will be a net positive outcome in terms of efficiency. A net positive outcome relies on valuing the benefits from heritage protection for the public as greater than the costs of heritage protection for individual property owners, e.g., the transaction costs of resource consents, and the opportunity costs of not being able to develop to the intensity otherwise enabled.*

[10] *Christchurch District Plan: Plan Change 14 Section 32 Evaluation, 2023.*

- *Benefits would typically be experienced over a longer time period than transaction costs and can be more difficult to measure. For example, a number of the key benefits of heritage provisions are intangible e.g., identity, sense of place and stability, and of 'membership' or belonging to the community.*

- *Protecting historic heritage by a qualifying matter that requires restricted discretionary consent, will create environmental benefits as it allows for consideration of proposals in terms of their effect on heritage values, either of sites or of specified areas. Economic benefits of protecting items of historic heritage may be that these items contribute to building heritage tourism, for example through heritage walks.*

- *RHAs in particular have heritage values as distinctive and significant residential environments representing important aspects of the City's history. Under section 6(f) of the RMA they should be protected against the possibility of rapid change through intensification. Feedback through pre-notification consultation indicated that many residents consider this a benefit.*

Likely economic impacts of the proposed RHA provisions

Heritage economic value

71. Based on the approximately 1,350 sites identified within the RHAs, there are likely to be approximately 700 additional sites materially impacted by the aura impact[11]. The total value attributable to this effect therefore is estimated at approximately $**17m** (as total capital value). It is important to note that this does not include the increased value to the protected properties themselves.

72. An Australian assessment[12] found that participants would be willing to pay $5.33 per annum for every 1,000 heritage buildings protected. Given the potential variance in value and community preference for heritage protection, I consider it appropriate to assess a lower value associated with the protection. In the case of approximately 1,350 properties assessed through PC14 and PC13 (both sites and areas), and considering a population of **280,000** (over 18 years old) in Christchurch City, the estimated annual value

[11] Christchurch City PC13 Heritage Areas and Sites Cost-Benefit Analysis" Property Economics, December 2022. Page 9,
[12] Valuing the Priceless: The Value of Historic Heritage in Australia. Allen Consulting group, 2005.

of these properties in terms of public good would be in the order of $**1.16m** per annum or a total of $**13.3m** over a 15-year period.

Residential capacity impacts

73. The evidence of Mr Scallan has outlined the potential residential MDRS development impacts of the RHA QM. Table 3 of his evidence suggests a loss of 3,380 theoretical units with a reduction in feasible development of 1,668 dwellings. Once again this represents just over 1% of the total feasible capacity measured through the modelling of PC14.

Economic costs and benefits

74. Table 1 below summarises the potential economic costs and benefits resulting in the market from the provision of RHAs and the associated rules. While the identified rules – which relate to the restrictions on new construction and on demolition – have similar impacts, their extents are likely to differ across the various RHAs due in part to their identification of specific sub-sets of buildings as well as the extent of preservation as opposed to restrictions on new builds.

Table 1: Heritage General Economic Cost Benefit Summary

Heritage Rule	Economic Cost	Economic Benefits	Comments
Restriction on New Construction	Increased development costs Reduced development capacity Reduced land values Reduced development pattern efficiency Increased transactional costs Reduced housing options	Improved amenity Increased tourism Increased land values	Restrictions on development are for the front sites only
Restriction of Demolition (defined or contributory building)	Increased development costs Reduced development capacity Reduced land values Increased transactional costs Reduced housing options	Heritage protection Improved amenity Increased tourism Increased land values	Restriction on defined and contributory buildings only

Source: Property Economics.

82. Table 2 identifies the extent of feasible residential development under each of the RHA's. This ranges from the Shelly / Forbes Area that exhibits low additional feasible capacity through to Lyttleton which potentially impacts a large level of feasible dwellings.

Table 2: Total Additional Feasible Development Capacity Impacted

RHAs	Feasible Additional Dwelling Yield
Piko / Shand	257
Inner City West	143
Chester St East	46
Englefield Avonville	90
Gosset / Carrington / Jacobs	30
Heaton St	134
Wayside Ave	81
Wigram	98
Macmillan Ave	28
Shelley / Forbes St	10
Lyttelton	751
ALL RHAS	**1,668**

Source: Christchurch City Council

83. Even though there is a reduction in residential and commercial capacity within the identified RHAs, at a city level this cost is likely to be less significant given the results of Mr Scallan's capacity assessment indicating feasible capacity beyond the QM, conservatively at over 79,000 dwellings under the MDRS.

84. At a city level, the identified economic costs are likely outweighed by the benefit from the preservation of heritage character which form an important part of Christchurch's, and New Zealand's, (non-economic) history.

85. I consider that the proposed RHA Buffer Zone and the associated proposed rule[13] will ultimately result in some economic costs, such as those mentioned above, including:

(a) Increased compliance costs

(b) Reduced feasibility of development

[13] *i.e., Restricted Discretionary for "any new building (except buildings of less than 5 metres in height) on a site in the High-Density Residential zone or Residential Visitor Accommodation zone which is located outside a Residential Heritage Area but shares a boundary with a site or sites in a Residential Heritage Area.*

(c) Increased risk associated with development.

86. Again, the extent of impact is likely to be commensurate with the development impact for each heritage area as identified previously. The converse of this capacity impact (and the potential impact on development value) is the 'aura' value attributable to the heritage area itself outlined in the general costs and benefits.

AIRPORT NOISE INFLUENCE AREA QM

Introduction

87. The Airport Noise Influence Area is a QM that seeks to control intensification within areas that experience 50dBA Ldn or greater of aircraft noise associated with Christchurch International Airport. It is an existing QM, in the sense that aircraft noise at and above that level exists in parts of the city and provisions in the Noise Chapter prescribe building standards to manage the effects of noise from the Airport's activities within a (similar, but currently less extensive) 50 dB Ldn Air Noise Contour.

88. PC14 proposed to extend the geospatial extent of the noise protection to reflect the 50 dBA Annual Average Outer Control Boundary (**AAOCB**) and to maintain the current zoning of the sites located within this Airport Noise Influence Area (predominately Residential Suburban Zone) instead of reclassifying it as MRZ or HRZ.

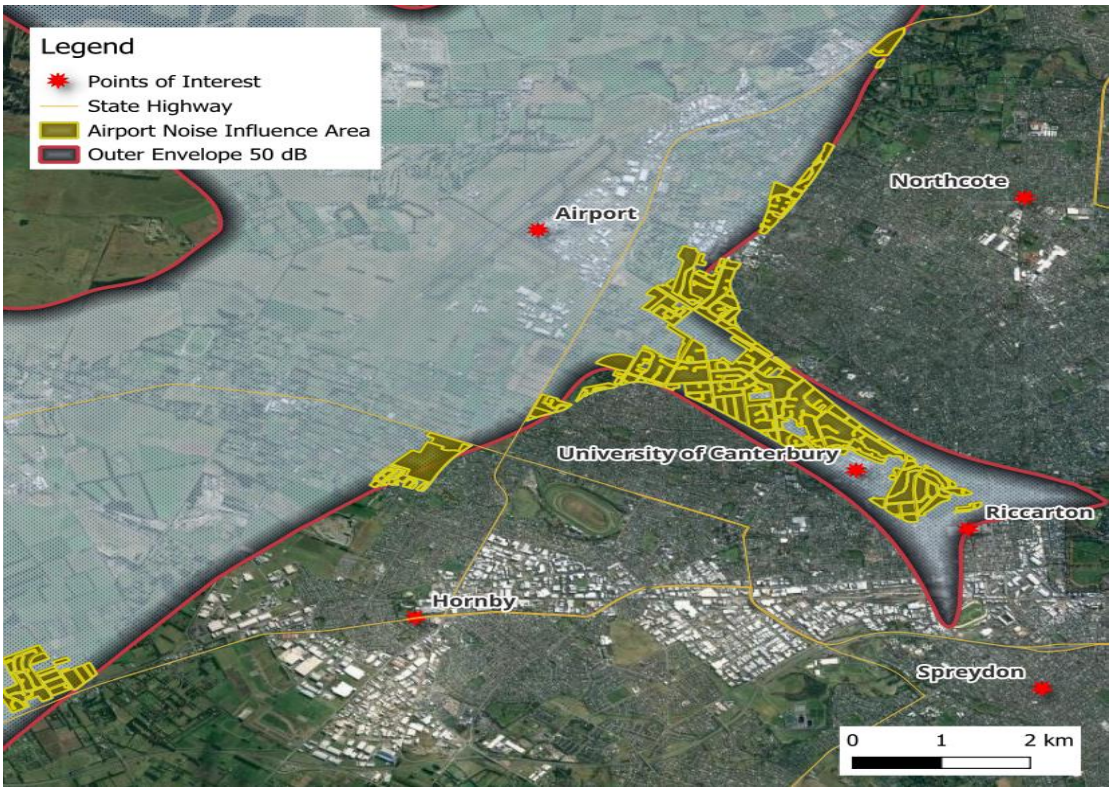
89. The provisions under the Residential Suburban Zone allow significantly less development density than is enabled by the MDRS, including limiting building heights to 8m and site coverage to 35%.

90. Subsequent to the notification of PC14, Christchurch International Airport Limited (**CIAL**) has made a submission recommending an extension of this QM to cover the outer boundary of the 50dBA noise envelope.

91. It is my understanding that Ms Sarah Oliver recommends making some changes in response to CIAL's submission, to extend the Airport Noise Influence Area to some sections of the Outer Envelope.

92. The spatial extent of the Airport Noise Influence Area in PC14 as notified and the Outer Envelope 50 dBA area as recommended by CIAL is shown on **Figure 2** below.

Figure 2: Notified Noise Influence Area QM



Source: CCC

93. This area of the notified Airport Influence Area covers a total of 404 ha and extends into the walkable catchments of the Riccarton Town Centre, i.e. land that would otherwise be zoned HRZ.

94. The area covered by the Outer Envelope over the Riccarton Mall and extends into the Mass Rapid Transport corridor around Riccarton. This is significant as the economic costs of a reduction in development potential for this area are greater than loss capacity elsewhere.

95. It is my understanding that, for this reason, although generally supportive of CIAL's proposed extension, Council intends to retain some of the walkable catchment around Riccarton that lies within this Outer Envelope as HRZ. The Council officers also propose to raise the height of some of the HRZ to the east (i.e. outside of the Outer Envelope) to enable eight storeys and zone additional HRZ along the MRT route to compensate for the lost capacity as a result of this QM extension.

96. The primary purpose of the Airport Noise Influence Area QM is to protect the operations and efficiency of the Christchurch International Airport and minimise the reverse sensitivity effects on their operation.

97. According to CIAL's submission (Submission #852, point 50): "*less enabling density standards are necessary to protect Christchurch Airport operations and avoid unreasonable amenity outcomes. Allowing intensification to the MDRS within the Airport QM area would expose a greater number of residents to aircraft noise, impacting their health and amenity and ultimately compromising the viability of Christchurch Airport operations*."

98. In May 2022 Property Economics was engaged to produce a report for CIAL on the economic impacts of constraints on its operations. In this report, we found that the airport's contribution to the local economy included the following:

    (a) A regional contribution of over $3b per annum;

    (b) Growth over the past 9 years of over nearly $1b to regional GDP;

    (c) In 2020 the airport created over 28,000 regional jobs;

    (d) Over $1.5b worth of goods were transported through the airport;

    (e) Over $1b worth of tourism spend was generated through the airport, supporting over 9,000 jobs;

    (f) 50% of visitors to Canterbury arrive via the airport;

    (g) CIAL contributes $4.76b to the South Island economy;

    (h) The airport accommodates 7,000 workers within its campus; and

    (i) CIAL directly employs over 200 workers, generating $187m in revenue per annum and supporting a further 500 local jobs.

99. Consequently, the report found that if the Airport has constraints placed upon it such as a night-time curfew, the loss in night-time freight and passenger operations could result in an overall impact to 2031 (from 2022) in excess of $4.5b.

Matters raised in submissions

100. The main submission in support of this QM is the CIAL. As mentioned above, CIAL seeks an expansion of the zone to include the Outer Envelope, a proposal which, as I understand it, the Council is looking to support while balancing the impacts on the Riccarton centre and the MRT corridor.

101. There are also a number of submissions that oppose the Airport Noise Influence Area QM. Submitters' primary issue with the QM appears to be that it unnecessarily restricts development potential in order to minimise reverse sensitivity that has the potential to be mitigated.

102. Kāinga Ora (submission #834, on page 31-32) points out that the effect of noise is already managed through the building consent and acoustic insulation requirements set out in Rule 6.1.7.2.2. The submitter also argues that the health, safety and amenity of existing and future residents living within the Airport Noise Influence Area could be retained with intensification through the aforementioned building noise standards.

103. Waka Kotahi (submission #805) suggests that "*technology or building materials may change over time, which could reduce the need for restricting residential development" and that the District Plan should instead "provide for a consenting pathway where increased density can occur if they can address effects of noise associated with the operation of the airport*".

104. There are also several other submissions that express similar concerns, including to assert that the Council should, as Jack Gibbons (submission #676) puts it, "*let builders / the market decide if it is still worth building in this area*" with the noise-proofing controls that are already in place. This approach reflects the principles of the Resource Management Act 1991 in that it prioritises managing the effects of activities, rather than directly regulating the activities themselves.

105. A key economic consideration with regard to the approach taken through this QM is the certainty provided by the provisions. While an assessment of effects and the conditions under the acoustic insulation standards would provide for appropriate conditions for individual consents, it is more difficult to manage the cumulative impacts generated by providing material residential development potential within the area affected by airport noise.

Economic benefits

106. **Protect the safe and efficient operations of Christchurch Airport**. Although the submissions claim that the reverse sensitivities associated with the Airport's operations are able to be satisfied by the provisions in Rule 6.1.7.2.2, there is the risk that these mitigation methods fail. The QM is the planning option that minimises the risk of potential disruption to the Airport's operations.

Economic costs

107. **Reduction in Housing and Business Capacity**. According to the evidence of John Scallan, the Airport Noise Influence Area QM including the extensions into the Outer Envelope that are supported by the council, affects sites with Plan-enabled capacity totalling 43,600 dwellings and a feasible capacity of 11,759 dwellings.

108. It is important to note that this represents the worst-case scenario where no development occurs within the noise overlay. It does not account for any development that could occur with the existing operative rules. Furthermore, it is my understanding that this loss in capacity does not include the compensatory additional capacity the Council is intending to enable in the areas surrounding the MRT. At the time of writing this evidence, the capacity loss of this updated position has not been assessed.

109. Although this loss of capacity does not result in an undersupply at the city-wide level, there is economic cost from a locational perspective that needs to be considered.

110. Additionally, when Property Economics assessed the impacts of the Airport Noise Influence Area QM as notified, we identified that the QM has the potential to reduce commercial office capacity by approximately 500,000sqm[14]. To put this in context, the total additional commercial capacity has been assessed at approximately 27.4million sqm. This would potentially be increased if assessed under Council's proposed extension.

111. Notably, the Airport Noise Influence Area QM directly impacts on the land surrounding the University of Canterbury, thereby having a direct effect on land that would be ideally suited for student accommodation activities (including student flats). Similarly, the QM extends into the walkable catchment of the Riccarton Town Centre, land that would otherwise be an efficient place for intensification to occur.

112. This is not to suggest that there will be a shortfall of potential supply to support the development of the University or Riccarton. The demand for these activities has not been assessed on a locational basis.

[14] 'Impacts of QFM in PC14 on Commercial Capacity Methodology', Property Economics August 2022.

Inequitable outcome for exposed landowners:

113. Land and property owners of the properties in these sites and areas would be less likely to enhance their income from the existing lower intensification levels (relative to higher density multi-unit developments)

114. Landowners under the Airport Noise Influence Area will have their property values and development potential negatively impacted by the policy. This a cost that these landowners will be forced to bear (relative to the rest of the city) to ensure the ongoing operations of the Airport are protected, the benefits of which extend to the wider city and region.

115. Overall, there is a material risk to the operations of Christchurch Airport from noise complaints, that could have substantial and sustained impacts on the wider City and South Island economies. The risk of this reverse sensitivity is (at a minimum) proportionately increased through greater levels of development within the Noise Influence Area as greater levels of residents will be affected and through this complain. While there may be a practical option considered regarding the attempted mitigation and avoidance of noise impacts the option continues to exhibit a considerable risk, both in terms of cumulative impacts and in terms of noise threshold acceptance. Additionally, the Council's capacity assessments would suggest that this foregone capacity under the MDRS is not crucial in meeting sufficiency under PC14.

116. As such, in my view this QM is warranted to safe guard the airport operations and the economic wellbeing of the Christchurch community.

COASTAL HAZARDS AND TSUNAMI MANAGEMENT AREA

117. Objective 3.3.6 in the Strategic Objectives Chapter directs the Plan to avoid new subdivision, land use, and development in areas where the risks from natural hazards are assessed as being unacceptable.

118. Although the Operative Plan currently has controls in place for flooding risks, the New Zealand Coastal Policy Statement 2010 also directs councils to "*avoid increasing the risk of social, environmental and economic harm from coastal hazards and avoid redevelopment, or change in land use, that would increase the risk of adverse effects from coastal hazards*" (Policy 25).

119. The Council intends to implement this policy fully through a separate plan change (known as Plan Change 12), which will include more substantial changes to the objectives and policies of the Plan for coastal hazards

management. In order to avoid intensification occurring in the affected areas in the meantime, however, the Council has identified QMs relating to coastal hazards in PC14.

120. Policy 5.2.2.5.1 follows this objective and states that: "*Within the following Qualifying Matters, development, subdivision and land use that would provide for intensification of any site shall be avoided, unless the risk is from coastal inundation and a site-specific assessment demonstrates the risk is low or very low based on thresholds defined in Table 5.2.2.5.1a below*":

Table 5.2.2.5.1a thresholds for coastal inundation

Coastal inundation risk category	Flood depth based on 0.6m of sea level rise (higher certainty)	Flood depths based on 1.2m of seal level rise (less certainty – higher consequence)
Very low	Dry	d < 0.4m
Low	d < 0.4m	0.4m < d < 1.0m
Medium	0.4m < d < 1.0m	d > 1.0m
High	d > 1.0m	d> 1.6m

Note - d represents the depth of coastal flooding in a flood event, which factors in the sea level amount considered i.e. 0.6m of sea level rise does not equate to 0.6m of flooding.

121. The rules in the chapter achieve this policy by controlling the replacement or extension of existing buildings and making the construction of new dwellings a Discretionary Activity in the Medium Coastal Hazard Area and a Non-complying activity in the High Coastal Hazard Area.

122. Policy 5.2.2.5.2 states that "*Within the Tsunami Management Area Qualifying Matter, avoid development, subdivision and land use that would provide for intensification of any site, unless the risk to life and property is acceptable*."

123. The District Plan effects this policy by retaining the existing zone within the Tsunami Management Area to curtail intensification beyond that which is already permitted by the Operative Plan.

124. In general, the economic benefits of introducing restrictions on Coastal Hazards are summarised below.

125. **Reduce risk of damage / harm to property, people and the community.** By discouraging the (re)development of an area exposed to coastal hazards the number of people and amount of property being exposed to coastal hazards is reduced. This reduces the aggregate risk of casualties and total

monetary loss in property. In the extraordinary event of a necessary emergency evacuation of an area due to a rare coastal hazard event, this could also mean lower levels of congestion to facilitate such a task.

126. The Ministry of Business, Innovation and Employment funded a study carried out by Victoria University of Wellington on 'Insurance Retreat'.[15] This indicated that insurance companies start 'retreating' (refusing to insure a property) where the annual exceedance probability (**AEP**) of a relevant event exceeds the 2% AEP threshold (e.g. a 1 in 50 year flood risk) and there is a full retreat once the AEP reaches 5%.

127. Based on the authors' analysis and predicted sea level rise, they expect that insurance companies will begin to retreat from the 4,850 properties in Christchurch that are within 1km of the coast and located within the 1% AEP Extreme Sea Level Surge Zones from 2030, with a full retreat anticipated by 2045.[16]

128. The report also estimated the potential property damage following a flood event.[17] Based on this analysis, it is suggested that a property incurs:

    (a) 50% damage if the water exceeds 1m above floorboards,

    (b) 30% damage if the floor is made from timber and flood exceeds the height of the floorboards; and

    (c) 10% damage if the floor is concrete and the flood is less than 1 metre above the floorboards.

129. **More efficient allocation of public resources**: Funds that would have been allocated to funding infrastructure in coastal hazard areas (install, repair, maintain and fortify) can be better allocated to areas where the annualised upkeep costs are lower. This is because the exposure to coastal hazards is more likely to damage infrastructure or require fortified (more expensive) infrastructures to mitigate hazards in these areas compared to areas with no coastal hazard risk.

130. **Reduced risk and extent of environmental from coastal events**: The impact of rare coastal events such as 100-year floods or large-scale coastal erosion can have long-lasting damage on the environment that can

[15] Storey, B., Owen, S., Noy, I. & Zammit, C. (2020). Insurance Retreat: Sea level rise and the withdrawal of residential.
[16] Ibid at page 10.
[17] Ibid at page 7.

negatively impact the vital natural resource pool that the community and productive industries enjoy. By reducing the amount of activity in areas exposed to these risks Council may be reducing the risk of environmental damage such as toxic stormwater run-off in these events that could detrimentally impact these resources.

131. **Greater awareness of flood risk**. Enhancing public awareness of flood risks assists consumers in appropriately valuing property that is at risk from floods. Research[18] has shown that consumers typically ignore statistical evidence meaning they underestimate the probability of events they are unfamiliar with and overestimate the likelihood of events occurring with which they are familiar.

132. This suggests that consumers may under-estimate the risk imposed by tsunami and coastal hazards and therefore over-value coastal properties. The identification of these QMs helps consumers to make more informed decisions and reduces the potential for the market to inappropriately allocate resources (market failure).

133. The general economic costs are summarised below.

134. **Reduction in housing capacity**. The evidence of Mr Scallan is that the housing capacity in Medium and High Coastal Hazard areas affects sites that have a plan-enabled capacity for 25,700 dwellings and a feasible capacity totalling 4,680 dwellings. In tsunami risk areas, the Plan-enabled capacity that is potential impacted amounts to 63,880 dwellings, and the feasible capacity that is impacted is 9,868, not accounting for any development that is enabled by the underlying operative plan zones that these areas will fall back to.

135. It should be noted that these capacity impacts are not independent. There is significant overlap between the Coastal Hazard QM and the Tsunami Management Area QM. Although not indicated in Mr Scallan's evidence, the Updated Housing Capacity Assessment provided as Appendix 1 to Part 1 of the Section 32 Report (at page 19)[19] suggested that the Coastal Hazard QM only covered an additional theoretical yield of 200 that was not covered by the Tsunami Management QM.

[18] Kahneman, D. (2003). Maps of bounded rationality: Psychology for behavioral economics. *American economic review*, *93*(5), 1449-1475.
[19] PC14-S32-Part-1-Appendix-1-Updated-Housing-Capacity-Assessment-14-March-2023.pdf (ccc.govt.nz)

136. **Loss of business capacity and economic activity**. This loss in capacity also extends to business as the (re)development of business landed is impeded by provisions. Specifically, Property Economics in earlier reports to the Council found that the Coastal Inundation Zone reduced capacity by 475,000 sqm of business floorspace. Although when compared to the city-wide capacity potential this loss is small, it has a significant impact at a locational level.

137. Table 3 provides a breakdown of the Coastal Hazards QM impact by centre. This highlights that there are four centres that have all or almost all of their floorspace development potential restricted by the Coastal Hazard QM and that over 60% of the New Brighton Local Centre is affected.

138. This has the follow-on effect of reducing economic activity as fewer economic opportunities (retail, visitors, employment options, development) are created in areas exposed to coastal hazards. Although the existing local business may benefit from the reduced market competition, this comes at a cost to the local community in the areas exposed to, or adjacent to areas of, coastal hazards.

Table 3: Commercial Floorspace Impact Coastal Hazards QM

Centre Type	Suburb	Coastal Inundation Zone	Sum of Additional Floorspace	% Impact	Existing Floorspace
Local Centre Zone	Redcliffs	10,399	10,876	96%	3,927
	Sumner	26,192	26,192	100%	12,499
	Woolston	1,714	49,300	3%	12,625
	New Brighton	59,226	96,728	61%	21,015
	Ferrymead	330,696	345,474	96%	23,438
Neighbourhood Centre Zone	New Brighton	2,586	19,925	13%	2,263
	South New Brighton	2,752	2,752	100%	726
Other Areas		41,814			
Total Impact		475,380			

139. **Loss of amenity**: The increased barriers to redeveloping property may mean the gradual degradation of exposed areas over time. This will lead to a general loss of amenity of an area over time as buildings and fixtures depreciate and are no longer maintained or redeveloped as the returns decrease. Since the policy also aims to disincentive intensification of the coastal hazard areas, the (re)development and maintenance of existing infrastructures may also be deferred, as it will be comparatively less efficient to maintain these infrastructures – leading to longer wait periods and more depreciated public assets.

140. **Reduced housing options**: The area of urbanised land impacted by coastal hazards also represents a loss in geospatial choice of housing including the unique, proximate features to these neighbourhoods that make them special. This loss comes in the form of the impedance on (re)development and on intensification that reduces the number of people able to live in these areas. This represents a loss of choice to the community in where they may choose to live.

141. **Inequitable outcome for exposed landowners**: Landowners that are impacted by the anticipated coastal hazards areas will have their property values and development potential negatively impacted by the policy. This will result in an inequitable distribution of cost to the landowner where the wider city receives the benefits of a greater share of public spending (deferred from the coastal hazard areas). These policies may also impact property values near coastal hazard areas as people anticipated further increases in the extent of coastal hazards and public funding of infrastructure supporting these areas is reduced.

Submissions

142. Kāinga Ora (submission #834) seeks to amend Policy 5.2.2.5.1 to remove consenting requirements in the Medium Tsunami Hazard Area. The submitter also considers that retaining the Operative Rules within the Tsunami Management Area is disproportionate and should only be applied within the 1:100 or 1:200 risk area. According to the s32 report, the Tsunami Management Area QM is based on NIWA's 1:500 year tsunami event with 1.6m sea level rise by 2120.

143. When evaluating the objectives and policies of the Plan, an issue arises as to what level of risk can be deemed acceptable when comparing the 1:500 year and 1:200 year tsunami risks. The Tsunami Management Area QM incurs a cost for landowners by limiting their development potential in comparison to other areas within the district, thus leading to a decrease in land values relative to areas where intensification is permitted. The biggest loss in the potential gain is for any site that would otherwise be zoned for High Density.

144. Based on the assumption that a home, along with its contents, is worth $600,000 and is well-maintained, the estimated annual net present value cost of a 1:500 year tsunami risk resulting in the complete destruction of the home is approximately $13,600 per dwelling. For homes located in a 1:200 year

tsunami risk area, this cost increases to just over $34,000, and for homes in a 1:100 year tsunami risk area, the cost goes up to $68,000.

145. Additionally, the costs associated with the damage to any infrastructure that may be required to support growth and the costs associated with disaster relief – e.g. providing temporary housing, and disruption to jobs.

146. According to the evidence of Dr Emily Lane, research into the impacts of the 2011 Japan tsunami showed that around 75% of buildings inundated up to 50cm deep suffered damage and that only 3% were destroyed.

147. This suggests that the expected net-present value for the damage to property within the 1:500 year 30 cm tsunami risk area would be significantly less than this $13,600.

148. However, Dr Emily Lane also raises the concern that in the event that this 1:500 year tsunami risk occurs, that such tsunami would be likely to affect all low-lying regions on the east coast of New Zealand with the potential to also effect some areas on the east coast. This suggests that in the event that such a tsunami occurs, New Zealand's recovery resources and efforts may be stretched thin, increasing the time it would take for Christchurch to recover. This extensive time delay would exacerbate the economic costs of such an event by causing significant disruptions to economic and business activities.

149. Her evidence also highlights that between now and 2130, there is a 65.9% chance of the 1:100 tsunami inundation being reached or exceeded. This is reduced to 41.5% and 19.3% chance for the 1:200 and 1:500 tsunami inundation areas respectively. It should be noted that Dr Lane provides evidence on the different model scenarios on sea level rise. On paragraph 41, she says "*If the modelling were repeated with the new recommendations for RSLR, the probability of the inundation [1:500 year] from that study being reached or exceeded between now and 2130 would be 12.8*%".

150. Taking the above evidence into account, it is my view that, from a purely economic perspective, the costs imposed upon those in the 1:500-year tsunami risk likely exceed the economic losses that will be incurred for each additional property affected. This, however, assumes that the additional intensification will not increase the risks to the life of Christchurch citizens in evacuation plans.

151. It should also be acknowledged that the risks to life and property imposed by the 1:500 year tsunami risk overlay makes development within the overlay a less efficient location for growth to occur.

152. While Kāinga Ora's position that the 1:200 year risk extent is preferable to the 1:500 year extent, in my view the latter is supported on economic grounds when, in addition to the potential loss to individual properties within the extent of impact outlined in Ms Lane's evidence, consideration is given to the additional impact in terms of recovery time. As well as the direct impact on individual property values, there is an economic cost associated with recovery when seeking to re-house residents as well as providing access to other amenities. An event such as that outlined in Ms Lane's evidence is likely to result in a recovery timeframe that is materially impacted by the number of residents affected. This potential timeframe increases economic costs materially when extend, through loss of access to businesses and household needs, given the potential additional capacity stretches into the tens of thousands of households the level and impact on the city's economy could vastly extend the recovery timeframe and therefore the economic recovery (as seen in respect of the Christchurch earthquakes).

153. I should also note that Dr Lane has recommended the use of RiskScape in assessing the potential impact and cost of a tsunami event and the additional risks imposed by intensification. My economic analysis, although comprehensive, is high-level and such an assessment would help narrow down the economic costs of this policy.

154. The North Beach Residents Association (submission #739), South Shore Residents Association (submission #380) and David East (submission #87) suggest that, given the tsunami risk represents the risk of earthquakes originating near South America, and that these events have been shown to have ample warning timeframes, warning systems and evacuation plans will be sufficient to manage the risk to life.

155. Even if intensification were not to increase the risks to life in any way, property and infrastructure cannot be evacuated. Consequently, enabling intensification to occur within the tsunami prone areas represents a strictly less efficient outcome than intensification outside of these areas, at least where there is sufficient capacity outside of these areas to support growth.

156. The North Beach Residents Association (submission #739), South Shore Residents Association (submission #380) and David East (submission #87)

are concerned with the use of Representative Concentration Pathway (**RCP**) 8.5 scenario because the Intergovernmental Panel on Climate Change report describes it as "*not a likely*" or a "*plausible scenario*".

157. Submission #814 suggests that the coastal hazard policy should be aligned to the policy on flood hazard and enable development where the risks can be mitigated (i.e. raising the floor level above the 1:100 year flood line).

158. Although the risk to an individual building can be mitigated through building standards, building controls are unable to manage intensification that may reduce permeable surfaces and increase the potential risk to neighbouring properties. Consequently, it is my view that a consent should be required to manage the reverse sensitivities of intensification in flood prone areas.

159. Some submitters (for example submission #878) propose that the policy should be limited to restricting residential intensification. Further the Port company (submission #853) seeks that it be removed from the Industrial Zone or specifically in respect of their facilities.

160. It is my view that there are greater economic costs of restricting development of industrial areas and port facilities compared to residential, particularly in the case of Port facilities who have a strategic need to locate in the coast. For this reason, provided that enabling development of the Port does not increase the risk to life, I consider the economic costs of restricting development of the Port exceed the economic benefits.

Conclusion

161. In summary, the submissions against the policy, although agreeing with the intentions of reducing the risk of hazard, believe that the controls put in place are overreaching and extensive relative to the risk imposed by these hazards.

162. It is my view that both tsunami and coastal flooding hazards present a risk to the economic well-being of residents and the city as a whole and that failing to appropriately manage these risks will extend the cost of these natural hazards, and thus would represent a less efficient economic outcome.

163. Although the risks imposed from floods on individual sites can be mitigated through building regulations and raising the floor levels, such site-by-site assessments are unable to account for the cumulative effect and risk of intensification in these areas.

164. I therefore support Council's position directing growth away from the Coastal Hazard areas from an economic perspective.

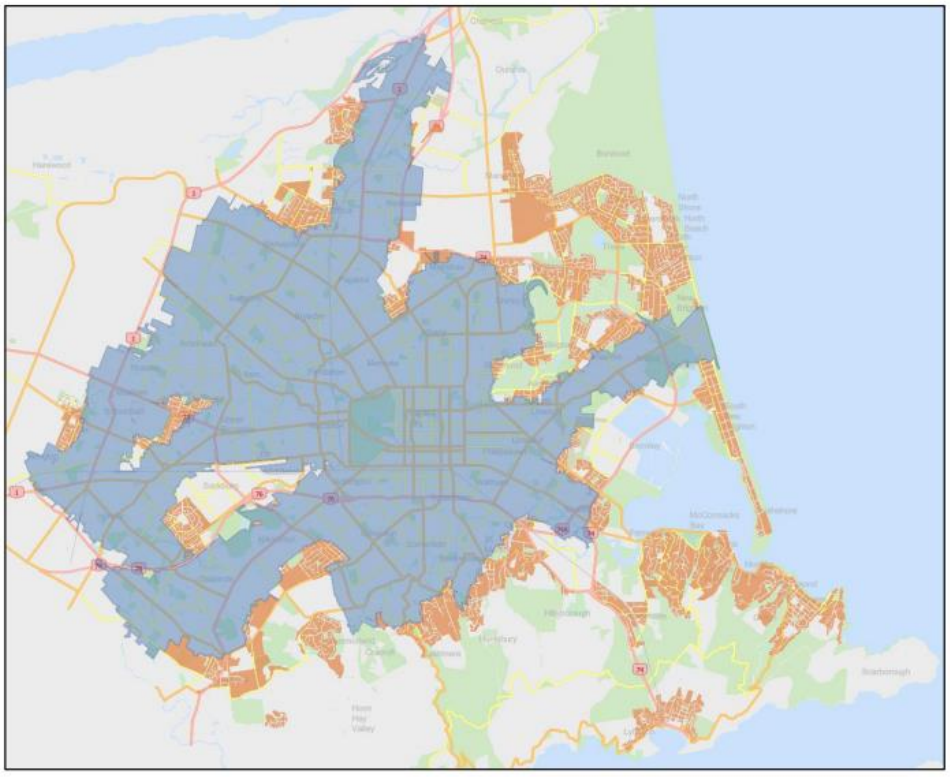
165. I also support the implementation of a QM that prevents intensification in areas prone to tsunami risk. While I concur with Kāinga Ora's viewpoint that a 1:200-year tsunami risk area may have economic advantages, I also acknowledge that a 1:500 year extent may be more desirable, considering the non-economic consequences and the level of potential economic impact faced through a recovery process.

LOW PUBLIC TRANSPORT ACCESSIBILITY AREAS QM

166. The Low Public Transport Accessibility Areas QM identifies areas that currently have low access to public transport where the MDRS will not be applied (i.e. the existing Operative Plan zoning will be retained).

167. **Figure 3** below shows the extent of the proposed Low Public Transport Accessibility Areas QM, in PC14 as notified. It should be noted that this has been changed by Council to include further Public Transport routes and reduce the total area covered by this QM. I will not consider in my evidence the merits of including one public transport route over another, but rather the merits of the proposed QM as a whole.

Figure 3: Extent of Proposed LPTAA Qualifying Matter (Shaded Orange)



Source: CCC

168. Specifically, this limits the MDRS to the following areas:

(a) Residential areas within an 800m walk from either the five High Frequency (Core) Routes and / or from specified bus routes that have been identified with a significant potential to connect employment centres together.

(b) Residential areas surrounding (approx. 200m) HRZ.

(c) Area zoned Residential Suburban Density Transition Zone, Residential New Neighbourhoods and Residential Medium Density in the Operative Plan.

169. This QM essentially serves to curtail the geospatial extent of the MRZ (where MDRS development is anticipated) to focus activity towards areas with existing public transport access.

170. Overall, the section 32 report (on page 434) concluded that:

- *This (LPTAA) qualifying matter will provide for a level of intensification within the qualifying matter area consistent with the level of existing and likely future accessibility to employment, education and community services in these areas and promote an integrated and more efficient and effective approach to the provision of public transport and three waters network infrastructure focussed on areas most suited to enable intensification close to centres and areas with relatively strong demand.*
- *It will support well-functioning urban environments reductions in greenhouse gas emissions and support resilience to climate change effects without significantly impacting on housing affordability and competitive land and development markets.*
- *The social and environmental benefits of this qualifying matter are considered to outweigh the economic costs of reducing the development capacity from what could be achieved if this qualifying matter was not applied.*

171. There are a number of submission points in opposition to this QM. The main issues raised by submitters from an economic perspective include:

(a) The current public transport accessibility represents a static picture, meaning it does not easily adjust or adapt to changing circumstances or demands.

(b) The QM imposes restrictions on the ability for the affected suburbs to growth, regardless of the demand that may or may not exist for housing stock in these areas.

(c) That this QM represents an additional constraint to growth in particularly East Christchurch, resulting in an increase in the inequality within Christchurch.

(d) Although the locations where public transport is currently provided should ideally cover the most populated areas and efficient locations for intensification to occur, public transport is only a proxy for restricting density to ideal locations. In reality, it is possible the current system might not adequately reflect this relationship, resulting in a less efficient distribution of density.

(e) An alternative approach suggested is that of a financial contribution to fund growth in the public transport system. Theoretically, the idea of this proposal is that the financial contribution would help fund public transport to access the areas where it is currently not provided.

172. In general, the economic benefits associated with the Low Public Transport QM include those summarised below.

173. **Improved infrastructure efficiency**: The section 32 report highlights that one of the motivating factors behind this QM is to reduce the demands on infrastructure. Enabling intensification to occur everywhere gives the Council less control over growth and will require the Council to provide infrastructure haphazardly as and where the demand occurs, rather than in line with long-term plans.

174. Although this policy conflicts with the intensification focus of the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 Act, it does give effect to the NPS-UD policy of achieving a compact and consolidated urban form, provided that there is more than sufficient capacity enabled within the existing urban extent to minimise the need for greenfield development.

175. The evidence of John Scallan suggests that this is indeed the case. That is, there is feasible capacity for 78,789 dwellings within Christchurch's urban area that lie outside of any QM overlay, not inclusive of either apartment development or greenfield. When compared to the long-term household demand of 35,194, there is more than sufficient potential supply to support

growth. Consequently, this QM is unlikely to constrain the growth potential of Christchurch City as a whole.

176. **Improved public transport usage and efficiency**: International research[20] has shown that increasing the frequency of public transport generates more demand for the service than a reduction in price and that this additional demand is statistically significant.

177. When it comes to choosing between public transport and private vehicles, consumers' decisions are influenced by convenience and time. For instance, if a bus arrives every 15 minutes, a consumer is more likely to opt for public transport than if, for the same service, a bus arrived only every 30 minutes.

178. Consequently, there is a direct benefit to concentrating people and residents around existing public transport routes compared to creating new ones. A public transport network with fewer routes and a higher frequency is likely to see a greater uptake, viability and reliability as well as lower marginal costs than one that is more spread out but with a lower frequency, provided that there is sufficient demand for those higher frequencies.

179. In addition, it can be assumed that public transport is provided in areas where it is most efficient, such as along major roads and near commercial centres. In contrast, the locations identified as having low public transport access are predominately areas at the edge of the city, as highlighted in **Figure 3**, such as Sumner.

180. **Improved centre viability**. The Low Public Transport Accessibility Areas QM reduces the redevelopment potential of land that is further away from centres. This provides a competitive advantage to land where intensification is enabled, i.e. land closer to centres. Consequently, this QM has the potential to provide an indirect flow-on benefit to the viability of commercial centres.

181. In general, the economic costs associated with the Low Public Transport QFM include those summarised below.

182. **Reduction in housing capacity**. The evidence of Mr Scallan is that the housing capacity loss from the Low Public Transport Accessibility Areas QM is a reduction in theoretical capacity by 143,150 dwellings and a reduction in

[20] Brechan, I. (2017). Effect of price reduction and increased service frequency on public transport travel. *Journal of Public Transportation*, *20*(1), 139-156.

feasible capacity of 23,839 dwellings. Notably, this makes it the QM with the largest impact on capacity.

183. **Reduced housing options**: This loss comes in the form of the impedance on (re)development and on intensification that reduces the number of people able to live in these areas. This represents a loss of choice to the community in where they may choose to live.

184. **Inequitable outcome for exposed landowners**: Landowners that are impacted by the QM will have their property values and development potential negatively impacted by the policy. This will result in an inequitable distribution of cost to the landowner where the wider city receives the benefits of a greater share of public spending (deferred from the low public transport areas).

185. In particular, one of the key submission points is that this QM has the potential to exacerbate social inequities in eastern Christchurch. However, a large portion the eastern area of Christchurch is also at risk of being inundated from tsunami and coastal flooding hazards. Low public transport accessibility to eastern Christchurch serves only to increase the inefficiency of enabling intensification to occur in that area.

186. Based on the economic costs and benefits outlined above, I consider the implementation of this QM is likely to result in a more economically efficient urban form in comparison to the alternative of allowing growth to occur in all locations.

187. Concerns remain, however, regarding the appropriateness of using public transportation access as an indicator for the aforementioned intensification benefits. While it is agreed that the resulting geospatial extent of intensified zoning is likely to be an appropriate one, it is not in itself driven by access to public transport. The locations where people choose to live should drive where infrastructure including public transport is provided, not necessarily the other way around. For example, wastewater infrastructure in a given area is not more efficient because the area has a high degree of access to public transport.

188. A potential risk with this approach is that 'downstream[21]' provisions lead 'upstream' policies. This is to say that factors that lead to public transport

[21] In this case 'downstream' refers to the fact the often Public Transport provision is based on population which is based on residential intensity. Enabling residential choice should consider infrastructure choice at part of the options.

efficiencies are generally independent of these networks, at least initially, such as existing centres, and existing densities. The provision of high accessibility to public transport will not in itself result in these outcomes.

189. The Low Public Transport Accessibility Areas QM, therefore, is a limitation that may not be responsive to changes in the growth of the city and may not enable growth to occur in the locations where residents may otherwise choose to live.

190. The alternative suggestion made by at least one of the submitters is that financial contributions could be imposed to fund public transport in these areas. The difficulty is that this creates an expectation of public transport being provided in an area. If only a few dwellings are built such that public transport is not provided, then the properties would have had to pay for infrastructure that will never be implemented, i.e. the Council could be charging financial contributions to pay for infrastructure for which there is limited certainty.

Conclusion

191. Overall, the Low Public Transport Accessibility Areas QM is likely to result in a more economic efficient distribution of intensification across the city that if intensification was allowed in these locations. The QM is likely to result a lower marginal cost on infrastructure and greater public transport utilisation. It is my view that these economic benefits outweigh the economic costs imposed due to the loss in housing capacity and loss development opportunities for landowners.

CITY SPINE TRANSPORT CORRIDOR QM

192. The City Spine Transport Corridor QM applies to properties that directly adjoin the following arterial roads:

    (a) Main South Road (Carmen/Shands to Riccarton Roads);

    (b) Riccarton Road (Yaldhurst to Deans Avenue);

    (c) Papanui Road (Bealey Avenue to Harewood Road); and

    (d) Main North Road (Harewood to Northcote Roads).

193. This QM aims to widen the setback from the road boundary from 1.5m to 4m in the residential zone and add a setback of 1.5m in the commercial zones

where the road width is less than 24m. The rules also require that this land be used for landscaping including a minimum of 1 tree for every 10m of site boundary length.

194. Tree coverage forms a vital part of the transport vision of creating a high-quality multi-functional corridor along Christchurch's arterial roads, which functions as a transport corridor for both public and private vehicles, pedestrians and cyclists. Trees help improve the look and feel of the transport corridors and improve user comfort through natural shading.

195. Furthermore, these arterial corridors have street widths of only 20m in some places, which I understand (from the evidence of Mr William Field) makes it challenging to achieve a high-quality urban form. Enabling intensification up to the site boundary would significantly exacerbate the cost to the public of widening the public roading area.

196. One of the main economic concerns in residential areas is that the transport corridors are often the ideal places for intensification to take place. Therefore, any factors that limit capacity in these areas have a significant impact on urban efficiency.

197. However, because landscaping is required within the residential zones, the Council planners are of the opinion that this control is unlikely to have a significant impact on development potential.

198. This is reflected in the housing capacity assessment undertaken by John Scallan, who has assessed this QM as reducing the theoretical and feasible capacity by less than 100 units.

199. In this regard, the cost imposed upon landowners is more one of controlling the design and potential layout of the site, rather than any significant decrease in their development potential.

200. The exception to this is landowners with properties that extend significantly further along the road boundary. In this case, the setback might have a more noticeable effect on their development potential. In such cases, a larger portion of their property might be affected, potentially reducing the available space for building or other uses.

201. Furthermore, the landowners adjoining these arterial routes receive a greater share of the direct benefits from this policy than the wider city.

202. These benefits include those summarised below.

203. **Enhanced property values**: The improved aesthetics, reduced noise levels, and better environmental conditions resulting from the setback and tree planting can make their properties more attractive to potential buyers or tenants. This increased desirability could lead to higher property values and potentially higher rental or resale prices.

204. **Improved quality of life**: The presence of greenery and the potential for a more visually appealing environment can contribute to a higher quality of life for the residents of these properties. Access to green spaces and a healthier living environment can positively impact their overall well-being.

205. Furthermore, there are also positive externalities that extend to the wider city. These externalities include improved urban form, reduced air and noise pollution, and increased aesthetic appeal, which can contribute to a more attractive and sustainable city overall.

206. For these reasons, I am of the opinion that the economic benefits of improved amenity and quality of the arterial routes both to the affected landowners and the wider community outweigh the expected loss in development potential within the residential zones.

207. On the other hand, the primary issue raised by submissions (including in submissions #834, #805, and #877) is that the proposed setbacks are in the commercial zones where this policy is in "*direct conflict in urban design outcomes (and rules) where the Key Pedestrian Frontage rules require buildings to be built up to the road boundary*" (submission of Kāinga Ora, #834).

208. By identifying a setback, there is a risk of obstructing the visibility / profile of some businesses, potentially adversely affecting pedestrian footfall, access and economic performance. There are also likely to be some adverse impacts associated with the functionality of the affected sites and a small loss of potential development capacity.

209. Given the above, at a site-by-site level, the impetus for redevelopment is also likely to be impacted with buildings being, potentially, set back further than existing structures and potentially impacting upon some forms of commercial and retail viability. This in itself has the potential to impact upon the timeframe by which redevelopment will result in greater consistency between buildings on affected sites.

210. At an individual level there are a number of economic concerns regarding this QM, however it is also important to consider the cumulative effects on centres and commercial ‘spine’ development. With greater building heights enabled under PC14 through these centres and transport routes there is a need, from an amenity perspective to provide an environment that facilitates light and space without feeling confined. These economic costs are likely to be mitigated by potential benefits in the long term of providing a more functional City Spine Corridor through the commercial areas and an improved centre environment, amenity and accessibility. This improves the attractiveness of the commercial environments which would assist economic performance long term.

211. As a result, this QM is likely to result in some economic costs and disruption over the short to medium term to affected commercial activities along the corridor. These costs, however, are likely to be mitigated over the long-term by greater locational amenity as well as the non-economic benefits outlined in the evidence of Mr Field.

11 August 2023

Philip Mark Osborne