BEFORE INDEPENDENT HEARING COMMISSIONERS
AT CHRISTCHURCH

I MUA NGĀ KAIKŌMIHANA WHAKAWĀ MOTUHAKE
KI ŌTAUTAHI

IN THE MATTER	**of the Resource Management Act 1991**
AND	
IN THE MATTER	**of the hearing of submissions and further submissions on Plan Change 14 to the Operative Christchurch District Plan**

STATEMENT OF EVIDENCE OF JONATHAN CLEASE ON BEHALF OF KĀINGA ORA – HOMES AND COMMUNITIES

PLANNING

TREE FINANCIAL CONTRIBUTIONS

20 SEPTEMBER 2023

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1. EXECUTIVE SUMMARY

1.1. My name is Jonathan Clease, and I am a Director at Planz Consultants Limited. I have been engaged by Kāinga Ora-Homes and Communities (**Kāinga Ora**) to provide planning evidence in support of its primary submission (submitter #834) and further submissions (further submitter #2099) on Plan Change 14 ("**PC14**") to the Operative Christchurch District Plan ("**ODP**").

1.2. I readily acknowledge that the careful integration of landscaping within the design of multi-unit developments is important for delivering an appropriate level of amenity for both occupants and for the wider neighbourhood.

1.3. I find that the proposed Tree Financial Contribution is not an appropriate tool for delivering such outcomes. The role of intensification as a leading cause of canopy loss is not made out on a city-wide basis. There is no nexus between the 20% canopy requirement and the cover necessary to deliver appropriate amenity outcomes in a medium density residential context. An appropriate level of landscaping for medium density environments is instead set out as a density standard in the MDRS provisions. Compliance with the density standard means that there is no negative effect that requires mitigation via a financial contribution.

1.4. The Tree Financial Contribution goes well beyond the landscaping outcomes considered appropriate in the Enabling Act. It will have a negative effect on housing yield, residential amenity, and housing affordability.

1.5. The rule as drafted is ambiguous, time consuming to assess, costly to process, delivers uncertain outcomes, will be challenging to monitor, and will require a consent notice to be entered onto the title of virtually all new residential sites for the foreseeable future.

1.6. As such I recommend that the Tree Financial Contribution and all associated provisions be deleted.

2. INTRODUCTION

2.1. My full name is Jonathan Guy Clease. I am a director of planning and resource management consulting firm Planz Consultants Limited and work as a Senior Planner and Urban Designer. My qualifications and experience are set out in full in my separate brief of evidence regarding Centre Hierarchy.

2.2. In preparing evidence on the proposed Tree Financial Contribution (**the Tree FC**) I have considered the following material:

- Section 32 reports applicable to the Tree FC;
- Section 42A reports prepared by Ms Anita Hansbury (Planning), Mr Toby Chapman (Arboriculture), Dr Colin Meurk (Biodiversity), and Prof. Justin Morgenroth (Tree services);
- The evidence of Ms Sophie Strachan (landscape) and Mr Fraser Colgrave (Economics) for Kāinga Ora;
- Ōtautahi Christchurch Urban Forest Plan 2023 ('the Urban Forest Plan');
- Tree Canopy Cover in Christchurch New Zealand 2016/17 and 2018/19, J Morgenroth (**the Tree Report**);
- Resource Management (Enabling Housing Supply and Other Matters) Amendment Act (**the Enabling Act**);
- National Policy Statement – Urban Development (**NPS-UD**);
- The Greater Christchurch Spatial Plan 2023 (**the Spatial Plan**).

Code of Conduct

2.3. Although this is a Council hearing, I confirm that I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2023. I have complied with the Code of Conduct in preparing this evidence and agree to comply with it while giving evidence.

2.4. Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

Scope of evidence

2.5. My evidence addresses the proposed Tree FC suite of provisions, examines the underlying issue identification process, the benefits that trees provide to urban environments, and the impacts that multi-unit development has on City-wide canopy cover. I assess the efficiency and effectiveness of the proposed Tree FC, the implications that it has on residential yield and the ability of PC14 to properly give effect to the NPS-UD and Enabling Act directions, and the appropriateness of using financial contributions as a tool for achieving the desired outcomes.

3. THE KĀINGA ORA SUBMISSION AND FURTHER SUBMISSIONS

3.1. The Kāinga Ora submission opposed the introduction of the Tree FC in Chapter 6.10A of the Christchurch District Plan (**the District Plan**) and accordingly sought the deletion of the Tree FC concept and all associated provisions, including:

- Chapter 3 Strategic Directions, Objective 3.3.9
- Chapter 6.10A
- Chapter 8 Subdivision, including Rules 8.3, 8.5.1, and 8.7.12;
- Chapter 14 Residential Zones, including Rules 14.4.2, 14.11.2, 14.6.1.3.

4. RESPONSE TO THE SECTION 42A REPORT

The value of integrating landscaping within medium density residential environments

4.1. The integration of trees and other landscaping within urban environments is an important component in delivering a well-functioning urban environment, especially as suburbs intensify.

4.2. This is recognised by Kāinga Ora who have produced a 'Landscape Design Guide for Public Housing 2023'[1]. This guide informs the design of all Kāinga Ora new build projects. In addition, all large multi-unit projects are subject to a comprehensive assessment through the resource consent process and are commonly presented to the Council's Urban Design Panel for independent design review and recommendations. A key consideration of these review processes is the manner in which landscaping is integrated with development to ensure the development delivers a positive holistic outcome.

4.3. In addition to landscaping having long been an urban design assessment matter for developments comprised of 3 or more units, such developments have also been subject to zone rules requiring that a minimum number of trees be planted per site. These existing rules have a restricted discretionary status which enables applications to be declined where unacceptable outcomes are proposed. The tree planting requirements were established through careful s 32 assessment and subsequent submission and hearing processes as part of Plan Change 53 to the original District Plan, and were largely carried through to the Operative District Plan following the Canterbury earthquake sequence.

4.4. In my experience, the provision of landscaping in a manner that is commensurate with medium density outcomes is a key matter in the assessment of resource consent applications and such consents are not granted unless an acceptable outcome is delivered.

4.5. The contribution that trees can make to urban environments was recognised by Kāinga Ora in their submission on Council's Urban Forest Plan which was recently developed under Local Government Act processes. This separate submission supported the goal of increasing tree planting in appropriate locations, whilst raising concerns regarding the workability of the 20% target when applied to medium density environments. The Urban Forest Plan submission also emphasised that the Tree FC referred to in the Urban Forest Plan had yet to be properly tested through the upcoming PC14 process.

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[1] https://kaingaora.govt.nz/assets/Publications/Design-Guidelines/Landscape-Design-Guidelines-for-Public-Housing.pdf. This guide replaces an earlier version from 2020.

4.6. This evidence therefore does not challenge the benefits of providing a level of tree planting that is commensurate with medium density residential outcomes, rather it focusses on whether the Tree FC as proposed in PC14 is a necessary, efficient, and effective tool.

Placing the Tree FC in strategic context

4.7. In assessing the Tree FC, it is critical to first place it in the wider strategic context of what the Enabling Act, NPS-UD, and indeed PC14 are trying to achieve. The core of both the NPS-UD and the Enabling Act seek to ensure that housing supply meets demand, that a greater range of housing typologies are delivered to meet the diverse housing needs of the community, that more people are able to live in close proximity to centres where they can access employment and services in a manner that reduces carbon emissions, and that a well-functioning urban environment results.

4.8. The Greater Christchurch Spatial Plan[2], which is out for consultation at the time of writing, provides the key strategic direction for Greater Christchurch over the next 30+ years. Of note, the draft Spatial Plan proposes that no new greenfield land be made available for residential use in Christchurch City, along with no additions to existing greenfield areas in Selwyn and Waimakariri Districts. The Spatial Plan concurrently predicts that a further 200,000 people will call Greater Christchurch home over the coming 30 years.

4.9. For that significant level of growth to be accommodated within existing urban areas, there must clearly be a marked shift in the character and density of existing residential areas. Such a shift is consistent with the outcomes anticipated through both the NPS-UD and the Enabling Act.

4.10. Effects on residential amenity generated by intensification are addressed explicitly in the NPS-UD. Objective 4 is clear that amenity values will change over time in response to the diverse and changing needs of people, communities, and future generations. Policy 6(b) likewise addresses the changes that may occur as part of a shift in planned urban form, and that those changes:

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[2] https://greaterchristchurch.org.nz/assets/Documents/greaterchristchurch-/Draft-GCSP/Greater-Christchurch-Spatial-Plan.pdf

(i) May detract from amenity values appreciated by some people but improve amenity values appreciated by other people, communities, and future generations, including providing increased and varied housing densities and types; and

(ii) Are not, of themselves, an adverse effect.

4.11. This unambiguous policy direction is clear that amenity (which includes canopy cover) will change as a consequence of greater provision of more intensive housing forms.

4.12. The delivery of housing in an intensified manner must still result in a well-functioning urban environment. The Enabling Act establishes a baseline for an appropriate level of landscaping for medium density developments through Schedule 3A Clause 18. Compliance with the landscaping density standard, and assessment of landscaping as part of the proposed urban design assessment matters for more than three units, are appropriate tools for managing landscape outcomes in a medium density context.

4.13. The Council is of course free to undertake separate initiatives to provide further planting through street upgrades and parks, however such landscaping is in addition to what is necessary to be provided on private land in order to deliver the outcomes anticipated in the Enabling Act. (The legal advice I have received from Kāinga Ora's counsel is that any such separate planting or landscaping initiatives need to be progressed through planning mechanisms other than this IPI process.)

4.14. Both national direction, and local strategic thinking, are pushing for a more intensified urban environment. It is therefore critical that the District Plan framework functions in a manner whereby the outcomes anticipated in the Enabling Act are able to be delivered. I note that Ms Hansbury's s 42A report on the Tree FC does not seek to place the proposed Tree FC in any wider context or framework. This lack of integration goes to the heart of the associated costs and benefits assessment of the Tree FC.

Identifying the issue

4.15. The s.32 assessment references two Tree Reports which assessed changes to tree canopy cover between 2016-17 and 2018-19[3]. Residential intensification is put forward as a key driver of this loss in the s 42A report[4], with the Tree FC then advanced as a necessary tool for resolving this issue.

4.16. It is important to understand the Tree Reports in more detail, as they form the basis for the Council's issue identification and the Council's justification that underpins the need for the Tree FC.

4.17. The Tree Reports were based on LiDAR data and excluded trees that were less than 3.5m in height. The later Tree Report (i.e. 2018-19) found that tree cover equated to some 13.56% of the study area. The study area included all of flat land Christchurch (including rural areas) and the Port Hills (excluding Banks Peninsula) i.e. it is not an assessment of just urban forest cover. The report found that within the study area, canopy cover was 13.56%. Two thirds of this canopy was located in rural or open space (park) zones i.e. only a third of City-wide canopy cover occurs in urban areas.

4.18. The report found that canopy cover had reduced by approximately 2% between the study periods. Of note, the key reasons given for this reduction in the Tree Report were the programmed harvesting of plantation forests in the Bottle Lake area, and the loss of plantation forest and native bush areas following the Port Hills fires in 2017[5]. It is four years since the study was undertaken, and therefore the Tree Reports do not capture the programmed replanting that has since occurred in the Bottle Lake plantation or regrowth in the Port Hills fire areas. The report also acknowledged that changes in recording and sampling methodology between the study periods meant that any difference in results should be "made cautiously"[6].

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[3] Tree Canopy Cover in Christchurch New Zealand 2018/19, J Morgenroth, University of Canterbury
[4] Anita Hansbury s42a para.5.2.6
[5] Ibid, page 9
[6] Ibid, page 10

4.19. Of note, I have been unable to find any reference in the Tree Report that intensification was a leading contributor to City-wide canopy loss, with no significant reduction in canopy identified between the study periods for the inner-city wards where most intensification has occurred.

4.20. The s 32 assessment also includes a cross-reference to an earlier study[7] that excluded rural areas and found that in the four-year period between 2011-2015 urban tree canopy reduced from 10.84-10.28% i.e. less than 0.5% over a multi-year period that included the aftermath and widespread redevelopment of properties following the Canterbury earthquake sequence. This earlier report concluded that tree canopy losses were more likely to occur in meshblocks containing properties that underwent redevelopment, but that the loss was insensitive to the density of redeveloped properties.

4.21. There are two key findings of particular note in the Tree Reports that are of direct relevance to the Tree FC. First, the existing percentage of tree canopy across the parts of the City with a residential zoning is 13.44%, which is similar to the whole of study area average. This is significant given that these suburbs are largely low-density suburban environments. The second key point is that the only zone category to meet the proposed 20% canopy cover target are the open space zones, which are largely under Council control, and even then, they only manage 23.24% coverage. The rural zone only achieves 11.39% canopy, which given this zone is the largest by land area, is the key contributor to pulling down the city-wide average.

4.22. Figure 7 of the Tree Report identifies that the tree canopy on publicly held land equates to 43% of the total canopy, with 57% located on private land (which includes rural, commercial, and industrial areas). This contrasts with Ms Hansbury's understanding that 70% of the City's tree canopy is located on residential land[8], with this incorrect understanding potentially having impacted on her recommendations.

4.23. The current canopy cover over residential areas is significantly below the proposed target percentage, despite being well-established,

[7] City-wide canopy cover decline due to residential property redevelopment in Christchurch, New Zealand, T. Guo, J. Morgenroth, T. Conway, C. Xu, Science of the Total Environment, 2019
[8] Anita Hansbury s 42A, Para.6.6.17

generally low density-built environments i.e. despite having lots of room for planting around existing stand-alone dwellings, residents' preferred use of their private spaces does not achieve close to 20%. Despite not achieving 20%, from observation Christchurch's suburbs generally deliver a pleasant living environment with an appropriate balance between housing and garden plantings, commensurate with existing suburban outcomes/ zoning.

4.24. In summary, the key reason for canopy loss during the study period is not intensification, but rather is the normal programmed harvesting of plantation forests, along with an exceptional Port Hills fire event. The proposed Tree FC does nothing to mitigate either of these contributing factors.

Identifying the number of trees lost through intensification

4.25. Given that the Tree Report does not identify intensification as the main contributor to tree canopy loss, it is important to first establish the extent of loss through intensification, and then secondly to compare that loss to the number of new trees being planted across the City, in order to build a clear picture of what is driving changes to canopy cover.

4.26. From reviewing the PC14 material, I have been unable to find any evidence on the above two matters. As a ball-park guide, Council issued building consents for some 5,000 multi-unit dwellings in 2022[9], which by typology made up 70% of total dwelling consents issued (with the balance being stand-alone homes). At an average of say 5 units per site, that equates to 1,000 sites being redeveloped for multi-units across the City. If conservatively say, 10 existing trees per site were removed, then that equates to a loss of 10,000 trees. Which seems like a big number. These sites however also include new tree planting, which in my experience is typically at a rate of one small tree per unit, so approximately 5,000 replacement trees being planted. Clearly there will be a shift in canopy cover as mature trees are replaced by saplings, albeit that this difference will slowly reduce over time as trees mature.

[9] https://ccc.govt.nz/culture-and-community/statistics-and-facts/built-environment-reporting/

4.27. This net loss in tree canopy is inherent in the significant wider societal benefits made through the provision of additional warm, dry, modern housing in existing urban locations (rather than peripheral greenfield areas). Of importance, it also needs to be contrasted with tree planting that separately occurs on an annual basis, as the Tree FC justification is predicated on the need to manage net tree loss. Whilst Council-led tree planting figures can be difficult to collate given that planting is undertaken by different Council departments, a reasonable estimate of planting over 2021 was recently provided by Council in response to a LGOIMA request[10]. This planting included:

- 1,264 - parks specimen trees
- 6,873 - regional parks
- 60,000 – red zone (of which 50% were by volunteer groups)
- 10,000 – oxidation ponds
- 53,703 – waterways and wetlands

4.28. In total, Council planted some 132,000 trees in 2021, with the above figures excluding any additional planting that may have occurred within road reserves. In addition, there will have been thousands of trees purchased from garden centres and planted in private homes, and the trees grown by charitable organisations such as Trees for Canterbury (over 1 million trees since their establishment). Dr Meurk identifies[11] the 'million or so' indigenous trees planted in the City by a range of parties over the past few decades.

4.29. Whilst the replacement of a single residential unit with 4-5 units will result in a reduction in canopy cover on the site in question, this is an inherent consequence of the strategic approach to accommodate residential growth primarily through intensification and the national direction provided through the NPS-UD and the Enabling Act. The tree loss resulting from this strategic growth management direction is balanced by the MDRS landscape area requirement and replacement

[10] How many trees planted over the last three years? - a Official Information Act request to Christchurch City Council - FYI
[11] Dr Meurk s42a, para. 26

planting that occurs both as part of multi-unit developments, and through the actions of Council, community groups, and private homeowners, such that the environmental issue that underpins the need for the Tree FC is, in my opinion, not clearly made out.

Effects the Tree FC is supposed to mitigate

4.30. The proposed amendment to Strategic Objective Natural and Cultural Environment 3.3.9(E) identifies five key reasons for the Tree FC, namely:

- carbon sequestration;
- improving biodiversity;
- reducing stormwater runoff;
- reducing heat island effects;
- improving residential amenity.

4.31. These effects generally relate back to the city-wide extent of tree cover, and as such, if the key issue is a lack of canopy cover, then the key response should be to examine tools to increase canopy cover across the District. This increase in canopy can be delivered far more efficiently and effectively in rural and open space zoned areas. Council fortunately already owns extensive areas of park and open space land, including several thousand hectares of land on the Port Hills and some 489ha of recently acquired land in the Ōtākaro Red Zone corridor which weaves through residential areas. The Tree Report identified that the Red Zone has a canopy cover of only 9.8%[12]. Given that this area is not intended for rebuilding or for active sports field-based recreation (in the main), there is significant opportunity for reforestation of this area. In addition to parkland, the Council also holds extensive areas of road reserve which, again, are an integral component of residential environments.

[12] The Tree Report, pg.13

4.32. Prof. Morgenroth[13] identifies that trees sequester carbon, which I accept. If the issue is carbon sequestration, then the most effective and efficient tool is simply for Council to establish fast growing plantation forests on council land, or to encourage such planting on farmland around the edge of the City. The same holds true for indigenous biodiversity gains.

4.33. The LGOIMA request referenced above also helpfully sets out the relative costs of tree planting (albeit it excludes ongoing maintenance costs). Council's estimate of the cost of planting a specimen tree in a park or street is $235-$380 (assuming no specialist engineered tree pit construction). The cost of planting a native tree in massed ecological restoration is $16.50. Council's own costs can be contrasted with the Tree FC whereby the $50,000 cost of being one tree short in a multi-unit development would fund the planting of over 3,000 native trees on land already held by Council.

4.34. Such mass planting can clearly be undertaken on a per tree basis for much lower costs both financially and without the opportunity costs generated by reductions in residential yield. The same amount of carbon is sequestered whether the same tree grows in a garden, in the street, in a park, or on rural land. Prof. Morgenroth does not assess whether alternative planting strategies would be a more efficient and effective method for sequestering carbon. Dr. Meurk likewise makes no assessment of the biodiversity gains generated by 1 tree in a medium density area funded through the Tree FC compared with the biodiversity value delivered by some 3,000 native trees planted for the same cost in public open space areas, yet such comparisons must necessarily sit at the heart of any robust s 32 costs and benefits assessment

4.35. Turning to the next issue, Ms Hansbury considers that intensification will likely lead to *increased* carbon emissions[14]. Ms Hansbury relies on this position to justify the Tree FC on the basis that it is necessary to mitigate the carbon-generating effects of intensification[15]. I disagree. Both national and local strategic direction is to manage growth primarily

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[13] Research report – Urban trees and their ecosystem services, Prof. J Morgenroth, April 2022. Included in PC14 s32.
[14] Anita Hansbury s42a, para.5.2.2
[15] Ibis, para 5.2.3

through intensification as a key tool for reducing emissions. In my opinion, the reduction in development yield and the associated displacement of residential units further from centres because of the Tree FC has the potential to result in the perverse outcome whereby the Tree FC exacerbates carbon emissions by constraining intensification in appropriate areas (i.e. close to entres).

4.36. Prof. Morgenroth identifies that tree planting assists in mitigating stormwater peaks through both intercepting rain on leaves (so the rain never reaches the ground) and through root systems absorbing water[16]. He also identified that studies on the extent of this mitigation are rare because of the complexity of directly measuring urban runoff in-situ[17].

4.37. In the event that Council can provide a clear evidential basis that the City's stormwater network is unable to cope with the increased runoff generated by its preferred approach to urban growth management, and that those systems are unable to be upgraded through normal DC and LTP processes, then a more effective rule would be to either introduce a properly costed stormwater FC, or to introduce a requirement that a minimum percentage of a site be pervious, or that a specified amount of water needs to be retained on site for either reuse as grey water or gradual release into the stormwater network following the rainfall peak. Such rules controlling the extent of impervious surfacing are relatively common in District Plans, albeit typically in Districts with much higher rates of annual rainfall.

4.38. Prof. Morgenroth identifies that tree cover can help in reducing urban heat island effects by absorbing less heat than hard materials[18]. He also identifies that there is considerable variability in the literature's findings. I was unable to locate any research in the s 32 reports that demonstrates that there is a significant urban heat island effect in *Christchurch*, or indeed other New Zealand Cities, that would warrant mitigation. The rationale for the Tree FC in terms of heat island mitigation does not appear to be based on any specific assessment of the Christchurch context such as to warrant mitigation through

[16] Ibid, Section 4
[17] Ibid, section 4.2
[18] Research report – Urban trees and their ecosystem services, Prof. J Morgenroth, April 2022. Included in PC14 s32.

regulation. I was unable to find within Ms Hansbury's evidence any separate assessment as to whether there is an issue with heat islands in Christchurch, whether stormwater networks are functional, or whether far more efficient and effective alternative methods for planting trees to deliver carbon sequestration and biodiversity values are available.

Identifying the rationale for the 20% threshold

4.39. A tree canopy cover of 20% sounds like a relatively modest threshold. The reality is that it is significant, as shown by the fact that no existing suburban areas meet the threshold – what we mentally picture 20% looking like and what it actually looks like are quite different things.

4.40. As set out above, 20% is well above the existing coverage delivered under low density suburban zoning. The s 42A report identifies[19] that other cities have a higher percentage coverage e.g. Auckland (18%) and Wellington (30%). It is unclear whether these levels relate to residentially zoned land, nevertheless the greater coverage in these cities is likely to be a function of their different geographies (hills and gullies combined with higher rainfall that more readily supports native bush rather than tussock ecologies).

4.41. In short, there is no plausible justification of the 20% target, beyond a general desire to increase canopy coverage relative to the status quo and so a higher figure has been selected. The s 42Areport references the recently adopted Urban Forest Plan as the justification, however this becomes a circular argument as the Urban Forest Plan was prepared *following* the Tree FC being developed in the 2022 PC14 exposure draft. It was also prepared under the LGA and was not therefore subject to the RMA's robust s 32, submission, and hearing process.

Understanding the implications on yield and MDRS enablement

4.42. Supporting s 42A technical reports include ecology and arboriculture perspectives, but I have been unable to identify any s 42A reports that properly test the Tree FC outcomes in a 'real world' site-specific context

[19] Anita Hansbury s42a, para. 5.2.5

i.e. it appears that following submissions, no Council expert has been tasked with applying the Tree FC requirements to a representative selection of multi-unit developments to understand if it is capable of being implemented.

4.43. Ms Strachan undertakes this on behalf of Kāinga Ora and has presented the outcome of that process in her evidence.

4.44. It is important to emphasise that all the tested plans have either been through a resource consent process where urban design outcomes were assessed, and/or have been presented to the Council's urban design panel. In all cases, consent or design panel feedback has been that the proposals deliver an acceptable living environment and achieve an appropriate balance between landscaping and dwellings for a medium density context. There is therefore no issue with the outcomes the case study sites deliver in terms of amenity.

4.45. The evidence of Ms Strachan finds that none of the sites achieve 20% canopy cover when assessed against plausible canopy spread. Compliance is further compounded by ambiguity in the rule regarding the treatment of canopy that extends over property boundaries and whether non-compliance with the pervious surfacing requirement means that the tree itself does not count towards canopy cover.

4.46. The shortfall generates significant financial costs under the Tree FC rules (discussed below) that would need to be met by the developer (i.e. passed on to the ultimate purchaser). To achieve 20% coverage, there would need to be a noticeable reduction in the number of units delivered and/or a substantial reduction in functional outdoor living space. Alternatively, it would have the effect of substantially increasing housing costs.

4.47. Ms Hansbury considers that because the MDRS standards restrict building coverage to 50%, and require 20% of sites to be landscaped, that there is sufficient opportunity to install compliant trees without reducing development capacity[20]. There is a marked difference between a zoning framework that requires 20% landscaping (grass or

[20] Anita Hansbury s42a, para. 6.4.5

plants) which as an option can also include canopy cover over impervious surfaces (as per MDRS), and one that requires 20% canopy cover with an associated pervious land requirement.

4.48. In addition to setting a minimum 20% canopy cover requirement, the proposed Tree FC rule also sets a requirement for land area around each tree, 80% of which must be kept free from impervious surfacing. This is a different threshold from that set out in MDRS, where the landscaping requirement is 20% of the site, including any impervious areas that are covered by a tree canopy.

4.49. On medium density developments, small trees are generally located by the side of the driveway / parking areas, adjacent to internal boundaries, or between the front unit and the road boundary. This locational pattern is likewise common on low density suburban properties. The pervious land area requirement effectively prevents compliant trees from being planted in such locations. They cannot be located next to driveways. They cannot be located on internal boundaries where the adjacent site has its driveway located next to the shared fenceline, noting that even if the neighbouring site is grassed, there is no ability to control the neighbour installing additional impervious surfaces as a permitted activity in the future. They cannot be located between the front unit and the road boundary due to both the unit itself and the nearby footpath and road being impervious. The only potentially compliant locational option for typical developments is therefore right in the middle of the private courtyards. Even then, it would be necessary to assume that these courtyards contain no paving or decking and to disregard the clear functional limitations that such a tree location would place on the usability of the space for outdoor living.

4.50. Whilst hedging over 1.5m can be counted towards canopy cover requirements, the area taken up by hedging around site boundaries will not be sufficient for achieving the requisite coverage, and even hedging cannot be located adjacent to driveways or paved courtyards due to the pervious land area requirements.

4.51. For the same reason, it is highly unlikely that any street tree planted in the road reserve will comply as more than 20% of the surrounding land area will be invariably sealed.

4.52. On an average development site of say 800m^2, 20% canopy cover equates to 160m^2. Using Table 1 in the rule, to achieve 160m^2 canopy, you would need to plant one average tree (130m^2 canopy) and three small trees (3 x 10m^2 canopy). The pervious land requirement is 62m^2. An example of an 'average' tree with a compliant canopy and a 50m^2 land area is shown in **Figure 1** below.

Figure 1. Tree with 130m^2 canopy and 50m^2 pervious land area

4.53. Whilst compliant locations might be found for the small trees, given that the land requirement set out in Table 1 for an 'average tree' is 50m^2, then 40m^2 (80%) per tree must be kept free of impervious surfacing. The Council submission (#751) seeks the rule be amended further to include minimum dimensions for the land area. In contrast, MDRS requires a minimum outdoor living space of 20m^2, and in my experience, townhouse courtyards typically range in size between 20-30m^2. Even if a tree is placed in the middle of the courtyard, compliance will still not be achieved as the open space per tree is twice the size of the outdoor living area required by MDRS.

4.54. Tree canopies (and roots) that extend over property boundaries can be trimmed by the adjacent owner under property law rights[21]. The Council likewise requires canopies to be lifted to be at least 2.5m above footpaths and 5m above roads in order to manage potential obstruction or safety hazards to pedestrians and vehicles. Property owners cannot therefore guarantee that the canopy will be retained for any canopy that projects over site boundaries. Compliance with the Tree FC rule must therefore be able to be demonstrated through canopies located wholly within the application site. As noted above, such a requirement is directly counter to the typical locational choices made by homeowners to establish trees around site boundaries.

4.55. In short, the proposed rule is unworkable when applied to standard medium density typologies. The only manner in which it could be achieved is to set aside a large 130m^2 greenspace within the site to enable both the requisite pervious surfacing to be provided, along with sufficient space for the canopy to become established. This equates to the loss of one unit on the above 800m^2 site. Given that sites of this size typically yield 4-5 units, it is a 20-25% reduction in yield.

4.56. In short, a medium density outcome simply cannot be delivered concurrently with an on-site 20% canopy cover requirement.

4.57. Whilst not a Qualifying Matter, the Tree FC functionally acts as the largest limitation proposed in PC14 on delivering the medium density outcomes directed through the Enabling Act.

4.58. Mr Osborne, for Council, has undertaken an economic assessment of the Tree FC. Despite not having the benefit of being able to consider the rule impacts on developable areas and yield, he nonetheless correctly surmises that there will be impacts upon the level of feasible capacity, that those impacts will not be the same across all types of development (i.e. there is limited impact if development perpetuates status quo low density layouts), and that the costs associated with the Tree FC have the potential to alter the future balance of residential feasibilities, spatial distribution of development, and to some extent

[21] Property Law Act 2007, s.332-338

affordability and distribution of cost. Mr Colgrave makes similar observations.

Understanding the rule and the associated costs

4.59. The Operative Plan has long contained a tree planting rule for multi-unit developments as follows (Rule 14.5.2.2):

	For all activities, except permitted commercial activities in the Sumner Master plan Overlay
i	a. A minimum of 20% of the site shall be provided for landscaping (which may include private or communal open space), where i. at least 50% of the landscaping shall be trees and shrubs, and ii. a minimum of one tree for every 250m^2 of gross site area (prior to subdivision), or part thereof, is included within the landscaping, and iii. at least one tree shall be planted adjacent to the road boundary. b. All trees required by this rule shall be not less than 1.5 metres high at the time of planting. c. All trees and landscaping required by this rule shall be maintained and if dead, diseased or damaged, shall be replaced. d. For multi-unit residential complexes, social housing complexes, retirement villages, and groups of older person's housing units, the minimum tree and garden planting requirements shall be determined over the site of the entire complex.

4.60. This rule is clear and unambiguous. In my experience, it takes less than one minute to determine compliance, and this compliance determination can be made with 100% certainty i.e. the rule is both clear and certain. Importantly from my observation, it also delivers appropriate outcomes for medium density environments.

4.61. Conversely, the proposed rule in PC14 extends across two pages and ascertaining compliance is complex and requires adherence to numerous steps, takes significant time to work through, and has little certainty as to whether compliance is achieved, as explained in Ms Strachan's evidence. Ms Strachan discusses the limitations and assumptions required when undertaking a compliance check, which is reflective of the high number variables involved in the rule and uncertainty over various elements.

4.62. Once the Tree FC has been calculated, there remains one final procedural step. Rule 6.10A.4.2.3 requires that where tree canopy cover is provided in full or in part on the site, that a consent notice be registered on the title to ensure that tree coverage is maintained in perpetuity. Given that most sites will include some tree planting, it follows that such instruments will therefore need to be included on the titles of virtually all sites containing a new residential unit, including permitted development. Such an outcome is confirmed by Ms

Hansbury[22] who identifies that consent notices "will also capture permitted development that does not require consent".

4.63. These consent notices impose additional costs due to the associated specialist expert and legal inputs required to amend property titles. It means that any further development of the site is subject to a subsequent process to vary the consent notice, even for minor works. Whilst Ms Hansbury 'envisages'[23] that a consent notice will refer to the size of the tree canopy required rather than listing individual trees, such flexibility is not identified in the rule, and will be challenging to implement in practice given that the detailed assessment set out above.

4.64. It also creates a long-term monitoring and enforcement issue for Council where the height of hedges and the extent of canopies will need to be continuously monitored for all new sites across the City.

4.65. Land value in residential areas in Christchurch varies by suburb but averages around $\$800/m^2$ ($400k for a $500m^2$ section)[24]. Once GST is added (as required by the Tree FC rule), the FC will be approximately $50,000 per tree. This excludes the costs of input from specialist experts and legal advisors.

4.66. To put the Tree FC dollar amount into context, DCs are typically around $10,000 per unit. The cost of being 1 tree short in a development is therefore some five times the DCs payable per residential unit, with the DC covering the costs of all of the following matters: 3-waters reticulation, roading upgrades, public transport, cycleways, community facilities, regional parks, and local parks.

Identifying the appropriateness of using FCs as a tool for managing tree cover

4.67. The first option for managing effects is through a District Plan built form standard and related urban design assessment matters rather than a FC. This is how tree planting in medium density residential zones has been managed for several decades.

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[22] Ibid, Para. 6.13.2
[23] Ibid, Para 6.13.2
[24] Feedback from Mr Colgrave and as set out in corporate evidence

4.68. The Operative Plan tree planting rule is clear, unambiguous, easy to apply with certainty, and in my view delivers landscaping outcomes on private land that are commensurate with medium density residential environments.

4.69. As set out above, the Enabling Act includes a density standard that addresses landscaping outcomes. The legislation is clear that a more restrictive standard cannot be introduced unless a Qualifying Matter is applicable. In my opinion, the proposed Tree FC mechanism actively subverts the Qualifying Matter tests, despite its comparative restrictive nature.

4.70. It is concerning that the Tree FC appears to be a 'work around' to functionally deliver a more restrictive tree rule. Ms Hansbury[25] considers that the Tree FC is not "*an impermissible additional density standard applicable to a permitted activity residential development, because the proposed required level of tree canopy cover can be accommodated within the 50% of the site that must not be occupied by buildings, and in particular the required 20% landscaped area*".

4.71. As demonstrated by the evidence of Ms Strachan, this is simply not the case, with the proposed Tree FC rule markedly more restrictive than both the MDRS standard and the Operative Plan rule.

4.72. The District Plan policies and associated rule framework establish the outcomes sought for any given zone, as well as creating an envelope of anticipated and acceptable effects. In terms of tree canopy outcomes sought in the MRZ and HRZ, the MDRS legislation includes a density standard that deals explicitly with landscape outcomes in medium density environments.

4.73. Schedule 3A, Part 2, Clause 18 sets out the landscaped area as follows:

> *(1) A residential unit at ground floor level must have a landscaped area of a minimum of 20% of a developed site with grass or plants, and can include the canopy of trees regardless of the ground treatment below them.*

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[25] Anita Hansbury s42a, paras.2.2.10(b) and 6.4.15

(2) The landscaped area may be located on any part of the development site, and does not need to be associated with each residential unit.

4.74. The rule is notable in that landscaping is only required on sites where there is a residential unit at ground level. Where this is the case, there must be at least 20% of the site in grass or plants. Whilst the 20% metric is the same percentage as the Tree FC, there is a very clear difference between canopy cover required by the FC and grass or plants required by the MDRS. The landscaping requirement can alternatively be made up by tree canopy cover, where that canopy extends over hard surfaced areas such as driveways or paved courtyards.

4.75. The landscaped area density standard establishes the baseline for what an acceptable environmental outcome is in medium density residential areas. Proposals that breach the rule can be assessed on a case-by-case basis as a restricted discretionary activity. As such, either the application will be declined if the resultant effects are unacceptable, or the application will be approved having been able to demonstrate site-specific circumstances and design solutions (enforced if need be, via conditions of consent). Either way there are no adverse effects that go beyond the outcome anticipated in the MDRS.

4.76. There is therefore no nexus or justification for the proposed Tree FC, as there is no unanticipated adverse effect that requires mitigation.

Consideration of alternatives

4.77. FCs are only one tool available to Council. Section 32 requires the careful consideration of other options as a necessary prerequisite for justifying regulation. Such options can extend beyond regulation imposed through District Plans, and should include an assessment of voluntary measures, design guides and educational material, or tools under the Local Government Act.

4.78. Assuming an issue is correctly identified as requiring mitigation (which the Tree FC does not), alternative options to a Tree FC could include a built form rule (discussed above), DCs, and other planting tools or methods.

4.79. In terms of addressing amenity outcomes, I recognise that the MDRS standard for landscaping only relates to sites with a ground floor residential unit. As such, the rule does not address non-residential activities e.g. preschools, healthcare, churches, convenience retail etc, all of which are relatively common in residential zones.

4.80. I agree with Ms Hansbury[26] that retention of the Operative Plan tree planting requirement is necessary where residentially-zoned sites are developed for non-residential purposes to ensure some landscaping is provided.

4.81. As a final note on rule drafting, I do not support the Tree FC and therefore seek the deletion of the concept from the Plan. In the event that the IHP see fit to retain the Tree FC in Chapter 6.10A, I agree with Ms Hansbury[27] that the tree-planting policies and rules should be deleted from the Subdivision (Chapter 8) and Residential Zones (Chapter 14) where they simply duplicate Chapter 6.10A, and that in these chapters they be replaced with an advice note that cross-references to Chapter 6.10A.

5. CONCLUSION

5.1. The strategic direction of the Enabling Act, the NPS-UD, and the Spatial Plan, is to enable the management of urban growth through intensification. The District Plan rule framework needs to be integrated with this strategic direction.

5.2. Acceptable levels of landscaping and associated amenity for private medium density sites are established through the MDRS, Clause 18. Council is free to undertake initiatives to further increase planting in public areas as part of its wide mandate under the LGA, and as a response to its preferred strategic approach to accommodate future growth through intensification. It likewise is able to recoup the fair and reasonable costs of the growth component of development through DCs, including the acquisition of new local parks in areas experiencing high rates of development.

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[26] Ibid, Paras. 6.8.14
[27] Ibid, Paras. 6.8.16-17

5.3. Whilst redevelopment can result in a reduction in canopy cover on individual sites, there is no evidence that the key reason for the reduction in canopy cover experienced in Christchurch is intensification. The key reasons are instead plantation harvesting and wildfire events.

5.4. There is no evidence that establishes a clear rationale for either a city-wide canopy cover of 20%, or more relevantly the appropriateness of a 20% canopy cover for medium density residential zones. Reference to the pre-human ecology of the Christchurch area is not considered to be an appropriate basis for setting a canopy target for medium density urban environments.

5.5. Achieving a 20% canopy cover and associated pervious land requirements cannot be functionally achieved on sites developed to medium densities without a clear loss in the number of homes delivered. This unpicks the strategic outcomes and forces a lower density outcome with associated reduction in housing capacity, choice, and proximity to centres. The disproportionate cost of $50,000+ per tree, combined with the challenges with achieving compliance, effectively mean that the Tree FC functions as a Qualifying Matter that reduces MDRS outcomes.

5.6. The proposed rule is ambiguous, complex, time-consuming to assess, and delivers uncertain compliance outcomes. The rule will require all sites containing a new residential unit to enter into a consent order with Council. Enforcement will be challenging.

5.7. FCs require a nexus between the effect to be mitigated and the use of the dollar contribution. The effects of landscaping are separately and effectively managed through landscaping and urban design rules. There is therefore no effect left to manage through a FC.

5.8. I therefore consider that the Tree FC and all associated provisions should be deleted.

Dated 20 September 2023