BEFORE INDEPENDENT HEARING COMMISSIONERS
IN THE WAIKATO REGION

I MUA NGĀ KAIKŌMIHANA WHAKAWĀ MOTUHAKE
WAIKATO

IN THE MATTER	of the Resource Management Act 1991
AND	
IN THE MATTER	of the hearing of submissions on **proposed Plan Change 26 (residential intensification) ('PC26') to the Operative Waipā District Plan ('WDP')**

STATEMENT OF PRIMARY EVIDENCE OF PHILIP THOMAS JAGGARD ON BEHALF OF KĀINGA ORA – HOMES AND COMMUNITIES

(INFRASTRUCTURE AND STORMWATER CONSTRAINT OVERLAYS)

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1. EXECUTIVE SUMMARY

1.1 My full name is Philip Thomas Jaggard. I am a Director/Infrastructure Specialist consultant at MPS Limited providing expert and technical advice, and direction on three waters infrastructure and effects. I have been engaged by Kāinga Ora-Homes and Communities ("**Kāinga Ora**") to provide evidence addressing infrastructure capacity in support of its submissions to Plan Change 26 to the Waipā District Plan ("**PC26**").

1.2 In summary, my evidence concludes that:

1.3 Focusing development into an existing and compact urban form has several benefits and can generally be viewed as positive as reduces the overall area required to be serviced.

1.4 Based on the predicted growth that will occur by 2050 by the Council's economic expert, Ms Fairgray, the demand (and therefore potential water and wastewater infrastructure constraints) are in fact less than those under the PC26 modelling scenario (which has been deemed acceptable by Council's experts).

1.5 As the capacity of the water supply and wastewater systems is sufficient to service the growth forecast by Ms Fairgray up to 2050, any future issues identified beyond 2050 need not adversely affect the Waikato River or its catchment so, if managed appropriately are not problematic in terms of Te Ture Whaimana. There is sufficient time to plan, design, consent and construct any upgrades required beyond the existing growth forecast, as Council's PC26 water and wastewater modelling scenarios are likely to be reached sometime around 2080, with the Medium Density Residential Standards ("**MDRS**") modelling scenario likely to be reached beyond 2100.

1.6 Therefore, I do not support the conclusion that an Infrastructure Constraint Overlay is required for managing water and wastewater capacity and effects.

1.7 In addition, Council under the existing Bylaws, LGA and Building consent process, has an ability to decline connections to infrastructure, if no capacity is available.

1.8 Regarding stormwater, the redevelopment of a site under either the two or three dwellings per lot scenario can and will likely result in the same or similar stormwater discharges and effects as building and impervious coverage controls are based on percentages and are the same irrespective of whether two or three dwellings are proposed.

1.9 In addition, the Stormwater Bylaw and Regional Infrastructure Technical Standards (**RITS**) allows Council to appropriately manage stormwater effects to ensure compliance with its Comprehensive Stormwater Discharge Consents (**CSDC**) and provide for improved stormwater quality and flow attenuation outcomes from redevelopment of sites.

1.10 Therefore, it can be concluded that redevelopment of sites into either two or three dwellings will more than likely have the same stormwater flows and contaminate loads in terms of environmental effects on the Waikato River.

1.11 Flood displacement effects generated by development are already addressed through the existing planning rules which require resource consent (as a non-complying activity) where development obstructs an overland and secondary flow path.

1.12 To address potential concerns around flood displacement effects occurring in the area between the 50-year and 100-year flood plain, I recommend that the "Secondary flow path" definition is changed from a "1 in 50-year return period rain event" to a "1 in a 100-year return period rainfall event."

1.13 Therefore, I do not support the conclusion that an Infrastructure Constraint Overlay and the Stormwater Constraints Overlay is required for managing stormwater and flood displacement effects.

2. INTRODUCTION

2.1 My full name is Philip Thomas Jaggard, and I am a Director/Infrastructure Specialist consultant at MPS Limited providing expert and technical advice, and direction on three waters infrastructure and effects. My experience includes providing infrastructure advice, support and expert witness evidence on water, wastewater and stormwater servicing for brownfield and greenfield development proposals for both public and private entities across Auckland.

2.2 I hold a Bachelor of Science from the University of Auckland and have over 20 years' experience in the water sector, with the past nearly 7 years as a consultant at MPS Limited.

2.3 Prior to MPS Limited, I have been intimately involved in the strategy, planning and delivery of three waters infrastructure to improve levels of service and service growth in Auckland. I was the Wastewater Planning Manager at Watercare and more recently the Strategy and Resilience Manger, Healthy Waters, Auckland Council. During my time at both organisations, I provided input, and contributed to, the development of Auckland Council's Infrastructure Strategy and Land Release Programme.

2.4 My experience working for both public and private entities, gives me insight into how regulatory systems operate and the issues that arise when those systems don't function well.

2.5 Full details of my qualifications and relevant experience are at Attachment A to this evidence.

2.6 Kāinga Ora has requested my expert technical advice and opinion on the PC26 provisions relating to infrastructure and development, with my scope of work including:

(a) Reviewing the PC26 provisions.

(b) Reviewing Council evidence/documents.

(c) Reviewing submission points relating to infrastructure.

(d) Reviewing high level strategic evidence; particularly planning and economics.

(e) Participating in expert conferencing where required.

(f) Preparing expert three water infrastructure evidence.

Code of Conduct

2.7 Although this is a Council hearing, I have read the Environment Court's Code of Conduct for Expert Witnesses in its Practice Note 2023 and agree to comply with it. My qualifications as an expert are set out above. I confirm that the issues addressed in this statement of evidence are within my area of expertise and experience.

Scope of Evidence

2.8 The focus of my evidence will be on impact of development on infrastructure, particularly in brownfield areas, controls on connections and the level of intensification.

2.9 The aspects of Kainga Ora's submission on PC26 of greatest relevance to infrastructural issues are:

(a) Kainga Ora's opposition to Council's proposal to require resource consent for more than two dwellings per site within the proposed Infrastructure Constraints Overlay in place of the MDRS requirement for Permitted Activity status to apply to up to three dwellings per site.

(b) Kainga Ora's concern that Council has not justified its proposed infrastructure constraint map.

(c) Kainga Ora's request for further information to determine the difference in effect generated by the change from two to three dwellings per lot as a Permitted Activity in the Infrastructure Constraints Overlay.

2.10 I have been asked to provide evidence in relation to:

(a) Qualifying Matters – Infrastructure and Stormwater; and

(b) Infrastructure and Stormwater Constraint Overlays

2.11 My evidence will address the following topics in order:

(a) Background

(b) Benefits of Intensification

(c) Constraint Overlays

(d) Growth Forecasts

(e) Water and Wastewater Capacity

(f) Infrastructure Planning

(g) Managing Infrastructure Constraints

(h) Stormwater Disposal

(i) Stormwater Constraint Overlay

2.12 Where appropriate and relevant, my evidence will reference and rely on the evidence by Christopher Allington Hardy (WSP), Susan Michelle Fairgray (Market Economics Limited), Tony Shane Coutts (Waipa District Council) and Michael George Chapman (Te Miro Water Consultants Limited).

2.13 I understand the concerns raised by Mr Hardy, Mr Coutts and Mr Chapman regarding capacity of the infrastructure to service growth when plans change and will address those concerns through my evidence.

2.14 My evidence will separate three waters infrastructure into the following topics:

(a) Water and Wastewater

(b) Stormwater

2.15 The separation of the topics is important, as:

(a) Potential effects on water and wastewater networks is predominantly influenced by the size of the connected population; while

(b) Potential effects in terms of stormwater infrastructure and the broader environment is predominantly based on total impervious surface coverage, from buildings, hard stand areas and roads and is independent of the number of dwellings and not directly related to the population served.

3. BACKGROUND

3.1 A key outcome of the National Policy Statement on Urban Development and the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 is to minimise barriers that constrain the ability to deliver housing development across public housing, affordable housing, affordable rental, and market housing.

3.2 PC26 proposes an extensive Infrastructure Constraint Overlay to limit the permitted development under the MDRS to two dwellings per lot on the basis of an assessment showing that the future stormwater, water and wastewater networks will have significant issues unless additional infrastructure is planned.

3.3 Kāinga Ora has submitted that Overlay be removed as it reduces the permitted enabled density from three to two dwellings per site for land located within the Overlay.

3.4 In addition, a Stormwater Constraint Overlay has been added to enable the Council to manage the potential effects associated with the displacement of floodwaters.

3.5 In that regard:

(a) The Infrastructure Constraint Qualifying Matter Overlay (Infrastructure Constraint Overlay) is introduced as part of PC26 and focusses on water and wastewater infrastructure. Within the Infrastructure Overlay development of three dwellings is a restricted discretionary activity (Rules 2A.4.1.1(b) and (c)). Discretion is intended to be limited to an infrastructure capacity assessment (with a particular focus on wastewater, water and stormwater).

(b) The Stormwater Constraint Qualifying Matter Overlay (Stormwater Constraint Overlay) is introduced as part of PC26. Within the Stormwater Constraint Overlay maximum building coverage is restricted to 40% (Rule 2A.4.2.8) as opposed to 50% as provided for by the MDRS. Failure to comply with this rule requires a restricted discretionary activity to be sought.

3.6 In my evidence I will compare the development of two vs three dwellings under the plan and assess whether the proposed Infrastructure and Stormwater Constraint Overlays and controls are appropriate to achieve the required/desired outcomes for managing effects on infrastructure or are overly restrictive barriers to development to allow growth to occur.

3.7 Council, through Mr Hardy's evidence makes a case that there is insufficient capacity in the water and wastewater network to service the potential level of development allowed under the MDRS scenario and I will address this in my evidence in Section 7 and 8.

3.8 In addition, Council's stormwater evidence (Coutts and Chapman) makes the case that the level of development enabled by the MDRS would have an unacceptable level of effects in terms of stormwater, which will make it difficult for Council to comply with its CSDC and will be inconsistent with the objectives of Te Ture Whaimana o Te Awa o Waikato—the Vision and Strategy for the Waikato River ("**Te Ture Whaiman**a"). I will address this in Section 10 and 11 of my evidence.

3.9 In short, I acknowledge the statutory status and content of Te Ture Whaimana but, for reasons set out below, consider that it can be complied with and given effect to (insofar as it relates to infrastructure capacity) through controls that are less stringent than those proposed by the Council.

4. BENEFITS OF INTENSIFICATION

4.1 The impact of a compact urban form through intensification and redevelopment on infrastructure requirements can be generally viewed as positive. By concentrating growth within existing serviced areas, a compact urban form and associated infrastructure investments can have positive effects such as the following:

(a) It allows authorities to capitalise on and optimise investment decisions relating to renewal and growth programmes, (i.e.: it provides an opportunity to benefit from programmes relating to the replacement of aging or failing assets).

(b) By minimising the extent of urban form, it can reduce adverse impacts on receiving environments.

(c) It minimises the area to be service.

(d) It minimises the linear length of infrastructure required.

(e) It reduces the carbon footprint of development.

(f) Redevelopment can reduce water demand through water efficient appliances and plumbing fittings.

(g) Redevelopment can progressively reduce inflow and infiltration to the wastewater system from private drainage by replacing older earthenware pipes with PVC.

(h) It can provide greater security of supply for water infrastructure through duplication and pipe upgrades to service growth.

(i) It can reduce existing wastewater overflows.

(j) It can reduce flooding hazards in existing developed areas.

(k) It can reduce contaminants in runoff from existing serviced areas with improved water quality outcomes.

5. CONSTRAINT OVERLAYS

5.1 The proposed Infrastructure Constraint Overlay restricts the permitted density of a lot to two dwellings, in contrast to the proposed permitted density limit of three houses per lot intended by the MDRS legislation. Within the Overlay, development of three dwellings triggers the requirement for a resource consent (restricted discretionary), placing additional controls and requirements on developments than proposed by the MDRS legislation.

5.2 In addition, the Stormwater Constraint Overlay restricts the maximum building coverage to 40%, as opposed to 50% as provided for by the MDRS legislation. Failure to comply with this rule requires a restricted discretionary activity to be sought.

5.3 Therefore, the proposed controls in PC26 add constraints to the scale of development enabled. They also add barriers and costs (e.g.: on the consenting process) to the delivery of houses.

5.4 In my experience and opinion:

(a) The first principle when contemplating addition of a rule to a plan to manage infrastructure effects, is to determine if the rule adds anything that existing processes and rules do not already cover.

(b) The planning framework should provide flexibility on how developments manage any effects or achieve the desired outcome, and not focus on prescriptive infrastructure interventions that may have unintended consequences and costs.

(c) Therefore, from an infrastructure perspective I consider that permissive rules should be used, where the effects on infrastructure are no more than minor, or the effects can be appropriately managed through appropriate controls or other existing rules/regulations.

6. GROWTH FORECASTS

6.1 I agree with Mr Hardy and Mr Coutts that infrastructure capacity is necessary in order to properly service urban development and that Council is required to provide sufficient infrastructure to service current households and reasonably expected future growth.

6.2 However, in reviewing the evidence of Mr Hardy and Ms Fairgray, I have had difficulty in reconciling the number of dwellings enabled under the MDRS identified in the two reports. In particular, my reading is that the number of dwellings/population applied to the water and wastewater models by Mr Hardy is greater than those reported by Ms Fairgray. For reasons set out below, this apparent discrepancy is not determinative of my position, but I would like to have a better understanding of the relationship between the statements of evidence.

6.3 By way of explanation:

(a) Table 5-1 from Mr Hardy's evidence presents the following yields applied.

Network	Existing 2050 Growth Plan - Baseline Model	PC26 - Plan Change 26	MDRS (Medium Density Residential Standards)
Cambridge	15,670	19,790	39,761
Te Awamutu and Kihikihi	13,093	15, 653	35,585
Totals	**28,763**	**35,443**	**75,346**

(b) Table 3 from Ms Fairgray's evidence is presented below

Table 3: Effect of Individual Qualifying Matters on Total Modelled Urban Capacity

MODELLED SCENARIO	Plan Enabled Capacity	Commercially Feasible Capacity			
		Current	Short-Term	Medium-Term	Long-Term
	Net Additional Dwelling Capacity				
Full Intensification (MDRS)	59,700	5,300	6,900	15,500	34,800
All QMs Applied (PC26)	37,000	3,400	4,000	10,700	19,700
ICO only	37,400	3,600	4,400	11,600	20,100
Existing and New Heritage only	59,000	5,300	6,900	15,400	34,400
Stormwater only	59,700	4,400	5,800	14,800	34,300
Streams and Gullies only	59,700	5,300	6,800	15,400	34,700
	Net Change from MDRS (Full Intensification)				
All QMs Applied (PC26)	-22,700	-1,900	-2,900	-4,800	-15,100
ICO only	-22,300	-1,800	-2,600	-3,900	-14,700
Existing and New Heritage only	-700	-100	-100	-100	-400
Stormwater only	0	-1,000	-1,100	-600	-400
Streams and Gullies only	0	0	-100	-100	-100
	Percentage Change from MDRS (Full Intensification)				
All QMs Applied (PC26)	-38.0%	-35.4%	-42.2%	-30.8%	-43.4%
ICO only	-37.3%	-33.1%	-36.8%	-24.9%	-42.3%
Existing and New Heritage only	-1.1%	-1.3%	-1.1%	-0.8%	-1.0%
Stormwater only	0.0%	-18.4%	-16.3%	-4.2%	-1.2%
Streams and Gullies only	0.0%	-0.7%	-1.5%	-0.5%	-0.2%

Source: M.E Waipa Residential Intensification Model, 2022.

(c) That material indicates that, in comparison with Ms Fairgray, WSP has assumed an additional 15,646 (75,346 minus 59,700) dwellings or approximately an additional 42,000 people when undertaking its water and wastewater modelling for the MDRS scenario. This equates to an increase of approximately 26% above Ms Fairgray's dwelling numbers and raises questions over the accuracy and conclusions of the modelling undertaken by Mr Hardy.

6.4 I ask that the Council experts review and reconcile the yields and confirm the accuracy (or otherwise) of the infrastructure capacity modelling.

7. WATER AND WASTEWATER CAPACITY

7.1 It is noted in Ms Fairgray's evidence that the Waipā district's main urban towns (Cambridge and Te Awamutu/Kihikihi) form part of the Future Proof tier-1 high growth urban area, which is anchored by the proximate larger urban economy of Hamilton City.

7.2 It is recognised that the district is projected to experience significant growth over the short to long-term as noted in Ms Fairgray's report.

7.3 Mr Hardy concludes that the assessment undertaken on the water and wastewater networks shows that the existing networks and planned upgrades would not be able to service higher densities under the MDRS scenario.

7.4 Whilst I agree with this statement based on the report provided, the key factor in assessing infrastructure capacity is the likely uptake of when growth will occur and whether the modelling undertaken accurately reflects growth and demand forecasts for the same period.

7.5 A key issue I have with water and wastewater modelling assessments undertaken to support the Infrastructure Constraint Overlay, is that the modelling assumes that each growth scenario modelled will occur by 2050, as noted on all the system performance maps. My understanding is that this is an improbable scenario given Ms Fairgray's evidence.

7.6 In my opinion, this is an incorrect assumption for comparing the capacity of the networks, as the scenarios are not like for like comparison and do not align with growth forecasts to occur by 2050 in Ms Fairgray's' evidence.

7.7 For comparative purposes, the infrastructure capacity assessments should have been undertaken using the forecast growth predictions from the growth model noted in Ms Fairgray's evidence with some sensitivity analyses being undertaken to account for potential spatial differences.

7.8 Ms Fairgray's evidence provides the Future Proof 2021 HBA projected urban dwelling demand for Waipā district over the short, medium and long-term, as shown in the Table below.

Table 1: Waipā District Projected Urban Dwelling Demand by Location: 2020-2050

AREA	Dwelling Demand in Year				Net Change			Net Change + Margin		
	2020	2023	2030	2050	Short-Term: 2020-2023	Medium-Term: 2020-2030	Long-Term: 2020-2050	Short-Term: 2020-2023 (20% margin)	Medium-Term: 2020-2030 (20% margin)	Long-Term: 2020-2050 (15% margin)
Main Urban Areas										
Cambridge	7,400	7,900	9,300	12,600	550	1,900	5,200	660	2,300	6,000
Te Awamutu	4,900	5,200	5,700	7,300	310	760	2,400	370	920	2,800
Kihikihi	930	1,100	1,300	1,400	170	330	500	200	400	570
Total Main Urban	***13,200***	***14,300***	***16,300***	***21,400***	***1,000***	***3,000***	***8,100***	***1,200***	***3,600***	***9,400***
Minor Urban Areas/Settlements	1,000	1,100	1,100	1,300	30	90	230	40	100	260
TOTAL URBAN	***14,300***	***15,300***	***17,400***	***22,600***	***1,100***	***3,100***	***8,400***	***1,300***	***3,700***	***9,600***
Non-Urban	6,600	6,700	7,000	7,800	50	350	1,100	60	420	1,300
TOTAL DISTRICT	**20,900**	**22,000**	**24,300**	**30,400**	**1,100**	**3,500**	**9,500**	**1,300**	**4,100**	**10,900**

Source: M.E 2021 Future Proof HBA.

7.9 In total, Ms Fairgray reports there is a projected demand within the main urban towns (Cambridge, Te Awamutu and Kihikihi) for an 1,000 additional dwellings in the short-term, 3,000 in the medium-term and 8,100 in the long-term by 2050. With a 15% margin applied, there is demand for capacity to accommodate an additional 9,400 dwellings.

7.10 The above equates to a total of 22,700 dwellings within the main urban towns by 2050, assuming a 15% margin is applied (worst case scenario). Note that this is marginally higher than the 21,400 dwelling demand in 2050 for the Main Urban areas presented in the table above (refer section 7.8), as the numbers presented in the table above do not reconcile exactly.

7.11 However, for comparative purposes the WSP (Hardy) modelling assumes 28,763 dwellings for the Existing 2050 Growth Plan – Baseline Model simulation, which equates to an additional 27% growth occurring by 2050 over the numbers presented by Ms Fairgray.

7.12 The PC26 and MDRS modelling scenarios used by Mr Hardy have 35,443 and 75,346 dwellings applied respectively, far in excess of the growth forecasted to occur by 2050.

7.13 Note that the modelling report applies population to both models by applying a population density of 2.7 people per dwelling, in line with the Regional Infrastructure Technical Specification V1 (RITS) 2018.

7.14 Though the PC26 and MDRS scenarios may enable significant intensification, the plan change will not itself generate additional demand for housing in Te Awamutu and Cambridge. PC26 governs where and in what built forms that demand might be accommodated,

with the market ultimately deciding where to build. That is, PC26 will not result in greater population growth in the district but it will affect the location and type of dwellings in which the growth will be accommodated, and the urban form of the townships.

7.15 Given that the actual forecast growth by 2050 (22,700 dwellings) is significantly less than the numbers used to assess the infrastructure capacity in the PC26 and MDRS scenarios, both these simulations should be ignored for the purposes of assessing infrastructure capacity constraints by 2050.

7.16 I am unaware of any evidence to suggest the growth forecast by 2050, will occur faster under either PC26 or the MDRS scenarios.

7.17 The PC26 and MDRS models may be useful to assess development impacts of the plan change on infrastructure into the future beyond 2050, but either scenario is improbable and unlikely to occur within the foreseeable future.

7.18 Extrapolating the growth rate beyond 2050, the dwelling numbers in the PC26 scenario is likely to be reached sometime around 2080, approximately 60 years from now. The MDRS scenario is likely to be reached beyond 2100. This allows more than sufficient time to plan, design, consent and construct the required infrastructure to service population growth.

7.19 Therefore, this raises several questions on the validity and weighting that can be placed on the Council's water and wastewater modelling, including the conclusions reached to apply an Infrastructure Constraint Overlay to prevent one additional house being built without a resource consent.

7.20 I recommend that results from the 2050 Growth Plan – Baseline Model scenario is the more appropriate model to assess whether infrastructure constraints may exist. Noting that the results for this scenario apply dwelling numbers greater than forecast to occur by 2050 by Ms Fairgray and will overpredict the impact on infrastructure requirements.

7.21 In addition, if housing demand requires 12 new houses, then the supply can be achieved in either two ways under the PC26 or MDRS scenarios:

(a) PC26 - Construct 12 houses on 6 sites (average of 2 per site); or

(b) MDRS - Construct 12 houses on 4 sites (average of 3 per site).

7.22 The demand for water is a function of the number of people and the methods used to minimise water use (which is unrelated to where houses are located or their built form so unaffected by PC26).

7.23 The wastewater load is also a function of the number of people, methods used to minimise water use, and methods used to minimise wastewater quantities (which again are unrelated to where houses are located and their built form so unaffected by PC26).

7.24 Therefore, the demand on water and wastewater infrastructure is the same irrespective of the two scenarios above, as it is the demand side of the equation that drives development and the number of dwellings.

7.25 In addition, methods for water conservation, thereby reducing water use and wastewater generation are most easily incorporated into new houses (and can be incorporated into new dwellings regardless of whether PC26 is adopted).

7.26 Therefore, I do not support the conclusion that an Infrastructure Constraint Overlay is required for managing water and wastewater capacity. Particularly given that the justification to restrict the proposed permitted activity status of three dwellings per site under the legislation, is based upon the MDRS scenario over the PC26 and that growth in 2050 will be similar to the Baseline model results, which has a lower population forecast than the PC26 scenario. All the while recognising that the Baseline model results have higher population numbers than the growth forecasts by Ms Fairgray.

7.27 Therefore, based on the predicted growth that will occur by 2050, the matter of water and wastewater infrastructure constraints is less than the PC26 modelling scenario deemed acceptable by Council's experts.

7.28 In addition, by focusing development into an existing and compact urban form has the benefits set out earlier in the evidence regarding minimising the extent of network need to serve new development.

7.29 Overall, the capacity of the water supply and wastewater systems are sufficient to service the growth forecast by Ms Fairgray by 2050. Any growth beyond 2050 can be appropriately managed through planning for additional upgrades and expansion of the system as required to meet updated growth forecasts.

7.30 There is more than sufficient time for infrastructure providers to plan, fund, design, consent and construct any upgrades required beyond the existing growth forecast of Ms Fairgray as the PC26 modelling scenario is likely to be reached sometime around 2080, approximately 60 years from now, with the MDRS modelling scenario likely to be reached beyond 2100.

7.31 In addition, given the costs involved in obtaining even small resource consents, and the capacity of the water and wastewater systems is adequate to meet the growth forecasts presented by Ms Fairgray, a more permissive planning framework that allows developments to be undertaken up to the MDRS standards is more appropriate.

7.32 Therefore, I support the removal of the Infrastructure Constraint Overlay as it is not required for managing water and wastewater capacity and effects.

7.33 Other general comments I can make around the modelling is that:

(a) I have not had an opportunity to review the models in detail.

(b) There is a general lack of information, detail, and costs on the water and wastewater capacity upgrades applied in the model.

(c) There is no comparative existing system performance assessment for both water and wastewater.

(d) No level of service targets provided for wastewater, e.g., an overflow standard.

8. INFRASTRUCTURE PLANNING

8.1 Infrastructure planning is the process whereby detailed planning work assesses existing capacity, predicts further demands and issues and undertake assessments in investigations to develop an optimised investment plan for implementation.

8.2 While I agree that both the PC26 and MDRS model scenarios show infrastructure capacity issues, this is not an uncommon occurrence when changes are made through planning documents.

8.3 In fact, it is nearly always the case, as the planning and construction of infrastructure will generally allow for more development than the infrastructure can currently service. This is especially relevant to greenfield areas, where no infrastructure usually exists when plans are approved.

8.4 Councils and infrastructure providers undertake planning, design and constructing of three water infrastructure using long time frames e.g. 100 years or more, given the expected life of an infrastructure assets.

8.5 Following changes to planning documents, it is common for infrastructure providers to review and update infrastructure plans taking into consideration the ultimate population predictions.

8.6 Overall, the combination of increased height in the Town Centres and ability to develop two or three dwellings per lot, enables a variety of housing topologies to be developed to meet demand across both Cambridge and Te Awamutu.

8.7 However, there is no certainty as to where and how development within a city or township will occur under any development scenario, as it is market driven.

8.8 The impact of growth on infrastructure capacity will always be difficult to predict. However, prioritising trunk and bulk upgrades over localised upgrades allows infrastructure providers to provide capacity and facilitate development over the largest possible service area.

8.9 Smaller local network upgrades generally require less planning and can be implemented in response to growth over much shorter timeframes. In addition, smaller developments will generally have a lesser impact on the capacity of the network, by their very nature.

8.10 However, as noted earlier in my evidence, the 2050 demand forecast by Ms Fairgray is less than the PC26 modelling scenarios deemed acceptable by Council, providing sufficient head room and flexibility to where growth may occur.

8.11 Noting that it is best practice to regularly review capacity, growth and upgrade/renewal plans as new information becomes available, including tracking of approved developments to ensure capital expenditure plans support growth where it is occurring.

8.12 In addition, there is sufficient time to plan, design, consent and construct any upgrades required beyond the existing growth forecast of Ms Fairgray as the PC26 modelling scenario is likely to be reached sometime around 2080, approximately 60 years from now, with the MDRS modelling scenario likely to be reached beyond 2100.

8.13 The main output of infrastructure planning is list of projects for implementation that is entered into the published Asset Management Plan (AMP), typically a 20-to-30-year plan. However, internally the project list may extend beyond the 20- or 30-year time frame. An AMP is usually reviewed and updated every one to three years for budgeting and funding purposes. This process allows changes to the

capital works programme to enable the infrastructure provider to meet the demands of the market.

8.14 Though the PC26 and MDRS scenarios may enable significant intensification, a review of the ultimate development potential can be useful for planning investigations to determine an optimised infrastructure upgrade plan. Based on the rate of population growth from Ms Fairgray, both build out scenarios are likely to be reached sometime around 2080 and beyond 2100 respectively.

8.15 However, infrastructure planning takes into consideration that not all land will develop to the full potential of the plan. Providing planning provisions that enable development, is not the same as that development occurring. There are many reasons why development does or does not occur, such as: immigration, job opportunities, community facilities, location, climate and costs, just to name a few.

Infrastructure planning and upgrades will generally account for the fact that not all lots will develop to their full potential, as the release of land for more intensive development does not always result in that land being developed. For example, a development in Point Chevalier, Auckland immediately adjacent to the town centre and zoned "Terrace Housing and Apartment Buildings Zone" with a permitted building height of 16m is constructing over 15 townhouses of only two storeys.

8.16 Infrastructure planning considers a wide range of factors, not limited to growth uncertainties, funding, costs, benefits and expected life of an assets to determine an optimal investment profile for implementation.

9. MANAGING INFRASTRUCTURE CONSTRAINTS

9.1 As mentioned early, the proposal to add an Infrastructure Constraint Overlay to require a restricted discretionary consent for three dwellings adds complexity and cost to development proposals.

However, there are several alternative mechanisms available to Council/Infrastructure providers to manage connections.

9.2 These include the relevant local Bylaws, Asset Owner rights, Local Government Act and the Building Act.

9.3 Under the existing Bylaws, LGA and Building consent process, Council has an ability to decline connections to infrastructure, if no capacity is available.

9.4 For example, under the Section 9.1 of the Waipa Water Supply Bylaw it states: "*No person may, without prior Council Approval: a) connect to the Water Supply System*;"

9.5 Over the years I have been personally involved in the management of several development restriction "red zones" in my role at Watercare, and North Shore City Council. At both organisations, we did not use or seek rules in the District or Unitary Plan to control connections, as it was considered to be cumbersome and duplicates existing process.

9.6 Therefore, in my opinion, the Infrastructure Constraint Overlay is not the most efficient method for managing infrastructure capacity constraints and I support Kāinga Ora's request for its removal.

10. STORMWATER DISPOSAL

10.1 I agree with Mr Chapman, that urban planning intensification under the MDRS will create new impervious areas (roof, driveways, hardstand, and roads) from new urban development.

10.2 The Infrastructure Constraint Overlay is introduced as part of PC26 and focusses on water and wastewater infrastructure capacity. However, the matter of discretion also includes stormwater disposal, where development of three dwellings is a restricted discretionary activity. This section of my evidence will address the effect of two vs three dwellings in regard to stormwater disposal.

10.3 Section 13 of my evidence will address the flood displacement effects associated with the proposed 40% site coverage rule within the Stormwater Constraint Overlay.

10.4 The potential adverse impacts from intensification are managed through various guidance documents district plan rules, comprehensive discharge consents and the Building Act 2004 and associated bylaws and technical evidence such as flood hazard mapping undertaken by Council.

10.5 Mr Chapman states that "*The level of development enabled by the MDRS would have an unacceptable level of effects in terms of stormwater, which will make it difficult for Council to comply with its Comprehensive Stormwater Discharge Consents ("CSDC") and will be inconsistent with the objectives of [Te Ture Whaimana]*".

10.6 A review of the stormwater hydraulic modelling undertaken indicates pipe capacities and flooding issues in both Te Awamutu and Cambridge exist.

10.7 However, as discussed earlier, there is not a direct relationship between predicted increases in impervious coverage and the number of dwellings on a site.

10.8 For example, the table below summarises the maximum impervious coverage for two or three dwellings from the PC26 document both inside and outside the Stormwater Constraint Overlay.

Development/Coverage	**Two dwellings - outside SW Overlay**	**Three dwellings – outside SW Overlay**	**Two dwellings - inside SW Overlay**	**Three dwellings - inside SW Overlay**
Maximum Building Coverage	50%	50%	40%	40%
Maximum Impermeable Surface Coverage	60%	60%	60%	60%

10.9 The two-dwelling scenario is permitted within the Infrastructure Overlay, under PC26, while the three dwelling scenario requires a restricted discretionary resource consent.

10.10 However, as the above table shows, there is no difference in the allowable maximum impervious coverage between a development of two or three dwellings on a lot. Therefore, the potential effects from stormwater disposal are independent of the number of dwellings on a site, as the criteria is based on coverage percentages.

10.11 Therefore, it can be concluded that redevelopment under either the two or three dwellings per lot scenario can and will likely result in the same stormwater discharges and effects, with the former locking land into a lower overall density for at least 50 years (minimum expected life of a building).

10.12 In addition, it is important to note that the following requirements under the RITS can provide improved stormwater quality outcomes from redevelopment of sites:

(a) Water quality treatment is provided, unless an alternative criterion is provided within a relevant approved Integrated Catchment Management Plan (ICMP) or Waikato Regional Council Stormwater Consent.

(b) Flow attenuation (2 or 10 year) ARI events - required to match pre-development flow rates through attenuation, noting it is catchment dependent and always required in the upper half of the catchment, but may not be required if the site is the lower half of the catchment.

(c) Flooding - if a downstream flooding is identified, (or risk of) then detention is required limiting the post development 100-year flow rate to 80% of the pre development 100-year ARI event.

10.13 Mr Chapman also states in his evidence "*that the Council also has a stormwater bylaw which helps to manage these effects to ensure*

compliance with the Council's CSDC. A key purpose of the bylaw is to manage the entry of prohibited materials into the stormwater system and contribute to achieving appropriate environmental outcomes consistent with Te Ture Whaimana and the Future Proof Sub-Regional Three Waters Strategy".

10.14 Therefore, it can be concluded that redevelopment of sites into either two or three dwellings will more than likely have the same stormwater flows and contaminate loads. In addition, both scenarios are likely to be an improvement over the predevelopment scenario in terms of environmental effects on the Waikato River through the provision of stormwater treatment and flow controls.

10.15 In addition, Council has the stormwater Bylaw to manage compliance with the Councils' CSDC that will contribute to achieving appropriate environmental outcomes consistent with Te Ture Whaimana.

10.16 In my view, the Infrastructure Constraints Overlay is not required to give effect to Te Ture Whaimana either because the stormwater effects generated by each individual site are addressed by the matters noted above.

10.17 In addition, the overall aggregate stormwater issues will be reduced by PC26 because intensification within existing service areas reduces the total extent of new impermeable surface by reducing demand on greenfield expansion that includes new urban sites, and construction of new roads (which amount to a significant proportion of total impermeable surface).

10.18 Therefore, I do not support the conclusion that an Infrastructure Constraint Overlay is required to manage stormwater disposal and I support the full removal of the Infrastructure Constraint Overlay.

11. STORMWATER CONSTRAINT OVERLAY

11.1 Flooding is a natural process, and flood plains are part of the natural water system. Flooding only becomes a hazard when people, property and development are located within flood plains; overland flow paths

(areas along which flood waters flow); and areas that are susceptible to flooding when drainage networks are blocked (flood prone areas).

11.2 Historically, residential development has steadily intruded into flood plains as the urban areas intensified, and people sought to make use of what was perceived to be "spare land".

11.3 Risks from flood events are usually underestimated by developers, landowners, and home buyers, while over time, as urban areas develop and impermeable surfaces increase, flood events increase in severity.

11.4 It is understood that Council originally looked to include the updated flood hazard overlay as part of PC26 but had concerns around the truncated plan change consultation opportunity and timeframe deadlines. Accordingly, the updated flood hazard overlay was withdrawn during preparation and did not form part of PC26 as notified.

11.5 However, Council has included the Stormwater Constraint Overlay in PC26, based on the 100-year annual rain interval ("**ARI**") flood depth layer, created using flood plain extents. Within the Stormwater Constraint Overlay maximum building coverage is restricted to 40% (Rule 2A.4.2.8) as opposed to 50% as provided for by the MDRS. Failure to comply with this rule requires a restricted discretionary activity to be sought.

11.6 The Waipa District Plan - Section 15 Infrastructure, Hazards, Development and Subdivision, includes the following rules in relation to the management of flood hazards and risks:

(a) Existing rule 15.4.2.14 – site suitability: within or adjoining a Flood Hazard Area – shall have building platforms in a complying location that can achieve a minimum free-board level 500mm above the 1% AEP (100-year flood level)

(b) Existing rule 15.4.2.15 – no subdivision and development shall occur within a High Risk Flood Zone

(c) Existing rule 15.4.2.26 – development shall not obstruct overland and secondary flow paths - path taken by runoff in excess of the primary design flow for a once in 50 years return period rain event.

11.7 Secondary flow paths can be defined as the course taken by excess flood waters when design capacity of the primary drainage system has been exceeded, and therefore include flood plains.

11.8 Activities that fail to comply with Rules 15.4.2.14, 15.4.2.15 and 15.4.2.26 will require a resource consent for a non-complying activity.

11.9 New buildings foundations are generally constructed either slab on grade or on timber piles with exterior underfloor cladding. Therefore, a building constructed within a flood plain/secondary flow path will form an obstruction and therefore require a resource consent for a non-complying activity under Rule 15.4.2.26.

11.10 Therefore, any proposed development within the 50-year flood plain/secondary flow path would require the developer to prepare a flood hazard assessment report on a site by suitably qualified experts as part of any non-complying resource consent application.

11.11 In addition, any development within or adjoining a Flood Hazard Area will need to confirm a minimum free-board level 500mm above the 1% AEP (100-year flood level) or apply for a non-complying resource consent application.

11.12 Therefore, it is unclear why PC26 proposes to limit building coverage to 40% within the Stormwater Constraint Overlay, as the effects of flood displacement caused by new buildings are already covered under Rule 15.4.2.26 and Council decided not to proceed with changes to flood hazard overlay.

11.13 Council has also not provided any flood maps that show the relative differences in extents of flooding for the 50- and 100-year events, though both scenarios have been modelled by Council. I would have expected, as a minimum, before concluding that the Stormwater

Constraint Overlay was required, an assessment would have been undertaken by Council to review the flood extents of the 50- and 100-year events to determine the risk of development occurring without resource consent in the area between them.

11.14 If, following the review of above, Council was concerned about the difference between development obstructing or causing flood displacement effects in the area between the 50 and 100-year flood plain, the most appropriate solution would be to change the "Secondary flow path" definition from a "1 in 50-year return period rain event" to a "1 in a 100-year return period rainfall event".

11.15 Under either the 40% or 50% building coverage scenarios, the maximum impervious coverage for both scenarios is 60%. Therefore, the likely stormwater runoff effects, flows and volumes from developments are likely to be similar or the same. Noting that the RITS document already manages the effects of stormwater discharges and effects on the receiving environment from intensifying development.

11.16 Therefore, I support Kāinga Ora's position that the Stormwater Constraint Overlay is removed on the basis that:

(a) There are existing acceptable controls that manage flood displacement effects of new buildings constructed in the flood plain/secondary flow path.

(b) Stormwater flows and effects from development of either the 40% or 50% building coverage scenario can be the similar/same and can be appropriately managed by the RITS and Stormwater Bylaw.

(c) The "Secondary flow path" definition is changed from a "1 in 50-year return period rain event" to a "1 in a 100-year return period rainfall event."

11.17 In my view, the Stormwater Constraints Overlay is not required to give effect to Te Ture Whaimana either because any flood displacement

effects generated by development are already addressed through the necessary resource consents for a non-complying activity under the existing planning rules and flow attenuation requirements in the RITS.

Philip Thomas Jaggard
06 April 2023