

**BEFORE THE INDEPENDENT HEARING PANEL ON PROPOSED PRIVATE PLAN CHANGE 13
TO THE OPERATIVE HAMILTON CITY DISTRICT PLAN**

IN THE MATTER of the Resource management Act 1991 (the Act)

AND

IN THE MATTER of proposed Private Plan Change 13 to the Hamilton City District Plan

Statement of Evidence of Hayden John Vink on behalf of the Waikato Racing Club

Incorporated

(Three Waters)

Dated: 26 July 2023

MAY IT PLEASE THE INDEPENDENT HEARING PANEL

INTRODUCTION

1. My full name is Hayden John Vink.
2. I am a Civil and Environmental Engineer and a Director of Wainui Environmental Ltd. I have a Bachelor of Engineering (Civil) from Auckland University and have over 18 years' experience, sixteen years of which are based in the Waikato Region managing projects and undertaking civil infrastructure design for works associated with a variety of land development and roading projects.
3. I am familiar with the application site and the surrounding locality. I have read the relevant parts of the application; submissions; further submissions; and the Section 42A Report.

CODE OF CONDUCT

4. I am familiar with the Code of Conduct for Expert Witnesses (Environment Court Consolidated Practice Note 2023) and although I note this is a Council hearing, I agree to comply with this code.
5. The evidence I will present is within my area of expertise, except where I state that I am relying on information provided by another party. I have not knowingly omitted facts or information that might alter or detract from opinions I express.

PURPOSE AND SCOPE OF EVIDENCE

6. The purpose of my evidence statement is to support my assessment of 3 waters (Stormwater/Wastewater/Water supply) engineering requirements for the proposed Plan Change 13 (PC13) site/development activities, and to respond to submissions and the section 42A report, as necessary. These requirements and suggested 3 waters management options are outlined in further detail within the

Wainui Environmental Ltd Sub-Catchment Integrated Catchment Management Plan (ICMP) report.

7. In my evidence I address the following issues:

- (a) Summary of site/receiving environment;
- (b) Statutory context;
- (c) Stormwater management;
- (d) Water supply;
- (e) Wastewater
- (f) Submissions;
- (g) Council's section 42A report.

SITE/RECEIVING ENVIRONMENT

8. The following key site characteristics/attributes are noted.

Contour/Geology

- 9. The existing Racecourse Redevelopment Area topography can be generally characterised as a shallow low-lying basin, with ground levels on the eastern and western site boundaries generally falling toward a low point which runs from northwest to southeast through the centre of the site. Within the re-development area two small sub- catchments are delineated by a slight high point/divide running south to north through the centre-east of the site.
- 10. The site is underlain by fluvially reworked soil deposits of the Hinuera Formation. The Hinuera Formation infills the majority of the Waikato Basin and deposits generally comprise interbedded sands, silts and clays with interspersed peats. Groundwater was encountered at the

test locations within the proposed development area at depths of 1.5m to 2.8m below the current ground level.

Existing Stormwater

11. The site is located near the top of the existing HCC reticulated stormwater catchment servicing the site and surrounding area. An existing 1050mm stormwater main enters the site at the northern boundary conveying stormwater from a localised upstream catchment area which includes runoff from various industrial/commercial properties.
12. This main extends southward through the centre of the site collecting stormwater from the existing site surfaces along with flows from a lateral 450mm pipeline which drains a number of commercial/industrial properties to the southeast. The 1050mm main exits the site on the southern boundary and the HCC piped reticulation network then extends northeast through the residential suburb of Beerescourt discharging to the Waikato River via an outlet near Minchin Crescent approximately 1.5km from the site. Neither the immediate site nor broader catchment stormwater network is known to contain any existing stormwater quality or quantity management infrastructure.
13. The HCC Rapid Flood Hazard Modelling Assessment (RFHM) has been used to identify any greater than network capacity flood hazard and overland flow paths within/surrounding the site. The modelling confirms that flooding is anticipated within the redevelopment area during the 100-year ARI event, occurring within a central corridor and with flood flows occurring in a south to north direction, being the opposite direction to the primary stormwater reticulation flows. Flood velocity and flood level data indicates that the flood waters through this corridor are generally slow moving with flood depths ranging from 0.1 -1.14m.

14. An assessment has been undertaken to determine the volume of flood storage across the site based on the HCC RFHM and detailed topographic survey. The analysis shows there is approximately 7,500m³ of flood storage volume within the Racecourse Re-Development Area in the 100-year ARI event.
15. Beyond the site the RFHM shows that floodwaters pond in a large low-lying area through the area bordered by Te Rapa Road and Mainstreet Place. This flooded area continues north of Sunshine Avenue becoming concentrated along Sheffield Street. This identified flood corridor is understood to comprise the relict Te Rapa Channel, a paleo river channel once forming part of the Waikato River, but which has been significantly modified including numerous large-scale buildings and boundary fences which have been constructed directly through the channel.

Existing Water/Wastewater Services

16. The site is well serviced by existing HCC water and wastewater infrastructure.
17. There are existing HCC water mains which extend to the site at both the northern (Sir Tristram Avenue) and southern (Ken Browne Drive) boundaries.
18. An existing HCC 600mm/675mm wastewater interceptor runs through the centre of the site, draining southeast to northwest and draining both up-catchment and existing site wastewater flows northward to the Pukete treatment plant.

STATUTORY CONTEXT

19. Development of the subject site and in particular any discharges from the site development activities are subject to

consideration/assessment under various statutory documents including:

- (a) Resource Management Act 1991;
- (b) National Policy Statement for Freshwater Management 2020;
- (c) Waikato Regional Policy Statement;
- (d) Waikato Regional Plan (WRP);
- (e) Hamilton City District Plan (HCCDP); and
- (f) Waikato River – Vision & Strategy.

20. In addition, the following best practice engineering design guideline documents are relevant to inform the design and installation of an appropriate stormwater management system for the site to avoid adverse any adverse discharge effects within the downstream stormwater network and Waikato River receiving environment.

- (a) Waikato Stormwater Management Guidelines 2020 (TR2020/07);
- (b) Waikato Regional Infrastructure Technical Standards 2018 (RITS).

21. The intention is that the site's 3 waters infrastructure will be designed and implemented in accordance with these relevant guideline documents to ensure that any potential adverse effects are appropriately managed to avoid or minimise any adverse effects. On this basis, from a 3 waters perspective, as set out in John Olliver's evidence, it is considered that consistency with the relevant objectives and policies of the identified higher level planning documents will be maintained.

22. Furthermore, stormwater discharge activities from the development site will be subject to detailed assessment through specific resource/subdivision consent processes likely under both the WRP and HCCDP to ensure compliance with these requirements.
23. As water supply and wastewater discharges from the development area are planned to utilise existing municipal connections, additional consent authorisations for these activities under the WRP are not relevant or necessary. However, design of water and wastewater infrastructure will again adhere to the best practice design/management methods outlined in the RITS and will be assessed as part of the subdivision consent process under the HCCDP.

Stormwater Management

24. The ICMP outlines the following stormwater management design objectives for the proposed development:
 - (a) Provision of a primary reticulation network in accordance with a RITS level of service (10-year ARI without surcharge);
 - (b) Water Quality Treatment of all development stormwater runoff prior to discharge to the downstream network and eventual Waikato River receiving environment;
 - (c) Attenuation of post development stormwater flows to predevelopment levels to avoid any adverse effects upon the downstream HCC stormwater network capacity;
 - (d) Containment/conveyance of greater than design/overland flood flows to manage the broader catchment flood flows through the site without contributing to any increase in upstream/downstream flood hazards.

25. The ICMP outlines a recommended stormwater management approach for the development to achieve these objectives through implementation of a piped reticulation network to deliver site runoff to a proposed treatment/attenuation wetland located within a central reserve area. In addition, the approach includes provision for maintenance of a flood corridor through the centre of the site to ensure that the identified existing flood flows can continue to occur unimpeded through the site.
26. Further details of the proposed stormwater management system are summarised as follows.

Stormwater Reticulation Network

27. Consideration has been given to the potential to discharge development stormwater to ground soakage, however it has been discounted due to low soakage rates and elevated groundwater levels identified during initial geotechnical assessments. Accordingly, a typical kerb and channel/piped primary stormwater reticulation network is recommended for capture and conveyance of development stormwater. Nonetheless, further testing is recommended at the time of detailed design to determine the potential for ground soakage to be incorporated as part of the sites water efficiency management measures in accordance with HCCDP requirements.
28. The primary piped reticulation network for the development can be designed to generally follow the proposed public road corridors and shall be sized to provide a 10-year ARI level of service in accordance with the RITS. The primary reticulation network will deliver the development stormwater to the proposed wetland device for treatment/attenuation prior to discharge into the downstream network.

29. A preliminary capacity assessment has been undertaken on the existing HCC 1050mm SW line which currently conveys up catchment stormwater flows through the site to confirm whether this pipe has sufficient capacity to meet the current RITS level of service (10-year ARI without surcharge). Results of the modelling shows that this pipe does not have capacity to convey the 2-year ARI flows without surcharge and overflow at the upstream extent of the site. Accordingly, the ICMP recommends that the proposed development activities include upsizing and redirection within the site to meet current RITS standards (i.e., 10-year ARI pipe capacity with pipe alignments following public road corridors).
30. In addition, following discussions with HCC, the ICMP has also considered the potential for the existing upstream network flows from the industrial/commercial catchment above the site to be diverted into the proposed wetland device for treatment and/or attenuation in combination with the proposed development site runoff. This assessment has confirmed that there is sufficient space available within the site to allow for the upgrade/enlargement of the proposed wetland to accommodate these upcatchment flows.
31. Upgrade of the existing HCC pipe capacity downstream of the site is however not a prerequisite as attenuation will be provided within the proposed wetland to pre-development levels to mitigate any potential capacity effects on the downstream network.

Stormwater Wetland

32. All stormwater from the proposed development will be directed to the proposed constructed wetland device for water quality treatment and attenuation of post development stormwater flows to predevelopment levels prior to discharge to the downstream network.

33. The wetland has been subject to preliminary design sizing in accordance with the WRC TR2020/07 and the RITS to confirm that it can be accommodated within the proposed development site reserve areas. This includes sizing/design of the wetland to ensure that the following best practice design parameters can be achieved for the site within this device:
 - (a) Provision of an inlet forebay and provision of the developed catchment water quality volume including bathymetric bunding to maximise settlement and residence of water quality flows as they pass through the wetland;
 - (b) Planting throughout the wetland with a thick cover of native species to maximise filtration and biofiltration of soluble and insoluble contaminants within stormwater in-flows;
 - (c) Attenuation of post development catchment flows to predevelopment levels for the 2, 10 and to 80% of the 100 year event
34. The use of sub-catchment wetland devices has been chosen as the preferred stormwater management method for the subject site for the following reasons:
 - (a) The site has sufficient space to accommodate a wetland as the stormwater solution;
 - (b) Wetlands have a dual ability to achieve both water quality and water quantity design objectives;
 - (c) Wetlands have shown to be efficient and superior at improving water quality from urban developments in comparison to other stormwater treatment devices;

- (d) They moderate the temperature of water through the dense planting (in comparison to stormwater ponds which have large areas of open water);
- (e) They mimic natural processes of capture, settlement and biofiltration of catchment runoff prior to entering natural body receiving environments;
- (f) They provide multiple services/benefits including providing terrestrial and aquatic ecological values and having positive amenity benefits as they provide recreational opportunities with walkways/cycleways as well as landscape/visual enhancement values;
- (g) Lower maintenance requirements in comparison to other at-source treatment options e.g., raingardens/proprietary filter devices.

35. The use of constructed wetland type systems for management of urban stormwater runoff discharges to aquatic receiving environments is widely accepted as the best practice management option for land development activities in the Waikato including numerous development sites and high-volume roading catchments where development discharges occur to high value receiving environments (e.g., the Waikato River).

36. For these reasons, the proposed wetland is considered to present the most appropriate and effective stormwater management method for addressing the potential water quality and quantity effects of the proposed development on both the downstream HCC reticulation network and the eventual Waikato River receiving environment.

Flooding and Secondary Overland Flow

37. The ICMP design response to this identified flood corridor comprises development of a preliminary development layout plan which maintains a clear flood corridor through the central part of the site. This area will be maintained as open/undeveloped space containing the Ken Browne Drive extension road carriageway, a reserve network of green open space, the stormwater management wetland drainage reserve area and the Racing Club central arena, together with the horse float parking area.
38. The design provides for a green/open space buffer extending along the southern boundary of the site which will be contoured to capture and convey any flood flows entering the site into the defined flood corridor for conveyance northward as currently occurs. Upstream and downstream ground levels at the entry and exit to the flood corridor must be maintained as part of the site development works to ensure that no impediment to these extreme flood flows occurs. Further, to ensure no adverse flooding effects are caused by the development, it will be important that existing pre-development flood storage volumes are maintained within the site as part of any development works such as recontouring (i.e., no loss of floodplain storage).
39. Detailed flood modelling will be required as part of future resource consent applications and detailed engineering design for any development or earthworks proposed within the designated flood hazard areas. The detailed modelling will ultimately inform the final width and levels of the flood corridor, ensuring no adverse effects to adjacent properties.
40. The ICMP identifies minimum freeboard requirements for any future buildings in accordance with the current HCCDP requirements. It is recommended that site/catchment specific detailed flood modelling is undertaken at subdivision consent stage to establish more accurate

flood levels and the appropriate minimum freeboard requirements for all future buildings. The proposed rules will require this; see proposed subdivision Rule 23.7.9 included with Mr Olliver's evidence.

41. I am aware that HCC is currently undertaking detailed flood modelling of the wider catchment as part of their ongoing city-wide flood modelling programme. This model will be an invaluable tool to facilitate development on the site and ensure no adverse effects on adjacent property. Furthermore, the model will consider effects of climate change and allow for maximum probable development across the wider catchment.
42. Overall, the ICMP confirms that viable options are available for stormwater management at the site to enable the planned rezoning without presenting a risk of adverse environmental, network or flooding effects both within and beyond the site boundaries.

WASTEWATER

43. Verification modelling has been completed to assess whether sufficient capacity is available within the existing network at the site to service the proposed development. The outcomes of the modelling show the additional demand on the wastewater network from the proposed residential development is not predicted to have adverse effects on the HCC wastewater network.
44. Within the site, the existing HCC 675mm interceptor line is at a sufficient depth to enable a gravity network throughout the proposed Racecourse development. The current development layout shows building areas which are located over the existing wastewater reticulation within the site. Consideration should be given to either diverting the wastewater pipes or reconfiguring the development layout to avoid build-overs. I consider it appropriate that this item be addressed at detailed design/subdivision consent stage.

45. No submissions have raised concerns about wastewater effects.

WATER SUPPLY

46. Verification modelling has been completed to assess whether sufficient capacity is available within the existing water supply network at the site to service the proposed development. Results from the model show that there is sufficient capacity within the existing network to provide sufficient level of service to the proposed development, including residential firefighting supply.

MATTERS RAISED IN SUBMISSIONS

47. I have reviewed the submissions and considered those which raise matters in relation to 3-waters servicing and effects of the proposed development activities. Relevant submissions/matters are identified and addressed as follows.

Fire & Emergency New Zealand

48. Relevant matters raised in the Fire & Emergency submission relate to ensuring adequate water supply is available within the development area for firefighting activities. The submission seeks relief including:

- (a) Undertake updated water supply network modelling to confirm suitable residential firefighting water supply, and that the 2017 model findings are still accurate;
- (b) FENZ are also of the view that the District Plan provisions do not adequately address firefighting water supply servicing. They seek that a specific rule be included requiring all development and subdivision in the racecourse precinct to demonstrate compliance in accordance with SNZ PAS 4509:2008.

49. I consider the modelling work completed in 2017 is still fit for purpose when compared to HCC Future Water Demand assumptions. As outlined in the Mott MacDonald report, the proposed development does result in a minor drop in pressure in the network. However, resultant pressures are still above minimum service levels for both residential and residential fire flow requirements (FW2 – 25l/s with 10m residual head). Low pressures in the network are an existing level of service issue relating to the operation of the Pukete Reservoir. There are also expected to be improvements in the pressure in the service zone once the Pukete Zone is closed.
50. Any development within the PC13 area will need to be designed and serviced in accordance with the WLASS Regional Infrastructure Technical Specifications (RITS). Clause 6.2.3.3 of the RITS specifically requires a water supply network to comply with SNZ PAS 4509:2008, with consideration required to increase the level of service to ensure security of supply for operational purposes within specific developments. Adding a specific rule in the district plan via PC13 is not necessary and would result in a site-specific addition which is better addressed under standard consent processes. My experience is that this issue is well-managed through compliance with the RITS and there is no need to duplicate it.

McMac Properties Ltd - (Prestige Panelbeaters – 89 Garnett Avenue)

51. Relevant matters raised in the McMac Properties Ltd submission include:
 - (a) Existing flooding/ponding issues and concern that additional development will exacerbate the issues without extensive upgrades of the reticulation.
 - (b) Concern is also raised about the flood corridor delineation and proposal to construct dwellings within the flood hazard areas.

- (c) Concern regarding increased frequency and duration of significant rainfall events as a result of climate change.
- (d) Concern that the increased development and impervious surfaces will result in increased runoff causing adverse effects to their property

Phillip Robinson – 6 Ken Browne Drive

52. Relevant matters raised in the Phillip Robinson submission include:

- (a) Concern regarding the overland flow and flooding toward their site located to the south-east;
- (b) Concern regarding increased frequency and duration of significant rainfall events as a result of climate change;
- (c) An option is presented recommending extension of the wetland area further to the southern boundary.

53. As the two properties above are neighbouring each other, with similar concerns raised, I have addressed the concerns together, as follows.

54. I note that runoff from the PC13 area will be collected and reticulated away from both the McMac Properties and 6 Ken Brown Drive sites, with the primary networks and secondary overland flow paths directing flows internally to the proposed constructed stormwater wetland. The wetland will provide attenuation of the 2-, 10- and 100-year events back to pre-development rates and ensuring no adverse effects on the receiving stormwater reticulation. No overland flows will be directed over the southern boundary of the PC13 area into the neighbouring properties.

55. As outlined in the ICMP, the existing stormwater reticulation passing through the site does not have adequate capacity to convey the 2-year catchment flows without surcharge. I have recommended that site

development includes upsizing and redirection to meet current RITS standards (i.e., 10-year ARI pipe capacity with pipe alignments following public road corridors). This will result in significant improvement of pipe capacity through the PC13 area from external upstream sites.

56. Design of the post-development flood corridor, supported by detailed catchment wide flood modelling and in line with the proposed mitigation measures, will ensure no additional adverse effects on adjacent properties. Setback for future dwellings will be determined as part of the detailed modelling. The modelling will also allow for the Maximum Probable Development (MPD) scenario and include allowance for additional rainfall due to climate change. I also note that the existing HCC Rapid Flood Hazard Modelling (RFHM) shows 100-year ARI flood flows are generally flowing in a south to north direction, with flood flows discharging from the McMac Properties and 6 Ken Brown Drive sites into the PC13 area.
57. For these reasons, I do not agree with the submission points on behalf of those property owners.

RESPONSE TO FURTHER SUBMISSIONS

58. A further submission from Kāinga Ora – Homes and Communities was lodged in response to the submission by FENZ. This further submission supports the request by Fire and Emergency New Zealand for updated modelling. I note I have already responded to under the 'Matters Raised in Submissions' section.
59. The further submission however opposed the Fire and Emergency New Zealand submission for specific rules to be incorporated into the District Plan via PC13 to demonstrate compliance with SNZ PAS 4509:2008 based on the comment that such standards are covered through the building consent process. I agree with this reasoning.

RESPONSE TO THE SECTION 42A REPORT

60. The Section 42A Report recommends one inclusion to PC13 in relation to 3 Waters Infrastructure. Item 5.29 - recommended inclusion of the following additional rule:

Rule 4.8.13: Buildings within the Low Flood Hazard Area shown on the Te Rapa Racecourse Medium Density Residential Precinct Plan (Figure 4.5-1) shall comply with Rule 22.5.6 with the Low Flood Hazard Area defined as the area shown on Figure 4.5-1. This rule shall not apply if a flood risk assessment report has been provided in accordance with Rule 23.7.9.

61. I support the inclusion of this additional rule in the PC13 provisions, subject to any minor rewording recommended by Mr Olliver.

CONCLUSION

62. Based on the outcomes of the technical assessments of 3-waters servicing for the PC13 site area and the anticipated effects of the proposed level of development, there are no reasons to reject the proposed plan change based on 3-waters engineering matters. These assessments provide sufficient evidence that the site is suitable for development, subject to detailed design at the resource consent stage, and adherence to the proposed recommendations of the ICMP.



Hayden John Vink
Dated: 26 July 2023