

Before a Hearing Panel on the proposed Plan Change 20 to the Waipa District Plan

Under

the Resource Management Act 1991

And

In the Matter

of proposed Plan Change 20 to the Waipa
District Plan

Statement of Evidence by way of submission for
Christopher Wayne Hickey
and Sharon May Hickey
(local residents)
Dated: 8 March 2023

INTRODUCTION

Background to submission

1. I am making this submission on behalf of myself and my wife, Sharon Hickey.
2. We have been residents at 74 Lowe Road for 29 years.
3. I provided a submission on 28/10/22 in opposition to the proposed plan change (**Appendix 1**). This evidence to the Hearing Panel expands on the issues raised in that submission. Unfortunately, we consider that most of these issues have not been addressed at all in the information before the panel, with some of these issues constituting a high potential for environmental risk – particularly long-term adverse effects on drinking water supplies – should the development proceed.
4. Unfortunately, we will be overseas at the scheduled time for the convening of the Hearing Panel so I am unable to present this evidence in person.
5. I outline my professional expertise below as my qualifications and experience are directly relevant to the matters on which we have submitted.

Qualifications and Experience

6. My name is Christopher Wayne Hickey. I work for RMA Science specialising in Ecotoxicology and Environmental Risk Assessment. Previously, until September 2020, I was employed as Principal Scientist – Ecotoxicology and Environmental Chemistry with the National Institute of Water and Atmospheric Research Limited ("NIWA") based in Hamilton. Prior to this I was employed by NIWA and its predecessors as a research scientist since 1979.
 7. I hold the degrees of:
 - (i) B.Sc., chemistry and biology from University of Waikato (1976);
 - (ii) M.Sc. (hons), biochemistry and chemistry from University of Waikato (1978); and
 - (iii) Doctor of Philosophy in biochemistry/microbiology from the University of Waikato which I received in 1985.
 8. I have worked for over 40 years in environmental research and consulting in the area of contaminant impacts in fresh and marine waters. My specialist areas are in water quality guidelines and environmental toxicology.
 9. My research experience includes:
 - (a) characterisation of wastewater treatment systems;
 - (b) environmental impact of wastewater discharges; determining species sensitivity to chemical contaminants;
 - (c) biomonitoring for chemical contaminants and their effects on native fish and invertebrate species;
 - (d) derivation of water and sediment quality guidelines; and
 - (e) remediation of environmental contamination.
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10. I was a contributing author to the ANZECC (2000) water quality guidelines¹; the New Zealand Municipal Wastewater Monitoring Guidelines²; and Guidelines for Drinking-water Quality Management for New Zealand³. I am currently on a technical committee undertaking a review and derivation of new and revised Australian and New Zealand Guidelines (ANZGs) for marine and freshwaters⁴ and have been involved in revision of several guidelines – including the updated guideline for boron in freshwaters⁵.
11. I am also on the Technical Experts Committee for toxicants and sediments for the Ministry for the Environment for derivation and implementation of national environmental standards for freshwaters. I was responsible for the recently implemented national standards for nitrate and ammonia⁶, while contributing to reports providing the basis for future standards for other contaminants (nutrients and sediments⁷).
12. I was a Regional Associate Editor of Environmental Toxicology, an International Wiley Journal (1999-2005). I am a member of the Society of Environmental Toxicology and Chemistry (SETAC). I was President of SETAC Global (over 5000 members) in 2004 and served on the Board of Directors for SETAC Asia/Pacific (2001-2010). In 2016, I was elected a SETAC Fellow. Through my close involvement with national and international societies, I have been involved with the organisation of and have participated in numerous workshops and conferences covering a wide range of environmental issues. This experience is invaluable in undertaking site-specific evaluations of environmental contaminant risks in various geographic locations.
13. Acting as a consultant, I have been involved with the:
- (a) design and implementation of aquatic toxicity assessment and biomonitoring programmes;
 - (b) monitoring of pollution impacts;
 - (c) environmental impact reports and discharge consenting applications;
 - (d) site-specific guideline derivations; and
 - (e) government policy advice.
14. I have authored or co-authored over 100 published scientific papers on a range of freshwater and marine environmental toxicology topics, including:

¹ ANZECC/ARMCANZ, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, October 2000 ed. (Canberra, Australia: National Water Quality Management Strategy Paper No. 4, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, 2000).

² NZWERF, *New Zealand Municipal Wastewater Monitoring Guidelines*, ed. D.E. Ray (Wellington: New Zealand Water and Waste Association, October 2002, 2002).

³ MoH, *Drinking Water Standards for New Zealand 2005 (Revised 2008)* (<http://www.health.govt.nz/publication/drinking-water-standards-new-zealand-2005-revised-2008>) (Wellington, New Zealand: Ministry of Health, 2005).

⁴ Michael. StJ. Warne et al., "Revisions to the Derivation of the Australian and New Zealand Guidelines for Toxicants in Fresh and Marine Waters," *Environmental Science and Pollution Research* 21 (2014), <https://dx.doi.org/10.1007/s11356-013-1779-6>, M.StJ. Warne et al., *A Revised Method for Deriving Australian and New Zealand Water Quality Guideline Values for Toxicants - Update of 2015 Version* (Australian and New Zealand Governments and Australian state and territory governments, Canberra: Prepared for the revision of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018),

⁵ ANZG, *Toxicant Default Guideline Values for Aquatic Ecosystem Protection: Boron in Freshwater*. (<https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/toxicants/boron-fresh-2021>) (Canberra, ACT, Australia: Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, 2021),

⁶ MfE, *National Policy Statement for Freshwater Management 2014. Updated August 2017 to Incorporate Amendments from the National Policy Statement for Freshwater* (http://www.mfe.govt.nz/publications/fresh-water/national-policy-statement-freshwater-management-2014-amended-2017_) (Wellington: Ministry for the Environment, 2014),

⁷ P. Franklin et al., *Deriving Potential Fine Sediment Attribute Thresholds for the National Objectives Framework* (NIWA and Cawthron report prepared for Ministry for the Environment, 2019).

- (a) toxicity of chemicals to organisms;
- (b) pollution impacts on aquatic ecosystems;
- (c) the use of freshwater and marine organisms for biomonitoring;
- (d) the chemical contamination of freshwater and marine sediments; and
- (e) development of water quality guidelines and national standards.

Experience with the site

15. We have been resident at 74 Lowe Road for the past 29 years. Our original lifestyle block was 3.2 ha and the current block is 2.5 ha. Our house is located on a river terrace below the Lowe Road level.
 16. Our house and farm have for the past 29 years received a continuous water supply from a major spring near our house (>10 L/s flow). This spring has minimal seasonal flow variation. We have no water storage and rely on the base flow of this “Fernhollow Spring” (“**The Spring**”) for the entirety of our freshwater use. We use a 10 µm particle filter on our water supply pump and the filter lasts at least one year without requiring a change.
 17. There are multiple springs discharging from this terrace level, which together form two streams which run through our property and discharging to the Waikato River.
 18. The water quality in these springs is high. The water is very clear and well oxygenated. There is negligible iron and manganese in the water.
 19. The spring water from Fernhollow Spring has for the past 25 years been used as a reference water for ecotoxicity tests undertaken at the National Institute of Water and Atmosphere’s (“**NIWA**”) Hamilton laboratory. The spring water has been used for maintaining cultures of sensitive freshwater species and as a dilution water for toxicity testing.
 20. Extensive chemical testing has been done on the Fernhollow Spring water in conjunction with its use for ecotoxicity testing. The Spring water has slightly elevated nitrate concentration (~3 mg/L of nitrate-N) and no detectable pesticides, herbicides, heavy metals or other organic contaminants. The faecal bacterial measurements on the Spring water have always been less than detection.
 21. Two properties adjacent to ours also use spring water directly for drinking water supply while another two top up their tanks from Spring water during summer at times.
 22. The Nukuhau Stream (**Appendix 3**) receives multiple inputs from groundwater springs in its lower reaches. These cool spring flows maintain large longfin and shortfin eel (“**tuna**”) populations and freshwater crayfish (“**koura**”) in pools and suitable habitats.
 23. I consider that the aquifer upstream of Lowe Road is likely to be located under the proposed Plan Change area. As such, the change in landuse represents a potentially unacceptably high risk to downstream users of groundwater aquifer.
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SCOPE OF EVIDENCE

24. Our submission addressed three major issues (Appendix 1):
- i. Sewage and industrial waste disposal.
 - ii. Traffic density.
 - iii. Ambient lighting.
25. I expand on these issues in the following submission.

SUBMISSION ISSUES

Sewage and industrial waste disposal.

26. The environment downstream of the proposed Plan Change Development has sensitive environmental receptors – including surface water and groundwater environments (drinking water).
27. *Surface water.* The flow runoff surface hydrograph will change markedly from this development.
28. The increased hard-surface areas (i.e., roof areas, parking areas, roads) will result in a marked increase in the intensity (i.e., peak flow volume) and total volume of runoff.
29. I cannot find any predictions of the peak flow volume and total volume increase for rainfall events in the application. This assessment needs the hard surface area and the change in runoff coefficient – together with the size of the rainfall event being considered. An example of this type of analysis is provided by the Ruakaka Industrial Development.⁸
30. I consider that the fate of stormwater disposal from the site is poorly described. There is mention of “soakagepits”⁹, however, I consider that these would be inadequate as a mitigation measure given the likely current and future rainfall events and the sensitivity of the likely downstream environment. There is mention of discharge of stormwater to the Nukuhau Stream in the Plan Change Infrastructure report, which has significant tuna and koura populations and a number of properties and housing in close proximity (**Appendix 3**).
31. A potential flooding risk exists for both the Plan Change area and the downstream Nukuhau Stream. Should flooding occur then there is a risk of both adverse hydrological effects and chemical/microbial effects from the event(s). A suitably sized stormwater pond is a mitigation approach to reduce the risk for downstream receiving waters.
32. I consider that suitably sized stormwater retention ponds will be an essential component of this development. The size of the pond would need to be sufficiently large to maintain the near-natural current flow hydrograph in the Nukuhau Stream. Additionally, having a reticulated stormwater system to a major pond will allow monitoring of contaminants and provide some treatment for reducing contaminant concentrations.
33. *Groundwater.* The extent of the aquifer which feeds down-field properties is unknown based on my literature review and enquiries with Environment Waikato. To some extent

⁸ Ruakaka Structure Plan 2(2008).

(<https://www.wdc.govt.nz/files/assets/public/documents/council/plans/coastal-structure-plans/marsden-point-structure-plan-appendix-3.pdf>).

⁹ S42A, Appendix 3.

the aquifer which supplies our properties is likely to be part of the area under the proposed Plan Change development.

34. The potential risk to properties receiving drinking water and stock water is also unknown – though there may be a substantial number based on the property and housing number (**Appendix 3**).
35. Recharge of the aquifer will come from rainwater infiltration. Thus, a change in hard-surface area will potentially greatly reduce the recharge. Additionally, surface contouring and re-routing of the landforms could also likely significantly affect the groundwater recharge.
36. I consider that the groundwater aquifer in this Plan Change area must be mapped to determine groundwater flow direction. I am aware of a study in 1999 in a portion of this area which investigated groundwater flow and pesticides.¹⁰ That study was not sufficiently comprehensive to include the Plan Change area.
37. Additionally, the piezometers installed for the aquifer characterisation could be used for future compliance monitoring for water levels and chemical contaminants.
38. A risk assessment was undertaken by Environment Waikato for on-site wastewater treatment risks in 2012 (**Appendix 5**¹¹). That study identified a range of risk categorisations for adjacent properties, indicating that significant granularity may be expected for a groundwater/land-use risk assessment.
39. Thus, I would expect that a substantial investigation will be required to definitively establish the characteristics of the aquifer and the risk to down-field drinking water users.
40. *Contaminants of potential concern.* The nature of chemicals held, used and transported in this proposed Plan Change area is unknown. What can be assumed is that there will be a wide range of potentially highly ecotoxic, persistent and bioaccumulative environmental contaminants.
41. Thus, potential spillages and discharge will contain complex mixtures of chemicals (most of which are unknown) and which are very expensive for chemical analysis for effects assessment. This is both for routine stormwater monitoring and for adverse event monitoring (e.g., spillage, floods, transport accidents).
42. Fire events are commonly the highest risk for environmental discharge of these complex mixtures of chemical contaminants. The use of water applications for firefighting, and for 'clean-up' of chemical spillages, can result in widespread environmental contamination of persistent chemical toxicants in soils and aquifers.
43. Additionally, the costs for investigations, clean-up and remediation will be high. While clean-ups are possible for contaminated soils, the remediation of groundwater is often near impossible, resulting in long-term loss of the ability for down-field users to continue use.
44. Some chemicals which are classified as low toxicity (e.g., detergents, organics such as glycol) may result in deoxygenation of the aquifer. Spillage or discharge of these materials can deoxygenate the groundwater and result in a high iron/manganese, and potentially sulphurous, aquifer. This change in the condition of the aquifer will have long-term adverse effects for the suitability of the aquifer for drinking water supply.

¹⁰ Hadfield, J.C., D.A. Nicole, and M.A. Thompson. A Summary of Groundwater Investigations at the Rukuhia Pesticide Research Site. Hamilton: Environment Waikato, 1999.

¹¹ Trebilco U, Fletcher B, Simonson T, Hadfield J 2012. Potential for effects from onsite wastewater in the Waikato region, with particular focus on development south and east of Hamilton. Waikato Regional Council, Hamilton. Waikato Regional Council Technical Report 2012/09. 47 p.

45. The use of the Waipa Stormwater Bylaw (2019) has been proposed for management of stormwater effects.¹² While this may be acceptable from a surface water effects perspective, I consider it is not acceptable for drinking water supply catchments groundwaters.
46. The risk for drinking water supply catchments from chemical use in industry is high. The Ministry of Health produced “Guidelines for Drinking-water Quality Management for New Zealand: 2013”¹³ which provides some risk assessment guidance. I have reproduced the prioritisation tables from that document (**Appendix 6**). These tables highlight some of the wide range of chemicals which need to be considered for drinking water supply assessment.
47. I consider that characterisation of the groundwater aquifer together with a robust assessment of the potential for contaminant assessment from the proposed industries must be a component of the proposed Plan Change prior to granting the change. This assessment must also include identification of all dwellings and properties in the down-field aquifer which used the groundwater for drinking water, stock water or irrigation uses.
48. I also consider that if the groundwater under the proposed Plan Change area is identified as being linked to local drinking water uses, then robust planning rules must be included to restrict the types of industries and associated chemical contaminants which are permissible in the Plan Change area.
49. Conditions should also include comprehensive monitoring programmes to characterise baseline conditions in surface waters and groundwater resources. The monitoring conditions should also include routine future monitoring of stormwater pond(s) discharges and local groundwater (using piezometer arrays), together with monitoring for rainfall events.

Traffic density.

50. We submitted that:
- i. Raynes Road currently has no walking paths or safe provision for cycle use. The suitability for recreational use will be greatly reduced with traffic density increases associated with this proposed development.
 - ii. Peak time traffic density will also challenge the current roading infrastructure for access to local highways.
 - iii. The intersections and road widening will need to be improved.
51. Currently the residents of the rural residential area of Lowe Road have to use the highly unsafe Raynes Road for recreational cycling use to access other local rural roads and the Waikato River Cycleway. Walking on the verge is also unsafe because of the poor and unkept nature of the verges of Raynes Road.
52. We consider that the development should not proceed until the proposed Southern Links roading network is completed.
53. Should some limited development be consented, then we consider that consent conditions should include upgrading of Raynes Road to provide a safe cycle/footpath.

¹² S42A report, Appendix 3.

¹³ MOH 2013. Guidelines for Drinking-water Quality Management for New Zealand: 2013. Third edition. Ministry of Health, Wellington, New Zealand. 726 p.

Lighting

54. We submitted that ecologically sensitive lighting needs to be used to minimise adverse effects on birds, bats and aquatic/terrestrial insects.
55. The proposed development will have a substantial roading network and associated building security lighting. Much of this lighting will operate for the duration of darkness and create a high-light zone in what is otherwise currently a low-light (near-ambient) light area.
56. This high zone has the potential to adversely affect the ambient environment, both aesthetically and for ecological effects on a wide range of species.
57. We consider that a consent condition should be included to minimise the extent of light pollution and to use ecologically appropriate light sources.

RESPONSES TO SECTION 42A REPORTS

58. I have read the s42A report by Mr Nick Williamson, Consultant Planner, Align Ltd, contracted to Waipa District Council.
 59. I also specifically read the “3 Waters Report Waipa PPC20” (Appendix 3) prepared by Ms Claire Scrimgeour, Beca.
 60. There are a number of issues which I have raised in our submission which I consider are not specifically addressed in the s42A report which I briefly address below.
 61. In the “3 Waters Report Waipa PPC20” section:
 62. Section 3.3 Stormwater Management states: *“The dry industry and retail development types proposed are unlikely to be at high risk of impacting stormwater quality. The Waipā Stormwater Bylaw 2019 has provision for maintenance of on-site systems and pollution prevention plans for high risk industries to protect water quality.”*
 63. As stated in our submission I do not consider that nature of the types of industry proposed and their associated chemical contaminants and risks has been characterised. This risk assessment remains to be undertaken.
 64. I have reviewed the Waipa Stormwater Bylaw 2019 and I do not consider that it is adequately prescriptive for ecological environmental protection. Neither is it suitable for protection of sensitive drinking water supply catchments.
 65. I was not aware of the term “dry industry” and it is not defined in Waipa Stormwater Bylaw 2019 and to my knowledge is not a term in general use in relation to industry types. I called Nick Williamson in this regard and was informed that the term related to industries with a low water consumption. These industries generate a minimal hydraulic loading to septic tank systems.
 66. As in our submission, I consider that a stormwater pond system would be essential for the adequate management of stormwater from this proposed 89 ha development.
 67. Section 3.4 Wastewater states: *“The long term plan for the wastewater service for the area to the south of Hamilton is for a new wastewater treatment plant (WWTP) to service the wider Airport area, Matangi and parts of south Hamilton. The agreed approach is recorded in a Memorandum of Understanding (MoU) between the project partners which include WDC and Hamilton City Council.”*
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68. I was not aware that a treatment plant was planned in our area. No notification of this for site-selection and discharge water course has been made to residents.
69. I consider that full reticulation of wastewater must be incorporated into the plan.
70. Other: Drinking water has not been considered in this s42A Appendix 3. This is a major omission given the nature of the development and the high value of the local aquifer for drinking water supply.
71. As addressed in this submission, we consider that the characterisation of the aquifer and the potential risk to drinking water supplies must be addressed prior to the granting of consents for this proposed Plan Change.

CONCLUSIONS

72. Based on my local knowledge of groundwater use for drinking water and its importance for maintaining local streams I consider that this currently proposed Plan Change and industrial development has the potential for significant adverse effects.
73. We consider that:
- i. Stormwater reticulation and a stormwater pond will be required as part of this development.
 - ii. A fully reticulated wastewater system must be implemented.
 - iii. An assessment of the groundwater aquifer and down-field users of the aquifer for drinking water supplies must be undertaken prior to the granting of consents (see Recommendations).
 - iv. Planning rules need to be implemented to manage the types of industries and the nature of chemical contaminants in this Plan Change area.
 - v. Comprehensive future monitoring of surface waters and groundwaters will need to be implemented as part of any industrial development.
 - vi. Cycle and walkways should be provided on Raynes Road and Airport roads to connect with the Hamilton/Cambridge cycleways as a condition of this development.
 - vii. Low impact lighting systems should be required for the development to minimise adverse aesthetic and ecological impacts.
74. We provide recommendations below for the additional investigations and assessments which will help address the gaps in information for assessment of this application.
75. Based on the limited information currently available and the high potential for significant adverse environmental effects, we consider that the current application should be declined.
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RECOMMENDATIONS

76. I consider that there are currently a number of information gaps which limit the ability to assess the potential for adverse environmental effect associated with this proposed Plan Change and development.
77. I make the following suggestions for consideration based on my relevant professional expertise and experience in this area of environmental assessment and consenting:
- i. Decline the Plan Change application until such time as a groundwater aquifer assessment and drinking water use is undertaken.
 - ii. Require that a drinking water risk assessment be undertaken for potential stormwater and groundwater contaminants prior to granting any consents.
 - iii. Require that stormwater treatment ponds and fully reticulated wastewater systems be part of any development should consents be granted.
 - iv. Require that a flood risk assessment be undertaken prior to any development and before any consents are granted
 - v. Require that a baseline water quality monitoring programme for local surface waters and groundwater be undertaken prior to development; and that a comprehensive monitoring programme be in place after development.
 - vi. Consider implementing planning tools as part of this Plan Change which restrict the types of industry, chemicals used and activities undertaken in this area. These planning tools would be aimed at minimising all risks associated with chemical contaminants in this area.
 - vii. Require that a substantial bond be held with the Waikato Regional Council to cover event monitoring/clean-up/decontamination and compensation for affected users should consents be granted. This bond is required as small industries are generally not able to cover the cost of the environmental assessment and remediation. Additionally, the effects may occur from multiple industries being affected leading to complex chemical mixtures (e.g., with a fire event).


Christopher Wayne Hickey and Sharon May Hickey
8 March 2023

References

- ANZECC/ARMCANZ. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. October 2000 ed. Canberra, Australia: National Water Quality Management Strategy Paper No. 4, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, 2000. C:\Hickey databases\ANZECC guidelines\Water quality\Guideline documents.
- ANZG. *Toxicant Default Guideline Values for Aquatic Ecosystem Protection: Boron in Freshwater*. (<https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/toxicants/boron-fresh-2021>). Canberra, ACT, Australia: Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, 2021.
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- Trebilco U, Fletcher B, Simonson T, Hadfield J 2012. Potential for effects from onsite wastewater in the Waikato region, with particular focus on development south and east of Hamilton. Waikato Regional Council, Hamilton. Waikato Regional Council Technical Report 2012/09. 47 p.
- Warne, M.StJ., G.E. Batley, R.A. van Dam, J.C. Chapman, D.R. Fox, C.W. Hickey, and J. L. Stauber. *A Revised Method for Deriving Australian and New Zealand Water Quality Guideline Values for Toxicants - Update of 2015 Version*. Australian and New Zealand Governments and Australian state and territory governments, Canberra: Prepared for the revision of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018.
- Warne, Michael. StJ., G.E. Batley, Olga. Braga, John. C. Chapman, D.R. Fox, C.W. Hickey, Jenny. L. Stauber, and Rick. Van Dam. "Revisions to the Derivation of the Australian and New Zealand Guidelines for Toxicants in Fresh and Marine Waters." *Environmental Science and Pollution Research* 21 (2014): 51-60. <https://dx.doi.org/10.1007/s11356-013-1779-6>.

Appendix 1: Copy of Hickey submission.

COUNCIL USE ONLY	
Date received:	
Document ref:	


Waipā District Plan Plan Change Submission Form
Form 5 Clause 6 of the First Schedule to the Resource Management Act 1991

Send to: [Waipā District Council](mailto:districtplan@waipadc.govt.nz), Private Bag 2402, Te Awamutu 3840
 Phone: 0800 924 723 | [Online: www.waipadc.govt.nz/planchanges](http://www.waipadc.govt.nz/planchanges) | Email: districtplan@waipadc.govt.nz

Please attach additional sheets if there is not enough space for your submissions. If you do not wish to use this form, please ensure that the same information required by this form is covered in your submission.

Note: You must fill in **ALL** sections of this form.
 Submissions close **5pm Friday, 28 October 2022.**

1. Submitter details

Full name of submitter:	Christopher Wayne Hickey
Contact name if different from above:	
Contact phone number(s):	+64 274 867 429
Email address:	fern hollow@xtra.co.nz
Address for service: <small>(<u>required</u> if no email address is provided)</small>	4/74 Lowe Road RD 2 Hamiton 3282

We will serve all formal documents electronically via the email address provided above. Where there is no email address provided the documents will be posted to the above address.

2. This is a submission on the following proposed plan change to the [Waipā District Plan](#)

Plan Change 20 – Airport Northern Precinct Extension

Submissions must be received by [Waipā District Council](#) by **5pm on Friday, 28 Oct 2022**

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10878170

3. Trade competition		
Select one	<input type="radio"/> I could	gain an advantage in trade competition through this submission.
	<input checked="" type="radio"/> I could not	
Select one	<input checked="" type="radio"/> I am	directly affected by an effect of the subject matter that – (a) adversely affects the environment; and (b) does not relate to trade competition or the effects of trade competition
	<input type="radio"/> I am not	
4. Attendance at Council hearing		
Select one	<input checked="" type="radio"/> I do	wish to be heard (attend and speak at the Council hearing) in support of my submission
	<input type="radio"/> I do not	
If others make a similar submission, I will consider presenting a joint case with them at the hearing.		<input checked="" type="radio"/> Yes <input type="radio"/> No
28 Octo		
5. The specific provisions of the plan change my submission relates to are: (give details)		
Select one	<input type="radio"/> I SUPPORT	Intensity and location of industrial subdivision relating to: (i) sewage and industrial waste disposal; (ii) potential adverse effects on groundwater and surface water quality; (iii) traffic intensity relating to ability for cycling on local roads; (iv) traffic intensity relating to access to local highways.
	<input type="radio"/> I SUPPORT IN PART	
	<input checked="" type="radio"/> I OPPOSE	
6. My submission is: (please include the reasons for your view)		
<ol style="list-style-type: none"> 1. Sewage and industrial waste disposal. Our drinking water supply for our dwelling is from groundwater. The aquifer supplying our house is in the likely downstream area for this industrial development. The very large number of proposed industrial sites will be highly likely to contaminate groundwater and surface waters with chemicals and microbial contaminants unless full reticulated treatment systems are in place. Surface waters are also at very high risk from untreated stormwater runoff. 2. Traffic density. (i) Raynes Road currently has no walking paths or safe provision for cycle use. The suitability for recreational use will be greatly reduced with traffic density increases associated with this proposed development. (ii) Peak time traffic density will also challenge the current roading infrastructure for access to local highways. The intersections and road widening will need to be improved. 3. Ambient lighting. Ecologically sensitive lighting needs to be used to minimise adverse effects on birds, <u>bats</u> and aquatic/terrestrial insects. 		

7. I seek the following decision/s from Council: (give precise details – and what you would like the wording of a specific provision (or map) to be changed to)

Only undertake development if:

1. Fully reticulated wastewater and stormwater treatment systems can be provided.
2. Cycle and walkways are provided along Raynes Road and Airport Road to connect with Hamilton/Cambridge cycleways.
3. Improved roading infrastructure for local highway access.
4. Low impact lighting systems are included.

8. Signature of submitter (note: a signature is not required if you make your submission by electronic means, however please type your name below)

Signed by C.W. Hickey, 28/10/22

Note to person making submission

If you are a person who could gain an advantage in trade competition through the submission, your right to make a submission may be limited by [clause 6\(4\)](#) of Part 1 of Schedule 1 of the Resource Management Act 1991.

Please note that your submission (or part of your submission) may be struck out if the consent authority is satisfied that at least 1 of the following applies to the submission (or part of the submission):

- It is frivolous or [vexatious](#);
- It discloses no reasonable or relevant [case](#);
- It would be an abuse of the hearing process to allow the submission (or the part) to be taken further;
 - It contains offensive [language](#);
- It is supported only by material that purports to be independent expert [evidence](#), but has been prepared by a person who is not independent or who does not have sufficient specialised knowledge or skill to give expert advice on the matter.

Personal Information

The information requested on this form, including your contact details, is required by the Resource Management Act 1991. The information will be held by the Council, and you may ask to check and correct any personal information that we hold about you.

Your submission, including your name and contact details, will be made available for inspection at all Council service centres and libraries in accordance with the requirements of the Act. It may also be made available on the Council's website. A document summarising all submissions, including names and contact details of submitters will be posted on the Council's website



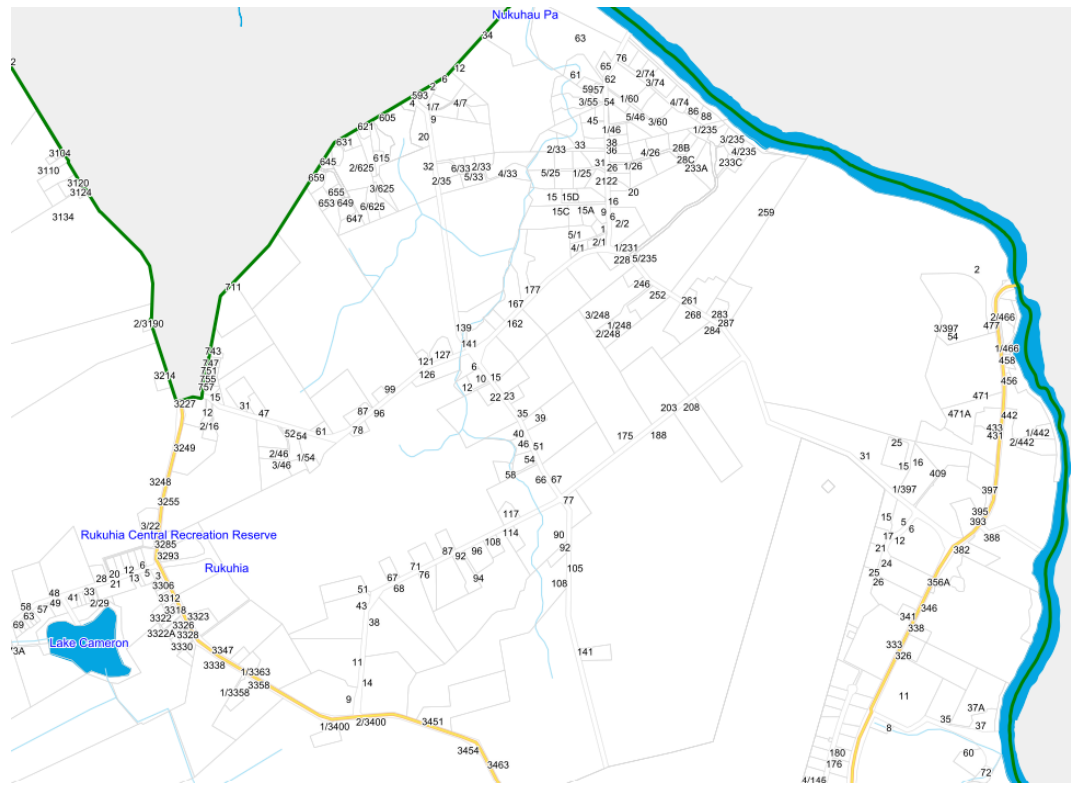
Submissions must be received by Waipa District Council by 5pm on Friday, 28 Oct 2022

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Appendix 2: Location of our property on Lowe Road.



Appendix 3: Waipa District Council dwellings in general vicinity of proposed development. Note: Historic Nukuhau Pa site shown near confluence of Nukuhau Stream with the Waikato River.¹⁴



¹⁴ From Waipa District Council, download 8/3/23 ([url](#))

Appendix 4: Topographical map for area showing Nukuhau Stream and relative proximity of dwellings (see Appendix 3 for dwellings and property boundaries).



Appendix 5: Risk assessment example for potential effects from on-site wastewater in the Waikato region.¹⁵ (Note: Lowe Road is shown in the lower centre. Assessment does not cover plan change area).

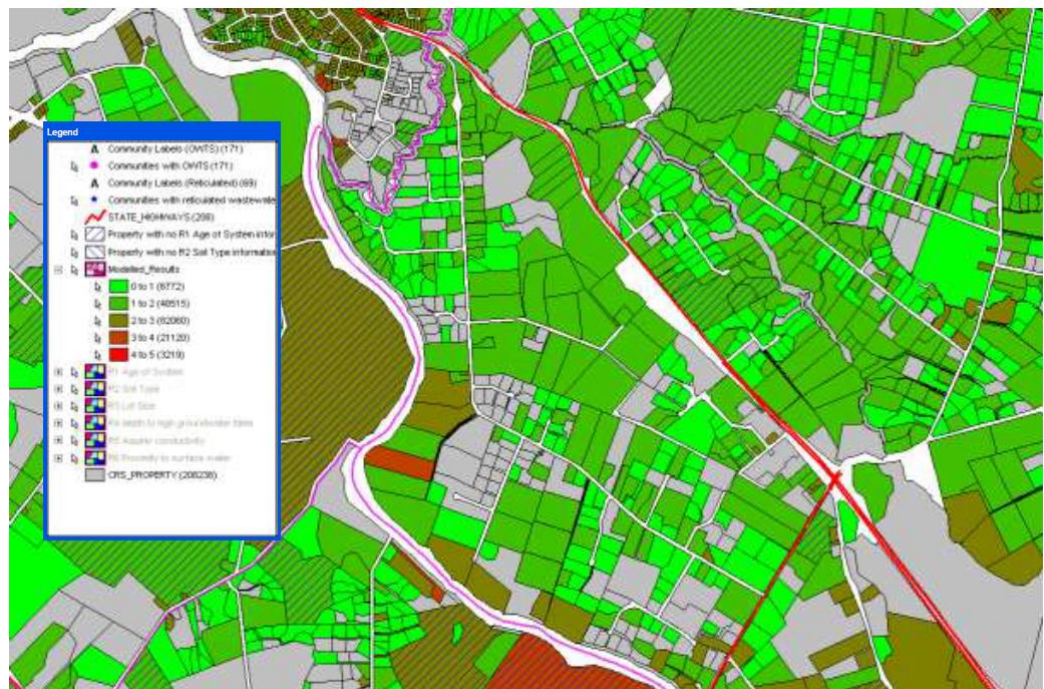


Figure 3: On-site wastewater GIS risk assessment - Tamahere

Note from document text: The red properties have higher risks from septic tanks (3-5 on the risk scale) than the green properties (0-2 on the risk scale).

¹⁵ {Trebilco, 2012 #7459}

Appendix 6: Prioritisation of chemical contaminants for drinking water assessment from Ministry of Health guidance document.¹⁶

Table 4.5: Prioritising chemical monitoring in drinking-water using limited information

Chemical	Chapter 3		Chapter 4		Chapter 5		Chapter 6		Chapter 7		Summary Does this chemical have a significant 'probability of occurrence'? (only ✓ if there are any ✓s in Chapters 3 to 7)	Attenuation Consider attenuation factors. (see Chapter 8). Is it still possible for the consumer to be exposed to this chemical? (only ✓ if yes)	Final list Should this chemical be kept on the list based on practical and feasibility of control considerations? (see Chapter 10) (only ✓ if yes)		
	Is it possible that this chemical is in the raw water source? (only ✓ if yes)														
	From naturally occurring sources		From agricultural sources		From human wastes		From human settlements and industry		Is it possible that this chemical is introduced during water treatment or distribution? (only ✓ if yes)						
Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific				
Inorganic constituents															
Antimony															
Arsenic	✓							✓							
Barium															
Beryllium															
Boron	✓				✓			✓							
Cadmium			✓					✓							
Chromium								✓							
Copper	✓							✓							
Cyanide															
Fluoride	✓				✓				✓						
Lead	✓							✓		✓					
Manganese	✓		✓		✓			✓		✓					
Mercury (total)	✓							✓							
Molybdenum															
Nickel								✓							
Nitrate (as NO ₃ ⁻)	✓		✓					✓		✓					
Nitrite (as NO ₂ ⁻)	✓							✓		✓					
Selenium															
Organic constituents															
<i>Aromatic hydrocarbons</i>															
Benzene								✓							
Toluene								✓							
Xylenes								✓							
Ethylbenzene								✓							
Benzo[a]pyrene								✓							

¹⁶ MOH 2013. Guidelines for Drinking-water Quality Management for New Zealand: 2013. Third edition. Ministry of Health, Wellington, New Zealand. 726 p.

Chemical	Chapter 3		Chapter 4		Chapter 5		Chapter 6		Chapter 7		Summary Does this chemical have a significant 'probability of occurrence'? (only ✓ if there are any ✓s in Chapters 3 to 7)	Attenuation Consider attenuation factors. (see Chapter 8). Is it still possible for the consumer to be exposed to this chemical? (only ✓ if yes)	Final list Should this chemical be kept on the list based on practical and feasibility of control considerations? (see Chapter 10) (only ✓ if yes)		
	Is it possible that this chemical is in the raw water source? (only ✓ if yes)														
	From naturally occurring sources		From agricultural sources		From human wastes		From human settlements and industry		Is it possible that this chemical is introduced during water treatment or distribution? (only ✓ if yes)						
Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific				
Pesticides															
Alachlor			✓												
Aldicarb			✓												
Aldrin/dieldrin			✓				✓								
Atrazine															
Carbofuran			✓												
Chlordane			✓												
DDT			✓				✓								
1,2-dibromo															
3-chloropropane															
2,4-D			✓				✓								
Heptachlor and			✓												
Heptachlor epoxide															
Hexachlorobenzene			✓				✓								
Lindane			✓				✓								
MCPA															
Pentachlorophenol			✓				✓								
Permethrin															
Propanil															
Pyridate															
Simazine															
Triflurin															
Chlorophenoxy herbicides other than 2,4-D, MCPA			✓												
2,4-DB															
Dichlorprop															
Fenoprop															
MCPB			✓												
Mecoprop															

Chemical	Chapter 3		Chapter 4		Chapter 5		Chapter 6		Chapter 7		Summary Does this chemical have a significant 'probability of occurrence'? (only ✓ if there are any ✓s in Chapters 3 to 7)	Attenuation Consider attenuation factors. (see Chapter 8). Is it still possible for the consumer to be exposed to this chemical? (only ✓ if yes)	Final list Should this chemical be kept on the list based on practical and feasibility of control considerations? (see Chapter 10) (only ✓ if yes)		
	Is it possible that this chemical is in the raw water source? (only ✓ if yes)														
	From naturally occurring sources		From agricultural sources		From human wastes		From human settlements and industry		Is it possible that this chemical is introduced during water treatment or distribution? (only ✓ if yes)						
Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific				
2,4,5-T			✓												
1080			✓												
Microcystin	✓		✓				✓								
Disinfectants															
Monochloramine									✓						
Di- and trichloramine									✓						
Chlorine									✓						
Chlorine dioxide									✓						
Disinfectant by-products															
Bromate									✓						
Chlorate															
Chlorite															
Chlorophenols							✓								
2-chlorophenol							✓								
2,4-dichlorophenol							✓								
2,4,6-trichlorop															
Formaldehyde							✓								
MX															
Trihalomethanes									✓						
Bromoform									✓						
Dibromochloromethane									✓						
Bromodichloromethane							✓		✓						
Chloroform									✓						

Chemical	Chapter 3		Chapter 4		Chapter 5		Chapter 6		Chapter 7		Summary Does this chemical have a significant 'probability of occurrence'? (only ✓ if there are any ✓s in Chapters 3 to 7)	Attenuation Consider attenuation factors. (see Chapter 8). Is it still possible for the consumer to be exposed to this chemical? (only ✓ if yes)	Final list Should this chemical be kept on the list based on practical and feasibility of control considerations? (see Chapter 10) (only ✓ if yes)		
	Is it possible that this chemical is in the raw water source? (only ✓ if yes)														
	From naturally occurring sources		From agricultural sources		From human wastes		From human settlements and industry		Is it possible that this chemical is introduced during water treatment or distribution? (only ✓ if yes)						
Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific	Theory	Site-specific				
Chemicals that may give rise to consumer complaints															
<i>Inorganic constituents</i>															
Aluminium									✓						
Ammonia	✓		✓		✓		✓		✓						
Chloride	✓						✓		✓						
Copper	✓						✓		✓						
Hydrogen sulphide	✓		✓												
Iron	✓		✓		✓		✓		✓						
Manganese	✓		✓		✓		✓		✓						
Sodium	✓		✓		✓		✓		✓						
Sulphate	✓		✓		✓				✓						
Zinc	✓		✓						✓						
<i>Organic constituents</i>															
Synthetic detergents					✓		✓								
<i>Disinfectants and disinfectant by-products</i>															
Chlorine							✓		✓						
Chloramine							✓		✓						
2-chlorophenol							✓								
2,4-dichlorophenol							✓								
2,4,6-trichlorophenol							✓								
<i>Chemicals not of health significance</i>															
Asbestos							✓		✓						

Source: Derived from WHO 2004b.

Upgrade this table following the WHO protocol – see Figure 1 (WHO 2004b).

