

**BEFORE THE INDEPENDENT PANEL  
APPOINTED BY HUTT City COUNCIL**

**IN THE MATTER** of the Resource Management Act 1991 ("**RMA**")

**AND**

**IN THE MATTER** of the Proposed District Plan: 104 Upper Fitzherbert  
Road, Wainuiomata - Rezoning to Medium Density  
Residential Activity Area

**Hearing Topic** Hearing Stream 3: Residential / Rural

---

**STATEMENT OF EVIDENCE OF VAUGHAN FRANCIS KEESING  
IN RELATION TO SUBMISSION 516**

**ECOLOGY**

**05 JUNE 2026**

---

## 1. INTRODUCTION

1.1 My name is Vaughan Francis Keesing.

### **Qualifications and experience**

1.2 I have been a consulting ecologist for the last 28 years. My qualifications include a B.Sc. (Hons, 1st) in Zoology and a Ph.D. in Ecology, both from Massey University, as well as a Diploma in Research Statistics.

1.3 My skills lie in community ecology. I have specialist skills in the areas of limnology (the study of inland waters, including wetlands, as ecological systems), entomology, zoology, and botany, and I have worked extensively in freshwater and terrestrial habitats.

1.4 I have been practising as an ecologist for the last 28 years and have worked in a variety of locations including the Wellington region and elsewhere in the lower North Island, West Coast, Canterbury, central North Island, the Far North, Auckland region, and the Bay of Plenty.

1.5 During that time, I have undertaken a wide range of ecological surveys of natural and semi-natural sites, incorporating both botanical and wildlife values. I have provided assessments of values and significance of sites for many councils and private clients, as well as assessing ecological effects of a range of activities on those sites.

1.6 This work has included significance and effects assessments across a range of projects and habitat types, such as:

- (a) determining significant wetlands (as part of exercises in the West Coast Region and Ashburton to identify Significant Natural Areas ("**SNAs**") and in Rangitikei as part of its Protected Natural Areas Programme);
- (b) bush significance assessments (eg over 150 Franklin District Conservation lots, 50 Western Bay of Plenty lots, and many more across New Zealand);
- (c) large-scale roading projects involving wetland assessment and devising proposals to offset wetland effects (eg MacKays to Peka Peka Expressway and Transmission Gully);
- (d) wind farms (eg West Wind, Hurunui, Mill Creek, and Hauāuru mā raki) and hydroelectric schemes (eg Arnold, Wairau, and Coleridge);

- (e) over 20 large-scale subdivisions (eg Omaha South (Darby Partners), Long Bay (Landco), Pegasus Bay (Infinity Co), and Ravenswood (at Woodend));
- (f) plan changes (eg Porters Ski field expansion); and
- (g) assessments of wetland, riparian systems and rivers (eg Hurunui irrigation project, Waitohi irrigation dams, Wakamoekau community water storage; Rakai Water Conservation Order ("**WCO**") amendment, Hurunui WCO, Ngaruroro WCO, Lake Summer dam proposal, Conway minimum flow regime, North Christchurch stream minimum flow assessments (macrophyte), Taramakau River riparian wetland assessment, and the Wairau hydroelectric power scheme).

1.7 Most relevant to this hearing is the work I have undertaken to identify wetland presence and values for:

- (a) Manu Park subdivision, Te Awa subdivision and Lindale subdivision (Waikanae);
- (b) Waikanae Summerset retirement village development,
- (c) Wakamoekau water storage and Lansdowne subdivision (Masterton);
- (d) Upper Katherine Mansfield Drive Bellbird Rise subdivision, involving wetland, stream and terrestrial vegetation habitat assessments,
- (e) Adams versus GWRC Whiteman's valley presence of natural inland wetlands,
- (f) Crosbie and Page appeal court assessment of GWRC wetland identification methods.
- (g) Ratanui Road Summerset retirement village plan change.

1.8 The work examples listed above are all recent assessments involving potential "natural wetlands" under the new Natural Resources Plan ("**NRP**") and the National Policy Statement for Freshwater Management 2020-23 ("**NPSFM**") and Resource Management (National Environmental Standards for Freshwater) Regulations 2020 ("**NES Freshwater**").

**1.9 Involvement in 104 Upper Fitzherbert Road, Wainuiomata - Rezoning to Medium Density Residential Activity Area.**

1.10 I have been involved with the site proposed for the plan change since April 2026. I undertook my site investigations on the 5<sup>th</sup> May 2026 (1 half day on site). Prior to and following that I have attended regular team meetings and development / design workshops.

## Code of Conduct

- 1.11 I confirm that I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2023. I have complied with the Code of Conduct in preparing this evidence and will continue to comply with it while giving oral evidence before the Hearing Commissioners. Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

## 2. SCOPE OF EVIDENCE

- 2.1 This statement of evidence will:
- (a) Present my ecological findings related to the site;
  - (b) Discuss the ecological constraints and opportunities on the site;
  - (c) Consider the potential effects of the plan change on ecology;
  - (d) Summarise the key findings and recommendations from my ecological assessment; and
  - (e) Respond to the Council Officer's Section 42A Report ("**Section 42A Report**") and the submissions received.

## 3. EVIDENCE

- 3.1 The site subject to the proposed plan change at 104 Upper Fitzherbert Road, Wainuiomata, is an area of some 4ha which is currently zoned Rural Residential and is rural in character and use.



**Figure 1:** Aerial image of plan change site, outlined in yellow. Source: Grip GIS.

#### **4. SITE ECOLOGICAL HISTORY**

- 4.1 The upper Fitzherbert Road valley was once a collection point for the draining hills surrounding the valley and which formed a swamp pre 1880 (the “black swamp”). This was drained through the 1880s, in part by enhancing connection to the Black Creek (named for its colour relating to the high tannin content of the water). The Black Creek (now a highly modified drain) collects and discharges the upper catchments water to the coast south having joined with the Wainuiomata River at about the southern end of Wainuiomata town (Homedale). 104 Upper Fitzherbert Road drains to the Black Creek.
- 4.2 The Black Creek is well accepted as a highly modified poor aquatic habitat with water quality issues (LAWA: C class MCI (99), D class QMCI (4.1), poorest 25% E. coli, turbidity, high ammoniacal nitrogen, high total phosphorus and DRP, lowest 50% state wrt DRP, TON, DIN, Nitrate), lack of riparian protections, high sediments on the bed, weed macrophyte growths and a very uniform flow, substrate, bed and banks. It functions more as a flood management device rather than aquatic habitat. It is across the main road from the site and is the recipient of stormwater and surface flows off the property. It is a poor habitat for fish and fish have not been recorded in the upper waterway.

#### **5. ON SITE**

- 5.1 Research and a site survey show that there are no indigenous terrestrial ecological values of note or that should be considered that could meet the significance criteria in Policy 23 of the Greater Wellington Regional Policy Statement (“RPS”). Areas not once or now fully grazed are a small linear area of exotic cherry, holly and blackberry and herbaceous weeds (with some native species (ferns, Grasses)) on the eastern boundary. These trees and scrub surround an intermittent stream feature on the property.



Eastern holly and cherry scrubland.

## 5.2 Natural Wetlands

- 5.3 Undertaking of the MfE 2020/23 natural wetland delineation protocol shows the presence of two narrow linear small natural inland wetlands in the proposed plan change area. GWRC spatial mapping (see Figure 2) suggests that the main channel is a stream, but site survey shows that neither are streams despite being linear. They conform to ephemeral flow path by definition in terms of the GWRC guidance (GWRC water type guidance 2021) but the vegetated bed component are all wetland species making the linear features best fit NRP natural wetland and NPS FM natural inland wetland classification.
- 5.4 There are a small range of other depression features that exhibit some indicators of wetland, such as scattered soft rush, creeping buttercup depression, occasional water pepper, but these are all predominantly still pasture vegetated (>50% pasture species as listed in (Clarkson et al 2021)).
- 5.5 The area of the 2 wetland features sum to approximately 720m<sup>2</sup>. They are largely exotic vegetation assemblages in currently grazed pasture. There are no rare or threatened habitats types (Wiser *et al.*, 2013)<sup>1</sup> on the property or listed threat category species (DOC threaten species classifications).

---

<sup>1</sup> Wiser, S; Buxton, R.; Clarkson, B.; Hoare, R.; Holdaway, R.; Richardson, S.; Smale, M.; West, C.; Williams, P. 2013. New Zealand naturally uncommon ecosystems. Ecosystems services in New Zealand: conditions and trends. Manaaki Whenua Press, Lincoln.

- 5.6 The wetland linear features are shown below (Figure 1). They are 1.5-2m in width, 200-300mm below the primary pasture surface and are predominantly composed of creeping buttercup, Yorkshire fog, *Isolepis prolifera* and *Myriophyllum propinquum* (common water milfoil).
- 5.7 Mouse ear chickweed, lotus jointed rush, toad rush, dock and spiked rush (*E. acuta*) are also frequently encountered in the depressions.
- 5.8 The upper grasslands are largely various pasture grasses and common pasture weeds (brown top, sweet vernal, Yorkshire fog, cocksfoot, plantain, lotus as well as dock, yarrow, fleabane, thistles, gorse, blackberry and some creeping butter cup). There were several areas of greater creeping buttercup presence, but I did not consider these valid natural wetlands and are a temporary state of the pasture management.
- 5.9 The shorter northern “drain” had very little water in the base (mostly damp soils) and is not spring fed. Groundwater is the source. Where I measured the assemblage to be wetland the prevalence indices ranged from 2.9 down to 1.35. A score under 3 indicates wetland (by the NPS FM delineation method) as does the cover dominance of FAC/FACW/Obligative species (which in the areas of wetland was 1 (i.e. dominant). In this case the dominance being either creeping butter cup or in other places the water milfoil.
- 5.10 I ceased to measure wetland dominance when Yorkshire fog became the dominant cover and so pasture.



Figure 1 The linear wetland features identified on the property (blue). Red dots are photo points. The red demarked area is a depression with greater wetland species present but remains pasture dominated.

- 5.11 The longer central depression is no different except near the northern end. There *Carex geminata* (Rautahi) becomes more prominent, with some kiokio and *Eleocharis acuta* more common. Again, prevalence indices were between 1 and 3 and dominance indices 1, indicating (without the need for soil tests but noting hydrology meets wetland conditions) natural wetlands and natural inland wetlands with no exception qualifiers such as pasture.
- 5.12 The following photographs illustrate my points above and show those areas I have just outlined.



Northern depression (western end) with creeping butter cup dominance in the foreground and water milfoil in the mid shot.



Northern depression northern end where there is a mix of creeping butter cup and Yorkshire fog, but the Yorkshire fog is dominant and > 50% cover.



Wider pastures from the northern end between depression looking south.



Southern end of the central main channel - wetland because of creeping butter cup dominance (tall brown vegetation seeded fleabane).



Central depression just north of main driveway, note water milfoil dominance.



Central portion of central depression, some taller soft rush, occasional Edgars rush, creeping butter cup most common, Yorkshire fog and short stretches of ground water as stagnant pools.



A side depression illustrating the presence of some indicative wetland species (*E. acuta*, *Juncus* species) but pasture is dominant as cover (>50%).



Northern central depression where *Carex geminata* and some other wetland species become prominent.

- 5.13 In the following I present my analysis of value based on the NPS FM direction which is to consider: ecosystem health, indigenous biodiversity, hydrological functioning, Māori freshwater values and amenity values.
- 5.14 I am not Tangata whenua and so cannot discuss Māori water values but can note mahinga kai. Nor am I a landscape architect and do not therefore discuss amenity.
- 5.15 Both wetland features on the site are highly modified, low points in grazed paddocks. There is no water flow and no obvious source other than rain and ground water height. There is limited to no real water storage in them. While there are some native species most of the cover is exotic. Historically under forest these features are most likely to have been ephemeral flow paths under a forest canopy. Now they are drainage features draining the adjacent pasture but not the site, due to a general absence in gradient. Their shapes do not suggest that they have been dug. The species assemblage and conditions are not representative of a natural wetland, and their dominance of exotic species and relatively low diversity suggests low indigenous biological diversity. They have only a very limited wetland functional value (being so small and thin). Their health is questionable given the high obvious amounts of oil sheens and various pollutant indicative algae in the water where it is present. It is likely these areas are the repository for pastoral fertilisers and herbicides. Further

they have little to no wider contextual values, they are not pathways for species migration or refuge or sources of food or seeds or any other functional role.

- 5.16 I found no species I understand to be important mahinga kai, or taonga, certainly either wetland is not home to tuna or mud fish or watercress populations. A fair assessment is that both linear wetlands are of very low ecological value.
- 5.17 In terms of the significance criteria set out in policy 23 of the RPS, these features cannot meet the representative criteria or the diversity and pattern criteria, nor the contextual criteria, being simple exotic dominated, induced features. In terms of rarity the RPS and NRP suggest that natural wetlands are underrepresented (rare) and it is true that indigenous representative wetlands are, with Ca. 4% of the historic abundance remaining in the region. However, these features do not represent indigenous representative wetlands and are not those which are rare (i.e. indigenous representative ones). These wetlands are not “significant” in terms of section 6c of the RMA through the RPS policy 23 criteria and so are not SNA.

### 5.18 Waterways

- 5.19 There is one channel on the property that did have flowing water, albeit too shallow to sample (eDNA or traditional kick nett). There is a length of what can be best described as intermittent stream (Figure 2). The character of the flow and substrate and setting (and the advice from a land owner on its flow regularity) strongly suggest that this “stream” is of marginal (very low) value and is not habitat for fish and only common low flow macrophyte related and silt related species (snails, worms, copepods, amphipods, and dipteran larvae – i.e MCI 60-70). This channel drains to the southern boundary drain that drains across the Upper Fitzherbert Road to the Black Creek.



*Figure 2 GWRC ARC GIS stream layer showing the central depression (a wetland) and my annotated position of the intermittent stream (orange).*

- 5.20 The flow while circa 1-2L/s is flowing and over a narrow pebble and sediment substrate bed. I did not find stable pools, but it is likely that this feature with better gradient and the central depressions flows more often and is more akin to an intermittent stream.



View of narrow channel opening amongst the rank grass which gets more open under the gorse.



The southern boundary drain, a relatively poor aquatic habitat, but one containing at least some potential as eel habitat.

## 6. CONSTRAINTS AND OPPORTUNITIES

- 6.1 There are no indigenous terrestrial values on site, no bats, indigenous bird habitat or lizard habitat other than the buildings and human debris as cover for the common northern grass skink.

- 6.2 There are few ecological constraints on the site but reasonable opportunities to improve the state of natural wetland and the waterway.
- 6.3 Submission 516 on the PDP seeks to rezone 104 Upper Fitzherbert Road from Rural Lifestyle Zone to Medium Density Residential Zone. The rezoning would provide for additional development potential in line with the surrounding residential areas to the west and south.
- 6.4 The proposal currently envisages a development layout as follows:



*Figure 3 Possible development layout. My blue line indicating wetland swale and wetland retention basin opportunities.*

- 6.5 Currently the “natural” wetlands on the property have no future improvement scenarios under the current land uses. Through this plan change there would be the potential for any subsequent development to create a centralised indigenous wetland that is part of the hydrology management of the site (so as to maintain wetland hydrology). And in addition, a sound aim would be to incorporate a long linear indigenous wetland as part of the sites flow management response such as a wide wetland swale. To this end, a stormwater management system that included a substantive indigenous wetland component would be feasible and assist with stormwater management while creating valuable natural wetland. Indeed, both a wetland swale and basin wetland would be ideal.
- 6.6 In such a scenario and because of the current low value poor quality wetland situation I do not see that there is evidence of a need to treat the future stormwater prior to that water being in any new wetland feature.

- 6.7 In a similar way the intermittent stream offers an opportunity through realignment to cause a better aquatic habitat with greater habitat extent and value to be present.
- 6.8 The restoration of a riparian native buffer to the waterway would also be advantageous to the waterway and a potential outcome of the development of this site but such an enhancement will not improve the level of intermittent flow or instream conditions related to substrates.
- 6.9 There is no wider landscape linkage or connectivity potential with the surrounding area in regard to the waterway or wetlands. It is possible that wider land development could take that into account and development on this property could plan that aspect at the time of resource consenting.

## **7. POTENTIAL ADVERSE EFFECTS**

- 7.1 The potential adverse effects of any land development in terms of ecological features and values are limited in essence to water quality aspects during the operational phase. Construction phase stormwater discharge management on such flat catchments are not overly problematic but nor is the potential receiving environment (the waterway) in any way sensitive to sediments (Black Creek).
- 7.2 The ultimate receiving habit is the Black Creek
- 7.3 Where there is sufficient stormwater management of the new sites impervious surfaces that treat the potential water quality changes caused by conversion from farming (nutrients and faecal coliform enrichment) to urban (metal and PAH contaminant) the result is often better water quality in the receiving environment. That aspect (managing water quality downstream) would form part of any future resource consent application.

## **8. KEY FINDINGS AND RECOMMENDATIONS**

- 8.1 The presence of 2 small modified very low ecological value natural (inland) wetlands gives rise to a significant opportunity to cause the creation of a larger, cohesive more indigenous representative wetland through development and use of the stormwater and hydrological changes that could be brought to the site. The wetlands will not be enhanced and protected under the current land use and practices.
- 8.2 That same process will more than likely result in better water quality leaving the site than does now.

- 8.3 The net ecological outcome for natural wetlands for development enabled under the plan change could be one of significant gain compared to the potential under the current land use. Those gains (and consideration of effects) are directed by the NPS FM, NES Freshwater and the NRP at a time of resource consenting. All seek to maintain the extent and values of rivers and natural wetland.
- 8.4 My recommendation is to ensure that the area of natural inland wetland is offset through the development of one cohesive indigenous marsh wetland system within flood and stormwater infrastructures and using the stormwater of the site.

## **9. RESPONSE TO SUBMISSIONS**

- 9.1 I have reviewed the following submissions in preparing this evidence:
- a) Submission 516; and
  - b) Further Submissions F16, F19, F24, F25 and F35.
- 9.2 There are no submission or further submission points related to ecology of this site.

## **10. RESPONSE TO SECTION 42A SUPPORTING ECOLOGICAL RESPONSE**

- 10.1 The Council officer's s42A report states at 2.6.1 (2) that matters relating to ecosystems and indigenous biodiversity were raised during initial discussions between representatives of the submitter and Council's reporting officers. I was not present at that discussion but understand that the potential for the presence of freshwater ecology was raised.
- 10.2 The officer does not otherwise reference any ecological matters or concerns with regard to this site.

## **11. CONCLUSION**

- 11.1 My ecological assessment demonstrates that the site contains no significant indigenous terrestrial ecological values and only two narrow, highly modified wetlands of low ecological value and a short section of intermittent stream fed from the neighbouring properties and delivering to the southern boundary drain and so Black Stream.
- 11.2 The proposed plan change presents an opportunity to achieve a net ecological gain through enhancement of natural wetland areas through the creation of a

cohesive indigenous marsh wetland as part of the possible development's stormwater management regime, to be determined through detailed design as part of a future resource consent.

- 11.3 And enhancement of the intermittent stream reach through realignment and creation of better bank, substrate, riparian edge and flow will also achieve positive outcomes. Specifics of this arrangement can be appropriately addressed with a future resource consent application.
- 11.4 With appropriate effects management measures related to natural wetlands and stormwater, particularly in relation to water quality, the development raised as the example in the plan change is likely to result in improved ecological outcomes compared to the current land use.
- 11.5 I do not consider there to be any ecological constraints that would preclude rezoning of 104 Upper Fitzherbert Road to the Medium Density Residential Zone.

**Dr. Vaughan Keesing**

**5 June 2026**

## Appendix 1: Plant species recorded in wetland features.

<i>taxa</i>	<i>Common name</i>	
<i>Cotula coronopifolia</i>	<i>Bachelors buttons</i>	<i>Indigenous</i>
<i>Eleocharis acuta</i>	<i>Sharp spike sedge</i>	<i>Indigenous</i>
<i>Juncus edgariae</i>	<i>Wīwī</i>	<i>Indigenous</i>
<i>Juncus effusus</i>	<i>Leafless Rush</i>	<i>Exotic</i>
<i>Myriophyllum propinquum</i>	<i>Common water milfoil</i>	<i>Indigenous</i>
<i>Persicaria hydropiper</i>	<i>Water Pepper</i>	<i>Exotic</i>
<i>Ranunculus repens</i>	<i>Creeping Buttercup</i>	<i>Exotic</i>
<i>Lolium perenne</i>	<i>Perennial Rye Grass</i>	<i>Exotic</i>
<i>Crepis capillaris</i>	<i>Hawksbeard</i>	<i>Exotic</i>
<i>Plantago major</i>	<i>Broad-leaved Plantain</i>	<i>Exotic</i>
<i>Holcus lanatus</i>	<i>Yorkshire Fog</i>	<i>Exotic</i>
<i>Isolepis prolifera</i>		<i>Indigenous</i>
<i>Trifolium pratense</i>	<i>Red Clover</i>	<i>Exotic</i>
<i>Lotus pedunculatus</i>	<i>Lotus</i>	<i>Exotic</i>
<i>Rumex crispus</i>	<i>Curled Dock</i>	<i>Exotic</i>
<i>Agrostis stolonifera</i>	<i>Creeping bent</i>	<i>Exotic</i>
<i>Centella uniflora</i>	<i>Centella</i>	<i>Indigenous</i>
<i>Cerastium glomeratum</i>	<i>Annual Mouse-ear Chickweed</i>	<i>Exotic</i>