

Before an Independent Hearings Panel

The Proposed Waikato District Plan (Stage 1)

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

IN THE MATTER OF hearing submissions and further submissions on the Proposed
Waikato District Plan (Stage 1):
Topic 25 – Zone Extents

**PRIMARY EVIDENCE OF DR GRAHAM THOMAS USSHER
ON BEHALF OF HAVELOCK VILLAGE LIMITED**

17 February 2021

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1. SUMMARY OF EVIDENCE

- 1.1 My full name is Graham Thomas Ussher.
- 1.2 I am providing ecological evidence in relation to proposed rezoning sought by Havelock Village Ltd (**HVL**)¹ of land at 5 Yashili Drive, 88 Bluff Road, 242 (in part) and 278 Bluff Road, Pokeno (the **Site**).
- 1.3 The Site comprises low-lying hill country with multiple small gully and valley systems connected by moderate to steep ridges and hillslopes. The Site supports ridgeline, slope and gully environments, remanent old-growth native forest, extensive valley floor wetlands (mostly degraded), and an extensive scarp system. Seepages are common along slopes, and valley floors typically support natural wetlands or wetlands induced through long-term farming.
- 1.4 Approximately 90 % of the Site is managed pasture grassland or rough exotic scrub/ weedland, with low ecological value. Streams and wetlands are either not fenced or have stock grazing along margins, resulting in areas with invasive plants, unnaturally high sedimentation, and excessive aquatic macrophyte growths in watercourses and wetlands. The overall indigenous ecological values of the site are considered to be low where pasture dominates, and moderate to high where gully stream/ wetland systems and native forest areas exist.
- 1.5 The rezoning proposal includes mechanisms that will provide extensive environmental protections to a far greater level than is being undertaken under current land management, or which could be achieved under the existing rural zone. The proposal includes an extensive Environmental Protection Area (**EPA**) overlay² on the proposed precinct plan and planning maps³ and proposes additional formal protection of native forest areas as Significant Natural Area (**SNA**). I refer to these as the HVL provisions and they are outlined in the evidence of Mr Tollemache.
- 1.6 I estimate that these will protect approximately 95% of the existing biodiversity or ecology values on the Site, and will provide wider ecological improvements.
- 1.7 I agree with Mr Munro that the key natural characteristics of the Property will be properly responded to, including by way of protections, by the Precinct Plan and overlays. With regard to ecology, I consider the zones and overlays proposed, and the placement of these protection layers across the Site, to be appropriate.

¹ Submitter 862 and further submitter 1291.

² With reference to rules 16.4.16 and 23.4.11 of the Proposed Waikato District Plan.

³ Refer to the evidence of Mr Tollemache.

- 1.8 The priorities for ecological management at this Site should be to protect and restore existing ecological features, including the remnant forest areas, the escarpment system, stream systems and wetland networks arising from these, and to re-create or strengthen ecological corridors and linkages across the Site.
- 1.9 The potential risks to ecological values on the Site from the HVL proposed re-zoning include the potential loss of indigenous vegetation, streams and wetlands within proposed development areas (i.e. outside of the EPA and SNAs), and the effects of sedimentation on watercourses if earthworks are not appropriately managed. Both of these risks will be appropriately managed through the suite of protections proposed in the HVL provisions, or by existing provisions of the Regional Plan or National Environmental Standards. The potential adverse effects all arise from activities that have workable controls that can be put in place and which are known to be effective at minimizing or avoiding impacts on the environment. The realistic level of potential adverse effect is likely to be minor compared to the very large potential ecological benefits of the proposal.
- 1.10 I have considered the way the Zones and proposed Precinct Plan have been designed, the intention of the HVL provisions to avoid development in areas of ecological value and to restore ecological areas currently present and link these through further restoration activities. Given those factors, it is my opinion that the HVL provisions will protect and facilitate the restoration of most of the existing biodiversity or ecology values on the Site, and will provide wider ecological improvements.

2. INTRODUCTION

- 2.1 My full name is Graham Thomas Ussher. I am a Restoration Ecologist and Director of RMA Ecology Limited, a company specialising in ecological effects assessment and management.
- 2.2 I hold the qualifications of Bachelor of Science (Zoology; 1993), Master of Science (Conservation Ecology; 1995) and Doctor of Philosophy (Conservation Management; 2000) from the University of Auckland, New Zealand.
- 2.3 I have 25 years' experience in environmental research and consulting with a particular focus on land-based ecology and methods for providing improvements to indigenous biodiversity. I have previously been employed as a Principal Ecologist at Tonkin & Taylor Ltd, Environmental and Engineering consultants, Auckland (2007 – 2016) where I was a senior-level ecologist and helped lead the Ecology Team. Over my period of employment there I managed, undertook fieldwork, reported on or reviewed in excess of 120 projects involving ecological effects assessments, management and ecological

mitigation/ restoration in New Zealand spanning small to large scale of effects, and covering all aspects of land use.

- 2.4 In my current role at RMA Ecology Ltd, I have undertaken approximately 150 projects since 2016 that have involved site assessment, impact evaluation, effects management design (including offsetting), management plan preparation, and construction management, including lizard, fish and plant salvage, stream reconstruction, and ecological monitoring and reporting. My project experience spans land development, infrastructure, power generation, resource extraction, water management, and roading sectors. My involvement in projects ranges from pre-purchase due diligence, preliminary/concept development design, precinct and private plan change assessments, resource consent applications, and construction supervision, implementation, monitoring and reporting.
- 2.5 I am providing ecology evidence in relation to the proposed rezoning sought by HVL of land at 5 Yashili Drive, 88 Bluff Road, 242 (in part) and 278 Bluff Road, Pokeno.
- 2.6 My previous experience includes the following relevant projects:
- (a) Auranga Housing Development (Drury West; ca. 3,500 lots) – lead ecologist for Precinct B Plan Change, and site ecologist for the staged resource consent applications for earthworks and subdivision;
 - (b) Milldale Housing Development (Milldale; ca. 4,000 lots) - lead ecologist for bulk earthworks and subdivision consenting, as well the ecologist monitoring project implementation;
 - (c) Warkworth Plan Change 40 (Warkworth; ca. 450 lots) – reviewer of the ecology package on behalf of the applicant, and designer of the ecological offset management programme;
 - (d) And various other smaller, medium-sized subdivision developments (ca. 400 – 1,000 lots) including multiple projects in Kingseat, Kumeu, Ardmore, Alfriston, Tuakau, and Manurewa, and approximately 10 medium or large-scale subdivision projects currently under way elsewhere in New Zealand.
- 2.7 I have been involved in the rezoning proposal by HVL since May 2020. My initial work on the Site was in relation to the proposed new access roads from TaTa Valley to Yashili Drive (discussed in evidence of Mr Hills and Mr Tollemache and referred to as the TaTa Valley Access) and the identification of significant indigenous forest and wetlands on the Site. My role has increased to provide a broader range of advice on the overall project, including evidence in relation to the HVL submission to the Proposed Waikato District Plan (**PWDP**). I have visited the Site, including areas

surrounding the Site five (5) times since June 2020, with my last site visit on 20 January 2021.

- 2.8 The ecology information that I have relied upon for my assessments is based on the site-wide, preliminary ecological values surveys undertaken by Wildland Consultants in 2018⁴, and my own site-wide surveys. I have sought to verify features and information from the Wildland report and other published or verbal sources through field assessments, with specific, in-depth assessments (e.g. for wetland distribution and state, and forest condition). This contributes to a greater certainty regarding the HVL submission, along with future resource consent applications and designs for development. In my opinion, sufficient information was gathered from across the Site to provide a significant degree of ground truthing of the available information and databases.

Scope of evidence

- 2.9 My evidence assesses the ecological effects of the proposed rezoning sought by HVL⁵ and is structured as follows:

- (a) Site Context and Characteristics:
- (b) Opportunities for ecological management;

- 2.10 My evidence relies on and should be read in conjunction with that of:

- (a) Mr Mark Tollemache –planning;
- (b) Mr Ian Munro – urban design; and
- (c) Mr Ryan Pitkethley – engineering design.

Code of Conduct

- 2.11 Although this is a Council hearing, I have read the Environment Court's Code of Conduct for Expert Witnesses, and I agree to comply with it. My qualifications as an expert are set out above. I confirm that the evidence and the opinions I have expressed in my evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

⁴ Wildland Consultants. September 2018. Assessment of constraints and opportunities for a proposed residential development at 88, 242, and 278 Bluff Road, Pokeno. Provided with the HVL submission to the PWDP. I have not provided a copy of that report with my evidence as I understand it is readily available.

⁵ Submitter 862 and further submitter 1291.

3. SITE CONTEXT AND CHARACTERISTICS

- 3.1 The Site is located within the Meremere Ecological District, approximately midway between Mercer and Tuakau. The Ecological District is entirely lowland habitats and includes alluvial flats, shallow lakes, wetlands, and floodplains, and as well as low hills surrounding some areas.
- 3.2 On the low-lying hills such as within the Site, clay soils derived from volcanic ash are widespread. Some areas of hill-country have leached soils derived from sedimentary rocks. Seepages are common along slopes, and valley floors typically support natural wetlands or wetlands induced through long-term farming.
- 3.3 Prior to human settlement, the low-lying hill country of the Meremere Ecological District would have been almost entirely forested, with kauri (*Agathis australis*) being locally abundant on ridges and hillslopes, and taraire (*Beilschmiedia tarairi*), abundant on hillslopes and gullies. Extensive floodplain wetlands on alluvial soils were dominated by stands of kahikatea (*Dacrycarpus dacrydioides*). All of these landforms are present within the Site, and some still support these characteristic native forest, shrubland or wetland communities.

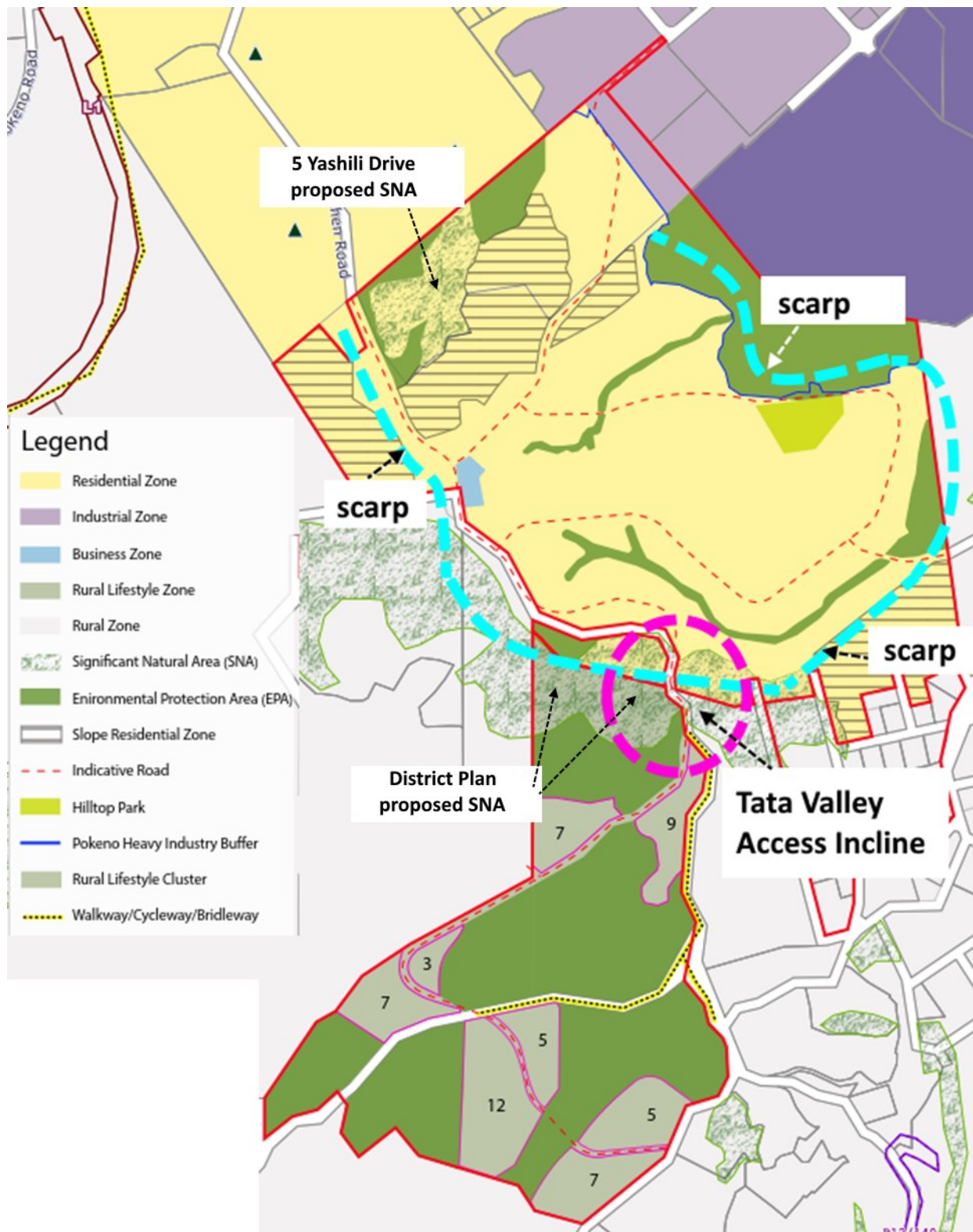


Figure 1. Key features of the HVL Precinct Plan that are referred to in the text of this evidence.

3.4 The low-lying hills within the Site reach an altitude of 130 metres above sea level and are characterised by a steep escarpment that bisects the Site (at the TaTa Access incline area – see **Figure 1**) and encircles the northern lobe of the Site, including almost all of 88 Bluff Road. The escarpment is an important feature as the exposed mafic rock formations and very steep land have preserved remnant areas of native

forest, or have allowed the re-establishment of some native plant communities where stock access is more difficult (and hence pest animal browse pressure is less).

- 3.5 As noted in the preliminary ecological survey report by Wildland Consultants, the cliffs, scarps and tors of mafic rock present in the northeast part of the Site (see **Figure 1**) includes outcrops of basalt, with abundant indigenous lichens and exposures of volcanic tuff. Areas of cliffs, scarps and tors of mafic rock are very rare features, both locally and nationally, and are listed as a 'Nationally Endangered' ecosystem in national guidance on the topic.
- 3.6 The local geology and terrain have resulted in a diverse range of ecological environments over a small geographic area. The Site supports ridgeline, slope and gully environments, remanent old-growth native forest, extensive valley floor wetlands (mostly degraded), an extensive scarp system - some of which still supports native plant communities - and a network of streams. The diversity listed here belies the fact that most have undergone pastoral conversion, all are highly degraded through continued stock access and browsing pests, and over time the component parts have been fragmented such that ecological corridors and connections across this part of the landscape have been removed.
- 3.7 Approximately 90 % of the Site is managed pasture grassland or rough exotic scrub/weedland with low ecological value. Streams and wetlands are either not fenced or have stock grazing along margins. The results of poor water quality arising from prolonged stock farming is obvious with invasive plants, unnaturally high sedimentation, and excessive aquatic macrophyte growths in watercourses and wetlands. This is no different from much of New Zealand's rural landscape; however, it is sobering to see such a special landscape so changed, and so obviously still in decline (from an ecology perspective).
- 3.8 In terms of ecological values across the Site, the key features are:
- (a) The old-growth forest areas along the parts of the scarp to the south of 88 Bluff Road, to the west of Bluff Road within 5 Yashili Drive, and on part of the northern face of 88 Bluff Road (**Plate 1**). The forest communities must be well over 200 years old and comprise a superb mix of lowland canopy forest species, including puriri (*Vitex lucens*), taraire, pukatea (*Laurelia novae-zelandiae*), kahikatea, rewarewa (*Knightia excelsa*), kohekohe (*Dysoxylum spectabile*), tawa (*Beilschmiedia tawa*) and totara (*Podocarpus totara*). Understorey and ground communities are heavily grazed, where stock have access. The extensive forest areas along the southern scarp are listed as a Significant Natural Area (**SNA**) in the PWDP, and the forest area at 5 Yashili Drive is also deserving of this SNA

scheduling (currently not scheduled as SNA in the PWDP, but protected by bush covenant and proposed to be scheduled through the proposed HVL mapping amendments to identified it as an SNA).

- (b) The extensive wetland areas in the valley basins of 5 Yashili Drive, and 242 and 278 Bluff Road (**Plate 2**). While degraded by stock access and (for 278 Bluff Road) introduced willow, these wetlands are still relatively intact and functioning systems.
- (c) The stream systems in the five catchments across the Site – within 5 Yashili Drive, the northern and southern parts of 88 Bluff Road, the headwater catchment of 242 Bluff road and the southern part of 278 Bluff Road (**Plates 3 and 4**). Although degraded by stock access, sedimentation and eutrophication, and installation of weirs (on 278 Bluff Road), all of the watercourses have retained their overall natural morphology (channel shape). Sediment mobilisation from slopes to gullies has filled in streams such that most now reflect gully wetlands; however, the underlying ecological function and potential for enhancement through restoration remains.
- (d) The escarpment, scarp slope and exposed rock formations.
- (e) The shallow groundwater seepage areas and associated ephemeral wetlands, especially those on the north-facing slopes of 242 Bluff Road (through which the indicative road is shown on the Precinct Plan) (**Plates 5 and 6**).

4. OPPORTUNITIES FOR ECOLOGICAL MANAGEMENT

- 4.1 There are a great number of opportunities that could very quickly improve the future ecology condition of the Site. I understand that these opportunities have formed a key foundation for the urban design and are reflected in the HVL Precinct Plan.
- 4.2 Although the Site has been farmed for many years and has been largely stripped of its original native forest cover, there are still clear indications that this Site, and the landscape surrounding it, historically supported a wealth of ecological environments, ecosystems and communities. Some of these persist today, while others have been severely degraded.
- 4.3 Ironically, because parts of the Site have so obviously been difficult to develop into pastoral grazing, and/or have escaped fire and clearance by whatever reason, there is a partial fabric of indigenous ecological values that still exists over part of the Site. That remaining fabric could be coaxed back to fully functioning indigenous systems as part of a connected, intact, ecological landscape. The focal points must be old-growth native

forest areas (as notified in the PWDP as SNAs or now proposed by HVL to be included as new SNAs) and the extensive associated wetlands. From there, connections to adjoining gully systems, incorporating hill-slope seepages, would add to the network of ecology beyond just the primary forest area that is proposed as SNA in the PWDP. The PWDP's Environmental Protection Area overlay⁶ offers this opportunity as its rules provide opportunities for enhancement plantings and their protection through subdivision.

- 4.4 The escarpment is another obvious focal point in that it exhibits exposed mafic geology rarely found elsewhere, and offers opportunities to preserve or restore specialised plant and animal communities associated with rock, cliff and gully environments. Removing stock from these would also assist with improving the quality of the several wetlands at the foot of the scarp (most of which are not within the Site). The HVL Precinct Plan identifies these areas as Environmental Protection Area overlay or the proposed lower density Slope Residential overlay.
- 4.5 In my opinion the priorities for ecological management at this Site should be:
- (a) Protect and enhance the remnant forest areas, provide buffer plantings around each and manage for conservation purposes (remove stock, control weeds and browsing pest animals);
 - (b) Protect the escarpment, control invasive weeds, and revegetate with native vegetation where practicable;
 - (c) Protect the stream systems and wetland networks arising or resulting from these as key parts of enhancing water quality through the Site, and as a skeleton upon which other key restoration activities can be added; and
 - (d) Re-create or strengthen ecological corridors across the Site and linkages to values on adjoining properties to serve both as conduits and reservoirs for biodiversity and to re-establish damaged ecosystem services in the local landscape.
- 4.6 The above provides a foundation upon which to create or preserve ribbon habitats, along with occasional nodes where larger habitat already exists. Added benefits to indigenous ecology accrue when larger areas are set aside and restored, providing opportunities for core (c.f. peripheral) habitats to be created that can support native plants and animals that require low light, high humidity environments.

⁶ Rules 16.4.16 and 23.4.11 of the PWDP.

- 4.7 As explained below, the HVL proposal sets up a well-structured framework that enables key part of the restoration management activities described above to be undertaken. Formal protection alone will not restore these areas; however, formal protection together with exclusion of stock and active restoration (weed and pest animal control and revegetation planting) will achieve far more. The HVL proposal preserves the opportunity to undertake further restoration, where stock are excluded as part of the SNA/ EPA management, restoration of wetlands, streams and forest will commence naturally.

5. RELEVANT PARTS OF REZONING PROPOSAL

- 5.1 The full details of HVL's current rezoning proposal are outlined the primary evidence of Mark Tollemache for HVL for this Topic.
- 5.2 The relevant parts of the proposal for the purposes of my evidence are the:
- (a) Environmental Protection Area overlay on the proposed Precinct Plan;
 - (b) Proposed new SNA at 5 Yashili Drive;
 - (c) SNA already identified in PWDP;
 - (d) Protections given to ecological values within standard zones; and
 - (e) Refinement of the boundaries of the existing SNA within the Site (as signalled in the SNA hearings topic⁷ and from detailed field observations of the correct boundary of the SNA).

The EPA overlay

- 5.3 The HVL proposal utilises the EPA overlay of the PWDP (which is an environmental enhancement layer with subdivision). Its application to the Site is extensive, and is used to connect existing ecological features and provides protection for the majority of indigenous ecology value locations on the Site. Land within the EPA is intended to be managed primarily for ecological purposes. The outcome of this will be a landscape with a far more comprehensive and robust connected network of ecologies than its current state. I would encourage the development of a site-wide ecological management plan (as per the EPA rule in the Residential Zone and Rural Lifestyle Zone chapters⁸), to guide where, when and how the various protections, enhancements

⁷ Section 42A report: Hearing 21A: Natural Environments – Indigenous Vegetation and Habitats Section 42A report, paragraphs 953 and 954 addressing the HVL submission on the correct boundaries of the SNA.

⁸ Rules 16.4.16 and 23.4.11 of the PWDP.

and revegetation will occur. The ability to utilise biodiversity offsets or compensation to achieve some of these outcomes should be acknowledged and preserved.

SNA already identified in PWDP

- 5.4 The SNA already identified in the PWDP between 88 and 242 Bluff Road supports the greatest ecological values on the Site, by quality and by area. The SNA includes mature old-growth lowland forest on scarp, with ridge, slope and valley components, forming a substantial area and an inter-connected, ecological sequence. The valley section supports extensive natural wetland areas. As mapped, the SNA includes some parts of road, pasture and exotic gorse weedland; which I discuss below. However, setting aside these mapping inaccuracies, the overall ecological value of the SNA is exceptional. The HVL proposal supports the listing of this part of the Site as an SNA (with some adjustments to boundaries to exclude edge areas with no ecology values - see paras 5.8 - 5.9).

Proposed new SNA

- 5.5 The old-growth forest at 5 Yashili Drive is proposed as an SNA (it was not identified as an SNA with the PWDP). The forest, and most of the associated gully wetland is included within the proposed SNA. These areas form closed old-growth forest with abutting wetland as a continuous ecological unit. Adjacent patches of solitary or copses of native trees and wetland areas are included in the overall EPA layer on the Precinct Plan, which extends out from the proposed SNA to form an ecological buffer, and overall, a more substantial restoration area. Forest and wetland within the proposed SNA meets at least four of the Waikato Regional Policy Statement criteria for assessing ecological significance of vegetation and habitats, indicating that this bush is both worthy of an increased level of formal protection (to SNA), and will benefit from the proposed EPA buffers and enhancements.

Protections within development zones

- 5.6 Environmental protections in the HVL proposal rely upon the existing suite of rules in the PWDP around setbacks to vegetation clearance for streams and wetlands. My understanding is that there are no general tree protection rules outside of these yards/ setbacks. Therefore, I assume that native vegetation, including shrubland and solitary old-aged native trees or copses of trees could be cleared as part of development within Residential Zones. The potential scale of this is small, as most existing biodiversity or ecology values on the Site are within the SNA and EPA overlays (I estimate that this amounts to approximately 95 % of these existing values). The EPA overlay is utilized along the riparian margins of the streams to provide for their enhancement at the time of subdivision. Provisions in the Regional Plan and National Policies/ Standards will

protect streams and any wetlands more, where these exist outside of the EPA and SNA overlays.

- 5.7 The matter of where and what biodiversity will be protected within development zones is a matter that will be addressed at the resource consent stage. However, where proposed development intersects with ecological values, I would assume that the full hierarchy of good practice effects management (avoid, remedy, mitigate, offset) would be applied to minimise and provide redress for any unavoidable adverse ecological effects.

Refinement of the SNA boundary at 88 Bluff Road

- 5.8 Council's Topic 21a report records that HVL seeks to amend the SNA mapping on areas located between 88 and 242 Bluff Road⁹. Several submissions opposed this. Council's Reporting Officer notes in response that the SNA should be ground-truthed before being identified on the planning map, although the area will still be deemed to be an SNA if it meets the criteria.
- 5.9 I have undertaken detailed mapping of parts of the SNA – in particular where the proposed Tata Valley Access (track upgrade) is proposed through a separate resource consent application (**Figure 2**). There are areas of vegetation that are within the SNA as currently proposed in the PWDP which are clay road, pasture grassland, and gorse weedland and hence do not meet the SNA criteria. I have mapped a revised boundary of part of the SNA that excludes these areas, as they do not meet any of the SNA criteria. This will provide a greater accuracy to the mapping of this SNA.
- 5.10 Overall, I support the statement made by Mr Munro in his urban design report that the Site's key natural characteristics will be properly responded to, including by way of protections, by the Precinct Plan and overlays. In particular, the priorities for ecological protection listed in paragraph 4.5 (a-c) are directly addressed, and opportunities will be provided for restoration within these, and for the creation ecological corridors between these (as per 4.5 (d)). With regard to ecology, I consider the methods used, and the placement of these protection layers across the site, to be appropriate.

⁹ Section 42A report: Hearing 21A: Natural Environments – Indigenous Vegetation and Habitats Section 42A report. Paragraphs 953 and 954.

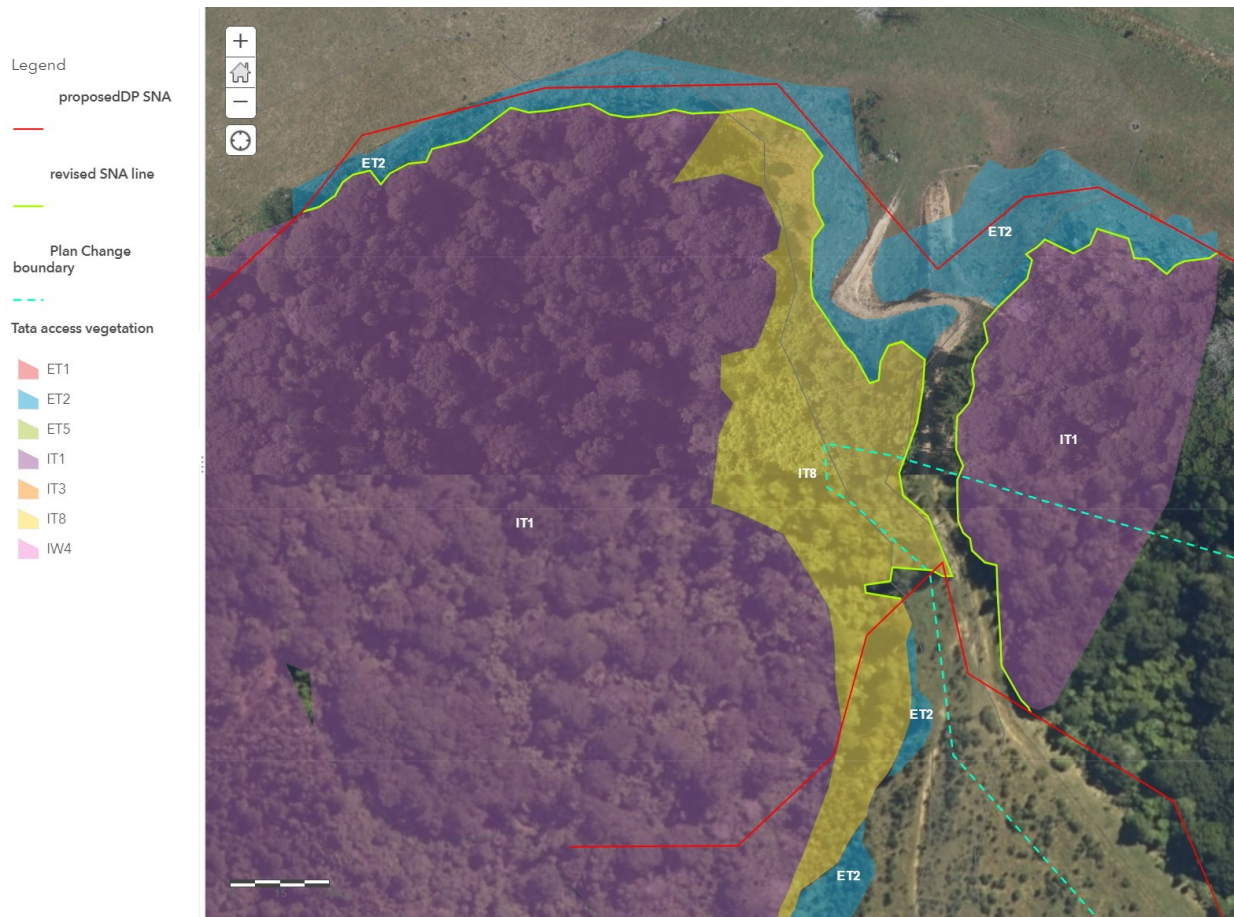


Figure 2. The Tata Valley Access Incline section of the SNA proposed in the PWDP showing PWDP boundary (red line) with suggested revised boundary (green line). Yellow and purple polygons are native vegetation; blue polygons and uncoloured land is exotic gorse weedland, managed exotic pasture grassland, or existing clay farm road and should be excluded from the proposed SNA.

6. POTENTIAL ECOLOGICAL EFFECTS OF PROPOSED REZONING

- 6.1 There are several potential risks to ecological values on the Site from the HVL proposed re-zoning. These include the potential loss of indigenous vegetation, streams and wetlands within proposed development areas, and the effects of sedimentation on watercourses if earthworks are not appropriately managed. Increased urbanisation typically brings with it an increase in weeds (and weed dumping or escapes into natural area) and an increase in pets (especially cats) that can harm wildlife.
- 6.2 Existing ecological features (the SNAs as identified in the PWDP) are protected by the existing suite of SNA rules which require resource consent for modification or removal. I understand that indigenous vegetation outside of riparian margins within Residential Zones has limited protection and could be cleared. Indigenous vegetation at risk of this occurring includes one small patch of native forest on the southern edge of 5 Yashili Drive (outside of the EPA overlay) and solitary native trees in some paddocks (most of which are in various stages of decline under the existing farming regime).

- 6.3 Rules on earthworks are included for each Zone, and I assume that any resource consent application will be required to describe appropriate methods of best practice erosion and sediment control where bulk earthworks are proposed.
- 6.4 Increased incidence of weeds and the effects of cats are consequences of intensification, and can be difficult to manage. However, where a new community develops a strong environmental ethic, it is likely that community adoption of natural areas will lead to more effective weed prevention and control, and control of pest animals. This can be seen happening in many other places around New Zealand in proximity to housing areas, with pest management including not only feral and domestic cats, but also control of other introduced mammalian wildlife pests.
- 6.5 The potential adverse effects all arise from activities that have workable controls that can be put in place and which are known to be effective at minimizing or avoiding impacts on the environment. The realistic level of potential adverse effect is likely to be minor compared to the very large potential benefits of the proposal. I have described these previously in my evidence; these include formal protection of the 5 Yashili Drive mature forest area as an SNA, the EPA enhancement overlay which I assume will require the eventually removal of stock from streams and wetlands and restoration of their margins, and the re-connection of ecological corridors and eco-types across the Site; which in combination will protect around 95 % of existing ecology values, and also add far more.
- 6.6 The change from rural land use to a mix of protection and residential / rural-residential use is likely to result in great improvements to water quality, wetland health, and the long-term sustainability of streams, wetlands and native forest on the Site. Overall, the precinct plan provides for larger scale revegetation opportunities not deliverable through the existing rural zone.
- 6.7 While at a localised scale, specific impacts on ecology can be addressed, it is through the wider planning process that real gains can be made at ecologically meaningful scales. The HVL submission sets out a robust foundation for preservation, conservation and restoration of ecologically valuable areas, and areas that may have no or few ecology values now, but hold promise of reconnecting the landscape and bringing about a greater collective improvement.
- 6.8 Although the scale of potential adverse effects will not be known until the resource consent stage, it is apparent that any future ecological impacts arising from development of the Site will be localised, and small in scale compared to the large areas proposed for protection within the SNA and EPA overlays. Constraints imposed by regional and national legislation on the development of areas that support riparian

vegetation, stream or wetland will further minimise the potential scale of adverse effects.

7. CONCLUSION

- 7.1 The Site is within a rural landscape where most natural ecological values have been removed or severely degraded, although some less modified examples of forest, stream and wetland remain.
- 7.2 Overall aquatic ecology values range from low to moderate. All streams have been heavily modified by past farming activities and some continue to be degraded by lack of riparian cover and stock access. Wetlands are extensive in places, but degraded by continued grazing. Many tributary streams have degraded to the point that sedimentation and stock access have allowed wetland vegetation to establish, forming riparian or gully wetlands. Seepages and ephemeral wetlands are common in places. A key feature of the Site is an extensive escarpment.
- 7.3 Despite supporting mainly pasture, the Site supports several significant patches of remnant or secondary regenerating native forest, including two worthy of listing as SNAs. Native forest areas and surrounding regenerating shrubland provide nesting and food resources for a range of native birds and are likely to support remnant populations of native lizards, including those that are rare or threatened.
- 7.4 The overall indigenous ecological values of the site are considered to be low where pasture dominates, and moderate to high where gully stream/ wetland systems and native forest areas exist.
- 7.5 I have considered the way the Zones and proposed Precinct Plan have been designed, the intention of the HVL provisions to avoid development in areas of ecological value and to restore ecological areas currently present and link these through further restoration activities. Given those factors, it is my opinion that the HVL provisions will protect and facilitate the restoration of most of the existing biodiversity or ecology values on the Site, and the Precinct provisions will provide opportunities for wider ecological improvements.

Dr Graham Thomas Ussher

17 February 2021

Plates



Plate 1 (left) Old-growth native forest along the escarpment at 88 and 242 Bluff Road (listed as SNA in the PWDP).



Plate 2 (right) wetland system at 278 Bluff Road.



Plate 3 (left) Degraded stream system at central part of 88 Bluff Road. Stock access and siltation has induced wetlands where formed stream channel once was present.



Plate 4 (right) Degraded stream system at southern part of 88 Bluff Road. The stream has been excavated over time and gradually infilled with sediment due to stock access and soil mobilisation.



Plates 5 and 6. Typical examples of slope and gully seepage wetlands (278 Bluff Road) arising from shallow groundwater exposures.