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 TIMOTHY JAMES MARTIN ON BEHALF OF TATA VALLEY LIMITED

17 February 2020

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1. SUMMARY OF EVIDENCE

1.1 My full name is Timothy James Martin. I am a consultant ecologist with Wildland Consultants, based in Auckland.

1.2 I am providing ecological evidence in relation to proposed rezoning sought by TaTa Valley Limited (**TVL**)[1] of land at 42B Potter Road and 35 Trig Road, Pokeno (**Site**)The Site covers 227 hectares and lies in the Meremere Ecological District on the northern banks of the Waikato River. Meremere Ecological District has been extensively modified by human settlement, and most of the rolling hill country has been converted to farmland as the easy terrain and associated access facilitated extensive indigenous vegetation clearance.

1.3 Most of the site (167.1 hectares) comprises exotic terrestrial habitats of low ecological value.

1.4 Eight indigenous forest and or scrub vegetation types occur at the site. Collectively, these cover 32.3 hectares.

1.5 Exotic-dominated wetlands cover 18.0 hectares and indigenous wetlands cover 17.6 hectares.

1.6 Long-tailed bats have been recorded at the site using Automatic Bat Monitoring devices. Pekapeka/long-tailed bats occur widely in the Waikato Region, and have been previously recorded near Puni, approximately 12 kilometres to the northwest, and approximately 14 kilometres downstream of the property near Aka Aka. The Site provides suitable foraging habitat for long-tailed bats, with watercourses, forest patches, and areas of open farmland. Foraging calls were abundant in the kahikatea forest and wetland habitats alongside the river, but were also recorded, in much lower numbers, in farmland near the Potter Road entrance to the Site. The relatively high frequency of bat foraging alongside the river, combined with the abundance of potential roost trees within the property, suggest that roost trees may be present within the Site. However the presence of long-tailed bat roosts at the property is unknown and is difficult to confirm. The habitats most likely to contain important or multiple bat roosts are the larger, more mature forest remnants in close proximity to the Waikato River, but roosts could potentially occur in any woody vegetation within the Site.

[1] Submitter 574 and further submitter 1340.

1.7 The Site is also habitat for indigenous fish species, at least nine indigenous bird species, and is likely to be habitat for indigenous skinks and geckos, including species classified as 'At Risk'. Cryptic wetland bird species, such as matuku/ Australasian bittern (Threatened-Nationally Endangered) and puweto (spotless crake; At Risk-Declining) are likely to be present in wetland habitats, at least as visitors. The streams and channelised streams within the site support populations of migratory indigenous aquatic fish and meet the criteria for significance of indigenous biodiversity in the Waikato Regional Policy Statement.

1.8 Collectively, 53 areas that meet the criteria for significance of indigenous biodiversity in the Waikato Regional Policy Statement cover 67.7 hectares (28.6% of the total land area of 236.7 hectares). Habitats that do not meet the criteria as significant indigenous biodiversity (i.e., pasture, gorse scrub, and some smaller exotic wetlands) cover the remaining 71.4% of the Site.

1.9 Of the 53 areas of significant indigenous biodiversity, 48 meet the threshold for local significance. Most of these, by number, are indigenous wetlands, but there are also some sizeable forest remnants on hillslopes.

1.10 Five areas of kahikatea forest on the river floodplain are of at least regional significance; these forest stands are degraded examples of a nationally rare habitat type.

1.11 If long-tailed bat roosts were to be confirmed as present as part of future surveys, this may lift the significance of areas containing roosts to nationally significant.

1.12 The 53 areas (and 67.7 hectares) of significant indigenous biodiversity pose an ecological constraint to the development of these areas. Only three of these areas are currently mapped as significant natural areas (**SNA**s) under the proposed District Plan.

1.13 Ecological surveys have identified an additional 50 discrete areas (of varying sizes) within the Site that meet the criteria of an SNA (as shown in Appendix 8 to this evidence). The TaTa Valley Concept Plan attached to Mr Scrafton's evidence includes identification of 49 of these areas outside of the Hotel Precinct[2], and one area within the Hotel Precinct (Polygon 38 - for which resource consent for removal has been granted).

[2] Tata Valley Precinct Plan 12-02-2021. Revision 11.

1.14 The mapping and identification of habitats within the Site that meet the criteria of an SNA is an appropriate step for the rezoning, and will facilitate appropriate management of ecological effects of development going forward.

1.15 The areas of significant biodiversity value within the site should be recognised and afforded appropriate protection. Subsequent development of the Site will then be firmly guided by the ecological constraints posed by these areas.

1.16 The site provides considerable opportunities for the enhancement of ecological values, such as fencing of forests and wetlands to exclude livestock, and pest plant and pest animal control. These opportunities can be further explored at the resource consent stage for the development.

2. INTRODUCTION

2.1 My full name is Timothy James Martin.

2.2 I am a Principal Ecologist with Wildland Consultants Ltd ('Wildlands'), based in Auckland. I have been employed as a consultant ecologist with Wildland Consultants since 2006.

2.3 In 2007 I graduated with a PhD in Environmental Science from the University of Auckland. I also hold the degrees of Bachelor of Science and a Master of Science with First Class Honours, both from the University of Auckland, where my studies were undertaken at the School of Biological Sciences and the School of Geography and Environmental Science.

2.4 I have considerable experience in New Zealand ecology, which I studied during both my Masters and Doctoral research. For my Masters research I studied the ecology of hutu (*Ascarina lucida*), a rare indigenous tree. My PhD research focused on the effects of wind disturbance on New Zealand indigenous forests, which involved extensive field research throughout the North Island. I am an author of five scientific papers published on these and other topics in peer-reviewed national and international scientific journals. I have also presented aspects of my research at national and international scientific conferences.

2.5 My work as an ecological consultant has covered a wide range of habitat types, including forests, shrublands, wetlands, streams, grasslands, dunelands, and estuarine ecosystems. I have provided assessments of ecological effects for a range of development activities in natural areas, provided technical advice on

community-led restoration projects, and undertaken surveys for threatened species. I have co-authored Protected Natural Area Programme Reports for several ecological districts in Northland, which includes large-scale identification and mapping of natural areas, and assessments of significance.

2.6 I have undertaken many assessments of ecological effects that have required accurate identification and mapping of wetland habitats, using wetland delineation tools. In 2012, I co-authored a report for Northland Regional Council that included guidance on wetland delineation.

2.7 I have undertaken surveys for a wide range of indigenous fauna throughout the North Island and associated offshore islands, including birds, herpetofauna, and land snails. I have undertaken many surveys of wetland fauna, including species such as black mudfish, mātātā/North Island fernbird, and puweto/spotless crake. I have undertaken reptile surveys in sand dunes, rocky coasts, riparian margins, and shrubland and forest habitats, and have led several reptile salvage projects at construction sites. I am familiar with the survey, capture, and handling of indigenous herpetofauna.

2.8 I have undertaken several vegetation, habitat, and fauna surveys of the subject property over the past three years, including but not limited to 17-18 August 2017, 15 and 27 February 2018, 16 May 2019, and 1 December 2020. I have also provided project oversight for several surveys of the property by other Wildlands specialists, including for freshwater fauna, bats, and lizards.

2.9 My previous experience includes the following relevant projects:

(a) Ecological surveys for the Doubtless Bay, Kerikeri, and Bay of Islands structure plans

(b) Ecological survey and assessment of ecological effects for the Ruakaka Racecourse plan change.

(c) Ecological survey and assessment of ecological effects for the Pukekohe West plan change.

(d) Various ecological assessments undertaken at the Site since 2017 (see Paragraph 2.14 below).

2.10 I have been involved in the rezoning proposal by TVL since September 2020, although Wildlands (including my colleague Sarah Budd) has provided advice to

TVL since September 2017. I last visited 42B Potter Road on 1 December 2020. The recent surveys of habitats and at 35 Trig Road and 42B Potter Road were undertaken by my colleague Sarah Budd on 9 October 2020, with my role being technical advisor.

2.11 Full details of TVL's rezoning proposal are outlined in TVL's submission and the primary evidence of Chris Scrafton for TVL.

Scope of evidence

2.12 My evidence identifies and describes habitats at the site, including:

(a) Identification, mapping, and description of vegetation and habitats.

(a) Identification and mapping of wetlands as defined in the Resource Management Act[3].

(b) Identification, mapping, and assessment of areas that meet the Waikato Regional Policy Statement criteria for significant biodiversity[4].

(c) Commentary on the local, regional, and national significance of habitats.

(d) Commentary on the habitats at the Site that meet the criteria for an SNA.

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

(a) Rob Pryor (landscape architect); and

(b) Christopher Scrafton (planner).

2.14 I have previously undertaken a number of ecological assessments of the property for the purposes of the related TaTa Valley consent applications. My assessment of this rezoning proposal as presented in this evidence has also been informed by this previous work:

(a) Wildland Consultants 2017: Assessment of ecological constraints and opportunities for a proposed development at 42B Potter Road, Pokeno. Wildland Consultants Ltd Contract Report No. 4416. Prepared for TaTa Valley Ltd.

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3 Resource Management Act 1991: http://www.legislation.govt.nz/act/public/1991/0069/latest/DLM230272.html?search=sw_096be8ed816355f1_wetland_25_se&p=1&sr=0 Accessed 28-08-2017.

4 Waikato Regional Council 2016: Waikato Regional Policy Statement: Te Tauākī Kaupapa here ā-Rohe.

(b) Wildland Consultants 2018a: Assessment of ecological effects of a proposed development at 42B Potter road, 278 Bluff Road and 88 Bluff road, Pokeno. Wildland Consultants Ltd Contract Report No. 4416c. Prepared for TaTa Valley Ltd.

(c) Wildland Consultants 2018b: Fish management plan for 42B Potter Road, Pokeno. Wildland Consultants Ltd Contract Report No. 4416f. Prepared for TaTa Valley Ltd.

(d) Wildland Consultants 2018c: Lizard management plan for 42B Potter Road, Pokeno. Wildland Consultants Ltd Contract Report No. 4416e. Prepared for TaTa Valley Ltd.

(e) Wildland Consultants 2018d: Bat management plan for 42B Potter Road, Pokeno. Wildland Consultants Ltd Contract Report No. 4416d. Prepared for TaTa Valley Ltd.

(f) Wildland Consultants 2018e: Ecological assessment for a proposed development at 42B Potter Road and 278 Bluff Road, Pokeno. Wildland Consultants Ltd Contract Report No. 4416a. Prepared for TaTa Valley Ltd.

(g) Wildland Consultants 2018j: Assessment of ecological and hydrological effects for proposed structures on the margins of the Waikato River at Pokeno and Mercer. Wildland Consultants Ltd Contract Report No. 4416j. Prepared for TaTa Valley Ltd.

3. CODE OF CONDUCT

3.1 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 issues addressed in this brief of 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 expressed.

4. SITE CONTEXT AND CHARACTERISTICS

Meremere Ecological District

4.1 TaTa Valley, comprising 35 Trig Road (26 hectares) and 42B Potter Road (211 hectares), is located on the northern banks of the Waikato River near the northern boundary of Meremere Ecological District, approximately midway between

Mercer and Tuakau. Meremere Ecological District (105,642 hectares in extent[5]) encompasses the lower Waikato River valley, and extends from Taupiri in the south, to the mouth of the river at Port Waikato, approximately 70 kilometres downstream. The Ecological District is entirely lowland habitats and includes alluvial flats, shallow lakes, wetlands, floodplains, and rolling hill country.

4.2 Low-lying land of the Meremere Ecological District[6] comprises river and swamp deposits of Holocene age. Low hills, such as those in the Mercer and Tuakau area, are of Pleistocene basalts, with some areas of sandstone and siltstone.

4.3 Meremere Ecological District is characterised by a warm, humid climate with mild winters. Rainfall averages 1,200-1,400 millimetres per annum, and the prevailing winds are from the west.

4.4 Soils of flat low-lying land close to the Waikato River are either poorly drained gleyed alluvial soils or peaty soils. On the low-lying hills, clay soils derived from volcanic ash are widespread. More locally, some areas of hill-country have leached soils derived from sedimentary rocks.

4.5 Prior to human settlement, the low-lying hill country of 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*). Freshwater wetlands on peat deposits were widespread along the course of the lower Waikato River, and these supported fens and peat bog vegetation characterised by mānuka (*Leptospermum scoparium* agg.), sedges, and rushes. In the southern half of the Ecological District, forests and wetlands graded into numerous shallow lakes with fringing reedlands.

4.6 Like many lowland ecological districts in New Zealand, Meremere Ecological District has been extensively modified by human settlement. Most of the rolling hill country has been converted to farmland as the easy access allowed extensive indigenous vegetation clearance. Pasture now covers approximately 64 percent of the district (67,677 hectares), with indigenous forest reduced to only 2.9 percent (3,091 hectares), and a further 2.6 percent (2,796 hectares) covered by mānuka and or

5 Analysis of habitats in the Meremere Ecological District derived from the New Zealand Landcover Database.

6 The descriptions of the Meremere Ecological District are derived from McEwen W.M. (ed.) 1987: Ecological Regions and Districts of New Zealand. Third revised edition in four 1:500 000 maps. Sheet 2. New Zealand Biological Resources Centre. Department of Conservation, Wellington.

kānuka (*Kunzea robusta*) scrub. Freshwater wetlands remain a significant feature of the Ecological District, largely due to the retention of most of the Whangamarino Wetland, which is a large wetland in the northeast, and floodplain wetlands along the margins of the lower Waikato River.

Local context

4.7 The site, comprising 42B Potter Road and 35 Trig Road, lies on the northern bank of the lower Waikato River. Low-lying flats on the property are partly within the floodplain of the river and are frequently submerged during flood events. These flats are mapped as orthic gley soils[7]. Historically, most if not all of these low-lying flats would have supported wetland habitats, with kahikatea swamp forest probably being the most extensive wetland type. However, the construction of a system of drains and stop banks has altered the hydrology of the Site, and large parts of the former wetland now comprise pasture on well-drained flats. Historical aerial photographs[8] show that, with the exception of pasture in the northwest corner, most of the flats on the property were indigenous wetland until at least the 1950s. By the 1980s most of the flats had been converted to pasture, with the exception of an area of swamp forest, adjacent to the remaining swamp forest in the northwest, which was cleared sometime between 2002 and 2009. Mānuka was the dominant cover on the hills in the northeast and was also cleared between 2002 and 2009.

4.8 The northeast flats at the Site, close to the foothills, also include areas of drained peat. These peat areas are likely to have developed following the impounding of headwater streams by alluvium deposited during flood events.

4.9 The low-lying hills, which within the Site reach an altitude of 108 metres above sea level, are part of a chain of steeper hill country that extends for approximately nine kilometres along the north and south banks of the Waikato River, from near Tuakau in the west to Pokeno in the east. The areas of indigenous forest on this hill country are, despite their small size, cumulatively one of the larger areas of indigenous forest remaining in Meremere Ecological District. The nearest tracts of indigenous forest of similar or greater size are near Onewhero, five kilometres to the southwest, and near Mount William, in the Manukau Ecological District, five kilometres to the northeast. A wetland of approximately 270 hectares in area lies three kilometres to

[7] Landcare Research 2017: S-map online. Digital soil map for New Zealand. Accessed on 7 April 2017. https://soils.landcareresearch.co.nz/soil-data/s-map-and-s-map-online/

[8] Retrolens 2017: http://retrolens.nz/map/#/1775416.0760075892/5871900.708543064/1779710.8815344758/5874523.454076169/2193/10 Accessed 29-08-2017.

the east of the property, between McIntyre Road and Baird Road, on the banks of the lower Mangatawhiri River. Indigenous forest and wetlands within the property are therefore likely to play an important role in the connectivity of indigenous habitats within the context of Meremere Ecological District and the lower Waikato River floodplain.

4.10 The site is in the catchment of the Lower Waikato River

4.11 Three of the four stands of kahikatea forest on the river floodplain at 42B Potter Road are mapped as Significant Natural Areas under the Proposed Waikato District Plan. These are the only areas of indigenous vegetation on the property that are mapped as Significant Natural Areas under the Proposed Waikato District Plan.

4.12 The proximity of the Whangamarino Wetland, 4.5 kilometres to the east of 42B Potter Road, is also important context for other wetland habitats in the Meremere Ecological District, and more locally, the subject property. The Whangamarino Wetland is a large lowland freshwater wetland comprising marsh, swamp, fen, and bog habitats. The wetland originally covered *c*.103 km^2, but large areas have been drained and modified and only 65.8 km^2 remains[9]. The Department of Conservation administers most of the remaining wetland (46.4 km^2), with the remainder administered by Fish and Game New Zealand (7.48 km^2) and private landowners (11.92 km^2).

4.13 The size and combination of wetland types and sequences at the Whangamarino Wetland confer significant conservation values. In 1989, it was recognised under the Ramsar Convention as a wetland of international importance. It is important habitat for a high diversity of indigenous plants and fauna, and contains the largest population in New Zealand of the matuku/Australasian bittern (*Botaurus poiciloptilus*)[10]. Matuku/Australasian bittern is listed as 'Threatened-Nationally Critical' by Robertson *et al*. (2017)[11]. Matuku/Australasian bittern is a mobile species which utilises suitable wetland habitats throughout the Meremere Ecological District.

4.14 methods for identification, description, and evaluation of habitats

4.15 In order to identify the ecological values and significant indigenous biodiversity present at the Site, vegetation and habitat types were identified, mapped, and

[9] Cromarty P., Scott D.A. 1996: A directory of wetlands in New Zealand. Department of Conservation, Wellington. 46 pp.
[10] Robertson H. and Suggate R. 2011: Arawai Kākāriki wetland restoration programme 2007-2010: implementation report. Research and Development Group, Department of Conservation, Christchurch.
[11] Robertson H.A., Baird K., Dowding J.E., Elliott G.P., Hitchmough R.A., Miskelly C.M., McArthur N., O'Donnell C.F.J., Sagar P.M., Scofield R.P., and Taylor G.A. 2017: Conservation status of New Zealand birds, 2016. *New Zealand Threat Classification Series 19*. Department of Conservation, Wellington. 23 pp.

described for 42B Potter Road as per the methods described by Atkinson (1985)[12]. Polygons were drawn onto hard copies of colour aerial photographs in the field, and then digitised using tools in ARCGIS.

4.16 Vegetation and habitat types were then identified as wetlands if they met the following definition in the Resource Management Act (1991):

> *"permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions".*

4.17 Plant species were regarded as being adapted to wet conditions if they were listed as obligate or facultative wetland species by Clarkson (2013)[13].

4.18 For 35 Trig Road, the survey on 9 October 2020 was at a broader level, and included identification and mapping of:

(a) Hillslope seepage wetlands

(b) Filled wetland

(c) Constructed wetland

(d) Indigenous forest and or scrub

(e) Exotic grassland with areas of gorse shrubland.

4.19 For each area of habitat identified and mapped, biodiversity significance was assessed using the criteria in the Waikato Regional Policy Statement Policy 11a (Table 111)[14]. The criteria are listed in full in Appendix 7 Key considerations for the assessment of the values of the property against Policy 11a included:

(a) The reduction of indigenous forest cover within the Meremere Ecological District to only 3.8 percent (3,870 hectares), with a further two percent (2,056 hectares) covered by mānuka and or kānuka (Kunzea robusta) scrub.

(b) The presence of a nationally significant population of matuku/Australasian bittern in Meremere Ecological District.

[12] Atkinson I.A.E. 1985: Derivation of vegetation mapping units for an ecological survey of Tongariro National Park, North Island, New Zealand. New Zealand Journal of Botany 23: 361-378.
[13] Clarkson B.R. 2013. A vegetation tool for wetland delineation in New Zealand. Landcare Research, Hamilton. 70 pp.
[14] Waikato Regional Council 2016: Waikato Regional Policy Statement: Te Tauākī Kaupapa here ā-Rohe.

(c) The known presence of long-tailed bats at the property[15].

5. VEGETATION AND HABITATS

5.1 Thirty-two vegetation and habitat types were identified during the survey at 42B Potter Road (refer to map in Appendix 1, and detailed descriptions in Appendix 2). These were grouped according to their location in wetland or terrestrial habitats, and their dominance by indigenous versus exotic plant species. These groups were then assigned the following codes which have been used to broadly classify the vegetation types:

(a) Exotic terrestrial: ET (143.1 hectares)

(b) Indigenous terrestrial: IT (31.9 hectares)

(c) Exotic wetlands: EW (18.0 hectares)

(d) Indigenous wetlands: IW (17.6 hectares)

5.2 Subsequent to the surveys at 42B Potter Road, a higher-level assessment of vegetation and habitat types at 35 Trig Road identified five main vegetation and habitat types (Appendix 3):

(a) Hillslope seepage wetlands

(b) Filled wetland (seepage wetlands with recently deposited fill)

(c) Constructed wetland

(d) Indigenous forest and or scrub

(e) Exotic grassland with areas of gorse shrubland

Extent of exotic terrestrial vegetation

5.3 Most of the site (159.0 hectares, 67.6 percent) comprises exotic grassland of low ecological value: 42B Potter Road (Vegetation types ET4 (72.4 hectares), ET5 (1.5 hectares), ET6 (61.1 hectares)) and 35 Trig Road “Exotic grassland and gorse shrubland” (23.9 hectares).

5.4 In addition to areas of exotic grassland, there are approximately 8.10 hectares of gorse (*Ulex europaeus*) scrub (ET1), gorse-pampas (*Cortaderia selloana*) shrubland

[15] Wildland Consultants 2018d: Bat management plan for 42B Potter Road, Pokeno. Wildland Consultants Ltd Contract Report No. 4416d. Prepared for TaTa Valley Ltd.

(ET2), and pampas tussockland (ET3). These habitats cover an additional 3.5 percent of the site and are all of low ecological value.

Extent of indigenous terrestrial vegetation

5.5 Eight indigenous forest and or scrub vegetation types are present at the site (IT1-IT7 at 42B Potter Road, Appendix 2, and a small area of māhoe scrub at 35 Trig Road). These collectively cover 32.3 hectares, and include:

(a) Taraire forest (IT1)

(b) Kahikatea forest (IT2)

(c) Kanuka forest and scrub (IT3)

(d) Totara-tanekaha-kanuka scrub (IT4)

(e) Mapou scrub (IT5)

(f) Radiata pine/ponga-mapou-kanuka scrub (IT6)

(g) Mamaku treefern land (IT7)

(h) Māhoe scrub

Extent of wetlands

5.6 Nineteen wetland types are present at 42B Potter Road: six wetland types dominated by exotic species and 13 wetland types dominated by indigenous species.

5.7 Wetlands dominated by exotic species collectively cover 18.0 hectares and include:

(a) Creeping bent-wī grassland (EW1)

(b) Yellow flag herbfield (EW2)

(c) Reed sweetgrass grassland (EW3)

(d) Mercer grass grassland (EW4)

(e) Yorkshire fog grassland (EW5)

(f) Parrot's feather-celery-leaved buttercup-*Isolepis prolifera* herbfield (EW6)

5.8 Wetlands dominated by indigenous species collectively cover 17.6 hectares and include:

(a) Kahikatea forest (IW1)

(b) Kahikatea treeland (IW2)

(c) Mānuka scrub (IW3)

(d) Harakeke flaxland (IW4)

(e) Swamp millet grassland (IW5)

(f) Rautahi sedgeland (IW6)

(g) Pūrei-yellow flag iris sedgeland (IW7)

(h) *Machaerina rubiginosa*-swamp millet-rautahi sedgeland (IW8)

(i) Wī/creeping bent rushland (IW9)

(j) Machaerina articulata reedland (IW10)

(k) Raupō reedland (IW11)

(l) Rautahi-wī rushland (IW12)

(m) Spike sedge-softrush reedland (IW13)

5.9 The most extensive areas of wetland habitat at 42B Potter Road occur on the lower floodplain of the Waikato River. A large swathe of low-lying land on river sediments is either shallowly inundated throughout the year, or subject to frequent inundation following flood events. Most of the floodplain wetlands at 42B Potter Road are dominated by yellow-flag (EW2; yellow flag herbfield), an invasive exotic species, with smaller areas of wetland dominated by mixtures of *Machaerina articulata* (IW10), rautahi (*Carex lessoniana*; IW6), and pūrei (*Carex virgata*; IW7).

5.10 An area of wetland habitat also occurs near the upper limit of the floodplain, where water from an adjacent hillslope spills out onto the valley floor. This area held areas of shallow water 0.1-0.3 metres deep when surveyed on 1 December 2020 and supports exotic herbfield dominated by the exotics parrot's feather (*Myriophyllum aquaticum*) and celery-leaved buttercup (*Ranunculus sceleratus*), and the indigenous species *Isolepis prolifera* (EW6).

5.11 Formerly, most, if not all, of the valley flats at 42B Potter Road would have been wetland, but vegetation clearance and drainage have resulted in most of these areas being converted to exotic grassland used for livestock grazing (ET6: Ryegrass-Yorkshire fog grassland). On most of the valley flats, soils are moderately to well drained, and the presence of surface water is largely restricted to periods of heavy rain.

5.12 Elsewhere, all habitats at 42B Potter Road that meet the RMA definition for wetland comprise hillslope seepage wetlands.

5.13 Hillslope seepage wetlands are defined by Johnson and Gerbeaux[16] as:

> *"An area on a slope which carries a moderate to steady flow of groundwater, often also surface water, including water that has percolated to the land surface, the volume being less than that which would be considered as a stream or spring. Substrate ranges all the way from raw or well-developed mineral soil to peat; nutrient status and pH range from low to high; and the water table varies from just above the ground surface to a slight depth below. Seepages are located primarily where groundwater diffuses to the surface, especially at a change of slope, or where an impermeable basement raises the water table".*

5.14 Most of the hillslope seepage wetlands at the site are grazed but retain a cover of the indigenous rushes *Juncus sarophorus* or *Juncus edgariae*, over a ground tier of creeping bent (*Agrostis stolonifera*). Smaller areas of higher quality wetland vegetation persist in some of the hillslope seepages, including areas dominated by rautahi, *Machaerina rubiginosa*, swamp millet (*Isachne globosa*), raupō (*Typha orientalis*), mānuka, and harakeke (*Phormium tenax*). Some of the hillslope seepages retain little if any indigenous vegetation, and these have been identified and mapped as Mercer grass (*Paspalum distichum*) grassland, Yorkshire fog (*Holcus lanatus*) grassland, reed sweetgrass (*Glyceria maxima*) grassland, and creeping bent (Agrostis stolonifera)-wī grassland.

5.15 Swamp forest habitats, dominated by kahikatea (*Dacrycarpus dacrydioides*), occur on two hillslope seepages (IW1: Kahikatea forest). These two areas have a higher diversity of indigenous plant species due to reduced grazing pressure, and the easternmost area of kahikatea forest includes a small population of mauri (swamp astelia; *Astelia grandis*). Where this vegetation type is heavily grazed, with only a

[16] https://www.doc.govt.nz/documents/science-and-technical/WetlandsBWa.pdf

few trees remaining, it has been mapped as kahikatea treeland (IW2). Small areas of IW2 occur on hillslope seepages throughout the site.

5.16 Two small constructed wetlands occur at 35 Trig Road immediately upstream of artificial impoundments on valley floors. With the exception of these two artificial wetlands, all wetlands at 35 Trig Road are hillslope seepages.

6. FLORA

6.1 Seventy-seven indigenous plant species and 53 naturalised exotic plant species were recorded during the surveys to date (Appendix 4). None of the species are classified as nationally 'Threatened' or 'At Risk' as per de Lange *et al.* (2018) [17]. Taraire (*Beilschmiedia tarairi*), however, reaches its southern limit in the Waikato Region and is classified as 'Naturally Uncommon' in the Waikato Region by de Lange *et al*. (2001)[18]. Mauri (swamp lily) is uncommon in the Waikato Region, and in the Auckland Region, the southern boundary of which is only two kilometres to the north, and mauri is classified as 'Regionally Critical' by Stanley *et al.* (2005)[19].

7. FAUNA

Avifauna

7.1 Nine indigenous bird species were seen or heard during the surveys (Appendix 5), none of which are classified as 'Threatened' or 'At Risk' by Robertson *et al*. (2017)[20] However, matuku/Australasian bittern, which has a conservation status of 'Threatened-Nationally Critical', is likely to be present, at least as an occasional visitor. This wetland bird is a relatively mobile species, suitable habitats are present, and the property is close to the large population in Whangamarino Wetland to the east. Puweto (spotless crake; *Porzana tabuensis tabuensis*), classified as 'At Risk-Declining', is likely to be present in areas of raupō reedland.

7.2 Pied stilt (*Himantopus himantopus leucocephalus*) has been seen in areas of flooded pasture, while pūkeko (*Porphyrio melanotus melanotus*) and spur-winged plover (*Vanellus miles*) were frequently seen throughout areas of grazed exotic

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17 de Lange P.J., Rolfe J.R., Barkla J.W., Courtney S.P., Champion P.D., Perrie L.R., Beadel S.M., Ford K.A., Breitwieser I., Schonberger I., Hindmarsh-Walls R., Heenan P.B., and Ladley K. 2018: Conservation status of New Zealand indigenous vascular plants, 2017. *New Zealand Threat Classification Series 22*. Department of Conservation, Wellington. 82 pp.

18 de Lange P.J., Collins L., and Brandon A. 2001: Draft list of regionally threatened plants (Waikato Conservancy). 4 pp.

19 Stanley R., de Lange, P.J., and Cameron E.K. 2005: Auckland Regional Threatened and Uncommon Vascular Plants List. *Auckland Botanical Society Journal 60*(2): 152-157.

20 Robertson H.A., Baird K., Dowding J.E., Elliott G.P., Hitchmough R.A., Miskelly C.M., McArthur N., O'Donnell C.F.J., Sagar P.M., Scofield R.P., and Taylor G.A. 2017: Conservation status of New Zealand birds, 2016. New Zealand Threat Classification Series 19. Department of Conservation, Wellington. 23 pp.

grassland. The site also supports common forest birds such as tūī (*Prosthemadera novaeseelandiae*), kōtare (New Zealand kingfisher; *Todiramphus sanctus vagans*), and pīwakawaka (North Island fantail; *Rhipidura fuliginosa placabilis*). Kererū (*Hemiphaga novaeseelandiae*) was seen in the kahikatea forest on the floodplain and is likely to utilise forest and scrub habitats throughout the property. Six exotic bird species were recorded.

Aquatic fauna

7.3 Three Gee-minnow traps were set at each of four locations on the night of 17-18 August 2017. Shortfin eel (*Anguilla australis*), kōura/freshwater crayfish (*Paranephrops planifrons),* and freshwater crab (*Amarinus* sp.) were captured in a stream that drains eastwards towards the harakeke flaxland in the northeast. The same species were also caught by kick-netting where this stream crosses the alluvial flats immediately to the south. The headwater streams in indigenous forest are also likely to be habitat for longfin eel (*Anguilla dieffenbachii*), which has a conservation status of 'At Risk-Declining'[21].

7.4 Subsequent to this freshwater habitat survey, 50 Gee minnows and two fyke nets were deployed for three nights 20-23 August 2018 and confirmed the presence of four indigenous freshwater fauna species: īnanga (*Galaxias maculatus*; 'At Risk-Declining'), shortfin eel, koura, and freshwater crab. Although this survey occurred two years ago, the aquatic habitats at the site have not changed significantly since that time and I consider that these results are still valid.

Herpetofauna

7.5 A targeted field survey for reptiles was beyond the scope of this assessment. Indigenous forest and scrub are likely to support arboreal geckos such as elegant gecko (*Naultinus elegans elegans*) and forest gecko (*Mokopirirakau granulatus*), particularly larger areas of indigenous forest that include kānuka or mānuka. There is an abundance of suitable habitat for indigenous skinks such as copper skink (*Oligosoma aeneum*) and ornate skink (*O. ornata*), including indigenous forest, open forest margins, shrubland, exotic scrub, and rank grass. Elegant gecko, forest

[21] Dunn, N.R., Allibone, R.M., Closs, G.P., Crow, S.K., David, B.O., Goodman, J.M., Griffiths, M., Jack, D.C., Ling, N., Waters, J.M. and Rolfe, J.R. 2018: Conservation status of New Zealand freshwater fishes, 2017. *New Zealand Threat Classification Series 24*. Department of Conservation. 11 pp.

gecko, and ornate skink are all classified as 'At Risk-Declining' by Hitchmough *et al*.[22]. All indigenous reptiles are absolutely protected by the Wildlife Act (1953).

Bats

7.6 Pekapeka/long-tailed bats (*Chalinolobus tuberculatus*) are one of only two terrestrial mammal species indigenous to New Zealand, and are classified as 'Threatened-Nationally Critical' by O'Donnell *et al*. (2018)[23]. The species is threatened by habitat loss, primarily the loss of roost trees, and by predation by introduced pest mammals.

7.7 Pekapeka/long-tailed bats occur widely in the Waikato Region. In 2014, pekapeka/long-tailed bats were seen near Puni, approximately 12 kilometres to the northwest, and they are known to be present approximately 14 kilometres downstream of the property near Aka Aka. Mature trees - both indigenous and exotic - are plentiful at the site and have the potential to support bats roosts. Trees with dead limbs, flaking bark, or tree holes, could potentially be bat roosts. A study of roost use in the Eglinton Valley, South Island, found that bats most frequently roosted in knot hole cavities with small diameter entrances[24].

7.8 Four AR4 acoustic monitoring devices were installed on 15 February 2018 to assess the presence of pekapeka at the site. The devices were retrieved on 27 February 2018 after 12 nights in the field. The weather during the time of deployment was mostly fine, punctuated by short periods of wet and or rainy weather up to two days duration. The data collected were analysed using BatSearch 3. All of the bat monitoring devices deployed at 42B Potter Road recorded bats during the time of deployment (Appendix 6). Although this survey occurred nearly three years ago, the habitat values for long tailed bats have not changed significantly since that time and I consider that these results are still valid.

7.9 The results confirm that pekapeka/long-tailed bats utilise habitats throughout the site. The property provides suitable foraging habitat, with watercourses, forest patches, and areas of open farmland. Foraging appears to be focused alongside the Waikato River, where the two ABMs in riverside vegetation recorded the majority of calls (88 of the 94 confirmed calls for the four ABMs deployed). The relatively high

[22] Hitchmough R, Barr B., Lettink M., Monks J., Reardon J., Tocher M., van Winkel D, and Rolfe J. 2016: Conservation status of New Zealand reptiles, 2015. New Zealand Threat Classification Series 17. Department of Conservation. Wellington.

[23] O'Donnell C.F.J., Borkin K.M., Christie J.E., Lloyd B., Parsons S., and Hitchmough R.A.2018: Conservation status of New Zealand bats, 2017: New Zealand threat classification series. Department of Conservation, Wellington.

[24] O'Donnell C.F.J. 2005: NZ long-tailed bat. p.98-109 in *The Handbook of New Zealand Mammals*. Second Edition. Edited by King C.M. Oxford University Press, Melbourne. 610 pp.

frequency of bat foraging alongside the river, combined with the abundance of potential roost trees within the Site, suggests that roost trees may potentially be present. The most likely areas to contain bat roosts, based on the ABM results and the location, size, and maturity of the forest remnants, are the forest remnants closest to the river. However, bat roosts could potentially occur in any woody vegetation within the Site.

8. ASSESSMENT OF SIGNIFICANT INDIGENOUS BIODIVERSITY

Overview

8.1 Although a draft National Policy Statement for Indigenous Biodiversity has been published[25], at this point in time there is no national policy on the identification of areas of significant indigenous biodiversity. The Waikato Regional Policy Statement, however, provides 11 criteria for assessment of significant indigenous biodiversity (Appendix 7) in the Waikato Region. An area is regarded as supporting significant indigenous biodiversity if it meets one or more of the criteria.

8.2 Van Der Zwan and Kessels (2017, Appendix 2, Table 2[26].) provide criteria for recognition of a Significant Natural Area as Internationally, Nationally, or Regionally Significant. The authors also note that if a site meets at least one of the 11 criteria in the Waikato Regional Policy Statement, but it is not Internationally, Nationally, or Regionally Significant, it is locally significant (p. 79).

8.3 Collectively, 53 areas at the subject site that meet the criteria for significance of indigenous biodiversity in the Waikato Regional Policy Statement cover 67.7 hectares (28.6% of the total land area of 236.7 hectares).

8.4 A map of areas that meet the criteria for significant indigenous biodiversity in the Waikato Regional Policy Statement is provided in Appendix 8.

8.5 Appendix 9 provides a detailed assessment of each of these areas against the criteria in the Waikato Regional Policy Statement.

8.6 Within the subject site, 48 of the 53 areas of significant indigenous biodiversity meet the threshold for local significance, based on the guidance provided by van der

[25] https://www.mfe.govt.nz/publications/biodiversity/draft-national-policy-statement-indigenous-biodiversity
[26] Van Der Zwan W., Kessels, G. 2017. Significant natural areas of the Waikato District: terrestrial and wetland ecosystems. Waikato Regional Council Technical Report 2017/36.

Zwan and Kessels (2017)[27], on the grounds that they meet at least one of the relevant criteria.

8.7 Five areas of kahikatea forest on the lower floodplain of the Waikato River (Appendix 8: 43, 44, 48, 50, 53) are of at least regional significance: these stands of kahikatea are an example of a nationally rare feature but are in poor condition due to the effects of grazing and pest plants. These stands of kahikatea forest are likely to be the areas of highest biodiversity value at the Site.

8.8 Foraging habitat for pekapeka/long-tailed bats is present at the site, as evidenced by the detection of bats during the ABM survey. Pekapeka/long-tailed bats forage widely, often following edges such as bush/pasture margins and riparian habitats, but individuals also forage over pasture and on the urban fringe. Provision of foraging habitat is not considered to increase the significance of a significant area from locally significant to regionally or nationally significant.

8.9 Roosting habitat for pekapeka/long-tailed bats could be present at the site, and this creates some uncertainty with regards to the level of significance of some of the identified areas. However, investigation of pekapeka/long-tailed bat roost locations requires the capture and radio-tracking of long-tailed bats, which can have adverse effects on the individuals handled. For the objectives of this study, confirmation of roost locations is therefore not required or justified, and the assessment of significance has taken a precautionary approach.

8.10 The kahikatea stands on the Waikato River floodplain (Appendix 8: 43, 44, 48, 50, 53) are known to be foraging habitat for pekapeka/long-tailed bat. These forest stands include many trees with cavities and would be elevated to national significance if the presence of pekapeka/long-tailed bat roosts was to be confirmed.

8.11 The four largest areas of indigenous forest on hillslopes at the subject site, numbered 29, 36, 39, and 40, may also provide roosting habitat for pekapeka/long-tailed bats. If roosts were to be confirmed as present in these areas, these areas would also meet the criteria for national significance.

8.12 Long-tailed bat roosts could feasibly be found in any mature woody vegetation in any parts of the subject site. However, the likelihood of this decreases with decreasing size of the forest or treeland, with fewer trees and fewer suitable cavities, and probably also increasing distance from riverine habitats alongside the

[27] Van Der Zwan W., Kessels, G. 2017. Significant natural areas of the Waikato District: terrestrial and wetland ecosystems. Waikato Regional Council Technical Report 2017/36.

river. Scattered roosts could occur in habitats such as kahikatea treeland (Sites 16 and 25) and the small area of kahikatea swamp forest in Site 21, but these habitats due to their small size are unlikely to be of national significance due to bats.

9. TATA VALLEY ZONE AND CONCEPT PLAN

9.1 I understand that development within the TaTa Valley Zone will be guided by the Tata Valley Concept Plan. The Concept Plan identifies a specific area (called the Hotel Precinct) for the location of the hotel and resort facilities. This lies in the south of the Site.

9.2 The Hotel Precinct is mostly exotic grassland (Appendix 1) with three wetland areas; a small hillslope seepage dominated by the exotic mercer grass (*Paspalum distichum*), a small hillslope seepage wetland dominated by the exotic grass creeping bent (*Agrostis stolonifera*) and wi (*Juncus* spp.), and a hillslope wetland with a mix of indigenous and exotic wetland vegetation types (Appendix 8, Polygon 38). Of these three wetland areas, only Polygon 38 meets the criteria as an area of significant indigenous biodiversity. However, resource consent for its removal has granted; this is addressed in the evidence of Mr Scrafton.

9.3 The 53 areas (and 67.7 hectares) of significant indigenous biodiversity at the Site pose ecological constraints for the potential development of these areas. However, only three of these areas are currently mapped as significant natural areas (SNAs) under the proposed plan (Appendix 8, Polygon 43, 48, 53), with associated provisions for their protection.

9.4 The Concept Plan includes identification of an additional 49 areas of habitat as SNA outside the Hotel Precinct (all except for Polygon 38, the area for which resource consent has been granted for removal). By doing so the rezoning recognises the ecological constraints of the Site and affords these areas a higher level of protection than currently provided.

9.5 The remaining 167.1 hectares of the site does not meet the criteria as SNA and does not pose significant ecological constraints for development.

9.6 Under Chapter 3 of the District Plan (Section 3.1.2), indigenous biodiversity values outside of SNAs are also recognized (i.e., indigenous fauna that utilise habitats outside of SNAs). Thus while the proposed rezoning has included additional protection for species and habitats within SNAs, the value of the wider landscape,

outside of SNAs (i.e. exotic habitats used by long-tailed bats), has also been recognized, and is also provided for, in the District Plan.

9.7 The mapping and identification of habitats within the Site that meet the criteria of an SNA is an appropriate step for the rezoning.

10. CONCLUSION

10.1 The subject site covers 227 hectares and lies in the Meremere Ecological District on the northern banks of the Waikato River.

10.2 Most of the site (167.1 hectares) comprises exotic terrestrial habitats of low ecological value.

10.3 Eight indigenous forest and or scrub vegetation types are present at the site and collectively cover 32.3 hectares. Indigenous wetlands collectively cover 17.6 hectares and exotic-dominated wetlands collectively cover 18.0 hectares.

10.4 Areas of exotic grassland and scrub cover approximately 71 percent of the site and pose few ecological constraints for development. The areas of significant indigenous biodiversity, despite modification by grazing and pest plants, are of at least local significance, and the kahikatea forest on the floodplain is of at least regional significance.

10.5 Collectively, 53 areas that meet the criteria for significance of indigenous biodiversity in the Waikato Regional Policy Statement cover 67.7 hectares (29% of the total land area of 236.7 hectares).

10.6 Only three of these 53 areas are currently recognised as SNAs, and afforded the additional protection given by the rules for SNAs.

10.7 The rezoning and Concept Plan proposes to identify 49 additional areas of significant indigenous biodiversity .

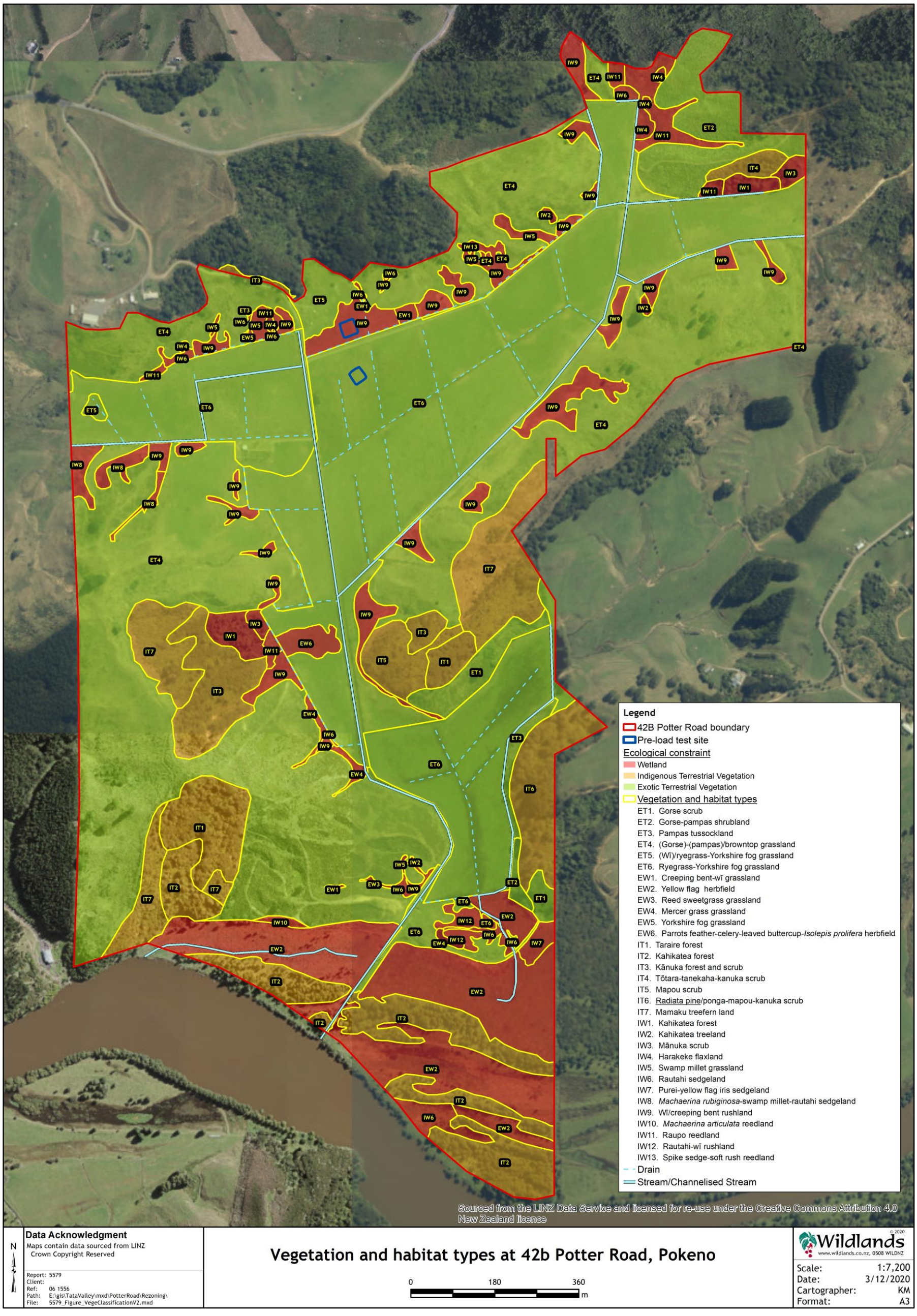
10.8 In my view, the areas of significant biodiversity value within the site should be recognised and afforded appropriate protection. Subsequent development of the Site will then be firmly guided by the ecological constraints posed by these areas.

10.9 The site provides considerable opportunities for the enhancement of ecological values, such as fencing of forests and wetlands to exclude livestock, and pest plant

and pest animal control. These opportunities can be further explored at the resource consent stage for the development.

Timothy James Martin
17 February 2021

MAP OF VEGETATION AND HABITATS AT 42B POTTER ROAD



DESCRIPTION OF HABITATS AT 42B POTTER ROAD

11. OVERVIEW

11.1 Most of the wetlands that are dominated by indigenous species are small hillside seepages. Wetlands, dominated by either indigenous or exotic species, also occur on the fringes of the low-lying flats, between the maximum extent of the valley floor drains and the adjacent slopes. None of the wetland areas on the site are fenced to exclude livestock. Consequently, all are adversely affected by grazing.

Indigenous wetlands

Kahikatea swamp forest on hillside seepage (IW1, 1.32 hectares)

11.2 A small area of kahikatea swamp forest (Plate 1) occurs in the northeast of 42B Potter Road. Kahikatea is abundant, forming a canopy *c*.15 metres tall. The sub-canopy is diverse and includes putaputawētā (*Carpodetus serratus*), whekī (*Dicksonia squarrosa*), horoeka (lancewood; *Pseudopanax crassifolius*), and tawheowheo (*Quintinia serrata*). Tōtara (*Podocarpus totara*) and tānekaha (*Phyllocladus trichomanoides*) are frequent on the drier margins. The understorey is dominated by tupari-maunga (*Gahnia xanthocarpa*) in association with kiokio (*Parablechnum novae-zelandiae*) and mature plants and seedlings of mauri (swamp lily) (Plate 2). A few of the older kahikatea are developing broader crowns and are likely to be at least 80 years old. Grazing of this area is minimal and is probably restricted by the deep, boggy peats on which it grows, the drain along its southern edge, and a steep hillslope to the north. Scattered shallow pools occur throughout the forest. A second small area of kahikatea swamp forest is present on the western margin of the floodplain near the centre of the site.

Kahikatea treeland on hillside seepage (IW2, 0.17 hectares)

11.3 Throughout the site are several small stands of secondary kahikatea up to *c*.16 metres tall. These areas occur within pasture and have a ground tier of exotic grasses, wī (*Juncus edgariae* and *J. sarophorus*), and giant umbrella sedge (toetoe upoko-tangata; *Cyperus ustulatus*).

Mānuka scrub on hillside seepage or poorly drained flats (IW3, 0.52 hectares)

11.4 Mānuka scrub is present on the eastern edges of the kahikatea swamp forest. Mānuka is abundant, forming a canopy 3-4 metres tall, with occasional emergent kahikatea to *c*.15 metres tall. There are small shallow pools throughout, and the understorey is dominated by tupari-maunga, whekī, and *Machaerina rubiginosa*. Mauri is also present as mature plants and seedlings.

Plate 1: Kahikatea swamp forest in the northeast of 42B Potter Road. 17 August 2017.

Plate 2: Mauri (Astelia grandis), an uncommon wetland plant, in the understorey of the kahikatea swamp forest. 18 August 2017.

Harakeke flaxland on poorly drained peats (IW4, 0.38 hectares)

11.5 Harakeke (flax; *Phormium tenax*) flaxland occurs on the valley floor at three locations in the northeast of 42B Potter Road (Plate 3). Harakeke is abundant, with frequent rautahi (*Carex geminata*) and occasional gorse (*Ulex europaeus*) and tī kōuka. This vegetation type occurs on deep, wet peats.

Swamp millet grassland on hillside seepages (IW5, 0.69 hectares)

11.6 Swamp millet (*Isachne globosa*) grassland occurs in hillside seepages within pasture. Swamp millet forms a dense, low sward over wet to shallowly inundated ground, with occasional wī (*Juncus sarophorus*), starwort (*Callitriche stagnalis*), and *Isolepis reticularis*.

Plate 3: Harakeke flaxland on wet peats. 17 August 2017.

Rautahi sedgeland on poorly drained peats and floodplain (IW6, 1.49 hectares)

11.7 Rautahi sedgeland occurs on poorly drained peats, and in depressions close to the bank of the Waikato River. In the northeast, rautahi is abundant, with occasional pampas (*Cortaderia selloana*) and harakeke. Close to the Waikato River, rautahi is also abundant, reed sweetgrass (*Glyceria maxima*) and water pepper (*Persicaria hydropiper*) are locally common, and giant umbrella sedge occurs occasionally.

Pūrei-yellow flag sedgeland on floodplain (IW7, 0.41 hectares)

11.8 Along the southern edge of the causeway, where it meets the western boundary of the site, a floodplain wetland is dominated by pūrei (*Carex virgata*) and yellow flag (*Iris pseudacorus*). Giant umbrella sedge and water pepper are locally common.

Machaerina rubiginosa-swamp millet-rautahi sedgeland on hillside seepages and poorly drained alluvium (IW8, 1.10 hectares)

11.9 This wetland vegetation type occurs in a gully in the northeast, and in hillside seepages near the northwestern boundary of 42B Potter Road (Plate 4). In the northeast, swamp millet and *Machaerina rubiginosa* are dominant, with rautahi, harakeke, and wī (*Juncus edgariae*). Kahikatea and tī kōuka occur as occasional

emergent trees. In the northwest, swamp millet, *Machaerina rubiginosa*, and rautahi are locally abundant, with areas of *Carex subdola*, and occasional pampas and mānuka.

Plate 4: Wetland dominated by *Machaerina rubiginosa* (foreground) and swamp millet (middle distance) near the northwest boundary of 42B Potter Road. 18 August 2017.

Wī-creeping bent rushland on hillslope seepages and poorly drained alluvium (IW9, 7.91 hectares)

11.10 Wī and creeping bent (*Agrostis stolonifera*) are abundant in grazed freshwater wetlands on hillslopes and along the toe of hillslopes (Plate 5). Yorkshire fog (*Holcus lanatus*) is common, and swamp millet and rautahi are locally abundant where this vegetation type occurs on steeper hillside seepages. Poorly defined stream channels occur within the larger seepages, often comprising a shallowly-inundated silty bed covered in starwort.

Machaerina articulata reedland on floodplain (IW10, 0.15 hectares)

11.11 Reedland dominated by *Machaerina articulata* occurs on poorly drained alluvium where a hillslope abuts the floodplain of the Waikato River. Rautahi is common, with occasional mānuka, giant umbrella sedge, and yellow flag.

Raupō reedland on hillside seepages and poorly drained alluvium (IW11, 1.96 hectares)

11.12 Raupō (*Typha orientalis*) reedland occurs on hillside seepages, and on poorly drained alluvium along the transition from hillslopes to alluvial flats. Raupō is abundant with locally abundant swamp millet and rautahi and occasional mānuka, gorse, and pampas, particularly on the drier margins.

Plate 5: Wī-creeping bent rushland in a hillside seepage (background). This vegetation type often grades into creeping bent-wī grassland at the toe of the slope (foreground). 18 August 2017.

Rautahi-wī sedgeland on poorly drained alluvium (IW12, 0.64 hectares)

11.13 On the northern side of the stop bank, an area of floodplain is dominated by rautahi and wī. Rautahi is abundant, wī is common, and beggars' ticks (*Bidens frondosa*), water pepper, and Mercer grass (*Paspalum distichum*) are frequent. Yellow flag and pūrei are also locally present. This area is subject to significant seasonal changes in water levels. In February 2018 the area had damp to moist soils, with little surface water, and in August 2017 this area was entirely inundated by floodwaters. During the August 2018 survey this area featured moist soils with small areas of standing water.

Spike sedge-soft rush reedland (IW13, 0.03 hectares)

11.14 A small pocket of spike sedge (*Eleocharis acuta*) occurs in seepage near the northern boundary of 42B Potter Road. Soft rush, *Juncus prismatocarpus*, rautahi and swamp millet are also present in this area.

12. EXOTIC WETLANDS

Creeping bent-wī grassland on seepages and poorly drained flats (EW1, 8.30 hectares)

12.1 Creeping bent-wī grassland occurs on seepages on the lower hillslopes. Creeping bent, an exotic grass that is often common in grazed wetlands, is abundant with common to occasional wī, spearwort (*Ranunculus flammula*), and soft rush (*Juncus effusus*). The ground is moist to wet, with areas of saturated soils and shallow water along drainage channels.

Yellow flag herbfield on floodplain (EW2, 16.50 hectares)

12.2 Yellow flag herbfield covers most of the lower floodplain at the southern end of the site, adjacent to the Waikato River (Plate 6). Yellow flag is abundant and emergent from shallow water 0.1-0.2 metres deep. This vegetation type includes a few kahikatea up to *c*.12 metres tall and mānuka to *c*.3 metres tall. To the west of the causeway there were several areas of shallow open water. This vegetation type also occurs in small depressions within the kahikatea forest on the floodplain, at a scale too small to be mapped.

Plate 6: Yellow flag herbfield in shallow water on the floodplain. Kahikatea forest on the floodplain is visible in the distance (photograph right). 17 August 2017.

Reed sweetgrass grassland (EW3, 0.04 hectares)

12.3 A narrow upper arm of a hillslope seepage at 42B Potter Road is dominated by the exotic reed sweetgrass. The grass forms a dense sward over moist to shallowly inundated ground, and there is no defined channel.

Mercer grass grassland (EW4, 0.51 hectares)

12.4 Freshwater wetlands dominated by exotic mercer grass occur on the northern side of the stop-bank, and along the foot of hillslope seepages in the south of the property. Alongside the stop-bank, a low sward of mercer grass forms a fringe of vegetation around the margins of an ephemeral pond. At the time of the spring 2017 field work, this area was flooded with no obvious vegetation. Further north, where hillslope seepages meet the floodplain, Mercer grass is abundant with frequent water pepper, marsh bedstraw (*Galium palustre*), rautahi, and wī.

Yorkshire fog grassland (EW5, 0.03 hectares)

12.5 Wet margins of some seepages contain dense Yorkshire fog with locally common watercress (*Nasturtium officinale*). Starwort, soft rush and water celery also occur within this vegetation type.

Parrot's feather – celery-leaved buttercup – *Isolepis prolifera* herbfield (EW6, 0.71 hectares)

12.6 On the upper edge of the floodplain, near the foot of the hillslope, is an area of shallow water over peaty substrates. The vegetation is dominated by wetland obligate species; parrot's feather (*Myriophyllum aquaticum*) is abundant, celery-leaved buttercup and *Isolepis prolifera* are common, and frequent species include *Azolla rubra*, starwort, and soft rush. There are frequent pools, some of which contain populations of the pest fish gambusia (*Gambusia affinis*).

13. TERRESTRIAL HABITATS

Overview

13.1 Terrestrial habitats within the property are characterised by exotic grassland and scrub on the well-drained flats and hillslopes, and areas of indigenous vegetation in the steeper gullies. An extensive area of indigenous forest also occurs on well-drained alluvium alongside the Waikato River.

Indigenous forest and scrub

Taraire forest on hillslope (IT1, 3.86 hectares)

13.2 In the southwest gully, taraire is abundant, forming a canopy *c.*12-16 metres tall (Plate 7). Tawa (*Beilschmiedia tawa*) is also common, with occasional pūriri (*Vitex lucens*), pukatea (*Laurelia novae-zelandiae*), rewarewa (*Knightia excelsa*), rimu (*Dacrydium cupressinum*), kahikatea, and tōtara. The oldest trees are likely to be *c.*200-300 years old.

13.3 To the east of the main race, a smaller area of taraire forest occurs on the southern side of a ridge. At this location, taraire is abundant with occasional rewarewa.

Plate 7: Taraire-tawa forest in the head of a gully in the southwest of the property. Dead gorse scrub in foreground. 17 August 2017.

Kahikatea forest on hillslope and floodplain (IT2, 9.64 hectares)

13.4 The lower slopes of the southwest gully transition from taraire-tawa forest to kahikatea forest. Tānekaha, tawa, and tōtara are occasional. On the lower floodplain of the Waikato River, dense stands of kahikatea 12-16 metres tall occur on bands of well-drained alluvium that sit above the surrounding wet to inundated floodplain (Plate 6). Kahikatea is abundant, with occasional pukatea, tī kōuka, and tītoki (*Alectryon excelsa*). The understorey is sparse, and includes māhoe, *Coprosma areolata*, poataniwha (*Melicope simplex*) and the divaricating shrub swamp māhoe (*Melicytus micranthus*). The most common ground tier species are the indigenous grass *Oplismenus hirtellus, Carex dissita*, and tupari-maunga. The pest plant tradescantia (*Tradescantia fluminensis*) is locally abundant, and in places is supressing regeneration of indigenous species (Plate 8). The indigenous vines, kohia (New Zealand passionfruit; *Passiflora tetrandra*) and kareao (supplejack; *Ripogonum scandens*) are locally common.

Plate 8: Kahikatea forest on the floodplain with poataniwha and kareao in the understorey, and tradescantia forming patches in the ground tier. 17 August 2017.

Kānuka forest and scrub on hillslope (IT3, 4.06 hectares)

13.5 Kānuka forest and scrub occurs on the margins of the older indigenous forest. Kānuka is abundant, with occasional māpou and tōtara. Some secondary species such as pukatea also occur occasionally.

13.6 Kānuka forest also occurs north of the driveway from Potter Road. While this is located on the neighbouring property it is proposed that some of this vegetation will be removed in order to upgrade the road.

Tōtara-tanekaha-kānuka scrub on hillslope (IT4, 0.65 hectares)

13.7 A small area of scrub dominated by tōtara, tānekaha, and kānuka is present along the upper edge of the kahikatea swamp forest in the northeast of 42B Potter Road. Horoeka and mānuka are frequent, with occasional rewarewa.

Māpou scrub on hillslope (IT5, 1.83 hectares)

13.8 Māpou scrub is present on a hillslope to the east of the main race. Māpou is abundant, forming a dense canopy 3-4 metres tall, with frequent ponga and kānuka, and occasional tānekaha, gorse and mingimingi (*Leucopogon fasciculatus*).

Radiata pine/ponga-māpou-kānuka scrub on hillslope (IT6, 3.47 hectares)

13.9 On a hillslope on the eastern boundary of 42B Potter Road, radiata pine is abundant with frequent to occasional maritime pine (*Pinus pinaster*). These trees are 15-25 metres tall and occur over a canopy of ponga, māpou, mingimingi, and kānuka 3-4 metres tall.

Mamaku treefernland on hillslope (IT7, 5.82 hectares)

13.10 Mamaku (*Cyathea medullaris*) treefernland occurs on the margins of indigenous forest. In the westernmost area of this vegetation type, mamaku is abundant, with frequent kānuka and occasional rimu and mānuka.

14. EXOTIC FOREST, SCRUB, AND GRASSLAND

Gorse scrub on hillslope (ET1, 2.11 hectares)

14.1 Gorse scrub occurs on hillslopes throughout the site. Gorse forms a dense, low canopy 1-3 metres tall with occasional pampas.

Gorse-pampas shrubland on hillslope (ET2, 5.38 hectares)

14.2 Gorse-pampas shrubland occurs on steeper hillslopes in the northeast of 42B Potter Road. Gorse and pampas are abundant, with patches of bracken (*Pteridium esculentum*) and occasional tupari-maunga.

Pampas tussockland on hillslope (ET3, 0.62 hectares)

14.3 A narrow band of dense pampas tussockland occurs along the foot of a hillslope near the eastern boundary.

Gorse-pampas/browntop grassland on hillslope (ET4, 75.19 hectares)

14.4 Exotic grassland dominated by browntop (*Agrostis capillaris*) is the most extensive vegetation type on the well-drained hillslopes of 42B Potter Road (Plate 11). Browntop is common, with frequent gorse. Pampas is locally abundant, particularly on steeper slopes in the heads of gullies, and radiata pine, maritime pine, and kahikatea occur as occasional mature trees throughout. The relative abundance of the grass species present changes with slope and soil moisture. The indigenous grass pātītī (*Microlaena stipoides*) is locally common, and Yorkshire fog and creeping bent increase in abundance where soil moisture is higher. Most of the woody vegetation

within this vegetation type is dead (Plate 9) following the aerial application of herbicide in January 2017 (Joel McKinlay, pers. comm. August 2017). Before the aerial spraying several areas of this vegetation type along the eastern boundary of 42B Potter Road were likely to have supported mamaku treefernland or kānuka forest and scrub, as evidenced by dead standing trees and shrubs.

Plate 9: Exotic grassland dominated by browntop covers most of the well-drained hillslopes. 17 August 2017.

Wī/ryegrass-Yorkshire fog grassland on alluvium (ET5, 1.53 hectares)

14.5 Poorly drained areas within the pasture, which often occur on the margins of drains, are exotic grassland dominated by rye grass (*Lolium perenne*) and Yorkshire fog. Wī is frequent with occasional soft rush (Plate 10).

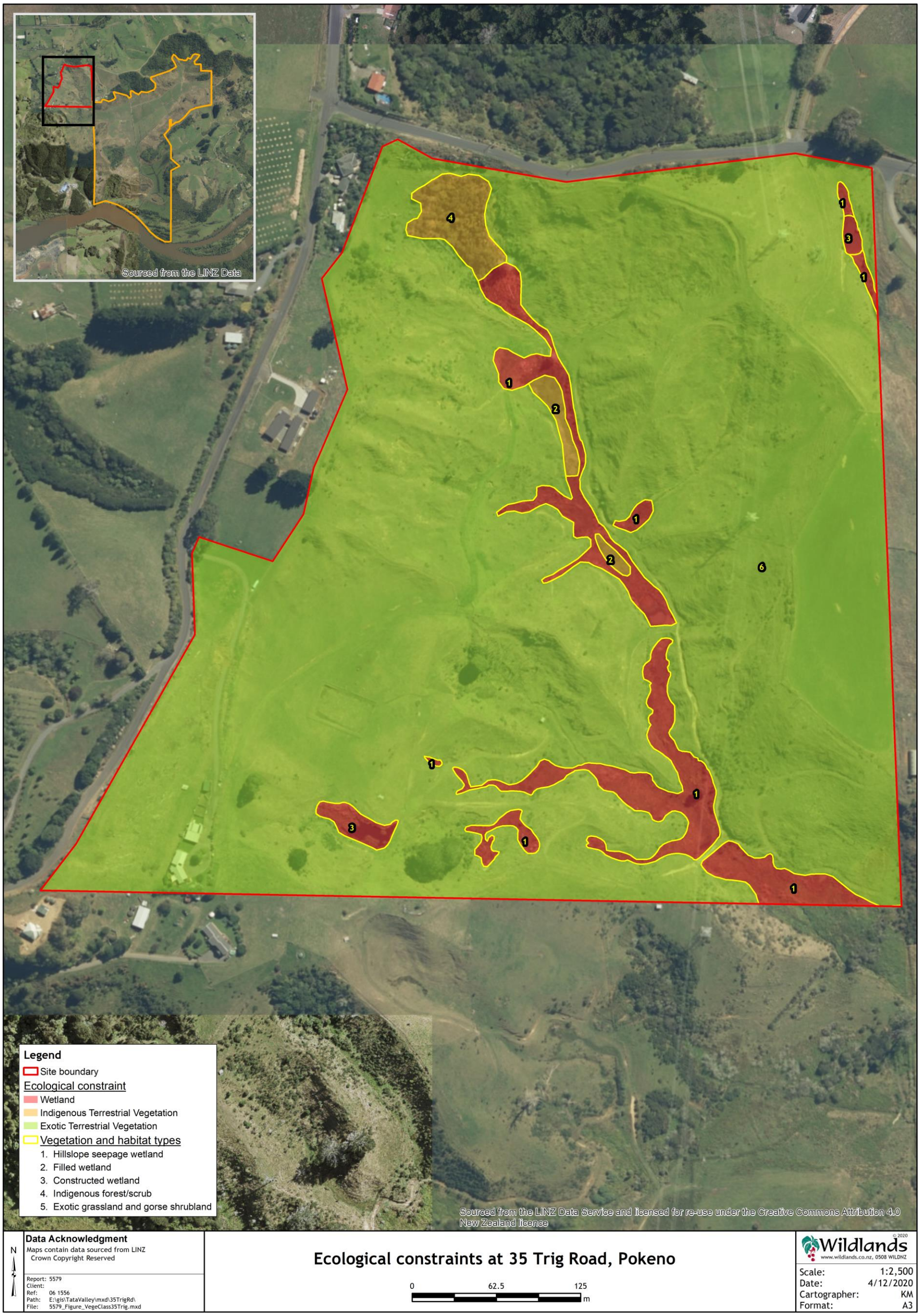
Ryegrass-Yorkshire fog grassland on alluvium (ET6, 39.86 hectares)

14.6 Grazed exotic grassland covers most of the well-drained flats throughout the site. The ground is firm underfoot with no standing water, and the water levels in the drains that cross the grassland are typically 1-2 metres below the top of the banks (Plate 11). Ryegrass is abundant, Yorkshire fog is common, and paspalum (*Paspalum dilatatum*) and creeping buttercup (*Ranunculus repens*) are frequent. California thistle (*Cirsium arvense*) and Scotch thistle (C. *vulgare*) are occasional.

Plate 10: Drain flowing through exotic grassland. Wī and soft rush are present along the margins of the drain. 18 August 2017.

Plate 11: Exotic grassland on drained alluvial flats. A channelised stream (foreground) with banks *c*.1.5 metres tall cuts across the flats. 17 August 2017

MAP OF VEGETATION AND HABITATS AT 35 TRIG ROAD



FLORA RECORDED AT THE SITE

INDIGENOUS SPECIES

Gymnosperms

Dacrycarpus dacrydioides	kahikatea
Dacrydium cupressinum	rimu
Phyllocladus trichomanoides	tānekaha
Podocarpus totara var. *totara*	tōtara

Monocot. trees and shrubs

Cordyline australis	tī kōuka, cabbage tree
Rhopalostylis sapida	nīkau

Dicot. trees and shrubs

Alectryon excelsus subsp. *excelsus*	tītoki
Beilschmiedia tarairi	taraire
Beilschmiedia tawa	tawa
Carpodetus serratus	putaputawētā
Coprosma areolata	
Coprosma rhamnoides	
Coprosma robusta	karamū
Geniostoma ligustrifolium var. *ligustrifolium*	hangehange
Hebe stricta var. *stricta*	koromiko, kōkōmuka
Knightia excelsa	rewarewa
Kunzea robusta	kānuka
Laurelia novae-zelandiae	pukatea
Leptospermum scoparium agg.	mānuka
Leucopogon fasciculatus	mingimingi
Melicope simplex	poataniwha
Melicytus micranthus	māhoe wao
Melicytus ramiflorus subsp. *ramiflorus*	māhoe
Myrsine australis	māpou, matipou, māpau
Pittosporum eugenioides	tarata; lemonwood
Pittosporum tenuifolium	kōhūhū, rautāhiri, rautāwhiri
Pseudopanax crassifolius	horoeka, lancewood
Quintinia serrata	tāwheowheo
Sophora microphylla	kōwhai
Vitex lucens	pūriri

Monocot. lianes

Ripogonum scandens	supplejack, kareao

Dicot. lianes

Metrosideros diffusa	rātā
Muehlenbeckia australis	puka
Passiflora tetrandra	kohia; native passionfruit

Ferns

Asplenium bulbiferum	mouku, hen and chicken fern
Asplenium flaccidum	makawe, ngā makawe o Raukatauri
Asplenium oblongifolium	huruhuru whenua
Blechnum filiforme	pānako
Blechnum minus	swamp kiokio
Blechnum novae-zelandiae	kiokio
Cyathea dealbata	ponga, silver fern
Cyathea medullaris	mamaku
Deparia petersenii subsp. *congrua*	
Dicksonia squarrosa	whekī
Gleichenia dicarpa	tangle fern, swamp umbrella fern
Hypolepis distans	
Microsorum scandens	mokimoki
Pneumatopteris pennigera	pākau
Pteridium esculentum	rārahu, bracken
Pyrrosia eleagnifolia	leather-leaf fern

Orchids

Microtis unifolia agg.	

Grasses

Isachne globosa	swamp millet
Microlaena stipoides	pātītī, meadow rice grass
Oplismenus hirtellus subsp. *imbecillis*	

Sedges

Bolboschoenus fluviatilis	pūrua grass, kukuraho
Carex dissita	
Carex geminata agg.	rautahi
Carex subdola	
Carex virgata	pūrei
Cyperus ustulatus f. *ustulatus*	toetoe upoko-tangata
Eleocharis acuta	spike sedge
Gahnia xanthocarpa	tupari-maunga
Isolepis prolifera	
Isolepis reticularis	
Machaerina articulata	
Machaerina rubiginosa	

Rushes

Juncus edgariae	wī, wīwī
Juncus planifolius	
Juncus prismatocarpus	
Juncus sarophorus	wī, wīwī

Monocot. herbs (other than orchids, grasses, sedges, and rushes)

Astelia grandis	mauri
Dianella nigra	tūrutu
Lemna disperma	karearea
Phormium tenax	harakeke, flax
Typha orientalis	raupō

Dicot. herbs (other than composites)

Callitriche muelleri
Nertera scapanioides

NATURALISED AND EXOTIC SPECIES

Gymnosperms

Pinus pinaster	maritime pine
Pinus radiata	radiata pine

Dicot. trees and shrubs

Acacia mearnsii	black wattle
Alnus glutinosa	common alder
Berberis glaucocarpa	barberry
Juglans ailantifolia	Japanese walnut
Ligustrum lucidum	tree privet
Salix cinerea	grey willow
Ulex europaeus	gorse

Grasses

Agrostis capillaris	browntop
Agrostis stolonifera	creeping bent
Anthoxanthum odoratum	sweet vernal
Cenchrus clandestinus	kikuyu grass
Cortaderia selloana	pampas
Dactylis glomerata	cocksfoot
Glyceria fluitans	floating sweet grass
Glyceria maxima	reed sweetgrass
Holcus lanatus	Yorkshire fog
Lolium perenne	rye grass

Paspalum dilatatum	paspalum
Paspalum distichum	mercer grass
Sporobolus africanus	ratstail

Sedges

Cyperus eragrostis	umbrella sedge

Rushes

Juncus articulatus	jointed rush
Juncus effusus var. *effusus*	soft rush, leafless rush

Monocot. herbs (other than orchids, grasses, sedges, and rushes)

Iris pseudacorus	yellow flag
Tradescantia fluminensis	tradescantia

Composite herbs

Bidens frondosa	beggars' ticks
Cirsium arvense	California thistle
Cirsium vulgare	Scotch thistle
Leontodon taraxacoides	hawkbit
Senecio bipinnatisectus	Australian fireweed

Dicot. herbs (other than composites)

Apium nodiflorum	water celery
Callitriche stagnalis	starwort
Galium palustre	marsh bedstraw
Lepidium didymum	twin cress
Lotus pedunculatus	lotus
Lotus suaveolens	hairy birdsfoot trefoil
Ludwigia palustris	water purslane
Lycopus europaeus	gypsywort
Myosotis laxa subsp. *caespitosa*	water forget-me-not
Myriophyllum aquaticum	parrot's feather
Nasturtium officinale	watercress
Persicaria hydropiper	water pepper
Persicaria strigosa	
Phytolacca octandra	inkweed
Plantago lanceolata	narrow-leaved plantain
Plantago major	broad-leaved plantain
Ranunculus flammula	spearwort
Ranunculus repens	creeping buttercup
Ranunculus sceleratus	celery-leaved buttercup
Raphanus raphanistrum subsp. *raphanistrum*	wild radish
Rumex obtusifolius	broad-leaved dock

FAUNA SPECIES RECORDED AT THE SITE

MAMMALS

Indigenous

Chalinolobus tuberculatus	pekapeka; long-tailed bat

Introduced (feral)

Bos taurus	domestic cattle
Capra hircus	feral goat
Felis catus	cat
Oryctolagus cuniculus cuniculus	European rabbit
Trichosurus vulpecula	brushtail possum*

BIRDS

Indigenous

Circus approximans	kāhu; swamp harrier
Hemiphaga novaeseelandiae	kererū; kūkupa; New Zealand pigeon
Himantopus himantopus leucocephalus	poaka; pied stilt
Hirundo neoxena neoxena	welcome swallow
Porphyrio melanotus melanotus	pūkeko
Prosthemadera novaeseelandiae novaeseelandiae	tūī
Rhipidura fuliginosa placabilis	pīwakawaka; North Island fantail
Todiramphus sanctus vagans	kōtare sacred kingfisher; New Zealand kingfisher
Vanellus miles novaehollandiae	spur-winged plover

Introduced

Anas platyrhynchos	mallard
Callipepla californica bunnescens	California quail
Emberiza citrinella	yellowhammer
Passer domesticus	house sparrow
Phasianus colchicus	common pheasant
Turdus merula	Eurasian blackbird

FISH

Indigenous

Anguilla australis	shortfin eel

Introduced and Naturalised

Cyprinus carpio	koi carp
Gambusia affinis	mosquitofish

FRESHWATER INVERTEBRATES

Amarinus sp.	freshwater crab
Paranephrops planifrons	kōura; freshwater crayfish

APPENDIX 6

ACOUSTIC BAT MONITORING RESULTS FOR 42B POTTER ROAD, POKENO, FEBRUARY 2018.

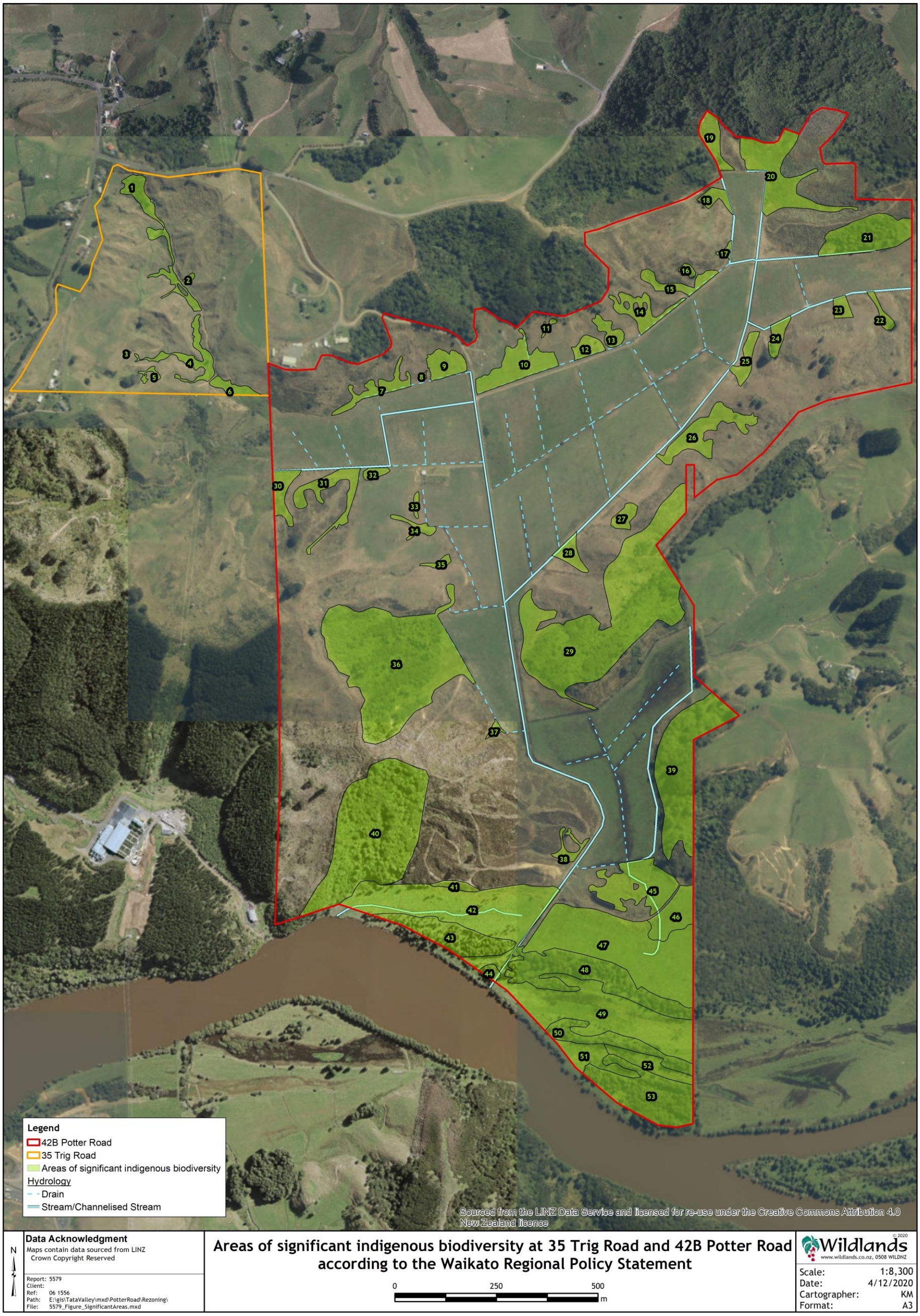
ABM Location/ Device #	Habitat Description	No. of Nights with Bats	Total Number of Confirmed Calls	Average Number of Confirmed Bat Calls per Night
1 (9A)	Kahikatea in wetland beside road	1	2	0.17
2 (47)	Group of three kahikatea in wetland	1	4	0.33
3 (3A)	Alder tree on banks of Waikato River	8	12	1.00
4 (2A)	Kahikatea on edge of floodplain forest	9	66	5.50

WAIKATO REGIONAL POLICY STATEMENT CRITERIA FOR THE ASSESSMENT OF SIGNIFICANT INDIGENOUS BIODIVERSITY

Criteria	
Previously Assessed Site	
1.	It is indigenous vegetation or habitat for indigenous fauna that is currently, or is recommended to be, set aside by statute or covenant or by the Nature Heritage Fund, or Nga Whenua Rahui committees, or the Queen Elizabeth the Second National Trust Board of Directors, specifically for the protection of biodiversity, and meets at least one of Criteria 3-11.
Ecological Values	
2A	In the Coastal Marine Area, it is indigenous vegetation or habitat for indigenous fauna that has reduced in extent or degraded due to historic or present anthropogenic activity to a level where the ecological sustainability of the ecosystem is threatened.
3.	It is vegetation or habitat that is currently habitat for indigenous species or associations of indigenous species that are: • classed as threatened or at risk, or • **endemic** to the Waikato region, or • at the limit of their natural range.
4.	It is indigenous vegetation, habitat or ecosystem type that is under-represented (20% or less of its known or likely original extent remaining) in an Ecological District, or Ecological Region, or nationally.
5.	It is indigenous vegetation or habitat that is, and prior to human settlement was, nationally uncommon such as geothermal, chenier plain, or karst ecosystems, hydrothermal vents or cold seeps.
6.	It is wetland habitat for indigenous plant communities and/or indigenous fauna communities (excluding exotic rush/pasture communities) that has not been created and subsequently maintained for or in connection with: • waste treatment; • wastewater renovation; • hydro-electric power lakes (excluding Lake Taupō); • water storage for irrigation; or • water supply storage; unless in those instances they meet the criteria in Whaley *et al*. (1995).
7.	It is an area of indigenous vegetation or naturally occurring habitat that is large relative to other examples in the Waikato region of similar habitat types, and which contains all or almost all indigenous species typical of that habitat type. Note this criterion is not intended to select the largest example only in the Waikato region of any habitat type.
8.	It is aquatic habitat (excluding artificial water bodies, except for those created for the maintenance and enhancement of biodiversity or as mitigation as part of a consented activity) that is within a stream, river, lake, groundwater system, wetland, intertidal mudflat or estuary, or any other part of the coastal marine area and their margins, that is critical to the self-sustainability of an indigenous species within a catchment of the Waikato region, or within the coastal marine area. In this context "critical" means essential for a specific component of the life cycle and includes breeding

Criteria	
	and spawning grounds, juvenile nursery areas, important feeding areas and migratory and dispersal pathways of an indigenous species. This includes areas that maintain connectivity between habitats.
9.	It is an area of indigenous vegetation or habitat that is a healthy and representative example of its type because: • its structure, composition, and ecological processes are largely intact; and • if protected from the adverse effects of plant and animal pests and of adjacent land and water use (e.g. stock, discharges, erosion, sediment disturbance), can maintain its **ecological sustainability** over time.
10.	It is an area of indigenous vegetation or habitat that forms part of an **ecological sequence**, that is either not common in the Waikato region or an ecological district, or is an exceptional, representative example of its type.
Role in Protecting Ecologically Significant Area	
11.	It is an area of indigenous vegetation or habitat for indigenous species (which habitat is either naturally occurring or has been established as a mitigation measure) that forms, either on its own or in combination with other similar areas, an ecological buffer, linkage or corridor and which is necessary to protect any site identified as significant under Criteria 1-10 from external adverse effects.

MAP OF AREAS OF SIGNIFICANT INDIGENOUS BIODIVERSITY ACCORDING TO WAIKATO REGIONAL POLICY STATEMENT CRITERIA



DETAILED ASSESSMENT OF AREAS OF SIGNIFICANT INDIGENOUS BIODIVERSITY USING THE WAIKATO REGIONAL POLICY STATEMENT CRITERIA SET

Significant Indigenous Biodiversity Assessment Polygon Number	Property Location	Vegetation Type	Criteria Met	Justification	Relative Importance (Internationally, Regionally, Locally)[1]	Comment
1, 2, 3, 4, 5, 6	35 Trig Road	Hillslope seepage wetland (35 Trig Road), māhoe forest and scrub	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. Indigenous forest reduced to less than 5% of original extent in ecological district. 6. Indigenous wetland of natural origin.	Locally.	
7	42B Potter Road	Harakeke flaxland, swamp millet grassland, rautahi sedgeland, Wi/creeping bent rushland, raupo reedland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	
8	42B Potter Road	Wi/creeping bent rushland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	Highly modified with low botanical diversity due to grazing by livestock.
9	42B Potter Road	Harakeke flaxland, swamp millet grassland, rautahi sedgeland, Wi/creeping bent rushland, raupo reedland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	
10, 11	42B Potter Road	Wi/creeping bent rushland, rautahi sedgeland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	

[1] Van der Zwan W., Kessels, G. 2017. Significant natural areas of the Waikato District: terrestrial and wetland ecosystems. Waikato Regional Council Technical Report 2017/36.

Significant Indigenous Biodiversity Assessment Polygon Number	Property Location	Vegetation Type	Criteria Met	Justification	Relative Importance (Internationally, Regionally, Locally)[1]	Comment
12, 13, 17, 18, 19, 22-23, 25-28, 32-35	42B Potter Road	Wi/creeping bent rushland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	Highly modified with low botanical diversity due to grazing by livestock.
24	42B Potter Road	Wi/creeping bent rushland, kahikatea treeland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	Highly modified with low botanical diversity due to grazing by livestock.
14	42B Potter Road	Swamp millet grassland, Wi/creeping bent rushland, spike sedge-soft rush rushland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	
15	42B Potter Road	Swamp millet grassland, Wi/creeping bent rushland,	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	
16	42B Potter Road	Kahikatea treeland	4, 6	4. Indigenous forest reduced to less than 5% of original extent in ecological district. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	Highly modified with low botanical diversity due to grazing by livestock.
20	42B Potter Road	Harakeke flaxland, rautahi sedgeland, raupō reedland	4, 6, 9	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin. 9. Representative example of harakeke flaxland.	Locally.	
21	42B Potter Road	Raupō reedland, kahikatea forest, mānuka scrub	4, 6, 9, 10	4. Indigenous forest reduced to less than 5% of original extent in ecological district. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin. 9.	Locally.	May also meet 3 and 11 if the trees provide roosting habitat for long-tailed bat.

Significant Indigenous Biodiversity Assessment Polygon Number	Property Location	Vegetation Type	Criteria Met	Justification	Relative Importance (Internationally, Regionally, Locally)[1]	Comment
				Representative example of kahikatea swamp forest. 10. Ecological sequence from hillslope forest to swamp forest that is uncommon in the ecological district.		
29	42B Potter Road	Wi/creeping bent rushland, taraire forest, kanuka forest and scrub, mamaku treefernland, mapou scrub,	3, 4, 6, 9	3. Taraire forest near southern limit. 4. Indigenous forest reduced to less than 5% of original extent in ecological district. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin. 9. Representative example of taraire forest.	Locally.	May also meet 3 and 11 if the trees provide roosting habitat for long-tailed bat. This would raise level of significance to nationally.
30	42B Potter Road	*Machaerina rubiginosa*-swamp millet – rautahi sedgeland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	
31	42B Potter Road	*Machaerina rubiginosa*-swamp millet – rautahi sedgeland, Wi/creeping bent rushland,	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	
36	42B Potter Road	Mamaku treefern land, kanuka forest and scrub, kahikatea forest, mānuka scrub, raupō reedland, Wi/creeping bent rushland	4, 6, 9, 10	4. Indigenous forest reduced to less than 5% of original extent in ecological district. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin. 9. Representative example of kahikatea swamp forest. 10. Ecological sequence from	Locally.	May also meet 3 and 11 if the trees provide roosting habitat for long-tailed bat. This would raise level of significance to nationally.

Significant Indigenous Biodiversity Assessment Polygon Number	Property Location	Vegetation Type	Criteria Met	Justification	Relative Importance (Internationally, Regionally, Locally)[1]	Comment
				hillslope forest to swamp forest to raupō reedland.		
37	42B Potter Road	Wi/creeping bent rushland, rautahi sedgeland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	
38	42B Potter Road	Kahikatea treeland, swamp millet grassland, rautahi sedgeland, wi/creeping bent rushland,	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin.	Locally.	Consent for removal has been granted.
39	42B Potter Road	Radiata pine/ponga-mapou-kanuka scrub	4	4. Indigenous forest reduced to less than 5% of original extent in ecological district.	Locally.	May also meet 3 and 11 if the trees provide roosting habitat for long-tailed bat. This would raise level of significance to nationally.
40	42B Potter Road	Mamaku treefern land, kahikatea forest, taraire forest.	3, 4, 9, 10	3. Taraire forest near southern limit. 4. Indigenous forest reduced to less than 5% of original extent in ecological district. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 9. Representative example of taraire forest and kahikatea forest. 10. Ecological sequence from hillslope forest to swamp forest that is uncommon in the ecological district.	Locally.	May also meet 11 if the trees provide roosting habitat for long-tailed bat. This would raise level of significance to nationally.
41	42B Potter Road	*Machaerina articulata* reedland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin	Locally.	
42, 47, 49, 52	42B Potter Road	Yellow-flag herbfield	6, 11	6. Floodplain wetland important for indigenous fauna. 11. Part of a wider connected area of floodplain habitats on the lower Waikato River.	Locally.	May also meet 3 if Australasian bittern confirmed as present

Significant Indigenous Biodiversity Assessment Polygon Number	Property Location	Vegetation Type	Criteria Met	Justification	Relative Importance (Internationally, Regionally, Locally)[1]	Comment
43, 44, 48, 50, 53	42B Potter Road	Kahikatea forest	3, 4, 7, 9, 10, 11	3. Foraging habitat for long-tailed bat. 4. Indigenous forest reduced to less than 5% of original extent in ecological district. 7. Large example of kahikatea floodplain forest. 9. Representative of kahikatea floodplain forest. 10. Part of a wider ecological sequence of floodplain habitats. 11. Important stepping stone habitat for riverine fauna, including long-tailed bats.	Regionally. Example of a nationally rare feature but in poor condition due to grazing and pest plants. Foraging habitat for long-tailed bat (Threatened-Nationally Critical).	Significance would be elevated to nationally if presence of long-tailed bat roosts confirmed.
45	42B Potter Road	Rautahi-wi rushland, rautahi sedgeland, yellow flag herbfield,	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin	Locally.	May also meet 3 if Australasian bittern confirmed as present
46	42B Potter Road	Pūrei-yellow flag sedgeland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin	Locally.	May also meet 3 if Australasian bittern confirmed as present
51	42B Potter Road	Rautahi sedgeland	4, 6	4. Indigenous wetlands reduced to less than 10% of original extent at a national scale. 6. Indigenous wetland of natural origin	Locally.	May also meet 3 if Australasian bittern confirmed as present