#### **BEFORE THE HEARING PANEL**

**IN THE MATTER** of the Resource Management Act 1991

AND

**IN THE MATTER** of the Proposed Waikato District Plan

#### STATEMENT OF EVIDENCE OF ANDREW RUSSELL BLAYNEY (ECOLOGY)

Dated 17 February 2021

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#### INTRODUCTION

- 1. My full name is Andrew Russell Blayney.
- 2. I am a senior terrestrial ecologist (Associate Principal) at Boffa Miskell Limited, in Hamilton. I have held this role since January 2017. Prior to that date, I was employed by the Bay of Plenty Regional Council as a Subject Matter Expert – Integrated Catchments (February 2016 to December 2016) and Land Management Officer (June 2012 – February 2016). I hold the qualifications of Master of Science – Zoology (1st class Honours), Massey University (2013) and Bachelor of Science - Ecology & Zoology, Massey University (2010). I am a Certified Environmental Practitioner (Certification # 1278) under the Certified Environmental Practitioner Scheme (CEnvP) of the Environmental Institute of Australia and New Zealand.
- The below selection of projects provides an indication of my experience which is relevant to my evidence:
  - a) Amberfield development Weston Lea Limited, Hamilton (2017 to present). Terrestrial ecologist for project. I assessed ecological values of the terrestrial vegetation, herpetofauna (lizards), and avifauna (birds) present on site, and the potential effects of the proposed subdivision on those ecological values. I have provided significant input into the design of the proposed methods with which to mitigate potential adverse effects. Presented evidence to Council hearing and Environment Court for this project.
  - b) Ruakura Inland Port (RIP) Tainui Group Holdings, Hamilton (2017 to present). I am the lead project ecologist in the design and implementation of the RIP and associated supporting infrastructure. This includes the assessment and management of fauna, providing ecological input into the development and design of wetlands and

lizard habitat for mitigation, and providing technical advice on ecological constraints and opportunities associated with the project.

- c) Whangarei to Te Hana Jacobs and Waka Kotahi (New Zealand Transport Agency) indicative and detailed business cases (2017present). Carried out indicative and detailed business case multicriteria ecological assessment for Whangarei to Te Hana roading project options for terrestrial and wetland ecology (vegetation, herpetofauna, bats, invertebrates, but excluding avifauna and fish). Project later reframed scope to Whangarei to Port Marsden which I have continued to provide assessment and advice on.
- d) Te Ahu a Turanga; Manawatū Tararua Highway Project Notice of Requirement - Waka Kotahi (New Zealand Transport Agency) (2019). Terrestrial fauna ecologist for the project who lead the assessment of fauna and their habitat ecological values along the road alignment and the potential effects of the construction of the road along the alignment. Presented evidence to Council hearing for this project.
- 4. I have been engaged by Shand Properties Limited (Shand) as a terrestrial ecologist to prepare a statement of evidence in support of its submission to the Proposed Waikato District Plan which seeks the rezoning of two areas of land in Huntly. Specifically, it seeks to rezone a parcel of land that lies between the North Island Main Trunk Railway and State Highway 1 to industrial zoning (Area 1) and a parcel of land that lies between East Mine Road and Russell Road to residential (Area 6). My role has been to assess wetlands on the Shand site (site) specifically those within Area 6 identified in the proposed zoning plan which is Appendix 1 to Attachment 1 of my evidence.

5. I am familiar with the site and surrounding environment having visited the site on 6 October 2020. This site visit was undertaken to assess wetland delineation and ecological values within the scope of my evidence.

#### CODE OF CONDUCT

6. I have read the Environment Court Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2014 and agree to comply with it. I confirm that the opinions expressed in this statement are within my area of expertise except where I state that I have relied on the evidence of other persons. I have not omitted to consider materials or facts known to me that might alter or detract from the opinions I have expressed.

#### SCOPE OF EVIDENCE

- 7. My evidence will briefly summarise the findings of the Boffa Miskell (2020) Wetland Delineation and Assessment technical report (the technical report) included as Attachment 1 which used the Ministry for the Environment wetland delineation protocols incorporated in the National Policy Statement for Freshwater (NPSFW) to identify the natural inland wetlands within Area 6 of the site. Specifically:
  - a) Delineation of the wetland area within the site;
  - b) Ecological values of the wetland area; and
  - c) Identified land use and activity constraints defined within the National Environmental Standards for Freshwater (NESFW) and the NPSFW relevant to the submission.

8. My evidence focuses on my assessment of the ecological values of, and the landuse constraints that apply to, Area 6 which is largely low-lying and contains a large wetland. I have also visually assessed Area 1. However, the vegetation cover is limited to improved pasture and there are no wetlands located there. The proposed future development of Area 1 does not give rise to any ecological issues under the NESFW, or the NPSFW. For that reason, I do not refer to it in my evidence below.

#### SUMMARY OF EVIDENCE

- An assessment of Area 6 identified a natural inland wetland feature of 1.84ha which is dominated by non-native vegetation and has medium ecological value.
- The NPSFW provides that, "The loss of extent of natural inland wetlands is avoided, their values are protected, and their restoration is promoted....". The NESFW outlines restrictions on activities surrounding wetlands including the discharge or diversion of water within 100m of a wetland.
- 11. Development in the area surrounding the wetland will impact on the wetland's hydrology through either diversion or discharge of stormwater. This is likely to require a non-complying resource consent under the NESFW. However, I consider the likely effects of an appropriately managed stormwater discharge would have neutral or positive effect on the wetland. This would be aligned with the intent of the NPSFW.

#### WETLAND DELINEATION AND ECOLOGICAL VALUE

12. I undertook an assessment of the wetland extent on Area 6 following the methods incorporated in the NPSFW which use a combination of vegetation plots, plant species habitat preferences, hydrology, and soil assessments which allow the accurate demarcation of the wetland edge when combined with aerial imagery and topographical information. The ecological values of the wetland were assessed following Environmental Institute of Australia and New Zealand (EIANZ) Ecological Impact Assessment Guidelines (2018)<sup>1</sup>. The detailed methods and results of this assessment are provided in **Attachment 1**.

- 13. The delineation exercise determined that the wetland on the site is 1.84 ha in size. A map is provided in Appendix 6 of Attachment 1 showing the location of the wetland. I consider the wetland to be a "natural inland wetland" as defined by the NPSFW<sup>2</sup>. I note that the 'natural wetland' definition under the NPSFW has the same meaning under the NESFW. The wetland is largely delineated by a drain around the outside edge but in a couple of areas the wetland boundary extends beyond the perimeter drain.
- 14. All survey plots supported this delineation except one, Plot 15, where recent disturbance had modified the soil, resulting in pooling of water in one discrete area adjacent to the wetland. I consider the vegetation and hydrology in this area to be unstable, and the result of the recent soil disturbance. On that basis, I have not included this small area within the assessment of wetland delineation.
- 15. The wetland is overwhelmingly dominated by exotic, invasive plant species with reed sweet grass (*Glyceria maxima*) forming the dominant ground cover and grey willow (*Salix cinera*) forming the dominant canopy cover. The little native vegetation which exists is of a low diversity and a minor component of the vegetation assemblage.
- 16. The exotic plant dominance within the wetland is typical of degraded wetland fragments within the wider area however, compared to many of

<sup>&</sup>lt;sup>1</sup> Roper-Lindsay, J., S. A. Fuller, S. Hooson, M. D. Sanders, and G. T. Ussher. 2018. Ecological Impact Assessment (EcIA). EIANZ Guidelines for Use in New Zealand: Terrestrial and Freshwater Ecosystems. 2nd ed. Melbourne: EIANZ.

<sup>&</sup>lt;sup>2</sup> NPSFW, clause 3.21: "Natural inland wetland means a natural wetland that is not in the coastal marine area".

the wetland fragments within the Waikato region, the wetland is relatively large. These factors combined with the importance and priority of protecting wetlands, both nationally and regionally, means that I have assessed the ecological value as Medium under the EIANZ (2018) guidelines.

## LAND USE CONSTRAINTS WITHIN AND SURROUNDING THE IDENTIFIED WETLAND

- 17. The NESFW came into force in September 2020. The NESFW prescribes standards for natural wetlands and activity statuses for vegetation clearance, earthworks or land disturbance, and the taking, use, damming, diversion, or discharge of water within or near a wetland. I consider that regulations 52, 53, and 54 of the NESFW apply to the natural wetland area in Area 6. These regulations are provided in full in **Attachment 1**. I note that the controls specified in regulations 52 to 54 of the NESFW align with clause 3.22(1) of the NPSFW: "The loss of extent of natural inland wetlands is avoided, their values are protected, and their restoration is promoted...".<sup>3</sup>
- 18. The NESFW restrictions on activities within and around the wetland are prescriptive and unambiguous. The discharge of water within a 100m setback from a natural wetland is a non-complying activity under regulations 52(2) and 54(c). In the context of this submission, which is to rezone an area for residential development, it is useful to say more about this non-complying activity status.
- 19. Area 6 is bisected by the wetland and only a limited area is beyond the 100m setback of the wetland extent. Residential development within 100m of a natural wetland, and within the wetland's catchment, would either

<sup>&</sup>lt;sup>3</sup> The exceptions listed in clause 3.22 do not apply to residential development unless it is specified infrastructure under the Regional Policy Statement or Regional Plan.

have to discharge water to, or divert water away from, the wetland. The latter would likely cause some degree of drainage or altered hydrology resulting in a change to the extent or values of the wetland, triggering the need to obtain aa non-complying resource consent. In this situation, I consider that a discharge of water from within the catchment to the wetland is preferable, and the effects of a discharge of water from residential development would be either neutral or positive, assuming the volume and flow rates are equivalent to baseline condition and water quality is of equal or better quality than baseline.

20. In the case where landuse is changed from agricultural to residential, and where stormwater is managed appropriately, I consider that the assumptions stated above are achievable. From an ecological perspective, such a discharge would align with the intent of the NPSFW as it would result in no loss of extent or values of the wetland.

#### CONCLUSION

- 21. I have assessed Area 6 within the Shand site using the NPSFW wetland delineation methods and determined that the 1.84 ha wetland feature meets the definition of a natural inland wetland. Non-native, invasive plants dominate the wetland vegetation, and the feature has a medium ecological value.
- 22. As any residential development surrounding a wetland will either have to discharge or divert stormwater, a non-complying resource consent will likely be required under the NESFW. However, I have considered the likely effects of a stormwater discharge from residential development and in my opinion an appropriately managed discharge would have a neutral or positive effect on the wetland assuming the volume and flow rates are

equivalent to baseline condition and water quality is of equal or better quality than baseline.

#### Andrew Russell Blayney

17 February 2021

### Attachment 1

Wetland Delineation and Assessment Report

# Boffa Miskell Shand Properties Wetland

Wetland Delineation and Assessment Prepared for Shand Properties Limited 16 October 2020



#### Document Quality Assurance

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Cover photograph: Shand Properties Wetland,  $\ensuremath{\textcircled{O}}$  Tine Ulrich, 2020

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- Appendix 4: Scottburn\_8a.1Soil factsheet
- Appendix 5: Utuhina\_17a.2 Soil factsheet
- Appendix 6: Shand Properties Wetland extent and plot map
- Appendix 7: Shand Properties wetland delineation plot sheets
- Appendix 8: Shand Properties Limited Plant species list

## 1.0 Introduction

Shand Properties Limited have made a submission on the Proposed District Plan for two areas in the northern-Huntly area. As depicted in the preliminary zoning plan provided in Appendix 1; Area 6 is proposed to be rezoned for residential use and Area 1 is proposed to be rezoned for industrial use. The vegetation cover of Area 1 is restricted to improved pasture with no wetlands. Area 6 lies between Russell Road and East Mine Road and consists of a large wetland and associated low-lying areas.

With the National Environmental Standards for Freshwater 2020 (NESFW) and the National Policy Statement for Freshwater Management 2020 (NPSFW) coming into force on 7 September, it is important to accurately assess and demarcate wetlands and low-lying areas to ensure proposed development complies with the NES/NPSFW.

#### 1.1 Scope

Boffa Miskell was engaged to assess the low-lying areas and wetlands of Area 6 within the Shand Properties Limited site (hereafter referred to as "the site") and provide a delineation of the natural inland wetlands in the area following the Ministry for the Environment wetland delineation protocols incorporated in the NPSFW. This assessment also provides guidance on the works and activities that can be conducted within and surrounding these areas in relation to the NES/NPSFW.

Note on the NES/NPSFW; we have interpreted the legislation and conducted this assessment on our understanding of the content and intent of this legislation. However, the recency of the legislation and policy statement means there has been no further guidance from local government or professional bodies that often support ecological assessments.

## 2.0 Methods

#### 2.1 Wetland vegetation and delineation

The wetland delineation method followed the protocols outlined by the Ministry for the Environment (2020) which is incorporated within the NPSFW and provided for ease of reference in Appendix 2. This method relies on vegetation plot sampling and hydrophytic vegetation determination tool outlined within Clarkson (2013) as well as an assessment of the presence of hydric soils and wetland hydrology. Clarkson (2013) is provided as Appendix 3. The wetland indicator rating status for each plant species follows Clarkson et al. (2013) which is also provided within Appendix 9 of Clarkson (2013) (provided within this report as Appendix 3). Where an indicator rating is not provided, a score was assigned based on habitat preference for the plant species (this only occurred for upland pasture weeds which were classified as UPL). The meaning of these classifications are as follows (taken from Clarkson (2013)):

• OBL: Obligate. Almost always is a hydrophyte, rarely in uplands (estimated probability >99% occurrence in wetlands)

- FACW: Facultative Wetland. Usually is a hydrophyte but occasionally found in uplands (estimated probability 67–99% occurrence in wetlands)
- FAC: Facultative. Commonly occurs as either a hydrophyte or non-hydrophyte (estimated probability 34–66% occurrence in wetlands)
- FACU: Facultative Upland. Occasionally is a hydrophyte but usually occurs in uplands (estimated probability 1–33% occurrence in wetlands)
- UPL: Obligate Upland. Rarely is a hydrophyte, almost always in uplands (estimated probability <1% occurrence in wetlands)

The minor deviations from the methods prescribed or areas where our interpretation has been qualified are as follow;

- Where there was standing water in drains, we carried out informal surveys of the vegetation to provide a brief description of the hydrophytic vegetation within the drain area. These were carried out where there was clear wetland vegetation and prevented the need to stake out plots within standing water that were not needed to determine the wetland extent (as they are able to be visually assessed to pass the rapid test) or determine ecological value.
- Very few plots included a tree or sapling/shrub stratum. Where trees and shrubs did occur; they were almost universally small saplings or larger multi-stemmed grey willow (*Salix cinera*) with a diameter at breast height at or very close to 10cm for each stem. Therefore, in several plots the tree and sapling/shrub strata were combined. Where this has occurred, the plot size used was the larger 10m circular plot directed for the tree stratum.
- As this area has a long history of disturbance and productive agriculture land use, the whole area could be considered significantly disturbed and be problematic for wetland delineation following the NPS protocols. Therefore, our interpretation of significantly disturbed was where there were clear and recent indicators of disturbance to the soil or hydrology rather than an alternative wider interpretation of historic land use change and disturbance.
- The two soil types found within the assessment area are both highly organic, poorly draining loamy peat. It is very difficult to determine the presence of hydric soils within these soil types. We do not consider that this has been a barrier to being able to delineate wetland areas within the assessment area as the hydrophytic vegetation tool has provided clear results. However, soil saturation in this area can occur outside of wetland areas and an assessment during or after a heavy rain event may result in a different visual assessment of the presence of hydric soils. These soils are also prone to pooling and becoming impermeable when disturbed and therefore can pool water in the absence of wetland hydrology.

The final mapping of the wetland then used the plot information, contours and vegetation types to delineate the wetland.

#### 2.1.1 Desktop review

Existing information relating to this area was reviewed to inform the approach to the ecological assessment, the initial assessment on putative wetland area, and determine the wider ecological context of the site.

Key sources of information reviewed included:

- Significant natural areas of the Waikato District: terrestrial and wetland ecosystems (van der Zwan & Kessels, 2017);
- S-Map Online (<u>https://smap.landcareresearch.co.nz/</u>) online viewer for soil type information.
- Aerial imagery to determine putative wetland extent based on visibly different vegetation types.

#### 2.2 Assessing the Ecological Value

The assessment of the ecological value of the wetland follows the Environmental Institute of Australia and New Zealand (EIANZ) Impact Assessment Guidelines (EIANZ, 2018).

For the wetland, we have assigned ecological value based on the matters to be considered when assigning ecological value outlined in Table 1.

Table 1. Guidelines for assessing ecological value to ecosystems/habitats	(adapted from EIANZ (2018)).
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Matter	Assessment matters considered; terrestrial and wetlands		
Representativeness	<ul> <li>Criteria for representative vegetation and habitats: <ul> <li>Typical structure and composition</li> <li>Indigenous species dominate</li> <li>Expected species and tiers are present</li> <li>Thresholds may need to be lowered where all examples of a type are strongly modified</li> </ul> </li> <li>Criteria for representative species and species assemblages: <ul> <li>Species assemblages that are typical of the habitat</li> <li>Indigenous species that occur in most of the guilds expected for the habitat type</li> </ul> </li> </ul>		
Rarity/distinctiveness	Criteria for rare/distinctive vegetation and habitats: <ul> <li>Naturally uncommon, or induced scarcity</li> <li>Amount of habitat or vegetation remaining</li> <li>Distinctive ecological features</li> <li>National priority for protection</li> </ul> <li>Criteria for rare/distinctive species or species assemblages: <ul> <li>Habitat supporting nationally Threatened or At-Risk species, or locally uncommon species</li> <li>Regional or national distribution limits of species or communities</li> <li>Unusual species or assemblages</li> <li>Endemism</li> </ul></li>		
Diversity and pattern	<ul> <li>Level of natural diversity, abundance and distribution</li> <li>Biodiversity reflecting underlying diversity</li> <li>Biogeographical considerations – pattern, complexity</li> <li>Temporal considerations, considerations of lifecycles, daily or seasonal cycles of habitat availability and utilization.</li> </ul>		

Matter	Assessment matters considered; terrestrial and wetlands
Ecological context	<ul> <li>Site history, and local environmental conditions which have influenced the development of habitats and communities</li> </ul>
	<ul> <li>The essential characteristics that determine an ecosystem's integrity, form, functioning, and resilience (from "intrinsic value" as defined in RMA)</li> </ul>
	Size, shape and buffering
	Condition and sensitivity to change
	<ul> <li>Contribution of the site to ecological networks, linkages, pathways and the protection and exchange of genetic material</li> </ul>
	<ul> <li>Species role in ecosystem functioning – high level, key species identification, habitat as proxy</li> </ul>

Table 2: Criteria for assigning ecological value to terrestrial and freshwater habitats and species (modified from EIANZ	
(2018))	

ECOLOGICAL VALUE	SPECIES	TERRESTRIAL VEGETATION & HABITATS
Very High	Threatened - (Nationally Critical, Nationally Endangered, Nationally Vulnerable)	Area rates High for 3 or all of the four assessment matters listed in Table 1. Likely to be nationally important and recognised as such.
High	At Risk - (Declining)	Area rates High for 2 of the assessment matters, Moderate and Low for the remainder, or Area rates High for 1 of the assessment maters, Moderate for the remainder. Likely to be regionally important and recognised as such.
Medium	At Risk - (Recovering, Relict, Naturally Uncommon) Locally (Ecological District) uncommon or distinctive species	Area rates High for one matter, Moderate and Low for the remainder, or Area rates Moderate for 2 or more assessment matters Low or Very Low for the remainder. Likely to be important at the level of the Ecological District.
Low	Native - Not Threatened. Nationally and locally common indigenous species.	Area rates Low or Very Low for majority of assessment matters and Moderate for one. Limited ecological value other than as local habitat for tolerant native species.
Negligible	Exotic species, including pests, species having recreational value.	Area rates Very Low for 3 matters and Moderate, Low or Very Low for remainder.

## 3.0 Results

#### 3.1 Site description and ecological context.

The Shand Properties Limited site is located in the Meremere ecological district which was historically dominated by kauri forest, podocarp forest, and large areas of wetland in the Waikato River flood plains area. Significant vegetation loss has occurred historically in the ecological district with indigenous vegetation remaining in less than 10% of the district. Much of this remnant area occurs in the large Whangamarino wetland in the north of the District.

The area surrounding the site has a long history of significant land use change and disturbance including landfill sites, coal mines, and wastewater-treatment plants and therefore little to no remnant indigenous vegetation remains.

The two soil types in the wetland area and plot locations are both very poorly drained deep loamy peats and are classified as Scottburn\_8a.1 & Utuhina\_17a.2. The Landcare Research factsheets for these soil types are provided in Appendix 4 and 5 respectively.

#### 3.2 Wetland vegetation and delineation

Wetland plots were conducted during a site visit on 6 October 2020 and the results for the wetland plots are provided below in Table 3. The locations of the plots and resulting wetland extent are mapped in Appendix 6. The wetland has an area of 1.8354 ha and meets the NPSFW definition of a natural inland wetland and therefore a natural wetland under the NESFW.

Field sheets for all plots are provided in Appendix 7. Several representative photos of the plots are provided below in Figure 1 to Figure 6.

The wetland is largely delineated by an artificial drain encircling the wetland area, the only location where this pattern deviates is in the vegetation type assessed within Plot 11 which is isolated from the main wetland by a recent drain (as indicated as "Drain through wetland – recent" in the map in Appendix 6) and then north of this area in the area assessed by Plot 14 where a local depression creates a small soft sedge (*Juncus effusus*) dominated seepage wetland.

The drain has been included in the wetland extent except for the north west reach where it continues beyond the wetland extent. The drain in the Plot 2A area has been included in the wetland extent as it is wide and flat and contains a high cover of wetland plant species and is considered to be appropriately classified as a linear wetland. This is compared to the drain extending to the northwest which is more incised and defined and subsequently excluded from the wetland extent.

Plot	Rapid test	Dominance test	Prevalence Index score	Wetland Hydrology present?	Hydric soil present?	Is plot within a wetland?	Notes
Plot 1	Fail	Fail	4.96	No	No	No	
Plot 2	Fail	Fail	3.2	Yes	No	No	
Plot 2A	Pass	NA	NA	NA	NA	Yes - drain	Informal drain vegetation survey
Plot 3	Fail	Fail	3.88	No	No	No	
Plot 4	Fail	Fail	4.16	Yes*	No	No	Water seeping to wetland
Plot 4A	Yes	NA	NA	Yes	Yes	Yes	
Plot 5	Fail	Fail	3.6	No	No	No	
Plot 6	Fail	Pass	NA	Yes	Yes	Yes - Drain	
Plot 7	Fail	Pass	NA	Yes	Yes	Yes	
Plot 8	Fail	Pass	NA	Yes	Yes	Yes	
Plot 8A	Pass	NA	NA	Yes	Yes	Yes	
Plot 9	Fail	Yes – All FAC	3.57	No	No	No	
Plot 10	Pass	NA	NA	Yes	Yes	Yes	
Plot 11	Pass	NA	NA	Yes	Yes	Yes	
Plot 12	Fail	Fail (50% FAC)	3.9	No	No	No	
Plot 13	Fail	Fail	5	No	No	No	
Plot 14	Fail	Fail (50% FACW)	2.9	Yes	Yes	Yes	
Plot 14a	Pass	NA	NA	Yes	Yes	Yes – Drain	Drain
Plot 15	Pass	NA	NA	Yes	?	Yes – problematic	Recent earthworks causing pooling.

Table 3: Shand property limited Wetland plot results summarised.



Figure 1: Plot 1 - pasture dominated upland plot.



Figure 2: Plot 2 – damp pasture dominated upland plot with some FACW and FAC species.



Figure 3: Plot 7 – interior of wetland plot Glyceria maxima dominated ground cover with stands of grey willow and occasional swamp Coprosma (Coprosma tenuicaulis).



Figure 4: Plot 8 – edge of wetland plot lacking tree or shrub cover dominated by sedges and grasses.



Figure 5: Plot 11 – Outside of ring drain around wetland - >99% Glyceria maxima cover.



Figure 6: Plot 14 – Pasture area with high dominance of FACW species resulting in wetland classification. Plot is within a small depression area.

Plot 15 was problematic in the determination of wetland extent. This plot area had been affected by recent earthworks which caused a small local depression. The working of the loamy peat soil

had caused it to create an impermeable surface soil layer. This local depression is on the top of a small rise used for vehicle access. As a result, water had pooled in the location during winter and wetland plant species had colonised the bare soil/wet area. This small artificial pool had not been created intentionally and is surrounded by upland vegetation types.

As such, we have not included this area in the determination of wetland extent, and we consider that the wetland plant community found is not stable, nor are the hydrological conditions likely to exist beyond the short term. It is most likely that pasture species will take over this area as the soil becomes more permeable due to cracking and root intrusion. A photograph of the plot and a photo of the context of the area in relation to the wetland is provided in Figure 7 and Figure 8 respectively.



Figure 7: Plot 15 – Disturbed area where earthworks have caused local pooling of winter.



Figure 8: Plot 15 – Context looking towards wetland – drain around wetland in background and upland pasture vegetation between plot and drain (Plot 14 was located directly behind person in hi-viz vest and Plot 3 is to the right of the photo extent).

#### 3.3 Wetland vegetation

The wetland mapped is dominated by a reed sweet grass (*Glyceria maxima*) ground cover with grey willow occurring in patches. Swamp *Coprosma* also occurs sporadically and is the sole canopy cover in a small area. There are discrete patches of Baumea, jointed Baumea, and *Carex* species sporadically through the wetland. Occasional kiokio and swamp kiokio occur within the grey willow and Swamp *Coprosma* canopy around the bases of trees. Royal fern, which had only just begun emerging at the time of survey and thus harder to detect, was common throughout the wetland. Overall, the wetland vegetation was overwhelmingly dominated by exotic, invasive, plant species and the little native vegetation which exists is a minority component of the vegetation assemblage.

The pasture vegetation immediately surrounding the wetland and the low-lying flats to the north of the wetland consisted of a variable cover of pasture grasses and soft rush. Higher areas consisted of rye grass dominated pasture. The species list and threat status for plants found while onsite is provided in Appendix 8.

## 4.0 Assessment of Ecological Value

The wetland has moderate representativeness as the species assemblage is typical of the degraded wetland fragments of the area. It has moderate rarity and distinctiveness as despite

its degraded state it is a reasonably large wetland that has high priority for protection regionally and nationally. Diversity and pattern are low due to exotic dominance of a depauperate species assemblage. It also scores moderate for ecological context as, despite the wetland scoring low for most assessment matters considered within this criterion, it is a large wetland of a compact shape in the context of wetland fragments in the Waikato Region.

Overall, the wetland area is of medium ecological value when considering the matters to be considered under the EIANZ (2018) guidelines.

## 5.0 Land use constraints within and surrounding identified wetland.

The land use constraints within and surrounding the mapped wetland extent are outlined within Part 3, subpart 1 of the NESFW. Relevant to this Proposed District Plan submission are Sections 52, 53, and 54. These sections are as follows;

#### Drainage of natural wetlands

52; Non-complying activities

- 1) Earthworks outside, but within a 100 m setback from, a natural wetland is a noncomplying activity if it
  - a) results, or is likely to result, in the complete or partial drainage of all or part of a natural wetland; and
  - b) does not have another status under any of regulations 38 to 51.
- The taking, use, damming, diversion, or discharge of water outside, but within a 100 m setback from, a natural wetland is a non-complying activity if it
  - a) results, or is likely to result, in the complete or partial drainage of all or part of a natural wetland; and
  - b) does not have another status under any of regulations 38 to 51.

#### **53 Prohibited activities**

- 1) Earthworks within a natural wetland is a prohibited activity if it
  - a) results, or is likely to result, in the complete or partial drainage of all or part of a natural wetland; and
  - b) does not have another status under any of regulations 38 to 51.
- 2) The taking, use, damming, diversion, or discharge of water within a natural wetland is a prohibited activity if it
  - a) results, or is likely to result, in the complete or partial drainage of all or part of a natural wetland; and
  - b) does not have another status under any of regulations 38 to 51.

#### Other activities

**54**; Non-complying activities

The following activities are non-complying activities if they do not have another status under this subpart:

- a) vegetation clearance within, or within a 10 m setback from, a natural wetland:
- b) earthworks within, or within a 10 m setback from, a natural wetland:
- c) the taking, use, damming, diversion, or discharge of water within, or within a 100 m setback from, a natural wetland.

This aligns with the NPSFW Section 3.22 "The loss of extent of natural inland wetlands is avoided, their values are protected, and their restoration is promoted, except where" (exceptions listed do not apply to residential development unless it is specified infrastructure under the Regional Policy Statement or Regional Plan).

## 6.0 Recommended management

We recommend that any development within the area aligns with the NPS/NES FW, including avoiding the wetland and any activities that may impact on the wetland's integrity and hydrology. Restoration of the wetland as an ecologically valuable habitat is an option and activities relating to restoration of natural wetlands are permitted under section 38 of the NESFW. The degradation and high dominance of invasive exotic plants means that any restoration attempts will need to occur over a long time period and follow advice from an experienced restoration ecologist.

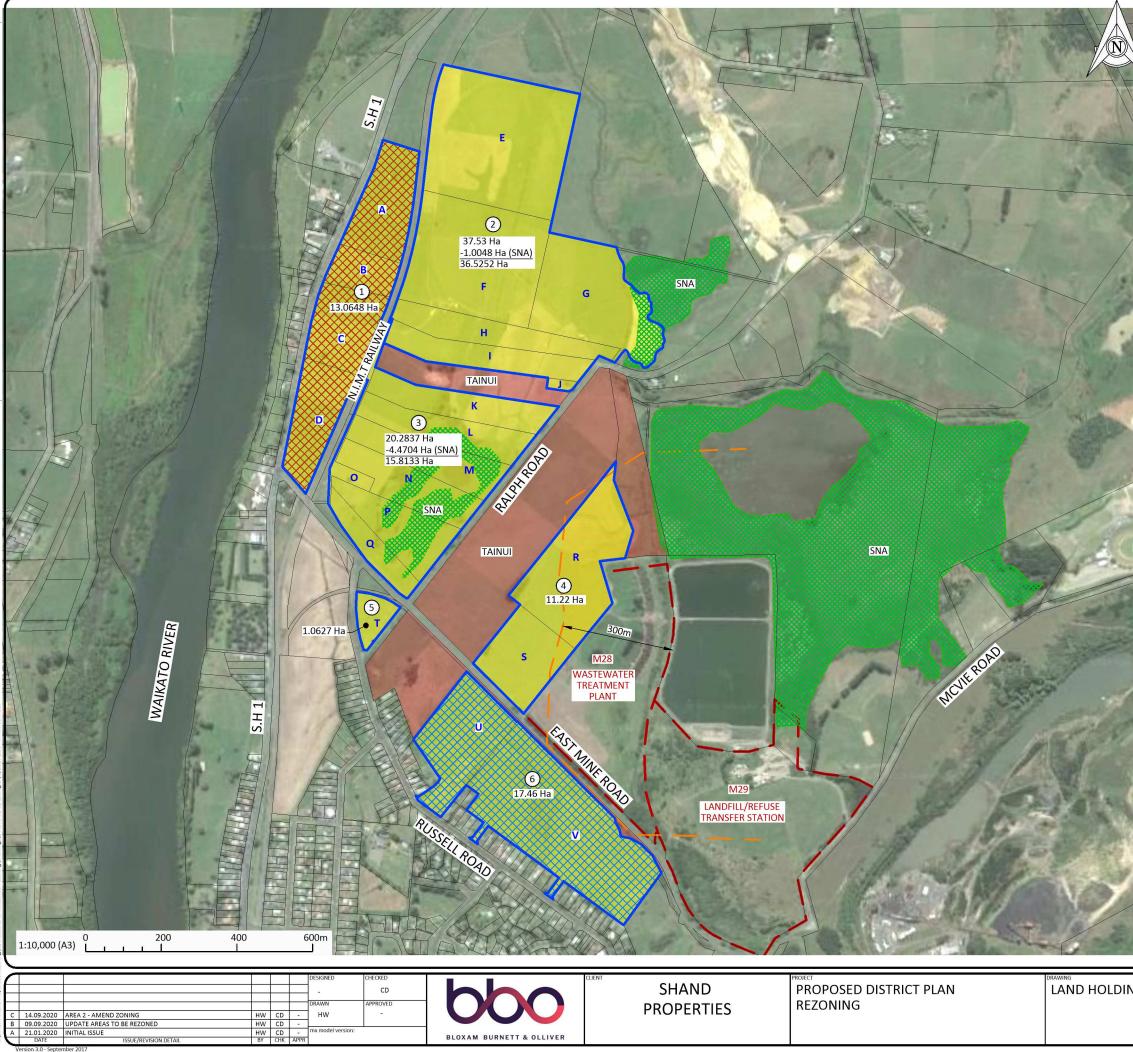
## 7.0 Conclusions

The assessment carried out of the Shand Properties Limited property delineated 1.8354 ha wetland of Medium ecological value. This area meets the definition of a natural inland wetland under the NPS/NES FW and therefore the constraints on complying activities outlined within the NESFW apply to the wetland and surrounding area.

### 8.0 References

- Clarkson, B. R. (2013). A vegetation tool for wetland delineation in New Zealand. Landcare Research for Meridian Energy Ltd.
- Clarkson, B. R., Champion, P. D., Rance, B. D., Johnson, P. N., Bodmin, K. A., Forester, L., & Reeves, P. N. (2013). *New Zealand wetland indicator status ratings*. Landcare Research.
- EIANZ. (2018). Ecological impact assessment (EcIA): EIANZ guidelines for use in New Zealand: Terrestrial and freshwater ecosystems. 2nd EDITION. Environment Institute of Australia and New Zealand.
- Ministry for the Environment. (2020). *Wetland delineation protocols*. Ministry for the Environment.
- van der Zwan, W., & Kessels, G. (2017). *Significant natural areas of the Waikato District: Terrestrial and wetland ecosystems* (Waikato Regional Council Technical Report TR2017/36). Waikato Regional Council.

Appendix 1: Zoning Plan



KEY:	
	SIGNIFICANT NATURAL AREA (SNA)
	SHAND PROPERTIES
	AREA TO BE REZONED RESIDENTIAL
	AREA TO BE REZONED INDUSTRIAL
	TAINUI
	DESIGNATION
	300m BUFFER

AREA SCHEDULE						
ID	SHOWN	OWN DESCRIPTION RECORD OF TITLE				
1	A	LOT 2 DPS 12402 SA9C/63, SA40C/873		4.0494 Ha		
	В	LOT 1 DPS 12402	SA43C/865, SA40C/873	1.8006 Ha		
	С	PT LOT 12 DP 24355	SA43C/865, SA40C/873	3.5911 Ha		
	D	LOT 11 DP 24355	SA43C/866	3.6237 Ha		
2	E	ALLOTMENT 22 TAUPIRI PARISH	SA9C/63, SA40C/873			
	F	PT ALLOTMENT 21 TAUPIRI PARISH	SA9C/63, SA40C/873			
	G	PT ALLOTMENT 18 TAUPIRI PARISH	SA9C/63, SA40C/873			
	Н	LOT 1 DP 23455	SA1086/107, SA40C/873	3.5640 Ha		
	- L	LOT 2 DP 23455	SA1086/107, SA40C/873	3.5190 Ha		
	J LOT 1 DPS 9628 SA34A/500		0.2023 Ha			
3	К	LOT 4 DP 23455	SA43C/880	3.5185 Ha		
	L	LOT 5 DP 23455	SA60D/753, SA40C/873	3.5190 Ha		
	М	LOT 6 DP 23455	SA60D/753, SA40C/873	3.5190 Ha		
	N	LOT 7 DP 23455	SA60D/753, SA40C/873	3.5190 Ha		
	0	LOT 10 DP 23455	SA60D/753, SA40C/873	0.8251 Ha		
	Р	LOT 8 DP 23455	SA33A/479, SA40C/873	3.4998 Ha		
	Q	PT LOT 9 DP 23455	SA33A/479, SA40C/873	1.8833 Ha		
4	R PT ALLOTMENT 16 TAUPIRI PARISH		SA1783/11, SA43C/878	7.2584 Ha		
	S	PT ALLOTMENT 12 TAUPIRI PARISH	SA1298/46	3.7356 Ha		
5	Т	PT LOT 23 DP 23455	SA43C/870	1.0627 Ha		
6	U	LOT 2 DPS 33575	SA43C/876	5.0730 Ha		
	V	PT ALLOTMENT 11 TAUPIRI PARISH	SA2B/843,SA26B/948,	5.0730 Ha		

STATUS			
PRELIMINARY			
DATE 14.09.2020	\$CALE (ORIGINAL SIZE #		
DRAWING NUMBER 144370-02-0141		REVISION	
	DATE 14.09.2020 DRAWING NUMBER	DATE SCALE (ORIG 14.09.2020 1 DRAWING NUMBER	

## Appendix 2: Wetland delineation protocols Ministry for the Environment

Available: <u>https://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/wetland-delineation-protocols.pdf</u>

Appendix 3: A vegetation tool for wetland delineation in New Zealand. Clarkson 2013

Available: <u>https://www.landcareresearch.co.nz/uploads/public/Discover-Our-</u> <u>Research/Biodiversity/Species-ecosystem-services/Restoring-wetland-ecosystem-</u> <u>functioning/vegetation\_tool\_wetland\_delineation.pdf</u>?vid=6delineation.pdf

## Appendix 4: Scottburn\_8a.1Soil factsheet



## SOIL REPORT

#### Scottburn\_8a.1

Report generated: 15-Oct-2020 from https://smap.landcareresearch.co.nz

Scot\_8a.1 (70% of the mapunit at location (1791478, 5843481), Confidence: High)

This information sheet describes the typical average properties of the specified soil to a depth of 1 metre, and should not be the primary source of data when making land use decisions on individual farms and paddocks. S-map correlates soils across New Zealand. Both the old soil name and the new correlated (soil family) name are listed below.

Capture of the base soil information in this region was funded by Environment Waikato, Manaaki Whenua and MPI.

#### Soil Classification

Soil Classification: Acid Humic Organic Soils (OHA)

> Family Name: Scottburn (Scot)

> > Sibling Name:

Scottburn\_8a.1 (Scot\_8a.1)

Soil profile material Organic layered or stony Depth class (diggability) Deep (> 1 m)

loamy peat

**Profile texture** 

Parent Material

Stones/rocks not applicable Soil material rhyolitic rock

Origin Peat

#### **Soil Sibling Concept**

This soil belongs to the Organic soil order of the New Zealand soil classification. Organic Soils are formed in the partly decomposed remains of wetland plants (peat) or forest litter. Some mineral material may be present but the soil is dominated by organic matter. It is formed in peat, from rhyolite parent material.



Humic Organic

#### About this publication

- This information sheet describes the *typical average properties* of the specified soil.
- For further information on individual soils, contact Landcare Research New Zealand Ltd: www.landcareresearch.co.nz
- Advice should be sought from soil and land use experts before making decisions on individual farms and paddocks.
- The information has been derived from numerous sources. It may not be complete, correct or up to date.
- This information sheet is licensed by Landcare Research on an "as is" and "as available" basis and without any warranty of any kind, either express or implied.
- Landcare Research shall not be liable on any legal basis (including without limitation negligence) and expressly excludes all liability for loss or damage howsoever and whenever caused to a user of this factsheet.

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#### Scottburn\_8a.1

#### Soil horizons

Characteristics of functional horizons in order from top to base of profile:

Functional Horizon	Thickness	Stones	Clay*	Sand*	Permeability
Clayey Organic Humic	30 - 35 cm	0 %	35 - 50 %	10 - 20 %	moderately slow
Clayey Organic Humic	15 - 35 cm	0 %	35 - 55 %	10 - 20 %	slow
Loamy Organic Humic	35 - 55 cm	0 %	20 - 40 %	15 - 25 %	moderately slow

\* clay and sand percent values are for the mineral fines (excludes stones). Silt = 100 - (clay + sand)

#### Scottburn\_8a.1

Depth class (diggability) Deep (> 1 m)Texture profile Loamy peatPotential rooting depth UnlimitedTopsoil stoniness StonelessRooting barrier Anoxic conditionsTopsoil clay range 35 - 50 %Depth to hard rock No hard rock within 1 mDepth to soft rock No soft rock within 1 mDepth to stony layer class No significant stony layer withinHeat and the soft rock No significant stony layer within		-	<ul> <li>Drainage class</li> <li>Very poorly drained</li> <li>Permeability profile</li> <li>Moderate over slow</li> <li>Depth to slowly permeable horizon</li> <li>30 - 35 (cm)</li> <li>Permeability of slowest horizon</li> <li>Slow (&lt; 4 mm/h)</li> <li>Aeration in root zone</li> <li>Very limited</li> </ul>	
Profile available water		Dry bulk density		
(0 - 30cm or root barrier)	(0 - 60cm or root barrie	r) (0 - 100cm or root barrier)	topsoil	subsoil
Very high (135 mm)	Very high (270 mm)	Very high (450 mm)	0.54 g/cm <sup>3</sup>	0.54 g/cm <sup>3</sup>

#### **Topsoil P retention**

High (62%)

#### Soil management factors

Soil structure integrity	Contaminant management	Water management
Structural vulnerability	N leaching vulnerability	Water logging vulnerability
	Very low	High
Pugging vulnerability	P leaching vulnerability	Drought vulnerability - if not irrigated
not available yet	not available yet	Low
Septic tank installation category	Dairy effluent (FDE) risk category	Bypass flow
A1 if slope > 15 deg otherwise B2	В	High
		Hydrological soil group
		D

**Relative Runoff Potential** 

#### **SINDI - Soil quality Indicators**

#### **SINDI - Soil Quality Indicators**

A suite of soil quality indicators is available from http://sindi.landcareresearch.co.nz/

- Compare your soil with information from our soils databases.
- Assess the intrinsic resources and biological, chemical and physical quality of your soil
- See how your soil measures up against current understanding of optimal values.
- Learn about the effect each indicator has on soil quality and some general management practices that could be implemented to improve soil quality.

#### Scottburn\_8a.1

#### Soil information for OVERSEER

The following information can be entered in the OVERSEER® Nutrient Budget model. This information is derived from the S-map soil properties which are matched to the most appropriate OVERSEER categories. Please read the notes below for further information.

#### Soil description page

#### 1. Select Link to S-map

2. Under S-map sibling data enter the S-map name/ref: Scot\_8a.1

#### Considerations when using Smap soil properties in OVERSEER

- The soil water values are estimated using a regression model based on soil order, parent rock, soil functional horizon information (stone content, soil density class), as well as texture (field estimates of sand, silt and clay percentages). The model is based on laboratory measured water content data held in the National Soils Database and other Manaaki Whenua datasets. Most of this data comes from soils under long-term pasture and may vary from land under arable use, irrigation, etc.
- Each value is an estimate of the water content of the whole soil within the target depth range or to the depth of the root barrier (if this occurs above the base of the target depth). Where soil layers contain stones, the soil water content has been decreased according to the stone content.
- S-map only contains information on soils to a depth of 100 cm. The soil water estimates in the > 60 cm depth category assume that the bottom functional horizon that extends to 100 cm, continues down to a depth of 150cm. Where it is known by the user that there is an impermeable layer or non-fractured bedrock between 100 and 150 cm, this depth should be entered into OVERSEER. Where there is a change in the soil profile characteristics below 100 cm, the user should be aware that the values provided on this factsheet for the > 60 cm depth category will not reflect this change. For example, the presence of gravels at 120 cm would usually result in lower soil water estimates in the > 60 cm depth category. Note though that this assumption only impacts on a cropping block, as OVERSEER uses soil data from just the top 60 cm in pastoral blocks.
- OVERSEER requires the soil water values to be non-zero integers (even though zero is a valid value below a root barrier), and the wilting point value must be less than the field capacity value which must be less than the saturation value. The S-map water content estimates supplied by the S-map web service have been rounded to integers and may be assigned minimal values to meet these OVERSEER requirements. These modifications will result in a slightly less accurate estimate of Available Water to 60 cm (labelled PAW in OVERSEER) than that provided on the first page of this factsheet, but this is not expected to lead to any significant difference in outputs from OVERSEER.





# Appendix 5: Utuhina\_17a.2 Soil factsheet



# SOIL REPORT

#### Utuhina\_17a.2

Report generated: 15-Oct-2020 from https://smap.landcareresearch.co.nz

Utuh\_17a.2 (30% of the mapunit at location (1791478, 5843481), Confidence: Medium)

This information sheet describes the typical average properties of the specified soil to a depth of 1 metre, and should not be the primary source of data when making land use decisions on individual farms and paddocks. S-map correlates soils across New Zealand. Both the old soil name and the new correlated (soil family) name are listed below.

Capture of the base soil information in this region was funded by Environment Waikato, Manaaki Whenua and MPI.

#### **Soil Classification**

\_Soil Classification: Mellow Humic Organic Soils (OHM)

> Family Name: Utuhina (Utuh)

Soil profile material Organic layered or stony

Depth class (diggability) Deep (> 1 m)

Profile texture loamy peat over silt

#### Parent Material

Stones/rocks not applicable Soil material rhyolitic rock

Sibling Name: Utuhina\_17a.2 (Utuh\_17a.2)

#### Origin Peat on Alluvium

#### **Soil Sibling Concept**

This soil belongs to the Organic soil order of the New Zealand soil classification. Organic Soils are formed in the partly decomposed remains of wetland plants (peat) or forest litter. Some mineral material may be present but the soil is dominated by organic matter. It is formed in peat overlying alluvial sand silt or gravel deposited by running water, from hard mudstone parent material.



Humic Organic

#### About this publication

- This information sheet describes the typical average properties of the specified soil.
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### Utuhina\_17a.2

#### Soil horizons

Characteristics of functional horizons in order from top to base of profile:

Functional Horizon	Thickness	Stones	Clay*	Sand*	Permeability
Loamy Organic Humic, Acidic Tephric	20 - 30 cm	0 %	25 - 40 %	10 - 20 %	moderately slow
Loamy Organic Humic, Acidic Tephric	20 - 40 cm	0 %	25 - 40 %	10 - 20 %	moderately slow
Loamy Fine Firm, Acidic Tephric	30 - 60 cm	0 %	20 - 45 %	15 - 25 %	moderately slow

\* clay and sand percent values are for the mineral fines (excludes stones). Silt = 100 - (clay + sand)

#### Utuhina\_17a.2

Depth class (diggability Deep (> 1 m)	)	Texture profile Loamy peat over silt	<b>Drainag</b> Poorly o	
Potential rooting depth 50 - 80 (cm)		Topsoil stoniness Stoneless		<b>bility profile</b> ate over slow
Rooting barrier Anoxic conditions		<b>Topsoil clay range</b> 25 - 40 %	<b>Depth to</b> 50 - 80	o slowly permeable horizon (cm)
Depth to hard rock No hard rock within 1 m	1			bility of slowest horizon 4 mm/h)
Depth to soft rock No soft rock within 1 m Depth to stony layer cla No significant stony lay			Aeration Limited	n in root zone
Profile available water			Dry bulk densit	у
(0 - 30cm or root barrier)	(0 - 60cm or root barrier	r) (0 - 100cm or root barrier)	topsoil	subsoil
Very high (135 mm)	Very high (255 mm)	Very high (314 mm)	0.54 g/cm <sup>3</sup>	0.54 g/cm³

#### **Topsoil P retention**

High (62%)

#### Soil management factors

Vulnerability classes relate to soil properties only and do not take into account climate or management	ent
---	-----

Soil structure integrity	Contaminant management	Water management
Structural vulnerability	N leaching vulnerability	Water logging vulnerability
	Very low	High
Pugging vulnerability	P leaching vulnerability	Drought vulnerability - if not irrigated
not available yet	not available yet	Low
Septic tank installation category	Dairy effluent (FDE) risk category	Bypass flow
A1 if slope > 15 deg otherwise B2	В	High
		Hydrological soil group
		B/D

**Relative Runoff Potential** 

#### **SINDI - Soil quality Indicators**

#### **SINDI - Soil Quality Indicators**

A suite of soil quality indicators is available from http://sindi.landcareresearch.co.nz/

- Compare your soil with information from our soils databases.
- Assess the intrinsic resources and biological, chemical and physical quality of your soil
- See how your soil measures up against current understanding of optimal values.
- Learn about the effect each indicator has on soil quality and some general management practices that could be implemented to improve soil quality.

#### Utuhina\_17a.2

#### Soil information for OVERSEER

The following information can be entered in the OVERSEER® Nutrient Budget model. This information is derived from the S-map soil properties which are matched to the most appropriate OVERSEER categories. Please read the notes below for further information.

#### Soil description page

#### 1. Select Link to S-map

2. Under S-map sibling data enter the S-map name/ref: Utuh\_17a.2

#### Considerations when using Smap soil properties in OVERSEER

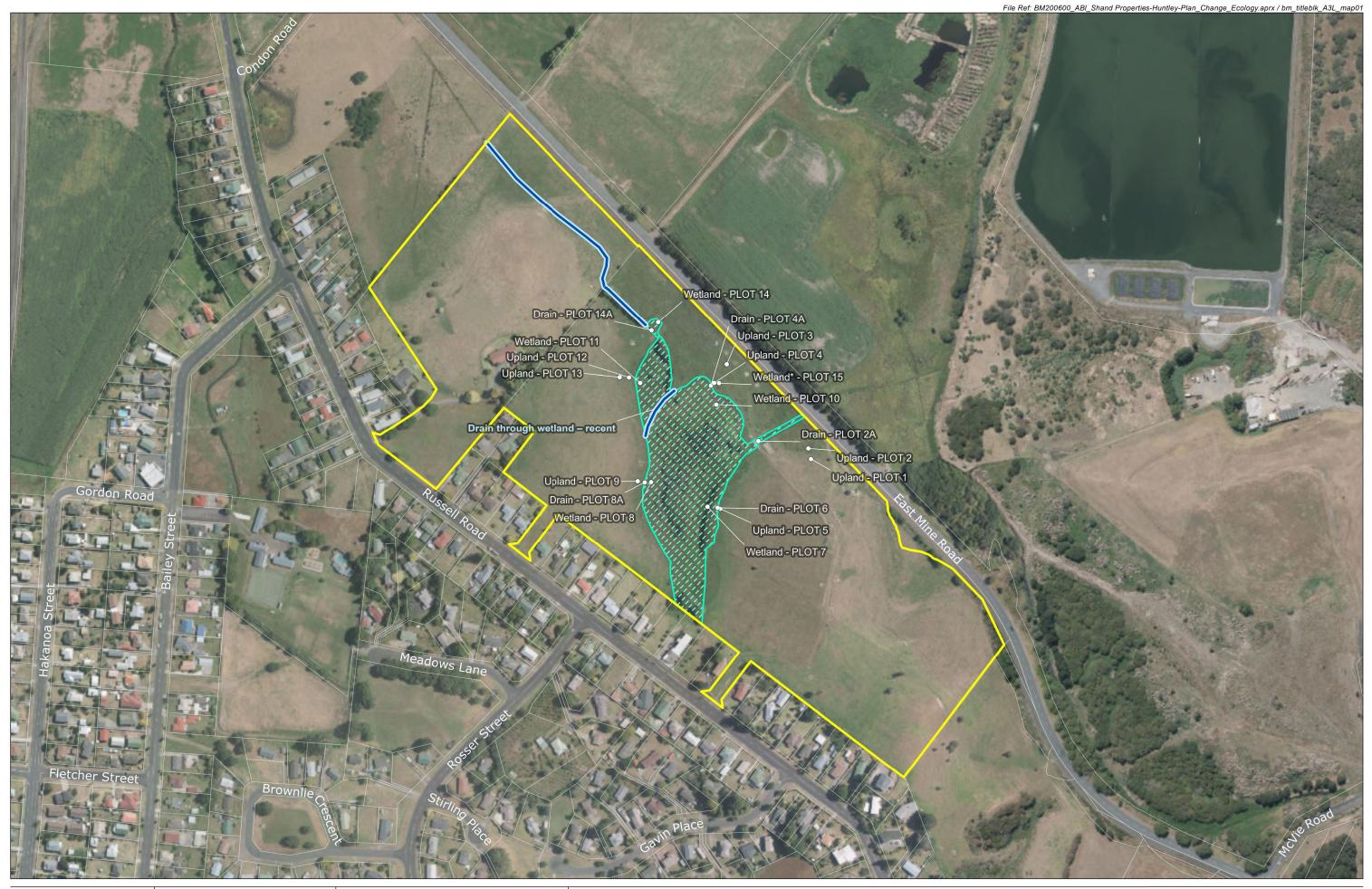
- The soil water values are estimated using a regression model based on soil order, parent rock, soil functional horizon information (stone content, soil density class), as well as texture (field estimates of sand, silt and clay percentages). The model is based on laboratory measured water content data held in the National Soils Database and other Manaaki Whenua datasets. Most of this data comes from soils under long-term pasture and may vary from land under arable use, irrigation, etc.
- Each value is an estimate of the water content of the whole soil within the target depth range or to the depth of the root barrier (if this occurs above the base of the target depth). Where soil layers contain stones, the soil water content has been decreased according to the stone content.
- S-map only contains information on soils to a depth of 100 cm. The soil water estimates in the > 60 cm depth category assume that the bottom functional horizon that extends to 100 cm, continues down to a depth of 150cm. Where it is known by the user that there is an impermeable layer or non-fractured bedrock between 100 and 150 cm, this depth should be entered into OVERSEER. Where there is a change in the soil profile characteristics below 100 cm, the user should be aware that the values provided on this factsheet for the > 60 cm depth category will not reflect this change. For example, the presence of gravels at 120 cm would usually result in lower soil water estimates in the > 60 cm depth category. Note though that this assumption only impacts on a cropping block, as OVERSEER uses soil data from just the top 60 cm in pastoral blocks.
- OVERSEER requires the soil water values to be non-zero integers (even though zero is a valid value below a root barrier), and the wilting point value must be less than the field capacity value which must be less than the saturation value. The S-map water content estimates supplied by the S-map web service have been rounded to integers and may be assigned minimal values to meet these OVERSEER requirements. These modifications will result in a slightly less accurate estimate of Available Water to 60 cm (labelled PAW in OVERSEER) than that provided on the first page of this factsheet, but this is not expected to lead to any significant difference in outputs from OVERSEER.





# Appendix 6: Shand Properties Wetland extent and plot map

Appendix 6: Shand Properties Wetland extent and plot map



Boffa Miskell www.boffamiskell.co.nz

This plan has been prepared by Boffa Miskell Limited on the specific instructions of our Client. It is solely for our Client's use in accordance with the agreed scope of work. Any use or reliance by a third party is at that party's own risk. Where information has been supplied by the Client or obtained from other external sources, it has been assumed that it is accurate. No liability or responsibility is accepted by Boffa Miskell Limited for any errors or omissions to the extent that they arise from inaccurate information provided by the Client or any external source. information provided by the Client or any external source.



Data Sources: Sourced from the LINZ Data Service and licensed for re-use under the Creative Commons Attribution 4.0 New Zealand licence Projection: NZGD 2000 New Zealand Transverse Mercator

Property Extent • Wetland Points - Drain Wetland

LEGEND

DRAFT

BM200600 SHAND PROPERTIES - HUNTLEY PLAN CHANGE ECOLOGY Shand Properties Limited – Wetland Extent and Plot Location

Date: 15 October 2020 | Revision: B Plan prepared for Shand Properties Limited by Boffa Miskell Limited Project Manager: Andrew.Blayney@boffamiskell.co.nz | Drawn: JWa | Checked: ABI Appendix 7: Shand Properties wetland delineation plot sheets

6 <sup>-</sup>

WETLAND DETER	MINATIC			- NEW ZEALAND
Project/Site: Shand		Renir	on: Wa,	sampling Date: 6/10/20
Applicant/Owner: Shand		Tiegh	un	Altitude: ~ 12 M Sampling Point No: Alto + 1
Investigator(s): ABI TUI			Nearby town	
Landform (hillslope, terrace, etc.): h1//slope				convex, none): none Stope (%): 2/0
Latitude.	woltasie.	GP	#: Pl	
Soil Map Unit Name: Sott burn f (sib 8	1-70%	Cove		him f (sib7) 30% and
Are climatic / hydrologic conditions on the site typical for this	1 0			(If no, explain in Remarks.)
Are Vegetation <u>X</u> , Soil <u>X</u> , or Hydrology <u>X</u> sig				"Normal Circumstances" present? Yes V No
Are Vegelation X, Soil X, or Hydrology R na				eeded, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map s				
Hydrophytic Vegetation Present? Yes No	$\checkmark$			
Hydric Soil Present? Yes No			the Sampled	
Wetland Hydrology Present? Yes No	$\overline{}$	W	ithin a Wetla	nd? Yes No
Remarks: Pearl soil type proble martic		de k	rmini	ng hydric soils.
VEGETATION – Use scientific names of plant	s.			
Tree Stratum (Plot size:	Absolute % Cover		nt Indicator ? Status	Dominance Test worksheet:
1.	<u></u>	000000	<u>ololuo</u>	Number of Dominant Species That Are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3/ <i>N/A</i>				Species Across All Strata: (B)
4				Percent of Dominant Species
Sapling/Shrub Stratum (Plot size:)		= Total (	Cover	That Are OBL, FACW, or FAC: (A/B)
1				Prevalence Index worksheet:
2				Total % Cover of:Multiply by:
3N/14				OBL species 0 x1= 0
4				FACW species X2=
5		- Total (		FAC species         2         x 3 =         D           FACU species
Herb Stratum (Plot size: 2×2 ) (P		= Total (		UPL species $\frac{96}{x5} = \frac{480}{480}$
1. LOLper P	95%	<u> </u>	<u> </u>	Column Totals: <b>98</b> (A) <b>486</b> (B)
2. Rumobt		N	_ FAC	Prevalence Index = $B/A = -4.96$
3. Pilosella sp.		_ <u>N</u>	_ UPL	Prevalence Index = B/A = 4.70 Hydrophytic Vegetation Indicators:
4. HOL lan (P) 5. Other, mixed	2		<u>_ FAC</u>	X Dominance Test is >50%
6				X Prevalence Index is $\leq 3.0^{1}$
7				Morphological Adaptations <sup>1</sup> (Provide supporting
8				data in Remarks or on a separate sheet)
9	·			Y Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
10				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
11				be present, unless disturbed or problematic.
12. (D = Pasture Sp.	100	= Total (	Cover	Hydrophytic Vegetation Present? Yes No
Remarks:				
Adapted from US Army Corps of Engineers				New Zealand Version 1.0

.

WETLAND DETE	RMINATION DATA FORM	- NEW ZEALAND		
Project/Site: Shand	Region;		Sampling Date: 6/10/20	7
Applicant/Owner:		Altitude:	A . L. 1	~ ~ ~
Investigator(s):	Nearby town			( dee
Landform (hillslope, terrace, etc.):	Local relief (concave,	conv_x, none):	av C Slope (%): 0	S plot /
Latitude.	ongitude: GAS # P	plot 2	Datum: WGS 84	11 Sheet
Soil Map Unit Name:				for inform
Are climatic / hydrologic conditions on the site typical for th		(If no, explain in Re	. ,	n nyra
Are Vegetation, Soil, or Hydrology		"Normal Circumstances" pr	esent? Yes V No	
Are Vegetation, Soil, or Hydrology	naturally problematic? (If n	eeded, explain any answer	s in Remarks.)	
SUMMARY OF FINDINGS – Attach site map	showing sampling point	locations, transects,	important features, etc.	
Hydric Soil Present? Yes Yes Yes	No Is the Sampled within a Wetla		No	
Remarks: Reat soil problematic for den	termining hydri	c soi'ls .		
VEGETATION – Use scientific names of plan		V		
Tree Stratum (Plot size:) 1	Absolute Dominant Indicator <u>% Cover Species? Status</u>	Dominance Test works Number of Dominant Sp That Are OBL, FACW, o	ecies	
2N/A		Total Number of Domina Species Across All Strat		
4Sapling/Shrub Stratum (Plot size:)	= Total Cover	Percent of Dominant Sp That Are OBL, FACW, o		
1		Prevalence Index work	sheet:	
2		Total % Cover of:	Multiply by:	
3N/A		OBL species 0 FACW species 39	x1=70	
4 5		FAC species //	x3= 30	
0 - 0	= Total Cover	FACU species65	x 4 = <b>220</b>	
Herb Stratum (Plot size: 2x2)	25% Y FACH	UPL species	0 000	
2 RANIED	10% FAC	Column Totals:	<u>o</u> (A) <u>320</u> (B)	
3. TKI 100 (P)	20% Y FACU	Prevalence Index	= B/A = <u>3· L</u>	
4. POA and (P-Maybe)	35% Y FACY	Hydrophytic Vegetatio		
5		Dominance Test is Prevalence Index is		
6		·	tations <sup>1</sup> (Provide supporting	
8			or on a separate sheet)	
9			hytic Vegetation <sup>1</sup> (Explain)	
10			and wetland hydrology must	
12		be present, unless distu		
(P) - Pastire sp.	<b>DO</b> = Total Cover	Hydrophytic Vegetation Present? Yes	<u>N₀_≻</u>	
Remarks:				
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		- NEW ZEALAND
ect/Site:	Region;	Sampling Date:
icant/Owner:		Altitude: Sampling Point No: Pot 2
		n/city:
fform (hillslope, terrace, etc.):	Local relief (concave	e, convex, none): Uprgin Slope (%): NA
ade: Eonĝ	inude: <u>GKJ#</u>	Datum: WGS 84
Map Unit Name:		
Vegetation _ 📐 , Soil, or Hydrology _ 📈 nati	nificantly disturbed? An urally problematic? (If	e "Normal Circumstances" present? Yes No
drophytic Vegetation Present? Yes No dric Soll Present? Yes No etland Hydrology Present? Yes No	within a Wet	ed Area and? Yes No
et problematic for hydric ID	-not problem i	n drain.
GETATION – Use scientific names of plants		Dominance Test worksheet:
ee Stratum (Plot size:)	/	

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WETLAND DET	ERMINATION DATA FORM		
roject/Site: Shand	Region:	Sar	mpling Date: 6/10/20
oplicant/Owner:		Altitude: Sar	npling Point No: plof 3
vestigator(s):	Nearby town		
andform (hillslope, terrace, etc.): terrace/+	Local relief (concave,	conyex, none): 1000	Slope (%):
alitacië:	Longitude: 6PS# ' Pla	of 3	Datum: WGS 84
oil Map Unit Name:			/
re climatic / hydrologic conditions on the site typical for	this time of year? Yes Ves No	(If no, explain in Rema	rks.)
re Vegetation 🗙 , Soil 🗡 , or Hydrology 🗡	_ significantly disturbed? Are	"Normal Circumstances" prese	ent? Yes 🗾 No
re Vegetation 🔜 🗶 , Soil 📈 , or Hydrology 🗡	_ naturally problematic? (If ne	eeded, explain any answers in	Remarks.)
UMMARY OF FINDINGS – Attach site ma	ip showing sampling point l	ocations, transects, in	portant features, etc.
Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes	No ~	I Area	$\checkmark$
Wetland Hydrology Present? Yes	No within a Wetlan	nd? Yes	No
Remarks:			
Peat soil problematic for hu	por determination	x	
EGETATION – Use scientific names of pl	ants.		
True Obstation (Distation	Absolute Dominant Indicator	Dominance Test workshe	et:
Tree Stratum (Plot size:)	% Cover Species? Status	Number of Dominant Specie That Are OBL, FACW, or F/	
2. ///A			(r)
3		Total Number of Dominant Species Across All Strata:	<u></u> (В)
4		Percent of Dominant Specie	$a_5  \alpha c' l$
Sapling/Shrub Stratum (Plot size:)	= Total Cover	That Are OBL, FACW, or F	AC: 25% (A/B)
1.		Prevalence Index worksho	eet:
2/ , /		Total % Cover of:	Multiply by:
3/ N/A-		OBL species	_ x1=
4		FACW species	$- x^{2} = \frac{10}{66}$
5		FAC species	$- \frac{x^{3}}{x^{4}} = \frac{66}{200}$
<u>Herb Stratum</u> (Plot size: $2 \times 2$ )	= Total Cover	FACU species <u>50</u> UPL species <u>20</u>	x5= (00
1. Lotper VI	20% V UPC	Column Totals: 97	(A) <b>376</b> (B)
2 POAgon (P-May	el 30 V FACH		A= 3.88
3. KAN IED TRELIED (P)	$-\frac{10}{10}$ $\sqrt{\frac{FAC}{FAC}}$	Prevalence Index = E	
4. Unintald	<u> </u>	Hydrophytic Vegetation In Dominance Test is >50	
6 RUM obt	2% FAC	Prevalence Index is ≤3	
7. Other mixed	3%	Morphological Adaptati	
8		data in Remarks or Y Problematic Hydrophyt	on a separate sheet)
9		Problematic Hydrophyt	ic vegetation (⊏xpiain)
0		<sup>1</sup> Indicators of hydric soil and	d wetland hydrology must
2		be present, unless disturbe	
	= Total Cover	Hydrophytic	
P= Parture species		Vegetation	No
Remarks:		140_	
· · · · · · · · · · · · · · · · · · ·			
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ect/Site: Shand	Region;	Sampling Date:
licant/Owner:		Altitude: Sampling Point No: Plot
esligator(s):	Nearby tow	
dform (hillslope, terrace, etc.):		e, convex, none): 600 Slope (%): 20
ude:	L <del>ongitude</del> : (PS #!	Plot & Datum: WGS 84
Map Unit Name:		
climatic / hydrologic conditions on the site typica		
Vegetation, Soil, or Hydrology		e "Normal Circumstances" present? Yes 🗾 No
Vegetation, Soil, or Hydrology	naturally problematic? (If	needed, explain any answers in Remarks.)
MMARY OF FINDINGS - Attach site	map showing sampling point	locations, transects, important features, etc.
drophytic Vegetation Present? Yes	No V Is the Sample	
/dric Soil Present? Yes	No ~	
	No within a Wetl	
emarks:	1 t (	this soil + seepage to
eat soil proble mate for	determining hy	dric soil.
	/ ()	avain
GETATION - Use scientific names o	f plants.	
Charles (Distaine)	Absolute Dominant Indicator	
ee Ştratum (Plot size:)	<u>% Cover Species? Status</u>	- Number of Dominant Species (A)
NA		
		Total Number of Dominant
/		Percent of Dominant Species
abling/Shrub Stratum (Plot size:	= Total Cover	That Are OBL, FACW, or FAC: (A/B)
Spirite Stratem (Fibraze.	_/	Prevalence Index worksheet:
		Total % Cover of: Multiply by:
NA		OBL species x 1 =
		= FACW  species  x 2 = 14
_/	= Total Cover	FAC species $53$ $x_3 = 7$ FACU species $53$ $x_4 = 2.12$
erb Stratum (Plot size: 2x2		UPL species $30 \times 5 = 150$
Lot per (P)	30%. Y UPL	- Column Totais: 92 (A) 383 (B)
POA an (P-ma	be) So: Y FACU 21. FAC	Prevalence Index = $B/A = 4.16$
Tet (a) (P)	3.1. FACU	
RAN Ha	1.7. FACW	7
RAN RP	1 ./. 'FAC	Prevalence Index is ≤3.01
JUNEFF	S :/. FACh	Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
Bale soil - incidental	\$7	<ul> <li>K Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</li> </ul>
		<sup>1</sup> Indicators of hydric soil and wetland hydrology must
		be present, unless disturbed or problematic.
	Total Cover	Hydrophytic Magazatilan
		Vegetation Present? Yes No
emarks:		
ema/ks:		
əmərks:		

ş.

				6/10/20
ject/Site: Shand	R	legion:	Sampling [	
licant/Owner:			Altitude: Sampling F	Point No: 10-41
estigator(s):		Nearby town/		
dform (hillslope, terrace, etc.):		relief (concave. )	-	_ Slope (%): (
iude:	<del>- Longitud</del> e: <u></u>	PJ #	370 -	Datum: WGS 84
Map Unit Name:				1
climatic / hydrologic conditions on the site typical f			(If no, explain in Remarks.)	./
Vegetation, Soil, or Hydrology			Normal Circumstances" present? Yo	
Vegetation, Soil, or Hydrology	naturally problema	atic? (If ne	eded, explain any answers in Remar	ks.)
MMARY OF FINDINGS – Attach site n	nap showing sam	npling point l	ocations, transects, importa	nt features, etc.
ydrophytic Vegetation Present? Yes	No			
ydric Soil Present? Yes	No	Is the Sampled		
etland Hydrology Present? Yes	No	within a Wetlar	Id? YesNO	
emarks:	~			
eat problematic for bydri	ID ID			
. 0				
GETATION – Use scientific names of	plants.			
	Absolute Don	ninant Indicator	Dominance Test worksheet:	
ee Stratum (Plot size:)	% Cover Spe	cies? Status	Number of Dominant Species	2 (1)
			That Are OBL, FACW, or FAC:	<u>د</u> (A)
NA			Total Number of Dominant Species Across All Strata:	2 (B)
				(0)
1	= To	tal Cover	Percent of Dominant Species That Are OBL, FACW, or FAC:	(00 (A/B)
ppling/Shrub Stratum (Plot size:)				(100)
			Prevalence Index worksheet: Total % Cover of:	Multiply by
NA			OBL species x1:	
			FACW species X	
				=
Charles 2×2	= To	otal Cover	FACU species x 4	=
	30 4	OBL.		=
PED land t	10 1	EN La	Column Totals: (A)	(B)
LUD Bal	<u> </u>	OBL	Prevalence Index = B/A =	
A20 61	<u>SS</u> Y	MBL	Hydrophytic Vegetation Indicato	rs:
			Dominance Test is >50%	
			↓ Prevalence Index is ≤3.0 <sup>1</sup>	
			Morphological Adaptations <sup>1</sup> (P data in Remarks or on a se	
			Problematic Hydrophytic Vege	
			<sup>1</sup> Hicators of hydric soil and wetlar	nd hydrology must
			be present, unless disturbed or pro	blematic.
	100 = To	tal Cover	Hydrophytic	
			Vegetation Present? Yes	No
lemarks:		1	·····	
Aquate veg M drain	mimaril	<b>.</b> .		
	· U · · · · · V //	1 '		
light is in the	r - ',	/		

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roject/Site: Shand		Region:		Sampling Date: 6/10/2
pplicant/Owner:			Altitude:	Sampling Point No: Plot
vestigator(s):	. 1905	Nearby town		
ndform (hillslope, terrace, etc.):	Jlope Lo	cal relief (concave,	convex, none):	Slope (%): 10
hude:	tongitude:	GPS#:	Plots	Datum: WGS 84
Map Unit Name:				
e climatic / hydrologic conditions on the sit				
e Vegetation <u>×</u> , Soil <u>×</u> , or Hydr				oresent? Yes No
e Vegetation <u>/ ,</u> Soil <u>/ ,</u> or Hydr	ology naturally proble	matic? (If ne	eded, explain any answe	rs in Remarks.)
JMMARY OF FINDINGS – Attac	h site map showing sa	ampling point l	ocations, transects	, important features, etc
Hydrophytic Vegetation Present?	/es No	In the Complete		
	/es No	Is the Sampleo within a Wetlan	nd? Yes	No
, , , , , , , , , , , , , , , , , , , ,	/es No	within a week		
Remarks: Acat soil problematic	in determining	hydric.		
GETATION – Use scientific na				
Free Stratum (Plot size:)		ominant Indicator pecies? Status	Dominance Test work Number of Dominant S	
		2	That Are OBL, FACW,	
NA			Total Number of Domin	ant
/			Species Across All Stra	ta: (B)
/		Total Cover	Percent of Dominant S	
apling/Shrub Stratum (Plot size:		Total Cover	That Are OBL, FACW,	or FAC: (A/B)
			Prevalence Index wor	
NP	r		Total % Cover of:	Multiply by:
p.			OBL species	x1≑
	· · · · · · · · · · · · · · · · · · ·		FAC species3	• x3= 90
0.~1	=	Total Cover	FACU species 6	<u>5</u> x4= <u>260</u>
HOL (on	(0) 15%	FAC	UPL species	x5=
POAm	P- Maybe) 65%	Y FACU	Column Totals:	
RAN ISP	15%	FAC	Prevalence Index	= B/A = <u>3.60</u>
JUN eff	5 %	FACW	Hydrophytic Vegetati	on Indicators:
			Dominance Test is	
			Prevalence Index	s ≤3.0 <sup>1</sup>
7		p		s or on a separate sheet)
3 9.			1	phytic Vegetation <sup>1</sup> (Explain)
0				
1			<sup>1</sup> Indicators of hydric so be present, unless dist	il and wetland hydrology must urbed or problematic.
2			Hydrophytic	P
	=	Total Cover	Vegetation	
D- Date on			Present? Ye	sNo
P) - Pasture sp.				
(P) - Pasture Sp. Remarks:				

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WETLAND DETERMIN	ATION DATA F	ORM - NEV		ND	
Project/Site:	Region:			Sampling D	Date: 6/10/21
Applicant/Owner:		A	titude:	Sampling P	Point No: Plot
pyesticator(s):	Near	rhy towo/city:			,
andform (hillslope, terrace, etc.): Drain	Local relief (co	oncave, convex	, none); D	Vrain	Slope (%): V
-atitude:	GPS	+ WP	371		Datum: WGS 84
Soil Map Unit Name:					
Are climatic / hydrologic conditions on the site typical for this time of	of year? Yes 🗸	No	(if no, explain	in Remarks.)	
Are Vegetation 🔀, Soil 🗶, or Hydrology 🗡 significa					es 🖌 No
Are Vegetation, Soil, or Hydrology naturally				swers in Remark	
SUMMARY OF FINDINGS – Attach site map show	ing sampling (	point locatio	ons, transe	ects, importa	nt features, etc
Hydrophytic Vegetation Present? Yes Veg. No		Sampled Area a Wetland?	Yes	✓ No	
Wetland Hydrology Present? Yes <u>V</u> No					
Peat soils problematic for determining	ng hydric	-			
VEGETATION – Use scientific names of plants.					
	lute Dominant In over Species? S	Statuo	inance Test v		
Tree Stratum (Plot size:) <u>% Cc</u>	iver opecies:	TAGUS	ber of Domina Are OBL, FA		4 (A)
2			I Number of D		
3NA			cies Across All		4 (В)
4		Perc	ent of Domina	nt Species	100
Sapling/Shrub Stratum (Plot size:)	= Total Cover		Are OBL, FA		(A/B)
1		Prev	alence Index	worksheet:	/
2				of:	
3NA		OBL	species	x1=	
4			W species		A
5			species	×3=	
Herb Stratum (Plot size: 2×1)	= Total Cove		U species		
	0% Y	T N.	mp Potals:		(B)
	0% Y 3	FACH /			
3. JUN play /C		ACH		ndex = B/A =	
4. <u>COT ped</u> <u>S</u> 5 Other mixed <del>S</del>			ropnytic vegi Dominance Te	etation Indicato	а.
			Prevalence In		
6. Open ground		<u> </u>			rovide supporting
8			data in Rer	marks or on a se	parate sheet)
9			Problematic H	ydrophytic Vege	tation' (Explain)
10			cators of hude	ic soil and watter	id hydrology must
11				disturbed or pro	
12	20 = Total Cove	Veg	rophytic etation sent?	Yes_	No
Remarks:	A.A				
Mixed S% CORsel, PSElut,	KAN Ag				
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WETLAND DETER	MINATION DATA FORM -	- NEW ZEALAND	100	
Project/Site: Shand	Region:		Sampling Date: 6/10/20	7
Applicant/Owner:	109000		Sampling Point No: Plot	7 Qu
Investigator(s):	Nearby town/		, o,	Ret
Landform (hillslope, terrace, etc.): Wetland Han	Local relief (concave, o	convex, none): N/A	Slope (%): 0	SPIOTI
	ngitude: GPS#: PI	077	Datum: WGS 84	- Ish '
Soil Map Unit Name:				l'et.
Are climatic / hydrologic conditions on the site typical for this				
Are Vegetation <u>×</u> , Soil <u>×</u> , or Hydrology <u>×</u> s		'Normal Circumstances' p	present? Yes 📈 No 🔜	-
Are Vegetation, Soil, or Hydrology n	aturally problematic? (If ne	eded, explain any answe	rs in Remarks.)	
SUMMARY OF FINDINGS – Attach site map	showing sampling point le	ocations, transects	, important features, etc.	1
Hydrophytic Vegetation Present? Yes Ves N Hydric Soil Present? Yes N	o Is the Sampled		No	
Wetland Hydrology Present? Yes V N	within a Wetlar	nd? Yes	<u>No</u>	
Remarks:	~ ~			
Reat soil - problematic to by	oric 1D.			
VEGETATION – Use scientific names of plan	ts.			
	Absolute Dominant Indicator	Dominance Test work	sheet:	1
Tree Stratum (Plot size:) 1.	% Cover Species? Status	Number of Dominant S That Are OBL, FACW,		
2.				
3. Combined	ē	Total Number of Domin Species Across All Stra		
4 M		Percent of Dominant S	pecies	
Sapling/Shrub Stratum (Plot size: 10m Rad.)	= Total Cover	That Are OBL, FACW,	or FAC: OO (A/B)	
1. SALGA	40 Y FACH	Prevalence Index wor	ksheet:	
2. 609 106	1 Y FACL	Total % Cover of:		
3		OBL species FACW species	x1=	
5.	· · · · · · · · · · · · · · · · · · ·	FAC species	×3=	
2 × 7	41 = Total Cover	FACU species	x 4 =	
Herb Stratum (Plot size: 2×2)	60% Y OBL	UPL species	x 5 =	
2. LOT ped	40% X FAC	Column Totals:	(A) (B)	
3		V	: = B/A =	
4		Hydrophytic Vegetatie Dominance Test is		
5		Dominance fest is     Prevalence Index i		
6 7			ptations <sup>1</sup> (Provide supporting	
8			s or on a separate sheet)	
9		- Problematic Hydro	phytic Vegetation <sup>1</sup> (Explain)	
10		<sup>1</sup> Indicators of hydric so	il and wetland hydrology must	
12.		be present, unless dist	urbed or problematic.	_
	Total Cover	Hydrophytic Vegetation Present? Ye	No	
Remarks:	care late to	.l.		
Most Willow borderline - Combined pla	saphag 15 mag			
- load and inte	ti			
Grindinee poie				

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WETLAND DETER	MINATION DATA FORM	- NEW ZEALAND
Project/Site: Shand	Region:	Sampling Date: 6/10/20
Applicant/Owner:		Attitude: Sampling Point No: Plot 8
Investigator(s):	Nearby town	city: (Ref
		convex, nane):
	ngitude: GPS#:	Plot 8 Datum: WGS 84
Soil Map Unit Name:		Shee,
Are climatic / hydrologic conditions on the site typical for this	time of year? Yes No	(If no, explain in Remarks.)
Are Vegetation 🗶, Soll 🦯 🦟 or Hydrology 📩 si	gnificantly disturbed? Are *	Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology n	aturally problematic? (If ne	eded, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map	showing sampling point l	ocations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	Is the Sampled	Area
Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No	within a Wetlan	nd? Yes No
Remarks:		
Peat problematic for hydric:	FD.	
VEGETATION – Use scientific names of plan	ts.	
Tree Stratum (Plot size:)	Absolute Dominant Indicator % Cover Species? Status	Dominance Test worksheet:
1		Number of Dominant Species 3 (A)
2		Total Number of Dominant ?
3NA	ē	Species Across All Strata:
4	= Total Cover	Percent of Dominant Species That Are OBL, FACW, or FAC:(OO (A/B)
Sapling/Shrub Stratum (Plot size: On Rgd)	2 Y FACH	
2.	<u> </u>	Prevalence Index worksheet: Total % Cover of;Multiply by:
3.		OBL species x 1 =
4		FACW species x2
5		FAC species x 3 =
Herb Stratum (Plot size: 2×2)	= Total Cover	FACU species x 4 =
1. MAC VUO	50% Y ORL	UPL species x 5 = Column Totats: (A) (B)
2. HOL lan (P)	40 Y FAC	
3. COT ped	$\frac{5}{6}$ $\frac{FAC}{Dat}$	Prevalence Index = B/A =
4. GL/MAX	<u> </u>	Hydrophytic Vegetation Indicators:
6.		Prevalence Index is ≤3.0 <sup>3</sup>
7		Morphological Adaptations <sup>1</sup> (Provide supporting
8		data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation' (Explain)
9		
10		Indicators of hydric soil and wetland hydrology must
12		be present, unless disturbed or problematic.
	(0) = Total Cover	Hydrophytic
(P) fasture species.		Vegetation Present? Yes V No
Remarks:		
(P) fasture species. Remarks: Combined tree a Sapt	ing	
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Project/Site: Sha	10	F	Region			Samo	ling Date: 6/10/2
Applicant/Owner:			tegion		Attitude:	Samp	ling Point No: Plot
nvestigator(s):			N	earby town/	city:		
	min	Loca			convex, none):		2n Slope (%): NA
	Longitude	6.6		\$ plo.		(all	Datum: WGS 84
Soil Map Unit Name:	Longitud			-		pent.	
Are climatic / hydrologic conditions on the	site typical for this time of	f vear?	(es	No	(If no expl	lain in Remarks	s.)
Are Vegetation <u>*</u> , Soil <u>*</u> , or H							? Yes <u>/</u> No
Are Vegetation <u>×</u> , Soil <u>·</u> , or H					eded, explain any		
				-			
SUMMARY OF FINDINGS - At	tach site map show	ing sar	nplin	g point le	ocations, tran	isects, imp	ortant features, etc.
Hydrophytic Vegetation Present?	Yes No		le th	e Sampled	Area		
Hydric Soil Present?	Yes No			in a Wetlar		esN	lo
Wetland Hydrology Present?	Yes No	_		in a notai		·	
Remarks:							
Reat problematic for b	Mric ID.						
	<i>J</i> .						
/EGETATION - Use scientific	names of plants.						
				Indicator	Dominance Te	st worksheet:	
Tree Stratum (Plot size:	) <u>% Co</u>	ver Spi	ecies :	Status	Number of Dom		
1					That Are OBL, F	PACW, of FAC	: (A)
N	A			<u> </u>	Total Number o Species Across		2 (B)
4							(0)
/		= Ti	otal Co	ver	Percent of Dom That Are OBL, I		(00 (A/B)
Sapling/Shrub Stratum (Plot size:							(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1	· · · · · · · · · · · · · · · · · · ·				Prevalence Ind		
2						over of:	
3/	1A				OBL species FACW species		
5					FAC species		x3=
		 = Te	otal Co	ver	FACU species	/	x 4 =
Herb Stratum (Plot size:	_)				UPL species		x 5 =
1. JUN art	25		<u> </u>	HACH			(A) (B)
2. JUN plg			Y	FACW			
3. <u>Algq</u>	70	<u> </u>		N/A		ce Index = B/A	
4					Hydrophytic V Dominance	-	cators:
5					1.	e frest is ≥30% e Index is ≤3.01	
6							s <sup>1</sup> (Provide supporting
7							a separate sheet)
9					Problemati	c Hydrophytic <sup>y</sup>	Vegetation <sup>1</sup> (Explain)
0							
11					<sup>1</sup> dicators of hy be present, unle	ydric soil and w	vetland hydrology must
2						eaa ulaturbed C	a problematic,
	te	<b>90</b> = T	otal Co	ver	Hydrophytic Vegetation	. /	/
					Present?	Yes	No
Remarks:							

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Project/Site: Shand	Region;		Sampling Date:
pplicant/Owner:	<b>.</b>	Altitude: S	
nvestigator(s):	Nearby town		
andform (hillslope, terrace, etc.):	Local relief (concave,	, convex, none):V	Slope (%): 15
	Longitude: GPS # :	Plot 9	Datum: WGS 84 (Plot- /
oil Map Unit Name:			
re climatic / hydrologic conditions on the site typical for t		(If no, explain in Rer	
re Vegetation <u>×</u> , Soil <u>×</u> , or Hydrology <u>×</u>			esent? Yes No
re Vegetation _ 🗡 , Soil, or Hydrology _ 🗡		eeded, explain any answers	
SUMMARY OF FINDINGS – Attach site ma	o showing sampling point	locations, transects,	important features, etc.
Hydrophytic Vegetation Present? Yes	No Is the Sample	d Area	
Hydric Soil Present? Yes	No within a Wetta		No
Wetland Hydrology Present? Yes Remarks:	No		
Reat problematic for hydr	ĸ ID.		
EGETATION – Use scientific names of pla	ints.		
Tree Stratum (Plot size:	Absolute Dominant Indicator % Cover Species? Status	Dominance Test works	
1/		Number of Dominant Spe That Are OBL, FACW, or	
2/ NA		Total Number of Dominal	nt <b>3</b> m
3		Species Across All Strata	a: (B)
4/	= Total Cover	<ul> <li>Percent of Dominant Spe That Are OBL, FACW, or</li> </ul>	
Sapling/Shrub Stratum (Plot size:)			
1		Total % Cover of:	Multiply by:
3. NA		OBL species	x1=
4		FACW species	x2= <b>7</b> - (
5	= Total Cover	FAC species <u>67</u> FACU species <u>5</u>	x3=20(
Herb Stratum (Plot size:)		UPL species	x5= 125
1. Loc per	$=\frac{1}{25} \frac{\gamma}{V} \frac{\eta c}{V}$	- Column Totals:	(A) <u>346</u> (B)
2. HOL IGN (P) 3. RAN IED	$\frac{25}{40}$ Y FAC	Prevalence Index	= B/A = 3.57
4. TRI reo (P)	S FACY	Hydrophytic Vegetation	Indicators:
5. RUM 067	- 2 FAC	Dominance Test is >	
6. Others mixed prove		<ul> <li>Prevalence Index is</li> <li>Morphological Adapt</li> </ul>	S3.0° tations' (Provide supporting)
7		data in Remarks	or on a separate sheet)
9		- Problematic Hydroph	nytic Vegetation <sup>1</sup> (Explain)
10		- 1Indicators of hydric soil a	and wetland hydrology musi
12.		be present, unless distur	
	= Total Cover	Hydrophytic Vegetation	
(P) Pasture species		Present? Yes	No <u></u>
Remarks:			

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WETLAND DE	FERMINATION DATA FORM	- NEW ZEALAND
Project/Site: Shand	Region:	Sampling Date:
Applicant/Owner:		Altitude: Sampling Point No: Pot 10
Investigator(s):	Nearby town	
Landform (hillslope, terrace, etc.): Wetled	Here Local relief (concave,	convex, none): Slope (%): ( Ket Plo
Latitude:	Longitude: GPS +: D	
Soil Map Unit Name:		) l sheel
Are climatic / hydrologic conditions on the site typical fo	r this time of year? Yes No _	(If no, explain in Remarks.)
Are Vegetation 🔀, Soil 🥂, or Hydrology 🗶	significantly disturbed? Are '	'Normal Circumstances' present? Yes No
Are Vegetation, Soil, or Hydrology	naturally problematic? (If ne	eded, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site m	ap showing sampling point I	ocations, transects, important features, etc.
	No Is the Sampled	V
Wetland Hydrology Present? Yes V	No within a Wetlan	nd? Yes No
Remarks:		
Reat problematic for by	are ID-this le	ocation 100% organic.
VEGETATION – Use scientific names of p		
Tree Stratum (Plot size:	Absolute Dominant Indicator % Cover Species? Status	Dominance Test worksheet:
1		Number of Dominant Species     2       That Are OBL, FACW, or FAC:     (A)
2NA		Total Number of Dominant
3		Species Across All Strata:
4	1 Table One	Percent of Dominant Species
Sapling/Shrub Stratum (Plot size: Sm Ra		That Are OBL, FACW, or FAC: (A/B)
1. SAL cin	Y FACL	Prevalence Index worksheet:
2		Tolal % Cover of: Multiply by:
3		OBL species x 1 =
4		FACW species x 2 = FAC species x 3 =
0	= Total Cover	FACU species x 4 =
Herb Stratum (Plot size:)		UPL species x 5 =
1. CLI Max	85 / 060	Column Tolars: (A) (B)
2. CAL 22	<u> </u>	Prevalence Index = B/A =
A Dead Gir max veg matter	NA	Hydrophytic Vegetation Indicators:
5 others incidental		Dominance Test is >50%
6		→ Prevalence Index is ≤3.0 <sup>1</sup>
7		Morphological Adaptations <sup>1</sup> (Provide supporting
8		data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
9		
11		<sup>1</sup> rdicators of hydric soil and wetland hydrology must
12		be present, unless disturbed or problematic.
	= Total Cover	Hydrophytic Vegetation Present? Yes No
Remarks:		
Adapted from US Army Corps of Engineers		New Zealand – Version 1.0

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Atiliade:       Sampling Point No:         Atiliade:       Nexthy foundity:         Nexthy foundity:       Nexthy foundity:         App Unit Name:       Longstude:       CP[1 # :         App Unit Name:       Longstude:       CP[1 # :         App Unit Name:       Congettede:       Are "Normal Circumstances" present? Yes       No         App Unit Name:       No       Its the Sampled Area       No       No         Attended:       No       Its the Sampled Area       No       No       No         Charl Marker:       No       Statum       No       No       No       No       No         Statum       Proble Mrc. D.       App Unit No       App Unit No:       App Unit No: <th>ect/Site:</th> <th>Region;</th> <th> Sampling Date: 6/10/</th>	ect/Site:	Region;	Sampling Date: 6/10/
tigator(s):	licant/Owner:		Attitude: Sampling Point No: 264
Bite:       Longitude:       C+P[#::       Datum:       Datum:       WQS 84         dig Unit Name:       Soil       or Hydrologic conditions on the site bylical for this time of year? Yes       No       (If no. explain in Remarks.)         regetation       Soil       or Hydrology       significantly disturbed?       Are "Normal Circumstances" present? Yes       No         Image: Soil       or Hydrology       naturally problematic?       (If no. explain in Remarks.)         Image: Soil       or Hydrology       naturally problematic?       (If needed, explain any answers in Remarks.)         Image: Soil       or Hydrology       naturally problematic?       (If needed, explain any answers in Remarks.)         Image: Soil       or Hydrology       No       is the Sampled Area within a Wetland?       Yes       No         Interview       Yes       No       within a Wetland?       Yes       No	stigator(s):	Nearby to	
Ge:	form (hillslope, terrace, etc.):	time Local relief (concav	e, convex, none): ^ Slope (%): 0
timatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)       No (If no, explain in Remarks.)         regetation	ūde:	101 4	
regetation       Soil       ✓ or Hydrology       ✓ significantly disturbed?       Are "Normal Circumstances" present? Yes       No         regetation       Soil       ✓ or Hydrology       The naturally problematic?       (If needed, explain any answers in Remarks.)         MMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.       is the Sampled Area within a Wetland?       No         ind Hydrology Present?       Yes       No       Is the Sampled Area within a Wetland?       No         Pack Mark Stratum       Yes       No       Is the Sampled Area within a Wetland?       No       No         Statum Hydrology Present?       Yes       No       Is the Sampled Area within a Wetland?       No       No         Statum (Plot size:       ////////////////////////////////////	Map Unit Name:		
regetation	climatic / hydrologic conditions on the site typical fo	or this time of year? Yes No	
AMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.         irophylic Vegetation Present?       Yes       No         is the Sampled Area       within a Wetland?       Yes       No         is the Sampled Area       within a Wetland?       Yes       No         addat       proble mchi for hydric ID         SETATION - Use scientific names of plants.       Dominant Indicator       Dominant Species         astratum       (Plot size:       )       Scover       Status         Stratum       (Plot size:       )       Scover       Status         Stratum       (Plot size:       )       Prevalence thorniant Species       (A)         Stratum       (Plot size:       2X1       (B)       Prevalence thorniant Species       (A)         Stratum       (Plot size:       7X1       Y       OBL       (C)       (A			re "Normal Circumstances" present? Yes No
is the Sampled Area       No       is the Sampled Area         within a Wetland?       Yes       No         Yes       No       within a Wetland?       Yes         Yes       No       within a Wetland?       Yes       No         Stratum       (Plot size:       )       Stratus       Dominant Species       1       (A)         Stratum       (Plot size:       )       = Total Cover       Prevalence Index withsheet:       (A)         OBL species       X1=       Prevalence Index withsheet:       (A)       (A)         OBL species       X1=       Prevalence Index withsheet:       (A)         OBL species       X1=       Prevalence Index is 3.0°       Multick to         OBL species       X1=       Prevalence Index is 3.0°       Prevalence Index is 3.0°         Morphological Adaptations '(Provide supporting data	Vegetation, Soil, or Hydrology	naturally problematic? (If	needed, explain any answers in Remarks.)
in a Sampled Area       is the sampled Area       within a Wetland?       Yes       No         in arks:       is the sampled Area       within a Wetland?       Yes       No         in arks:       is the sampled Area       within a Wetland?       Yes       No         in arks:       is the sampled Area       within a Wetland?       Yes       No         in arks:       in arks:       in arks:       Dominant Indicator       Nomber of Dominant Species         a Stratum       (Plot size:       )       Secure       Species?       Status         NA	MMARY OF FINDINGS – Attach site m	ap showing sampling poin	t locations, transects, important features, etc
in a Sampled Area       is the sampled Area       within a Wetland?       Yes       No         in arks:       is the sampled Area       within a Wetland?       Yes       No         in arks:       is the sampled Area       within a Wetland?       Yes       No         in arks:       is the sampled Area       within a Wetland?       Yes       No         in arks:       in arks:       in arks:       Dominant Indicator       Nomber of Dominant Species         a Stratum       (Plot size:       )       Secure       Species?       Status         NA	drashutia Vagatalian Brasant2	No	
Idead Hydrology Present?       Yes       No         Prarks:       Dead       Absolute       Dominant Indicator         SETATION - Use scientific names of plants.       Absolute       Dominant Indicator         a Stratum       (Plot size:       )       Absolute       Dominant Indicator         Settatum       (Plot size:       )       Absolute       Dominant Indicator         NA		No lis the Sampl	led Area
Provide methic for hydric ID         SETATION - Use scientific names of plants.         a Stratum (Plot size:       Absolute       Dominant indicator         NPA       Species 2 status       Dominant Species         NPA       Species 2 status       Dominant Species         NPA       Species 2 status       Number of Dominant Species         NPA       Species 2 status       Number of Dominant Species         NPA       Species 2 status       Not of Dominant Species         NPA       Species 2 status       Not of Dominant Species         NPA       Species 10 Dominant Species       OO (AVB)         Provalence Index worksheet:       Total Ac DEL, FACW of FAC:       Multiply to the species         NPA       Species 2       X 3 =       FAC species       X 3 =         FAC species       X 3 =       FAC species       X 3 =       FAC species       X 3 =         Column folias:       (A)       (B)       Prevalence Index to a separate sheet)       Prevalence Index is 3.0°         Mpdophylic Vegetation Indicators:       Operation of hydric soil and wetland hydrology must be present;       Problematic Hydrophylic Vegetation (Explain)         Distrum (Plot size:       ZX 1       FAC       Provide supporting data in Remarks or on a separate sheet)       Problematic Hydrophylic Vegetation (E		Within a wei	dand? Yes No
SETATION - Use scientific names of plants.         a.Stratum (Plot size:	marks:		
SETATION - Use scientific names of plants.         a.Stratum (Plot size:	Reat polatomenti La	hudii TO	
a Stratum (Plot size:)       Absolute % Cover       Dominant Indicator Species? Status       Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC:(A)         N/A	rui procentane ron	gave IV	
a Stratum (Plot size:)       % Cover Species? Status That Are OBL, FACW, or FAC:(A)         Number of Dominant Species That Are OBL, FACW, or FAC:(B)         Percent of Dominant Species That Are OBL, FACW, or FAC:(B)         Percent of Dominant Species That Are OBL, FACW, or FAC:(B)         Percent of Dominant Species That Are OBL, FACW, or FAC:(A)         Prevalence Index worksheet: Total % Cover of:(M)         NP         Prevalence Index worksheet: Total % Cover of:(M)         Prevalence Index worksheet: Total % Cover of:(M)         PAC species	GETATION - Use scientific names of p	plants.	
Image: Shrube Stratum       (Plot size:	e Stratum (Plot size:		
Interview			- Number of Dominant Species
Species Across All Strata:       1       (B)         Species Across All Strata:       1       (B)         Percent of Dominant Species That Are OBL, FACW, or FAC:       (A/B)         Prevalence Index worksheet:       1       (A/B)         Total % Cover of:       Multiply building bu			Total Number of Dominant
Image: Shrub Stratum       (Plot size:)       = Total Cover       That Are OBL, FACW, or FAC:(A/B)         Image: Shrub Stratum       (Plot size:)       Prevalence Index worksheet:	NA		
Imarkstore       (Plot size:)         Imarkstore			Percent of Dominant Species
Image: Stratum (Plot size: 2x1)       Image: Stratum (Plot size: 2x1)         Image: Stratum (Plot size: 2x1)       Image: Stratum (Plot size: 2x1)         Image: Stratum (Plot size: 2x1)       Image: Stratum (Plot size: 2x1)         Image: Stratum (Plot size: 2x1)       Image: Stratum (Plot size: 2x1)         Image: Stratum (Plot size: 2x1)       Image: Stratum (Plot size: 2x1)         Image: Stratum (Plot size: 2x1)       Image: Stratum (Plot size: 2x1)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)         Image: Stratum (Plot size: 2x2)       Image: Stratum (Plot size: 2x2)	plina/Shrub Stratum (Plot size:)	= Total Cover	That Are OBL, FACW, or FAC: (A/B)
NP			Prevalence Index worksheet:
FACW species       Y       Y         FAC species       X 3 =         FAC species       X 4 =         GLY mGX       Y       OB         LDT pcd       TIX       FAC         Prevalence Index = B/A =       Hydrophytic Vegetation Indicators:         Obminance Test is >50%       Prevalence Index is \$3.0°         Prevalence Index is \$3.0°       Morphological Adaptations° (Provide supporting data in Remarks or on a separate sheet)         Problematic Hydrophytic Vegetation * (Explain)       Problematic Hydrophytic Vegetation * (Explain)         *       Total Cover       Hydrophytic         *       Total Cover       Yes       No			_
FAC species       x 3 =			
FACU species       x 4 =			-
b Stratum (Plot size: 1×1)       1411.       Y       OBL       VIL species       x 5 =         Column Totals:       (A)       (B)         Prevalence Index = B/A =       Hydrophytic Vegetation Indicators:         Dominance Test is >50%       Prevalence Index is \$3.01         Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)       Problematic Hydrophytic Vegetation' (Explain)         Image: the state of the stat		= Total Cover	
Column Idtals:       (A)       (B)         LDT ped       TIL       FAC       Prevalence Index: = (A)       (B)         Prevalence Index       = B/A =	rb Stratum (Plot size: 2×2_)	mil	
Prevalence Index = B/A =         Hydrophytic Vegetation Indicators:         Dominance Test is >50%         Prevalence Index is ≤3.01         Morphological Adaptations1 (Provide supporting data in Remarks or on a separate sheet)         Problematic Hydrophytic Vegetation1 (Explain)         Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.         Hydrophytic Vegetation         Yes         No			Column Totals: (A) (B)
Hydrophytic Vegetation Indicators:         Dominance Test is >50%         Prevalence Index is \$3.0 <sup>1</sup> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)         Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)         Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.         Hydrophytic Vegetation         Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.         Hydrophytic Vegetation         Yes       No	CUT ped	<u></u> <u>+n</u>	
Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. = Total Cover     Hydrophytic Vegetation Present? Yes No			Dominance Tesl is >50%
data in Remarks or on a separate sheet)     Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)     Indicators of hydric soil and wetland hydrology must     be present, unless disturbed or problematic.     Hydrophytic     Vegetation     Present?     Yes No			+ Prevalence Index is ≤3.0 <sup>1</sup>
Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)     Indicators of hydric soil and wetland hydrology must     be present, unless disturbed or problematic.     = Total Cover     Hydrophytic     Vegetation     Present?     Yes No			
=       -			
=       1 dicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.         =       Total Cover         Hydrophytic Vegetation Present?       Yes No			
= Total Cover Hydrophytic Vegetation Present? Yes No			dicators of hydric soil and wetland hydrology must
Vegetation Present? Yes No			-
Present? Yes No		= Total Cover	
marks:			
	emarks:		
	emarks:		

Applicant/Owner:	Applicant/Owner:	Altitude: Sampling Point No: <u>Pot 12</u> rex, none): Slope (%): <u>15</u> Datum: <u>WGS 84</u> (If no, explain in Remarks.) mal Circumstances" present? Yes No d, explain any answers in Remarks.) htions, transects, important features, etc.
ABUDE       Sampling Point No: Point       Point No: Point       Point No: Point       Po	Applicant/Owner:	Altitude: Sampling Point No: <u>Pot 12</u> rex, none): Slope (%): <u>15</u> Datum: <u>WGS 84</u> (If no, explain in Remarks.) mal Circumstances" present? Yes No d, explain any answers in Remarks.) htions, transects, important features, etc.
Investigator(s):       Image: New dimetal functional field (concrive, convax, none):       Image: Non-       Stope (%):       Image: Non-       Non- </td <td>Investigator(s): Nearby town/city: Local relief (concave, converted to the structure in the structure interval of the structure in</td> <td>Arex, none):Slope (%):LOKe f Datum:WGS 84Ke f L(If no, explain in Remarks.) mal Circumstances" present? YesNo d, explain any answers in Remarks.) etions, transects, important features, etc.</td>	Investigator(s): Nearby town/city: Local relief (concave, converted to the structure in the structure interval of the structure in	Arex, none):Slope (%):LOKe f Datum:WGS 84Ke f L(If no, explain in Remarks.) mal Circumstances" present? YesNo d, explain any answers in Remarks.) etions, transects, important features, etc.
andform (hillstope, turrace, etc.):       h:11 Slope       Longitude:       Datum: WCSS 84         attitude:       Longitude:       Datum: WCSS 84       Datum: WCSS 84         Stope (%):       Longitude:       Datum: WCSS 84       Datum: WCSS 84         Stope (%):       Longitude:       Datum: WCSS 84       No       (If no. explain in Remarks.)         Stope (%):       Longitude:       Datum: WCSS 84       No       No       No         Stope (%):       Longitude:       Datum: WCSS 84       No       No       No       No         Stope (%):       Longitude:       No       (If no. explain in Remarks.)       No	Landform (hillslope, terrace, etc.):	rex, none):Slope (%):LOSlope (%):LOAdd +Datum:WGS 84Add +Add
astrude:       Longitude:       Datum: WGS 84         Solid MeD University       Longitude:       Datum: WGS 84         Solid MeD University       Solid MeD University       No       (If no, explain in Remarks.)         Vere Vegetation Charles       Solid MeD University       Solid MeD University       No       (If no, explain any answers in Remarks.)         SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.       Hydrophydic Vagetation Present?       No       If the Sampled Area within a Wetland?       If the Sampled Area within a Wetland?       No       If the Sampled Area within a Wetland?       If	Latitude: Longitude: Soil Map Unit Name: Are climatic / hydrologic conditions on the site typical for this time of year? Yes No Are Vegetation, Soil, or Hydrology significantly disturbed? Are *Norm Are Vegetation, Soil, or Hydrology naturally problematic? (If needed SUMMARY OF FINDINGS – Attach site map showing sampling point locat Hydrophytic Vegetation Present? Yes No Hydroic Soil Present? Yes No Is the Sampled Area	Datum:WGS 84 (If no, explain in Remarks.) mal Circumstances" present? Yes No d, explain any answers in Remarks.) attions, transects, important features, etc.
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no. explain in Remarks.)   Are Normal Circumstances' present? Yes No   Yev Vegetation	Are climatic / hydrologic conditions on the site typical for this time of year? Yes No Are Vegetation, Soil, or Hydrology _k significantly disturbed? Are "Norm Are Vegetation, Soil, or Hydrology _k naturally problematic? (If needed SUMMARY OF FINDINGS – Attach site map showing sampling point locat Hydrophytic Vegetation Present? Yes No Hydrophytic Vegetation Present? Yes No Is the Sampled Area	mal Circumstances" present? Yes No d, explain any answers in Remarks.) ntions, transects, important features, etc.
Are Vegetation Soil Kort Hydrology significantly disturbed?   Are "Normal Circumstances" present? Yes No   Ver Vegetation Question Present? Yes No Wein Soil Present? Yes No <td>Are Vegetation X, Soil K, or Hydrology K significantly disturbed? Are "Norm Are Vegetation K, Soil K, or Hydrology K naturally problematic? (If needed SUMMARY OF FINDINGS – Attach site map showing sampling point locat Hydrophytic Vegetation Present? Yes No K Hydrophytic Soil Present? Yes No K Hydrophytic Soil Present?</td> <td>mal Circumstances" present? Yes No d, explain any answers in Remarks.) ntions, transects, important features, etc.</td>	Are Vegetation X, Soil K, or Hydrology K significantly disturbed? Are "Norm Are Vegetation K, Soil K, or Hydrology K naturally problematic? (If needed SUMMARY OF FINDINGS – Attach site map showing sampling point locat Hydrophytic Vegetation Present? Yes No K Hydrophytic Soil Present? Yes No K Hydrophytic Soil Present?	mal Circumstances" present? Yes No d, explain any answers in Remarks.) ntions, transects, important features, etc.
Are Vegetation A. Soilor Hydrology naturally problematic? (If needed, explain any answers in Remarks.)   SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.   Hydrophylic Vegetation Present? YesNo	Are Vegetation, Soil, or Hydrology naturally problematic? (If needed SUMMARY OF FINDINGS – Attach site map showing sampling point locat Hydrophytic Vegetation Present? Yes No Is the Sampled Area	d, explain any answers in Remarks.) Itions, transects, important features, etc.
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.         Hydrophytic Vegetation Present?         Yes       No         Wetland Hydrology Present?       Yes         No       Yes         Mathematic Hydrology Present?       Yes         No       Yes         Metland Hydrology Present?       Yes         No       Yes         Mathematic Hydrology Present?       Yes         No       Yes         Mathematic Hydrology Present?       Yes         No       Yes         Yes       No         Yes       No         Yes       No         Yes       No         Yes       Yes         Yes       Yes         Yes       Yes         Yes       Yes         Yes       Yes         Yes       Yes         Yes       Yes<	SUMMARY OF FINDINGS – Attach site map showing sampling point locat Hydrophytic Vegetation Present? Yes No Is the Sampled Area	ations, transects, important features, etc.
Hydrophylic Vegetalion Present?       Yes       No       Is the Sampled Area within a Wetland?       Yes       No         Hydric Soil Present?       Yes       No       Is the Sampled Area within a Wetland?       Yes       No         Wetland Hydrology Present?       Yes       No       Is the Sampled Area within a Wetland?       Yes       No         Wetland Hydrology Present?       Yes       No       Is the Sampled Area within a Wetland?       Yes       No         Wetland Hydrology Present?       Yes       No       Image: Sampled Area within a Wetland?       Yes       No         Wetland Hydrology Present?       Yes       No       Image: Sampled Area within a Wetland?       Yes       No         Wetland Hydrology Present?       Yes       Absolue       Dominant Sampled Area Within Area OBL, FACW, or FAC:       1       (A)         Total Number of Dominant Species       Total Number of Dominant Species       So       (A)       FAC         Saplina/Shrub Stratum       (Plot size:       Image: Species       Yes       Xes       Xes       Yes         1       Image: Species       Yes       Yes       Image: Species       Yes       Yes       Yes         2       Image: Species       Yes       Yes       Yes       Yes       Yes <td>Hydrophytic Vegetation Present? Yes No Ves N</td> <td>a V</td>	Hydrophytic Vegetation Present? Yes No Ves N	a V
Hydric Soil Present?       Yes       No       Yes       No         Wetland Hydrology Present?       Yes       No       Yes       No         Remarks:       Remarks:       No       Yes       No         Remarks:       Remarks:       No       Yes       No         Itat Poblemath:       Asolute Dominant Indicator       Dominante Test worksheet:       Number of Dominant Species         Itat Are OBL, FACW, or FAC:       I. (A)       Total Number of Dominant Species       That Are OBL, FACW, or FAC:       I. (A)         2       Itat Are OBL, FACW, or FAC:       I. (A)       Total Number of Dominant Species       FAC         3       Prevent of Dominant Species       Solution       Prevent of Dominant Species       Solution       Image: Species       Solution       FAC         1       Itat Are OBL, FACW, or FAC:       Itat Are OBL, FACW	Hydric Soil Present? Yes No ~	V
Remarks:       Plant       Doblematic       Author       Dominant         VEGETATION - Use scientific names of plants.       Absolue       Dominant Indicator       Monther of Dominant Species       1         1.       Absolue       Species?       Status       That Are OBL, FACV, or FAC:       1       (A)         2.       NA       Species?       Status       That Are OBL, FACV, or FAC:       1       (A)         3.       NA       Species Across All Stratu:       2       (B)       FAC         3.       NA       Species Across All Stratu:       2       (B)       FAC         3.       NA       Species Across All Stratu:       2       (AB)       Fract Obminant Species       5       5         3.       NA       Species Across All Stratu:       1       (AB)       Fract Obminant Species       5       20       (AB)       7       6       6       7       6       6       7       6       6       7       7       6       6 <td>Wetland Hydrology Present? Yes No within a Wetland?</td> <td></td>	Wetland Hydrology Present? Yes No within a Wetland?	
Iree Stratum       (Plot size:       Absolute       Dominant Indicator       Dominance Test worksheet:         1.        Species?       Status       Number of Dominant Species       1       (A)         2.            (A)         3.           (A)         4.           (A)         3.           (A)         4.           (B)       FAC         3.           (A)           4.             (A)          1.               (A)                             <	Remarks:	
Iree Stratum (Plot size:       % Cover       Species?       Status       Number of Dominant Species       1       (A)         1	-	
1.       That Are OBL, FACW, or FAC:       (A)         2.       NA       Total Number of Dominant Species Arross All Strata:       (B)         3.       FAC       For that Are OBL, FACW, or FAC:       (A)         1.       Total Number of Dominant Species:       So //. (AB)         1.       Prevalence Index worksheet:       (AB)         2.       NA       Sector of:       Multiply by:         3.       NA       Sector of:       Multiply by:         3.       NA       Sector of:       Multiply by:         3.       NA       Sector of:       Multiply by:         0BL species       Sector of:       Multiply by:       OBL species         1.       OC       FACU species       Sector of:       Multiply by:         1.       OC       FACU species       Sector of:       Multiply by:         2.       CLV mark       Si//       Y       Machine         3.       RAN CP       Si//       Y       Machine         4. <td>Tree Structure (Distainer</td> <td></td>	Tree Structure (Distainer	
3.       Idal Number of Dominant Species Across All Strata:       2       (B)       FAC         Sapling/Shrub Stratum       (Plot size:       )       = Total Cover       Percent of Dominant Species       So // (A/B)         1.       .       .       .       Percent of Dominant Species       So // (A/B)         2.       .       .       .       .       Percent of Dominant Species       So // (A/B)         3.       .       .       .       .       .       .       .       .         4.       .		
4		
Sabing/Shrub Stratum       (Plot size:)       = Total Cover       Percent of Dominant Species       Solver (AVB)         1.	3 Spe	pecies Across All Strata:
Sabiling/Shrub Stratum       (Plot size:)         1.		ercent of Dominant Species
2. $\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Sapling/Shrub Stratum (Plot size:)	
3. $NA$ 4. $S$ 5. $A$ Herb Stratum (Plot size: $A$ 1. $OC$ $A$ 2. $CLY$ $Mgr.$ 3. $RA$ $N$ $Rp$ 4. $FRI$ $P$ 5. $OA$ $gooder (P)$ $Mgr.$ 6. $OA$ $Gooder (P)$ $Mgr.$ 7. $S$ 8. $OA$ $Gooder (P)$ $Mgr.$ 9. $OA$ $Gooder (P)$ $Mgr.$ 1. $Coc A$ $Gooder (P)$ $Mgr.$ 3. $RA$ $N$ $Rp$ 4. $FRI$ $P$ $P$ 5. $OA$ $gooder (P)$ $Mgr.$ 6. $OA$ $Gooder (P)$ $Mgr.$ 7. $A$ 8. $A$ 9. $OA$ $Gooder (P)$ $Mgr.$ 1. $Coc A$ $Gooder (P)$ $Mgr.$ 1. $Coc A$ $Gooder (P)$ $Mgr.$ 1. $Coc A$ $Gooder (P)$ $Mgr.$ 3. $RA$ $N$ $Rp$ 4. $FRI$ $P$ $P$ 5. $OA$ $Gooder (P)$ $Mgr.$ 6. $OA$ $A$ $OP$ $Mgr.$ 7. $A$		
4. $FACW$ species $x 2 = FAC$ species $x 3 = 105$ FAC species $x 4 = 69$ FAC species $x 4 = 69FAC species x 4 = 69FAC species x 4 = 69FAC species x 4 = 69FAC species y 3 = 105FAC species y 3 = 105$	. / 16	F
5. $A$ = Total Cover Herb Stratum (Plot size: $P$ = Total Cover 1. $P$		
Herb Stratum (Plot size:       Image: Construction of the size: <thimage: consis:<="" th="">       Image: Construction of th</thimage:>		
1. $OC$ $P$ $QO'$ . $Y$ $YPL$ $AS = \frac{1}{207}$ $AS = \frac$		
Column Totals: $\underline{77}$ (A) $\underline{57}$ (B) 2. $\underline{77}$ (A) $\underline{57}$ (B) 2. $\underline{77}$ (A) $\underline{57}$ (B) 2. $\underline{77}$ (A) $\underline{57}$ (B) Prevalence Index = $B/A = \underline{3 \cdot 90}$ Hydrophytic Vegetation Indicators: 2. $\underline{77}$ (A) $\underline{57}$ (B) Prevalence Index = $B/A = \underline{3 \cdot 90}$ Hydrophytic Vegetation Indicators: 2. $\underline{77}$ (A) $\underline{57}$ (B) Prevalence Index = $B/A = \underline{3 \cdot 90}$ Hydrophytic Vegetation Indicators: 2. $\underline{77}$ (A) $\underline{57}$ (B) Prevalence Index = $B/A = \underline{3 \cdot 90}$ Hydrophytic Vegetation Indicators: 2. $\underline{77}$ (B) Prevalence Index = $B/A = \underline{3 \cdot 90}$ Hydrophytic Vegetation Indicators: 2. $\underline{77}$ (A) $\underline{57}$ (B) Prevalence Index = $B/A = \underline{3 \cdot 90}$ Hydrophytic Vegetation Indicators: 2. $\underline{77}$ (B) 2. $\underline{77}$ (B) Prevalence Index = $B/A = \underline{3 \cdot 90}$ Hydrophytic Vegetation Indicators: 2. $\underline{77}$ (B) 2. $\underline{77}$		
3. $A = 1$ $A = 2$ $A = 3$	Col Col	
4.       IRT + p       ISI/       IRCU         5.       IOA gm       Image: Name       Image: Name       Image: Name         5.       IOA gm       Image: Name       Image: Name       Image: Name       Image: Name         6.       Image: Name       Image: Nam       Image: Nam <t< td=""><td></td><td>Prevalence Index = <math>B/A = 3.90</math></td></t<>		Prevalence Index = $B/A = 3.90$
6.       OH-       Prevalence Index is ≤3.01         7.       MA         8.       Morphological Adaptations1 (Provide supporting data in Remarks or on a separate sheet)         9.       Problematic Hydrophytic Vegetation1 (Explain)         10.       Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.         12.       Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	PAT PAGE PAGE	ydrophytic Vegetation Indicators:
7.		
8.	6. Other - mixed partice 3% NA X	
8.	7	
9.		
11.     Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.       12.     Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	9	_ , . , , , ,
12	11 'Inc	
P Parture species = Total Cover Hydrophytic Vegetation Present? Yes No	12 be	e present, unless disturbed or problematic.
	(P)- Parture species	gatation
	Adapted from US Army Corps of Engineers	

icant/Owner:	y disturbed? roblematic?	by town/cit oncave, cor by the cor by the correction by town/cit oncave, correction by town/cit oncave, correction by town/cit	Altitude: Altitude: Nvex, none); <b>b b b b b b b b b b</b>	Sampling	Point No: / Slope (%	): <u>{</u>
tigator(s):	Local relief (co	No Are "No	ty:	Non- 8 + yph: ain in Remarks.) nces' present?	Slope (%	b): _ <b>(∽</b> NGS 84
tform (hillslope, terrace, etc.): <u>blops</u> wde: <u>Longitude:</u> <u>Longitude:</u> Map Unit Name: <u></u> climatic / hydrologic conditions on the site typical for this time of y vegetation <u>,</u> Soil <u>,</u> or Hydrology <u>,</u> significanthy vegetation <u>,</u> Soil <u>,</u> or Hydrology <u>,</u> naturally pr <b>MMARY OF FINDINGS – Attach site map showing</b> drophytic Vegetation Present? <u>Yes No v</u> No <u>v</u>	Local relief (co	No Are "No	nvex, none): (If no, expla (If no, expla	8 → uph i nin in Remarks.) nces" present?	Datum: V	NGS 84
	rear? Yes y disturbed? roblematic?	No	(If no, expla	8 → uph i nin in Remarks.) nces" present?	Datum: V	NGS 84
Map Unit Name:	rear? Yes y disturbed? roblematic?	No Are "No	(If no, expla	in in Remarks.) nces" present?		_
climatic / hydrologic conditions on the site typical for this time of y         Vegetation	y disturbed? roblematic?	Are "No	ormal Circumstar	nces" present?	Yes	
Vegetation, Soil, or Hydrology significantly vegetation, Soil, or Hydrology naturally pr MMARY OF FINDINGS – Attach site map showing drophytic Vegetation Present? Yes No dric Soil Present? Yes No	y disturbed? roblematic?	Are "No	ormal Circumstar	nces" present?	Yes	
Vegetation, Soil, or Hydrology naturally pr MMARY OF FINDINGS – Attach site map showing drophytic Vegetation Present? Yes No dric Soil Present? Yes No	roblematic?					No
MMARY OF FINDINGS – Attach site map showing         drophytic Vegetation Present?         Yes         No         dric Soil Present?		(1/ 11000		answers in Rema		
drophytic Vegetation Present? Yes No dric Soil Present? Yes No	g sampling p				•	
dric Soil Present? Yes No		point loc	cations, trans	sects, impor	lant featur	es, etc.
	ls the S	ampled A	rea		1	
		a Wetland	? Yes	s No		
etland Hydrology Present? Yes No						
marks:						
leat problematic for hydre	ID.					
1						
GETATION – Use scientific names of plants.						
	e Dominant Ind r Species? S	tatue	Dominance Tes			
	aperies: o		Number of Domi That Are OBL, F.		Ø	(A)
						( )
/ NA			Total Number of Species Across /			(B)
			Percent of Domi	nant Snecies	0	
pling/Shrub Stretum (Plot size)	= Total Cover		That Are OBL, F.		0	(A/B)
ping/sindb stratum (i for size)			Prevalence Inde	ex worksheet:		
			Total % Cov	ver of:	Multiply by:	
NH			OBL species	x *	1 =	
			FACW species			
				x3	3 =	
erb Stratum (Plot size: 2x2)	= Total Cover		FACU species _ UPL species	<u>۲</u> ۲	t= 5= 67	5
LOL Ber (P) 295	<u>/                                    </u>		Column Totals:	95 (A)	47	ς (B)
Others-RANiep + RUMobt LS		<u>w</u>				<b>_</b> ( )
				e Index = B/A =		
			Hydrophytic Ve M Dominance		lors;	
		[] *	X Prevalence			
				al Adaptations <sup>1</sup> (	(Provide supp	porting
			data in R	emarks or on a s	separate shee	∋t)
		! ?	Problematic	Hydrophytic Veg	jetation' (Exp	ulain)
			<sup>1</sup> Indicators of hy	dric coll and wet	and bydrolog	v muet
			be present, unle			ymusi
100	O = Total Cover	r	Hydrophytic		,	
Asthre species	<u> </u>	· · · ·	Vegetation	Vee	No	
top inc species			Present?	Yes	No	
anarks:						

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ect/Site: Shad		Region:		
licant/Owner:			Altitude:	Sampling Date: 6/10/2 Sampling Point No: 201
stigator(s):		Nearby town/		
dform (hillslope, terrace, etc.):	Loca	al relief (conceve, o	convex, none):	Slope (%):
	ngitude:	GPS #	F' Aot	Datum:
Map Unit Name:				*
climatic / hydrologic conditions on the site typical for this	time of year?	Yes 🗾 No 🔤	(If no, explain in	Remarks.)
Vegetation, Soil, or Hydrology _Ks	ignificantly distu	rbed? Are "	Normal Circumstances	* present? Yes No
Vegetation <u>K</u> , Soil , or Hydrology <u>K</u> n	aturally problem	atic? (If ne	eded, explain any ans	vers in Remarks.)
MMARY OF FINDINGS – Attach site map	showing sar	npling point l	ocations, transec	ts, important features, et
rdric Soil Present? Yes N etland Hydrology Present? Yes N	o o	Is the Sampled within a Wetlar		No
Reat problematic for	0	Ð		
GETATION – Use scientific names of plan		este ant la dia stan	Demission Texture	
ee Stratum (Plot size:)		minant Indicator acies? Status	Dominance Test wo Number of Dominant	
/			That Are OBL, FACV	V, or FAC: (A)
NA	·		Total Number of Don Species Across All S	
Disc(Chauh Stratum (Dist cited))	= Te	otal Cover	Percent of Dominant That Are OBL, FACV	
pling/Shrub Stratum (Plot size:)			Prevalence Index w	orksheet:
NA			Total % Cover o	Multiply by:
			OBL species	x1=
			FACW species	$\frac{x_{2}}{5}$ $\frac{x_{2}}{x_{3}}$ $\frac{100}{15}$
/	= = Te	otal Cover	FACU species	40 x4= 160
UN eff	50%	Y FACH	UPL species	x5=
RAN RP	51.	FAC	Column Totals:	$(A)  \underline{\langle 7 \rangle}  (B)$
POR an Praybe	40%	y FACY		ex = B/A = 2-90
other mined partice RUMOBT RANTE	5%	<u>'N</u>	Hydrophytic Vegeta	
KONTK			Dominance Test	
			🔀 Morphological A	daptations <sup>1</sup> (Provide supporting
				irks or on a separate sheet) Irophytic Vegetation <sup>1</sup> (Explain)
				порнуто медетатот (Ехріан)
				soil and wetland hydrology must
				sturbed or problematic.
Deal	<b>OO_</b> = T	otal Cover	Hydrophytic Vegetation	
D-Pasture species			Present?	Yes No
emarks:				

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wetland de	Danian	Sampling Date: 6/10/20
	Region:	Altifude: Sampling Date: Altifude: Sampling Point No: Altifude: Altifude: Sampling Date: Altifude: Sampling Point No: Altifude: Sampling Date: Altifude: Sampling Date: Altifude: Sampling Point No: Altifude: Altifude: Altifude: Sampling Point No: Altifude:
plicant/Owner:	Nearby fown	/city:
ndform (hillslope, terrace, etc.):	Local relief (concave),	
	Longitude: GPS #	: WP 377 Datum: WGS 84_
il Map Unit Name:		
e climatic / hydrologic conditions on the site typical fo	or this time of year? Yes No	(If no, explain in Remarks.)
e Vegetation _ 📐 , Soil _ 🖄 or Hydrology 🖉		"Normal Circumstances" present? Yes No
		eeded, explain any answers in Remarks.)
		ocations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes Vegetation Present? Yes	No Is the Sampled	
Wetland Hydrology Present? Yes	No within a Wetla	nd? Yes No
Remarks:		
rat poblematic to bydr	ic ±D - not an i.	we in drain.
EGETATION – Use scientific names of p	plants.	
Tree Stratum (Plot size:)	Absolute Dominant Indicator % Cover Species? Status	Dominance Test worksheet:
1.	<u>_/o doveropecies:oidius_</u>	Number of Dominant Species ( That Are OBL, FACW, or FAC: (A)
2		Total Number of Dominant
		Species Across All Strata: (B)
		Percent of Dominant Species
Sapling/Shrub Stratum (Plot size:)	= Total Cover	That Are OBL, FACW, or FAC: (A/B)
i interest in the stratem		Prevalence Index worksheet:
2 / 🏘 -		Total % Cover of: Multiply by
3// <sup>~</sup> / <sup>~</sup> / <sup>~</sup>		OBL species x 1 =
/		FACW species x 2
•		FAC species x 3 =
erb Stratum (Plot size:)	= Total Cover	FACU species x 4 = UPL species x 5 =
1. PER hyd	<u>80/. V FACh</u>	Column Toris: (A) (B)
MYR gry		
B. RAN May	FACW	Prevalence Index = B/A =
CEM Min		Hydrophytic Vegetation Indicators: Dominance Test is >50%
Open Wite	NA	Dominance rest is >30 % Prevalence Index is ≤3.0 <sup>1</sup>
5 7		Morphological Adaptations <sup>1</sup> (Provide supporting
8		data in Remarks or on a separate sheet)
9		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
0		<sup>1</sup> Indicators of hydric soil and wetland hydrology must
		be present, unless disturbed or problematic.
2	= Total Cover	Hydrophytic Vegetation Present? Yes No
Remarks:		Present? Yes No
Incidental on drain ed	ge: JUN art d	ominat drain sikved
•		-

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generationers in the second se	WETLAND DI	ETERMINATION DATA FORM	- NEW ZEALAND			
Allude:       Sempling Point No:       PDC 1 S         veetgator(S):       Nemty tom/chy:       Stope (%):       Stope (%):<	shard	Region		ampling Date: 6/10/20		
vestigation(s):		Negion,	Altitude: St	empling Point No: Plot 15		
indicern (nillistope, tenzee, etc.):       Stratum       Stope (%):		Nearby fown	/city:			
Bill Map Unit Name:	podform (billelope terrace etc.): Clicitat	In II Jon ocal relief (concave	convex none): (en	× Slope (%): C [Ket		
III Map Unit Name:       Prov defa.         e dimited: //yddologic conditions on the site typical for this time of year? Yes No (if no, explain in Remarks.)       No (if no, explain in Remarks.)         a Vegetation		Sensitude: GPS#.	Plot 15			
e climatic / hydrologic conditions on the site typical for this time of year? Yes No (if no. explain in Remarks.) a 'e 'egelation Soil or Hydrology significandy disturbed? a 'egelation Soil or Hydrology naturally problematic? (if needed, explain any answers in Remarks.) UMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegelation Present? Yes No?			. / 10/ 10	- for de		
a Vegatation		for this time of year? Yes V	(If no, explain in Rem	arks.)		
a Vegatation						
UMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.         hydrophytic Vegetalaion Propent?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland?         Yes / No / Is the Sampled Area within a Wetland? <td></td> <td></td> <td></td> <td></td>						
Hydrophylic Vagetalion Present? Yes No   Is the Bampled Area within a Wetland? Yes No Yes No No Yes No No No Yes No No No Yes No </td <td></td> <td></td> <td></td> <td></td>						
Wetsand Hydrology Present?       Ves       No       Interfactor       Value       No         Remarks:       Part of polaristic       Distributed       Soil vpatte to Classify       Ac Classify         Remarks:       Part of earthworks:       Which base Created a porching; great that the the the the the the the the the th			ocations, transects, i	inportant leatures, etc.		
Wetsand Hydrology Present?       Ves       No       Interfactor       Value       No         Remarks:       Part of polaristic       Distributed       Soil vpatte to Classify       Ac Classify         Remarks:       Part of earthworks:       Which base Created a porching; great that the the the the the the the the the th	Hydrophytic Vegetation Present? Yes	- No Is the Sampler	Area			
Remarks: Part public to to TD yoric - Distributed Soil vpacht to Clausify Prear of earthwork: Which bac Created a parcing area, the t provide size:	Hydric Soil Present? NJTVI bec Yes	within a Wetla	. /	No		
EGETATION – Use scientific names of plants.         Intersection of plants.         Dominant Indicator % Cover         Species? Status Number of Dominant Species 2         Cover         Species? Status That Are Dolinant Species 2         Cover         Species? Status That Are Dolinant Species 2         Cover         Adjust cover of cover         Total Cover <td <="" colspan="2" td=""><td></td><td></td><td></td><td>1 of the</td></td>	<td></td> <td></td> <td></td> <td>1 of the</td>					1 of the
EGETATION – Use scientific names of plants.         Intersection of plants.         Dominant Indicator % Cover         Species? Status Number of Dominant Species 2         Cover         Species? Status That Are Dolinant Species 2         Cover         Species? Status That Are Dolinant Species 2         Cover         Adjust cover of cover         Total Cover <td <="" colspan="2" td=""><td>remains. Pear problem are no FC</td><td>Marie Distubed</td><td>Joi vpable</td><td>to Classing</td></td>	<td>remains. Pear problem are no FC</td> <td>Marie Distubed</td> <td>Joi vpable</td> <td>to Classing</td>		remains. Pear problem are no FC	Marie Distubed	Joi vpable	to Classing
EGETATION – Use scientific names of plants.         Intersection of plants.         Dominant Indicator % Cover         Species? Status Number of Dominant Species 2         Cover         Species? Status That Are Dolinant Species 2         Cover         Species? Status That Are Dolinant Species 2         Cover         Adjust cover of cover         Total Cover <td <="" colspan="2" td=""><td>Aveg of each</td><td>ver which base (</td><td>created a mording</td><td>ng grea, that,</td></td>	<td>Aveg of each</td> <td>ver which base (</td> <td>created a mording</td> <td>ng grea, that,</td>		Aveg of each	ver which base (	created a mording	ng grea, that,
Absolute       Dominant Indicator $\chi_{cover}$ Status $\chi_{cover}$ Total Number of Dominant Species $\chi_{cover}$ Total Number of Dominant Species $\chi_{cover}$ Total Number of Dominant Species $\chi_{cover}$ Facture of Dominant Species $\chi_{cover}$ Total Number of Dominant Species $\chi_{cover}$ Total Number of Dominant Species $\chi_{cover}$ Total Number of Dominant Species $\chi_{cover}$ Total Cover $\chi_{cover}$ Total Networksheet: $\chi_{cover}$ Total Cover of: $\chi_{cover}$ Multiple: $\chi_{cover}$ Status $\chi_{cover}$ $\chi_{c$			per p	is not natural.		
Tree Stratum (Plot size:)       % Cover       Species 2       Status	EGETATION – Use scientific names of	•				
Image: Septence in the sector of the sect	Free Stratum (Plot size:					
Total Number of Dominant       2       (B)         sapling/Shrub Stratum       (Plot size:						
Species Across All Strata:   iapling/Shrub Stratum   (Plot size:						
Sapling/Shrub Stratum (Plot size:)       = Total Cover         =	l					
Saping/Shrub Stratum (Piot size:)   1	4		Percent of Dominant Spec	ties / an		
1.       Prevalence Index worksheet:         2.	Sapling/Shrub Stratum (Plot size:	) = Total Cover	That Are OBL, FACW, or	FAC: (A/B)		
3.   4.   5.   5.   5.   1.   CAL Fra   4.   2.   0.   1.   CAL Fra   4.   2.   0.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   2.   1.   1.   1.   2.   1.   1.   2.   2.   2.   2.   2.   2.   3.   3.   3.   3.   3.   3.   3.   4.   7.   5.   2.   2.   2.   2.   2.   3.   3.   3.   3.   3.   4.   7.   5.   2.   3.   3.   3.   4.   7.   5.   2.   3.   4.   7.   5.   2.   2.   3.   2.   3.   3.   3.   3.   3.   4.   4			Prevalence Index works	heet:		
4.   5.   5.   5.   1.   CAL Fra   1.   CAL Fra   4.   2.   0.   3.   JUNACT   4.   9.   6.   CUD plan   7.   SAG pro   8.   9.   0.   1.   2.            FACW species   X 4 =   UPL species   X 5   Column Tatals:   (A)   (B)   Prevalence Index = B/A =      Hydrophytic Vegetation Indicators:   V   Dominance Test is >50%   Prevalence Index is \$3.01   Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)   9.   1.   2.          1.   2.               2.               2.               2.          3.   4.   9.   9.   9.   9.   9.   9.   10.   11.   12.   13.   14.   14.  <	2					
5.	3		OBL species	x1=		
Herb Stratum (Plot size: 2x2)       = Total Cover         Herb Stratum (Plot size: 2x2)       Herb Stratum (Plot size: 2x2)         Herb Stratum (Plot size: 2x2)       Herb Stratum (Plot size: 2x2)         Herb Stratum (Plot size: 2x2)       Herb Stratum (Plot size: 2x2)         Herb Stratum (Plot size: 2x2)       Herb Stratum (Plot size: 2x2)         Herb Stratum (Plot size: 2x2)       Herb Stratum (Plot size: 2x2)         Herb Stratum (Plot size: 2x2)       Hydrophytic Vegetation Indicators: (A)						
Herb Stratum (Plot size: 1x2   1. (AL ffa   2. OR   3. JUNACF   4. PER hyd   5. PAN ffa   6. LUD plan   7. SAG pro   9. Image: Stratum (Plot size:   1. Image: Stratum (Plot size:   2. Image: Stratum (Plot size:   1. Image: Stratum (Plot size:   2. Image: Stratum (Plot size:   1. Image: Stratum (Plot size:   2. Image: Stratum (Plot size:   2. Image: Stratum (Plot size:   3. Image: Stratum (Plot size:   4. Image: Stratum (Plot size:   4. Image: Stratum (Plot size:   5. Image: Stratum (Plot size:   5. Image: Stratum (Plot size:   6. Image: Stratum (Plot size:   9. Image: Stratum (Plot size:   1. Image: Stratum (Plot size:						
2.       OR       OR       OR       (A)       (B)         2.       S       Y       FRCM       Prevalence Index = B/A =	Herb Stratum (Plot size: 2x2)					
3.       S       Y       FALM       Prevalence Index = B/A =         4.       PEI2 hyd       S       FALM       Hydrophytic Vegetation Indicators:         5.       PAN Fig       Dominance Test is >50%       Prevalence Index is ≤3.0'         6.       LUD plan       DOBL       Prevalence Index is ≤3.0'         7.       SAG pro       FACL       Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)         9.	LAL Sta	<u>45 7 UBC</u>	Column Tatals:	(A) (B)		
Image: PEP hyde       S       Image: Per sector         Image: Per sector       S       Image: Per sector         Image: Per sector       Image: Per sector       Image: Per sector         Image: Per sector       Image: Per sector       Image: Per sector         Image: Per sector       Image: Per sector       Image: Per sector         Image: Per sector       Image: Per sector       Image: Per sector         Image: Per sector       Image: Per sector       Image: Per sector         Image: Per sector       Image: Per sector       Image: Per sector         Image: Per sector       Image: Per sector       Image: Per sector         Image: Per sector       Image: Per sector       Image: Per sector         Image: Per sector       Image: Per sector       Image: Per sector         Image: Per sector       Per sector       Per sector         Image: Per sector	offen ground	-43 - NA		D/A -		
5.       PAN FIG       FACL         6.       CUD plan       OBL         7.       SAG pro       OBL         8.       FACU       Prevalence Index is \$3.0°         9.       FACU       Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)         9.       Problematic Hydrophytic Vegetation' (Explain)         1.       Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.         1.       = Total Cover	REP hud		-			
3.       CUD plen       (M1Xeon)       OBL FACY         3.       Prevalence Index is ≤3.01         3.       Morphological Adaptations1 (Provide supporting data in Remarks or on a separate sheet)         3.       Problematic Hydrophytic Vegetation1 (Explain)         1.	RAN FIG	FACL FACL				
a.       data in Remarks or on a separate sheet)         b.       data in Remarks or on a separate sheet)         b.       Problematic Hydrophytic Vegetation' (Explain)         c.       indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.         c.       = Total Cover         Hydrophytic       Yes         No       No	ALLE AL MIXED					
8.	SAG pro	FALY				
9.	3					
1.			T rosonato nyatoph	the endowned (webland)		
2 = Total Cover = Total Cover Hydrophytic Vegetation Present? Yes No						
= Total Cover Hydrophytic Vegetation Present? Yes No			be present, unless disturb	ed or problematic.		
Present? Yes No		= Total Cover				
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## Appendix 8: Shand Properties Limited Plant species list

Scientific Name	NVS Code used on field sheets	Common Name	Structural Class	<b>Threat Status (</b> de Lange et al., 2018)	Considered exotic pasture species?
Azolla rubra	AZOrub	Pacific azolla	Ferns	Not threatened	No
Calystegia silvatica subsp. disjuncta <sup>1</sup> Carex lessoniana <sup>2</sup>	CALsil CARles	Great bindweed Rautahi	Dicotyledonous Lianes and Related Trailing Plants Sedges	Exotic Not threatened	No
Carex maorica	CARmao	Maori sedge	Sedges	Not threatened	No
Carex secta	CARsec	Purei	Sedges	Not threatened	No
Carex virgata	CARvir	Swamp sedge	Sedges	Not threatened	No
Carx geminata	CARgem	Cutty grass	Sedges	Not threatened	No
Coprosma tenuicaulis	COPtec	Swamp Coprosma	Dicotyledonous Trees & Shrubs	Not threatened	No
Cortaderia selloana	CORsel	Pampas grass	Grasses	Exotic	No
Galium palustre subsp. palustre	GALpal	Marsh bedstraw	Dicotyledonous Herbs other than Composites	Exotic	No
Glyceria maxima	GLYmax	Glyceria	Grasses	Exotic	No
Holcus lanatus	HOLlan	Yorkshire fog	Grasses	Exotic	Yes
Juncus articulatus	JUNart	Jointed rush	Rushes and Allied Plants	Exotic	No
Juncus effusus var. effusus	JUNeff	Soft rush	Rushes and Allied Plants	Exotic	No
Juncus planifolius	JUNpla	Grass-leaved rush	Rushes and Allied Plants	Not threatened	No
Lemna disperma	LEMdis	Common duckweed	Monocotyledonous Herbs	Not threatened	No
Lolium perenne	LOLper	Perennial rye grass	Grasses	Exotic	Yes
Lotus pedunculatus	LOTped	Lotus	Dicotyledonous Herbs other than Composites	Exotic	No
Ludwigia palustris	LUDpal	Water purslane, marsh ludwigia	Dicotyledonous Herbs other than Composites	Exotic	No

<sup>1</sup> No flowering material - presumed exotic species. Could also be *Calystegia sepium subsp. roseata* or very likely a hybrid of the two.

<sup>2</sup> C. lessoniana and C geminata - both species or a single species possibly present no flowering heads found to confirm ID.

Scientific Name	NVS Code used on field sheets	Common Name	Structural Class	<b>Threat Status (</b> de Lange et al., 2018)	Considered exotic pasture species?
Machaerina articulata	MACart	Jointed Baumea	Sedges	Not threatened	No
Machaerina rubiginosa	MACrub	Baumea	Sedges	Not threatened	No
Myriophyllum aquaticum	MYRaqu	Parrot's feather	Dicotyledonous Herbs other than Composites	Exotic	No
Osmunda regalis	OSMreg	Royal fern	Ferns	Exotic	No
Parablechnum minus	BLEmin	Swamp kiokio	Ferns	Not threatened	No
Parablechnum novae-zelandiae	BLEnov	Kiokio	Ferns	Not threatened	No
Paspalum distichum	PASdis	Mercer grass	Grasses	Exotic	Yes
Persicaria hydropiper	PERhyd	Water pepper	Dicotyledonous Herbs other than Composites	Exotic	No
Pilosella sp.	Pilosella	Hawkweeds	Dicotyledonous Herbs - Composites	Exotic	No
Poa annua	POAann	Annual poa	Grasses	Exotic	Maybe - more appropriately a pasture weed.
Pseudognaphalium luteoalbum	PSElut	Jersey cudweed	Dicotyledonous Herbs - Composites	Not threatened	No
Ranunculus flammula	RANfla	Spearwort	Dicotyledonous Herbs other than Composites	Exotic	No
Ranunculus repens	RANrep	Buttercup	Dicotyledonous Herbs other than Composites	Exotic	No
Ranunculus sceleratus	RANsce	Clerey-leaved buttercup	Dicotyledonous Herbs other than Composites	Exotic	No
Rubus fruticosus agg.	RUBfru	Blackberry	Dicotyledonous Trees & Shrubs	Exotic	No
Rumex obtusifolius	RUMobt	Broad-leaved dock	Dicotyledonous Herbs other than Composites	Exotic	No
Sagina procumbens	SAGpro	Procumbent pearlwort	Dicotyledonous Herbs other than Composites	Exotic	No
Salix cinera	SALcin	Grey willow	Dicotyledonous Trees & Shrubs	Exotic	No
Trifolium repens	TRIrep	White clover	Dicotyledonous Herbs other than Composites	Exotic	Yes

#### About Boffa Miskell

Boffa Miskell is a leading New Zealand professional services consultancy with offices in Auckland, Hamilton, Tauranga, Wellington, Christchurch, Dunedin and Queenstown. We work with a wide range of local and international private and public sector clients in the areas of planning, urban design, landscape architecture, landscape planning, ecology, biosecurity, cultural heritage, graphics and mapping. Over the past four decades we have built a reputation for professionalism, innovation and excellence. During this time we have been associated with a significant number of projects that have shaped New Zealand's environment.

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