

## Appendix 5: s53(2)(a) Fast Track Approvals Act 2024, Technical Advice – Land Ecology

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| To                          | Joanne Mitten, Principal Consents Planner, Environment Canterbury                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| From                        | Kate McCombs, Ecologist, URBECO                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Project advice provided for | NZTA – Woodend Bypass Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Documents referred to       | 2D Proposed Resource Consent Conditions<br>3I Ecological Impact Assessment<br>3J Wildlife Approval Report<br>4E Ecological Offset Plan                                                                                                                                                                                                                                                                                                                                                                 |
| Qualifications              | M.Sc. (Hons.) in Plant Ecology from University of Canterbury. I worked for the Christchurch City Council as a botanist for 13 years and have since worked as a self-employed ecological consultant, for about 20 years. I am a member of the New Zealand Ecological Society. I have carried out significance assessments of sites, wetland delineations and assessments, botanical surveys and monitoring. I have provided technical advice for plans, resource consents and subdivision applications. |
| Code of Conduct             | I confirm that I have read and agree to comply with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023. This technical report has been prepared in accordance with that Code. In particular, unless I state otherwise, the opinions I express are within my area of expertise, and I have not omitted to consider material facts that might alter or detract from the opinions that I express.                                                             |

### Discussions with Applicant

- 1) Written pre-submission comments were made, and I have attended several meetings with the applicant; one focused on taxa surveys and lizards, another on wetlands.

### Outstanding areas of contention

- 2) The main areas of contention are:
  - a) The value of habitat with Canterbury grass skinks.
    - i) Habitat has been undervalued for an 'At Risk –Declining' species (Canterbury grass skinks), which means that offsets to compensate for habitat loss are likely inadequate.
  - b) Suitability of the translocation site(s) for Canterbury grass skinks

- i) To increase the carrying capacity of the site(s), considerable enhancement will be required.
- c) The value of wetland remnants and indigenous vegetation
  - i) Wetland habitat and indigenous vegetation remnants on the Canterbury Plains have been undervalued, which means that offsets are inadequate.
- d) Type of vegetation in wetland offset
  - i) The Ecological Management Plan (EMP) has not been provided, so detailed comment on what is being proposed as an offset, is not possible.
  - ii) However it does appear that the proposed wetland offset is not of an equivalent type to what is being lost.
- e) Missing taxa surveys
  - i) A significant range of taxa have not been surveyed at all, such as annelids, flatworms, nematodes, rotifers, insects, crustaceans, molluscs, fish, non-vascular plants, fungi and algae.
  - ii) In particular, DOC have raised the importance of surveying the wetlands for the 'Threatened – Nationally Critical' Canterbury mudfish, which is thought highly likely to be present within the project footprint.
  - iii) Therefore the aquatic values of the wetlands have not been fully considered and the calculated offsets are likely to be inadequate.
- 3) These points are further elaborated below.

### **Habitat value for Canterbury grass skink**

- 4) Given the presence of Canterbury grass skinks<sup>[1]</sup>, with the threat status of 'At Risk – Declining'<sup>[2]</sup>, the applicants own process, which closely follows the generally accepted method of Roper-Lindsay 2018<sup>[3]</sup>, has not been followed.
- 5) Since an 'At Risk' species is present, the rarity/distinctiveness assessment matter for the site is high. Therefore, the site's combined value must be at least moderate or high.
- 6) The steps in this assessment process are shown below, using the tables from Volume 3I of the application:

Figure 1. Scoring process for an 'At Risk' species.

Appendix B Table 1: Factors to consider in scoring sites values in relation to species representativeness, rarity, diversity and pattern, and ecological context (adapted from EIANZ, 2018)

| Value         | Species values                                                      | Vegetation/Habitat values                                                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Very High     | Nationally threatened – endangered, critical, or vulnerable.        | Supporting more than one national priority type. Nationally Threatened species found or likely to occur there, either permanently or occasionally.                                                                            |
| High          | Nationally At Risk– declining.                                      | Supporting one national priority type or naturally uncommon ecosystem and/or a designated SEA in a regional or District Plan. At Risk - Declining species found or likely to occur there, either permanently or occasionally. |
| Moderate-high | Nationally At Risk– recovering, relict, or naturally uncommon.      | A site that meets ecological significance criteria as set out the relevant regional or district policies and plans.                                                                                                           |
| Moderate      | Not nationally threatened or At Risk, but locally uncommon or rare. | A site that does not meet ecological significance criteria but that contributes to local ecosystem services (e.g. water quality or erosion control).                                                                          |
| Low           | Not threatened nationally, common locally.                          | Nationally or locally common with a low or negligible contribution to local ecosystem services.                                                                                                                               |

Figure 2. Scoring process for an 'At Risk' species (cont.)

Appendix B Table 2: Ecological values assigned to terrestrial habitats (adapted from EIANZ, 2018)

| Attributes to be considered when assigning ecological value or importance to a site or area of vegetation/habitat/community |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Matters                                                                                                                     | Attributes to be considered                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Representativeness                                                                                                          | <p>Attributes for representative vegetation and aquatic habitats:</p> <ul style="list-style-type: none"> <li>• Typical structure and composition.</li> <li>• Indigenous species dominate.</li> <li>• Expected species and tiers are present.</li> </ul> <p>Attributes for representative species and species assemblages:</p> <ul style="list-style-type: none"> <li>• Species assemblages that are typical of the habitat.</li> </ul> <p>Indigenous species that occur in most of the guilds expected for the habitat type.</p>                                                                                                                                                |
| Rarity/distinctiveness                                                                                                      | <p>Attributes for rare/distinctive vegetation and habitats:</p> <ul style="list-style-type: none"> <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> <p>Attributes for rare/distinctive species or species assemblages:</p> <ul style="list-style-type: none"> <li>• Habitat supporting nationally Threatened or At-Risk species, or locally uncommon species.</li> <li>• Regional or national distribution limits of species or community.</li> <li>• Unusual species or assemblages.</li> </ul> <p>Endemism</p>        |
| Diversity and Pattern                                                                                                       | <ul style="list-style-type: none"> <li>• Level of natural diversity, abundance, and distribution.</li> <li>• Biodiversity reflecting underlying diversity.</li> <li>• Biogeographical considerations – pattern, complexity.</li> </ul> <p>Temporal considerations, considerations of lifecycles, daily or seasonal cycles of habitat availability and utilisation.</p>                                                                                                                                                                                                                                                                                                          |
| Ecological context                                                                                                          | <ul style="list-style-type: none"> <li>• Site history, and local environmental conditions which have influenced the development of habitats and communities.</li> <li>• The essential characteristics that determine an ecosystem's integrity, form, functioning, and resilience (from "intrinsic value" as defined in the RMA).</li> <li>• Size, shape, and buffering.</li> <li>• Condition and sensitivity to change.</li> <li>• Contribution of the site to ecological networks, linkages, pathways and the protection and exchange of genetic material.</li> </ul> <p>Species role in ecosystem functioning – high level, key species identification, habitat as proxy.</p> |

Figure 3. Scoring process for an 'At Risk' species (cont.)

Appendix B Table 3: Scoring for sites or areas combining values for four matters in Appendix B Table 2

| Value      | Description                                                                                                                                                                                                                           |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Very High  | Area rates High for three or all the four assessment matters listed in Appendix B Table 2. Likely to be nationally important and recognised as such.                                                                                  |
| High       | Area rates High for two of the assessment matters, Moderate and Low for the remainder, or<br>Area rates High for one of the assessment matters, Moderate for the remainder. Likely to be regionally important and recognised as such. |
| Moderate   | Area rates High for one matter, Moderate and Low for the remainder, or<br>Area rates Moderate for two or more assessment matters Low or Very Low for the remainder. Likely to be important at the level of the Ecological District.   |
| Low        | 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 | Area rates Very Low for three matters and Low or Very Low for remainder.                                                                                                                                                              |

- 7) Therefore it is my opinion that all areas of skink habitat on the project site should be considered to be of **at least moderate** ecological value, because they are supporting an 'At Risk' species.
- 8) Furthermore, leaving aside any disagreement over details of assessment method, if a species has high value because it is in danger of extinction, surely that means that its home is valuable, if we intend to halt further loss or extinction.

*Solutions and/or conditions sought regarding valuing skink habitat*

- 9) All habitat that has been identified as skink habitat should be amended to at least moderate ecological value and Table 7.2 (Vol 3J) should be revised to reflect this (see Figure 4).
- 10) Similarly, the summary of ecological values in Table 5.22 (Vol 3I) should also be updated. The suggested amendments to Table 5.22, including the wetland amendments discussed later, are included in Appendix 1.
- 11) This increase in ecological value should be carried through into all of the other relevant tables, and the subsequent calculations regarding mitigation and offsets.
- 12) Keeping track of all of the moderate and high value habitat is important because the report notes that "following final design, and in the event the area of habitat loss is reduced, a lesser area of enhancement would apply." (Vol 3I, p.133). Similarly, the Proposed Resource Consent Conditions specify that the offsets will be recalculated, to account for the final amount of habitat disturbed (EM.4). Hence the value assigned will be important to the result.



Figure 4. Proposed amendments to Table 7.2, Volume 3J.

**Table 7.2: Lizard habitat types, value and locations within the Package 2 Project area<sup>2</sup>**

| Section of the Project Site                  | Habitat type                          | Area (ha)   | Habitat value (in accordance with section 5.7 of EclA report (T+T 2025) and EclAG <sup>3</sup> ) | Lizards confirmed present (based on Wildlands 2025a surveys) |
|----------------------------------------------|---------------------------------------|-------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| <b>Cam River / Ruataniwha to Williams St</b> | Exotic shelterbelt                    | 0.2         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
|                                              | Exotic treeland                       | 1.0         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
|                                              | Rank grass                            | 0.5         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
| <b>Quarry Lakes – Woodend Beach Road</b>     | Exotic shelterbelt                    | 1.1         | Low                                                                                              | N                                                            |
|                                              | Exotic shrubland and grassland mosaic | 0.9         | Moderate                                                                                         | Y                                                            |
|                                              | Exotic treeland                       | 0.1         | Low                                                                                              | N                                                            |
|                                              | Rank grass                            | 0.1         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
| <b>Woodend Beach Road – Gladstone Road</b>   | Exotic shelterbelt                    | 0.7         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
|                                              | Exotic treeland                       | 0.5         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
|                                              | Rank grass                            | 0.1         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
| <b>Gladstone Road – SH1</b>                  | Exotic shelterbelt                    | 0.2         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
|                                              | Exotic shrubland and grassland mosaic | 3.2         | Moderate                                                                                         | Y                                                            |
|                                              | Exotic treeland                       | 1.7         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
|                                              | Rank grass                            | 0.9         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
| <b>Pegasus Interchange</b>                   | Exotic shelterbelt                    | 0.1         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
|                                              | Exotic treeland                       | 0.2         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
|                                              | Rank grass                            | 0.5         | <del>Low</del> <b>Mod</b>                                                                        | Y                                                            |
|                                              | Amenity & indigenous plantings        | 0.4         | <del>Low</del> <b>Mod?</b><br><b>1.2 ha (low) 11.2 ha (moderate)</b>                             | N<br><b>Not surveyed</b>                                     |
| <b>Total area</b>                            |                                       | <b>12.4</b> | <b><del>8.3 ha (low) 4.1 ha (moderate)</del></b>                                                 |                                                              |

### Suitability of the translocation site(s) for Canterbury grass skinks

- 13) If the habitat has greater value, as argued above, then the compensation should be increased to mitigate the loss of habitat.
- 14) The proposed site for relocation of skinks is already habitat to some existing skinks.
- 15) The population of skinks at Kaiapoi Lakes Reserve is already at a medium-high density, and for the Barkers Road relocation site “it is assumed that as the habitat is similar to Kaiapoi Lakes Reserve, a similar density of lizards is present” [4].

- 16) To increase the carrying capacity of these sites, enhancement will have to be high, or more practically, it is likely that a larger total area of habitat will be required, to provide sufficient habitat.
- 17) As noted by the applicants “there is a paucity of studies in New Zealand that have specifically investigated lizard carrying capacity levels following habitat enhancement” (Vol 3J, p 22). A conservative approach suggests that as well as enhancing the existing habitat, some additional habitat should be created to increase the chance of survival for this ‘At Risk’ species.
- 18) Further, for long term survival of the skinks, the carrying capacity needs to stay high in the long term. The current plan is to stop pest mammal control at 5 years after lizard release (Vol 3J p.24), which would make the survival of higher numbers doubtful. For realistic long term survival, for the increased numbers in the translocation area, pest management in perpetuity should be required, as it has been elsewhere<sup>[5]</sup>.
- 19) To determine success or otherwise, monitoring of the translocation sites is proposed. However as far as I can see it starts *after* the introduction of the lizards begins. Monitoring needs to start before that, to determine the effect on the existing population of lizards at the sites.

*Solutions and/or conditions sought regarding the translocation site(s)*

- 20) Create some additional skink habitat, ideally adjacent to the existing areas.
- 21) The area of NZTA-owned farmland immediately NE of the Barkers Road Lizard release site, marked A on the Vol 4E map, could be modified in this way.
- 22) Leaky fences could also be used to improve the habitat (as proposed by DOC<sup>[6]</sup> for the Southland Wind Farm).
- 23) To achieve long term survival of the skinks at the higher densities proposed, they probably require pest management in perpetuity.
- 24) The lizard population at the receiving site(s) should be surveyed using the same method proposed for post-release lizard monitoring (Vol 3J, p.25), to enable monitoring to determine if the proposed translocation is truly effective.
- 25) Monitoring should also carry on longer than 5 years, to see what happens, and thereby to inform future projects

**Value of wetland remnants and indigenous vegetation**

- 26) Wetlands are rare regionally and nationally, see Figure 5. Wetlands are now only 10.08% of their historical extent<sup>[7]</sup> and continue to be lost.

27) Indigenous vegetation on the Canterbury Plains is also rare, see Figure 6.

28) National Priorities for protecting indigenous biodiversity include:

*“National Priority One:*

*To protect indigenous vegetation associated with land environments (defined by Land Environments of New Zealand at Level IV), that have 20% or less remaining in indigenous cover.”*

*“National Priority Two:*

*To protect indigenous vegetation associated with sand dunes and wetlands; ecosystem types that have become uncommon due to human activity.”<sup>[8]</sup>*

29) Similarly, from the Canterbury Regional Policy Statement:

*“9.3.2 Priorities for protection*

*To recognise the following national priorities for protection:*

- 1. Indigenous vegetation in land environments where less than 20% of the original indigenous vegetation cover remains.*
- 2. Areas of indigenous vegetation associated with sand dunes and wetlands.*
- 3. Areas of indigenous vegetation located in “originally rare” terrestrial ecosystem types not covered under (1) and (2) above.*
- 4. Habitats of threatened and at risk indigenous species.”*

Figure 5. Map showing former and current wetland extent near the project site.

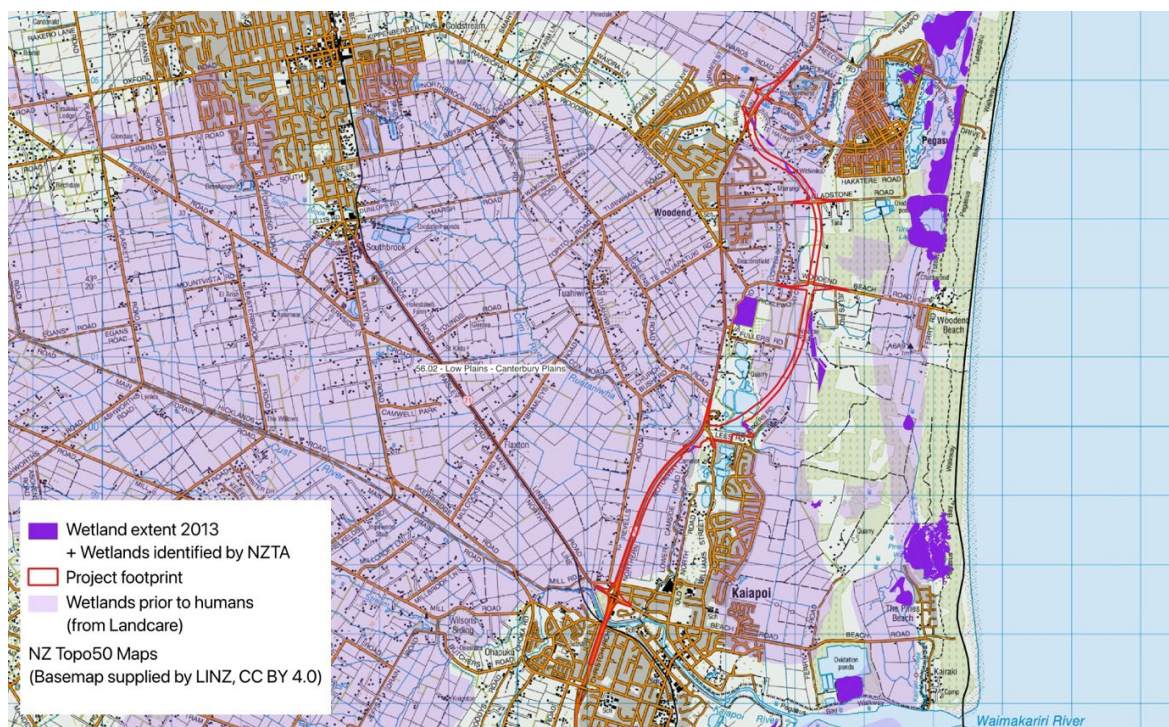
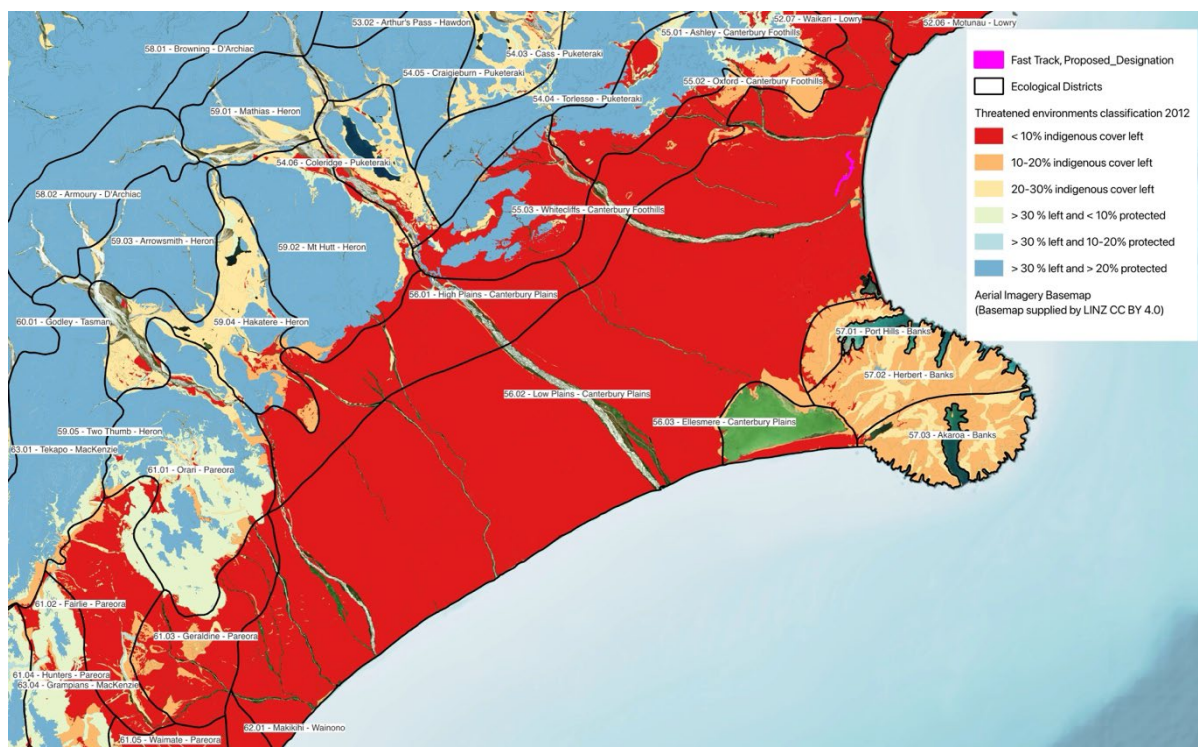




Figure 6. Map showing threatened environment classification near the project site.



- 30) Therefore, using the applicants own process, which closely follows the generally accepted method of Roper-Lindsay 2018<sup>[9]</sup>, the value of all the wetland sites should be 'very high'.
- 31) Since the habitat values are very high, the rarity/distinctiveness is high (and if Canterbury mudfish are found this would add yet further weight, though none is needed to achieve this status). Therefore the site's overall score should be moderate or high ecological value, depending on the other assessment matters.
- 32) Therefore, some of the wetlands that were scored 'moderate' for ecological value, should be increased to 'high'.
- 33) In discussion, the applicant expressed the view that it didn't matter too much if the valuation wasn't quite right, because proposed offsets include a net gain, which exceeds the requirements. However, if the effects are not fully measured, this cannot be known.
- 34) Further, the Proposed Resource Consent Conditions specify that the offsets will be recalculated, to account for the final amount of habitat disturbed (EM.4). Hence the values assigned will be important to the result.
- 35) The steps in the assessment process are shown below in Figure 7 - Figure 9.
- 36) If the value of the remnants are rated higher, then offsets will need to be increased.

Figure 7. Scoring process for wetlands and threatened land environments.

Appendix B Table 1: Factors to consider in scoring sites values in relation to species representativeness, rarity, diversity and pattern, and ecological context (adapted from EIANZ, 2018)

| Value                | Species values                                                      | Vegetation/Habitat values                                                                                                                                                                                                     |
|----------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Very High</b>     | Nationally threatened – endangered, critical, or vulnerable.        | Supporting more than one national priority type.<br>Nationally Threatened species found or likely to occur there, either permanently or occasionally.                                                                         |
| <b>High</b>          | Nationally At Risk– declining.                                      | Supporting one national priority type or naturally uncommon ecosystem and/or a designated SEA in a regional or District Plan. At Risk - Declining species found or likely to occur there, either permanently or occasionally. |
| <b>Moderate-high</b> | Nationally At Risk– recovering, relict, or naturally uncommon.      | A site that meets ecological significance criteria as set out the relevant regional or district policies and plans.                                                                                                           |
| <b>Moderate</b>      | Not nationally threatened or At Risk, but locally uncommon or rare. | A site that does not meet ecological significance criteria but that contributes to local ecosystem services (e.g. water quality or erosion control).                                                                          |
| <b>Low</b>           | Not threatened nationally, common locally.                          | Nationally or locally common with a low or negligible contribution to local ecosystem services.                                                                                                                               |

Figure 8. Scoring process for wetlands and threatened land environments (cont.)

Appendix B Table 2: Ecological values assigned to terrestrial habitats (adapted from EIANZ, 2018)

| Attributes to be considered when assigning ecological value or importance to a site or area of vegetation/habitat/community |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Matters                                                                                                                     | Attributes to be considered                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Representativeness</b>                                                                                                   | Attributes for representative vegetation and aquatic habitats: <ul style="list-style-type: none"> <li>• Typical structure and composition.</li> <li>• Indigenous species dominate.</li> <li>• Expected species and tiers are present.</li> </ul> Attributes for representative species and species assemblages: <ul style="list-style-type: none"> <li>• Species assemblages that are typical of the habitat.</li> </ul> Indigenous species that occur in most of the guilds expected for the habitat type.                                                                                                                                                              |
| <b>Rarity/distinctiveness</b>                                                                                               | Attributes for rare/distinctive vegetation and habitats: <ul style="list-style-type: none"> <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> Attributes for rare/distinctive species or species assemblages:                                                                                                                                                                                                                                                                                                     |
|                                                                                                                             | <ul style="list-style-type: none"> <li>• Habitat supporting nationally Threatened or At-Risk species, or locally uncommon species.</li> <li>• Regional or national distribution limits of species or community.</li> <li>• Unusual species or assemblages.</li> </ul> Endemism                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Diversity and Pattern</b>                                                                                                | <ul style="list-style-type: none"> <li>• Level of natural diversity, abundance, and distribution.</li> <li>• Biodiversity reflecting underlying diversity.</li> <li>• Biogeographical considerations – pattern, complexity.</li> </ul> Temporal considerations, considerations of lifecycles, daily or seasonal cycles of habitat availability and utilisation.                                                                                                                                                                                                                                                                                                          |
| <b>Ecological context</b>                                                                                                   | <ul style="list-style-type: none"> <li>• Site history, and local environmental conditions which have influenced the development of habitats and communities.</li> <li>• The essential characteristics that determine an ecosystem's integrity, form, functioning, and resilience (from "intrinsic value" as defined in the RMA).</li> <li>• Size, shape, and buffering.</li> <li>• Condition and sensitivity to change.</li> <li>• Contribution of the site to ecological networks, linkages, pathways and the protection and exchange of genetic material.</li> </ul> Species role in ecosystem functioning – high level, key species identification, habitat as proxy. |

Figure 9. Scoring process for wetlands and threatened land environments (cont.)

**Appendix B Table 3: Scoring for sites or areas combining values for four matters in Appendix B Table 2**

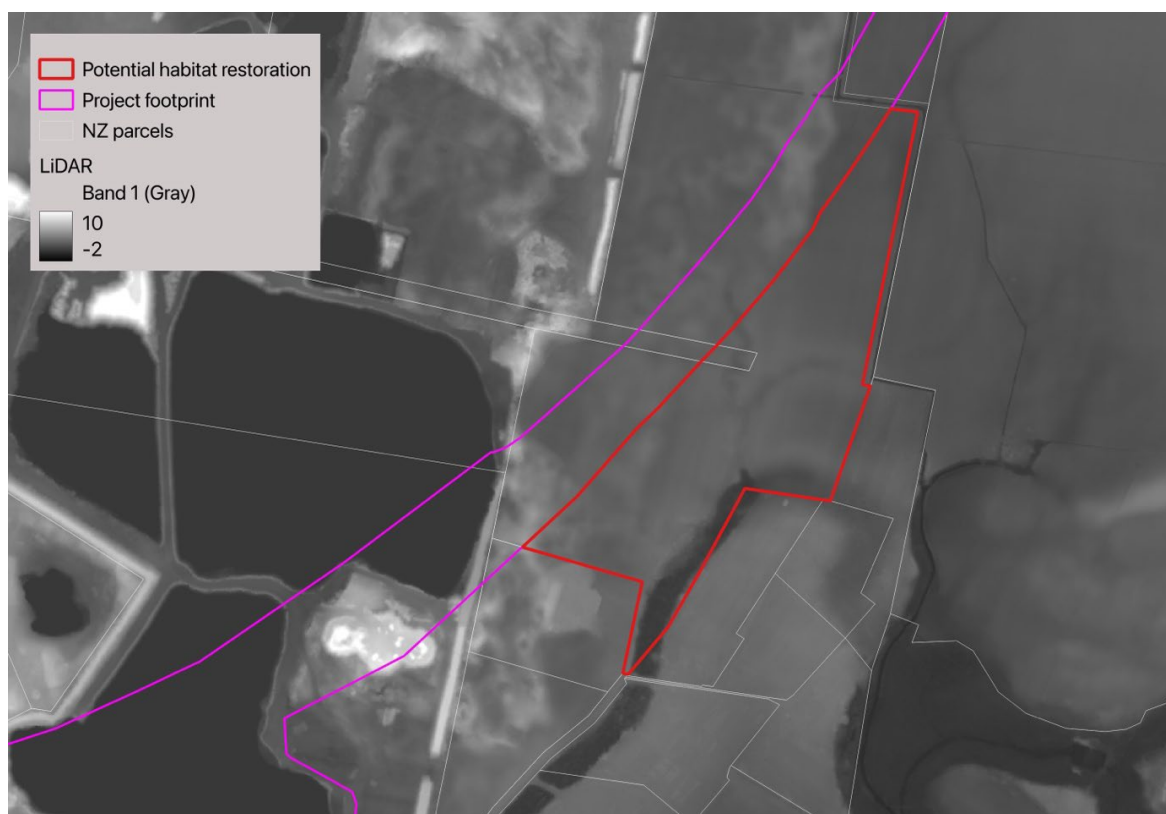
| Value             | Description                                                                                                                                                                                                                           |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Very High</b>  | Area rates High for three or all the four assessment matters listed in Appendix B Table 2. Likely to be nationally important and recognised as such.                                                                                  |
| <b>High</b>       | Area rates High for two of the assessment matters, Moderate and Low for the remainder, or<br>Area rates High for one of the assessment matters, Moderate for the remainder. Likely to be regionally important and recognised as such. |
| <b>Moderate</b>   | Area rates High for one matter, Moderate and Low for the remainder, or<br>Area rates Moderate for two or more assessment matters Low or Very Low for the remainder. Likely to be important at the level of the Ecological District.   |
| <b>Low</b>        | 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.                                                                 |
| <b>Negligible</b> | Area rates Very Low for three matters and Low or Very Low for remainder.                                                                                                                                                              |

*Solutions and/or conditions sought regarding valuing wetland habitat*

- 37) The assigning of ecological values should be amended to increase the ecological value of the wetland sites, as detailed in Appendix 1.
- 38) Volume 3I should be edited throughout, to reflect the change in ecological values (e.g. Section 6.3.6, including Table 6.7<sup>[10]</sup>).
- 39) Following through, the increased ecological values should form part of the offset calculations.
- 40) To increase the amount of offset for lost wetland areas, additional restoration or enhancement of wetlands in the vicinity could be undertaken. Work could include weed and pest control, stock exclusion, and restoration of natural hydrology<sup>[11]</sup>.
- 41) Restoration could be carried out to increase the connectivity of the remaining wetland habitats and reduce their fragmentation; for instance, to connect some or all of the Barkers Road wetlands to McIntosh Drain, see Figure 11, which as I understand it is within NZTA-owned land.



Figure 11. LiDAR Map of Barkers Road / Quarry Ponds area. Possible wetland connections are darker areas within the red outline.



### Type of vegetation in wetland offset

42) To be a suitable offset, the type of wetland that will be formed should be similar to that which is lost.

*“Offsets should re-establish or protect the same type of ecosystem or habitat that is adversely affected, unless an alternative ecosystem or habitat will provide a net gain for indigenous biodiversity.”<sup>[12]</sup>”*

43) The plans to form wetland in part of the Quarry Pond, as described in Volume 3I, has since been modified by the applicant:

*“As the design has developed, an alternative construction methodology is now proposed:*

- *Infilling of the entirety of the South Lake via progressive end-tipping from the lake margins.*

· Following a period of settlement and water level monitoring, re-contouring the filled area to create a range of water depths to support a diversity of wetland vegetation / habitat types and species, and recreating area(s) of open water.<sup>[13]</sup>

- 44) However no detailed plan has been provided to explain what the wetland offset vegetation will be like.
- 45) There is mention that “water depths will range from c.0.1-1.0 m” and that “Topsoil will be added, if required, in parts of the proposed wetland to improve planting success of the target habitat types” (Volume 3I, p.135).
- 46) The offset calculations (Volume 3I, Appendix G) use a reference habitat type “nominally defined as a tī kōuka/cabbage tree, harakeke, and mānuka type that was once originally found within the project area along waterways.”
- 47) The only planting detail available proposes planting:
- Raupō (*Typha orientalis*) reedland
  - Harakeke and tī kōuka flaxland
  - Kāpūngāwhā (*Schoenoplectus tabernaemontani*) sedgeland
  - *Juncus pallidus* rushland
  - *Carex virgata*/*Carex secta* sedgeland”
- 48) Narrow wetland margins around open water, would not be equivalent to the generally muddy, intermittently wet, wetland types that are currently present.
- 49) The types of wetland that will be lost or partially lost are shown in Figure 8.
- 50) Without an actual plan it is difficult to know what is intended, but it seems that the proposed wetland around open water, may look more like the sites shown in Figure 9, which would not be equivalent.
- 51) The offset may need to be adjusted, possibly by including some additional restoration/enhancement, to better cover the type of habitat that will be lost, to achieve no net loss.

Figure 12. Wetlands that will be destroyed or partly destroyed, from Volume 3I.

CR\_W2\_NPSFM

CR\_W2\_NPSFM



Photograph 5.4: CR\_W2\_NPSFM. Parts of this wetland contain a patchy crack willow canopy over shallow standing water and hydrophytic herbs and grasses.

CR\_W2\_NPSFM



Photograph 5.5: CR\_W2\_NPSFM. Rautahi dominated sedgeland on the western margin of crack willow forest within this wetland mosaic. Blackberry is locally common amongst the rautahi cover. Taken 10 April 2025.

QP\_W1\_NPSFM



Photograph 5.6: CR\_W2\_NPSFM. Parts of this wetland mosaic contain swamp forest species associations including *Carex virgata*, kiokio, and ti kōuka. Blackberry is present at low cover throughout. Taken 6 May 2025.

WC\_W1\_NPSFM



Photograph 5.7: QP\_W1\_NPSFM willow scrub with standing water beneath canopy. Taken 7 May 2025.

WC\_W5\_NPSFM



Photograph 5.21: WC\_W1\_NPSFM contains a patchy crack willow canopy over exotic grasses and herbs adapted to seasonally wet conditions. Occasional ti kōuka are also present. Taken 7 May 2025.



Photograph 5.24: WC\_W5\_NPSFM comprises a small hollow with *Juncus edgariae*, leaf litter, and exotic grasses. A slight depression connects this area to the Waihora Stream. Taken 6 May 2025.

WC\_W6\_NPSFM



Photograph 5.25: WC\_W6\_NPSFM. Part of this area contains dense *Carex virgata* beneath a crack willow canopy (left) however a small area of sharp spike sedge and wetland grasses is also present (right). Taken 6 May 2025.

Figure 13. Examples of ponds with marginal vegetation.





Photograph 5.39: GS\_CW1\_RMA contains open shallow water fringed with giant rush.



Photograph 5.40: GC\_W1\_LWRP natural wetland vegetation comprising raupō, Juncus species, and Carex species has established on the margins of an area of open water. Taken 6 May 2025.

### *Solutions and/or conditions sought regarding type of wetland offset*

- 52) That a more detailed plan is provided, to show what is being proposed as an offset.
- 53) That the areas of wetland offset restore similar wetland types to the areas that will be lost.
- 54) That where possible, offsets increase the connectivity of the remaining wetland habitat and reduce their fragmentation. Barkers Rd wetlands may be an appropriate location for additional protection and/or enhancement, see Figure 11.
- 55) If at all possible, restoration of habitat should include habitat specifically favourable to Canterbury mudfish, see discussion below.

### **Missing taxa surveys**

- 56) Only a few taxa groups have been surveyed. Significant biodiversity may be lost because it was not looked for.
- 57) Wetlands typically support fish and various invertebrate groups such as annelids, flatworms, nematodes, rotifers, insects, crustaceans, and molluscs<sup>[14]</sup>. Non-vascular plants, fungi and algae are also typically present. The aquatic values of the wetlands should be addressed, particularly in the light of the likely presence of Canterbury mudfish, as noted by DOC, discussed below.
- 58) The Canterbury mudfish is a 'Threatened - Nationally Critical' species, which is the highest threat category possible. The latest conservation report<sup>[15]</sup>. notes that there are thought to be 28ha of habitat remaining Its "persistence remains precarious" and it has a population "with a very high ongoing or predicted decline of > 70%".
- 59) The only information provided for many taxa is from iNaturalist records, however these are not equivalent to surveys. The majority of iNaturalist observations are casual, albeit

still of interest and value where they have occurred. But unless a site has been surveyed, the absence of an observation does not convey absence of a species.

- 60) In addition, given that much of the land is private, it is unlikely that iNaturalist will include any fortuitous sightings within or even near to the project footprint.
- 61) I also note the presence of significant diversity, and undescribed species, nearby in 'boggy ditches' at Styx Mill Wetland<sup>[16]</sup>. The point here is that wetlands do not need to be pristine (by our perception), for them to still have significant values.
- 62) The absence of a more complete set of taxa surveys means the sites will likely be undervalued, which means the offsets calculated are likely to be inadequate.
- 63) The Proposed Resource Consent Conditions, regarding the proposed Ecological Management Plan (MP.7), relies on adequate survey information.

*Solutions and/or conditions sought for missing taxa surveys*

- 64) During discussions with the applicant, ECan agreed that surveying the highly managed agricultural land was less important, and we agreed to send them a list of areas that we thought were high priority to be surveyed. That information is included here as Appendix 2.
- 65) At a minimum, a survey should be carried out for Canterbury mudfish.
- 66) The likely presence of aquatic fauna needs to be taken into account when valuing the wetlands.
- 67) Wetland values would be further increased if species such as Canterbury mudfish are found within them.
- 68) If there is insufficient time to remedy the lack of information on major groups of taxa, a conservative approach suggests that restoration and/or offsets should be increased to provide a degree of compensation for likely but unknown effects on additional taxa groups.
- 69) Recognise that restoration doesn't restore soil fauna and microbial communities, hence a large area required to truly offset losses
- 70) One way to compensate for values lost would be to improve connectivity between sites of remnant indigenous vegetation in the vicinity.
- 71) For instance, habitat enhancement could be carried out to provide a connection between the Barkers Rd wetlands and the nearby wetland offset. The Barkers Rd wetlands could also be extended at its northern end – LiDAR suggests this may be old stream channel, see Figure 11.



72) If possible, depending on the advice of DOC, habitat should be restored that would be favourable to Canterbury mudfish should be considered.

Appendix 1. Proposed amendments to the summary of ecological values, taking into account increased ecological values for lizard habitat and wetlands.

**Table 5.22: Summary of ecological values**

| Ecological feature                                                                                     |                                             | Ecological value                                                                       |
|--------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------------------------------------------------------------------------|
| <b>Ohoka Road overpass and Lineside Road (Section 4.1)</b>                                             |                                             |                                                                                        |
| Terrestrial - No riparian terrestrial habitats relevant to this stage of the Project works are present |                                             |                                                                                        |
| Wetlands - No wetland habitats present                                                                 |                                             |                                                                                        |
| Stream                                                                                                 | Stream habitat: Kaiapoi River               | High                                                                                   |
|                                                                                                        | Freshwater fauna: Kaiapoi River             | High                                                                                   |
| <b>Lineside Road and south of Cam River/Ruataniwha (Section 4.2)</b>                                   |                                             |                                                                                        |
| Terrestrial                                                                                            | Canterbury grass skink                      | High                                                                                   |
|                                                                                                        | 'Not Threatened' indigenous bird species    | Low                                                                                    |
|                                                                                                        | Rank grass (skink habitat)                  | <del>Low</del> Mod.                                                                    |
| Wetlands - No wetland habitats present                                                                 |                                             |                                                                                        |
| Stream                                                                                                 | Stream habitat                              | Rossiters Drain: Low<br>Wilsons Drain: Low                                             |
|                                                                                                        | Freshwater fauna                            | Rossiters Drain: Low – moderate (for fish)<br>Wilsons Drain: Low – moderate (for fish) |
| <b>Cam River/Ruataniwha and Williams Street (Section 5.1)</b>                                          |                                             |                                                                                        |
| Terrestrial                                                                                            | 'Not Threatened' indigenous birds           | Low                                                                                    |
|                                                                                                        | Kāruhiruhi/ pied shag                       | High                                                                                   |
|                                                                                                        | Canterbury grass skink                      | High                                                                                   |
|                                                                                                        | Exotic treeland (skink and bird habitat)    | <del>Low</del> Mod.                                                                    |
|                                                                                                        | Rank grass (skink habitat)                  | <del>Low</del> Mod.                                                                    |
|                                                                                                        | Exotic shelterbelt (skink and bird habitat) | <del>Low</del> Mod.                                                                    |
|                                                                                                        | Indigenous planting (bird habitat)          | Low                                                                                    |
| Wetlands                                                                                               | CR_W1_NPSFM                                 | <del>Low</del> Mod.                                                                    |

## Appendix 1 (cont.)

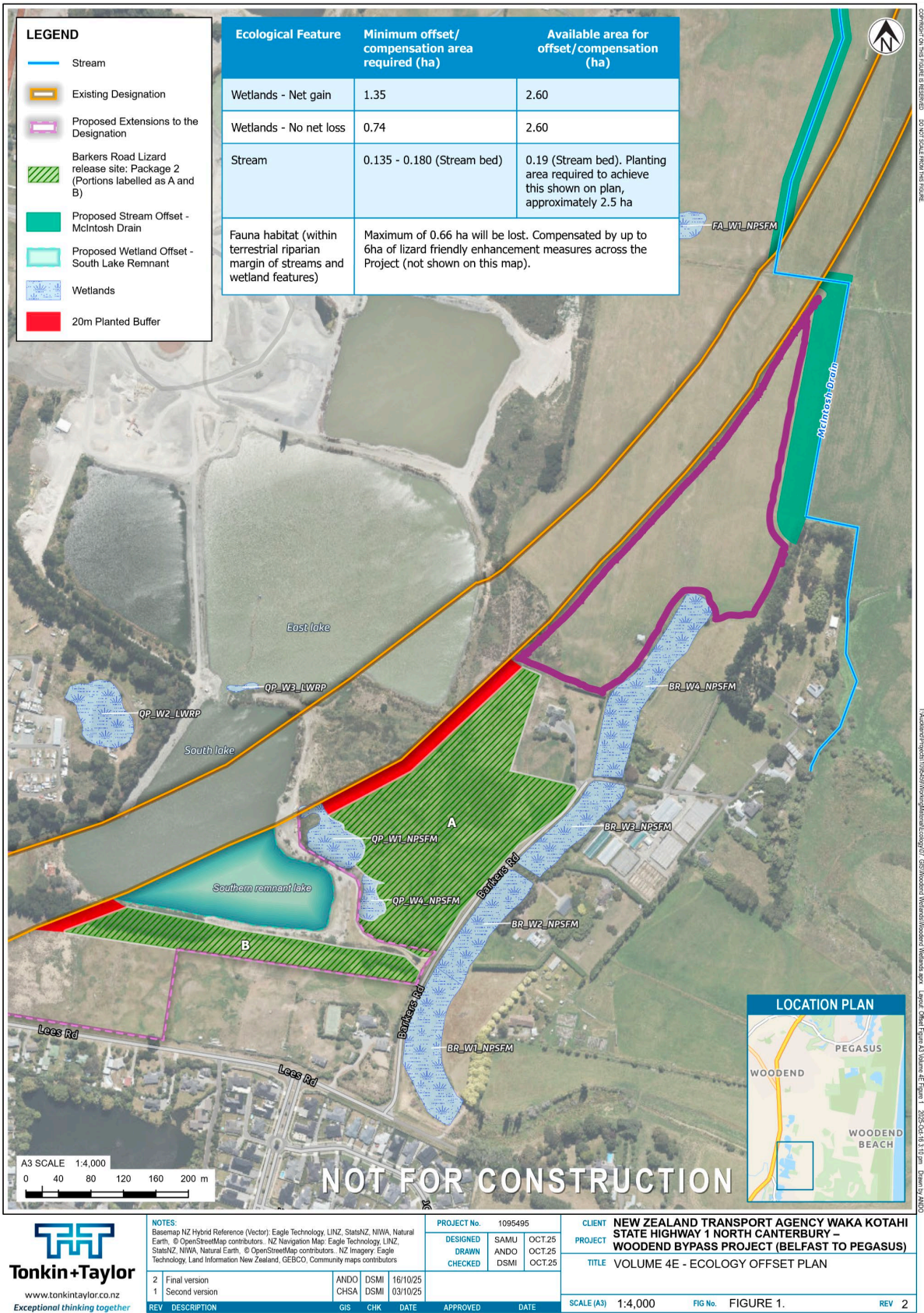
| Ecological feature                                         |                                                                            | Ecological value                          |
|------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------|
|                                                            | CR_W2_NPSFM                                                                | Moderate                                  |
| Stream                                                     | Stream habitat: Cam River/Ruataniwha                                       | High                                      |
|                                                            | Freshwater fauna: Cam River/Ruataniwha                                     | High                                      |
| <b>Quarry Lakes and Woodend Beach Road (Section 5.2)</b>   |                                                                            |                                           |
| Terrestrial                                                | 'Not Threatened' indigenous birds                                          | Low                                       |
|                                                            | 'At Risk' indigenous birds                                                 | High                                      |
|                                                            | 'Threatened' indigenous birds                                              | Very High                                 |
|                                                            | Canterbury grass skink                                                     | High                                      |
|                                                            | Exotic shelterbelts/Lake margin/Rank grassland (skink and/or bird habitat) | <del>Low</del> Mod.                       |
|                                                            | Exotic grassland/scrub mosaic (skink and bird habitat)                     | Moderate                                  |
|                                                            | Buildings and gardens                                                      | Negligible                                |
| Wetland                                                    | QP_W1_NPSFM                                                                | <del>Moderate</del> High                  |
|                                                            | QP_W4_NPSFM                                                                | Moderate                                  |
|                                                            | BR_W1_NPSFM                                                                | <del>Moderate</del> High                  |
|                                                            | BR_W2_NPSFM                                                                |                                           |
|                                                            | BR_W3_NPSFM                                                                |                                           |
|                                                            | BR_W4_NPSFM                                                                |                                           |
|                                                            | FA_W1_NPSFM                                                                | <del>Low</del> Mod.                       |
|                                                            | FR_W1_NPSFM                                                                | Moderate                                  |
|                                                            | FR_W2_NPSFM                                                                | Moderate                                  |
|                                                            | FR_W3_NPSFM                                                                | Moderate                                  |
|                                                            | FR_W4_NPSFM                                                                | Moderate                                  |
| Stream                                                     | Stream habitat                                                             | Quarry lakes: Low<br>McIntosh Drain: Low  |
|                                                            | Freshwater fauna                                                           | Quarry lakes: Low<br>McIntosh Drain: High |
| <b>Woodend Beach Road and Gladstone Road (Section 5.3)</b> |                                                                            |                                           |
| Terrestrial                                                | Canterbury grass skink                                                     | High                                      |
|                                                            | Rank grassland (skink habitat)                                             | <del>Low</del> Mod.                       |
|                                                            | Exotic grassland/scrub mosaic (skink and bird habitat)                     | <del>Low</del> Mod.                       |
|                                                            | Exotic treeland and exotic shelterbelts (skink and bird habitat)           | <del>Low</del> Mod.                       |
| Wetlands - No wetland habitats present                     |                                                                            |                                           |
| Stream - No stream habitats present                        |                                                                            |                                           |
| <b>Gladstone Road and SH1 (Section 5.4)</b>                |                                                                            |                                           |
| Terrestrial                                                | 'Not Threatened' indigenous bird species                                   | Low                                       |
|                                                            | Canterbury grass skink                                                     | High                                      |
|                                                            | Rank grassland (skink habitat)                                             | <del>Low</del> Mod.                       |

Appendix 1 (cont.)

| Ecological feature                       |                                                                  | Ecological value                                                                                   |
|------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|                                          | Exotic scrub/grassland mosaic (skink and bird habitat)           | Moderate                                                                                           |
|                                          | Exotic treeland and exotic shelterbelts (skink and bird habitat) | <del>Low</del> Mod.                                                                                |
| Wetland                                  | FA_W2_NPSFM                                                      | <del>Low</del> Mod.                                                                                |
|                                          | WC_W1_NPSFM                                                      | Moderate                                                                                           |
|                                          | WC_W2_NPSFM                                                      | <del>Moderate</del> High                                                                           |
|                                          | WC_W3_NPSFM                                                      | <del>Moderate</del> High                                                                           |
|                                          | WC_W4_NPSFM                                                      | <del>Moderate</del> High                                                                           |
|                                          | WC_W5_NPSFM                                                      | <del>Low</del> Mod.                                                                                |
|                                          | WC_W6_NPSFM                                                      | <del>Moderate</del> High                                                                           |
| Stream                                   | Stream habitat: Waihora Stream                                   | Low                                                                                                |
|                                          | Freshwater fauna: Waihora Stream                                 | Low                                                                                                |
| <b>Pegasus Interchange (Section 5.5)</b> |                                                                  |                                                                                                    |
| Terrestrial                              | 'Not Threatened' indigenous bird species                         | Low                                                                                                |
|                                          | Canterbury grass skink (if present)                              | High                                                                                               |
|                                          | Indigenous plantings (potential Canterbury grass skink habitat)  | <del>Low</del> Mod.                                                                                |
| Wetland                                  | GS_CW1_RMA                                                       | <del>Low</del> Mod.                                                                                |
|                                          | GC_W1_LWRP                                                       | Moderate                                                                                           |
|                                          | GC_W2                                                            | Unknown                                                                                            |
| Stream                                   | Stream habitat                                                   | Taranaki Stream: Moderate<br>Taranaki Stream Tributary: Low<br>Waihora Stream upstream of SH1: Low |
|                                          | Freshwater fauna                                                 | Taranaki Stream: High<br>Taranaki Stream Tributary: High<br>Waihora Stream upstream of SH1: Low    |



Appendix 2. Area NE of Release Site A that may be useful for additional offsets, outlined in purple.





### Appendix 3. Proposed areas for additional taxa surveys

#### NZTA Woodend Bypass - Proposed Survey Sites for Additional Taxa

19 March 2026 (Amended 21 April 2026 to correct sheet #'s and to exclude some of the area around the Quarry Ponds that is not in scope.)

K McCombs, Urbeco

Following on from our meeting yesterday, here is a proposed list of sites to survey, to provide a more comprehensive picture of the range of taxa present.

Surveys could most usefully cover areas of:

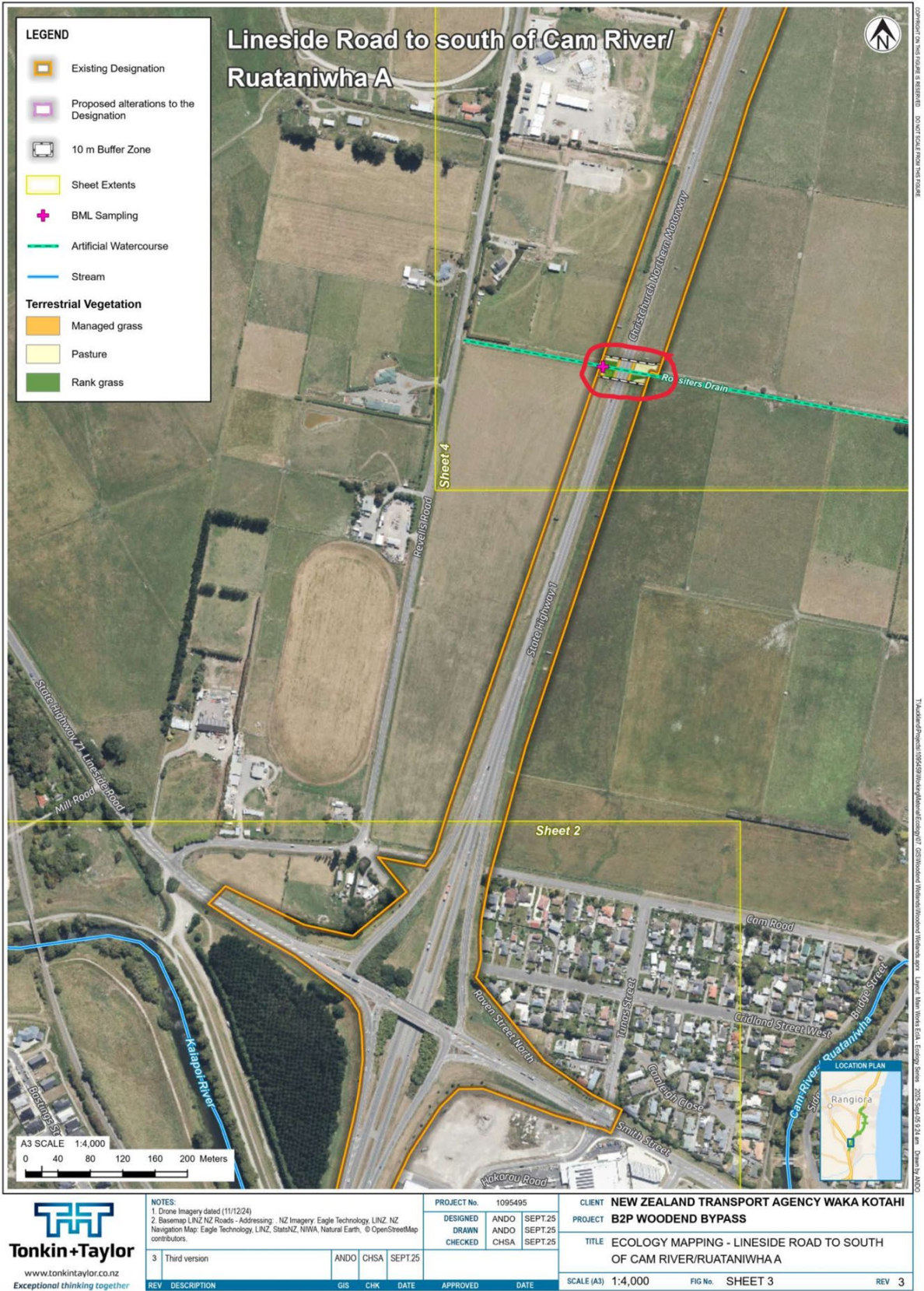
- rank grass
- wetlands
- native plantings
- banks of the waterways.
- around the ponds: the designated land.

| Location                   | Sheet # |
|----------------------------|---------|
| <u>Rossiters Drain</u>     | 3       |
| Wilsens Drain              | 4       |
| Cam River area             | 5       |
| Quarry Lakes area          | 6       |
| McIntosh Drain             | 7       |
| Upper <u>Waihora Creek</u> | 9       |
| <u>Waihora Creek @ SH1</u> | 10      |
| Taranaki Stream            | 11      |

Approx. locations are marked in red on the sheets attached below.

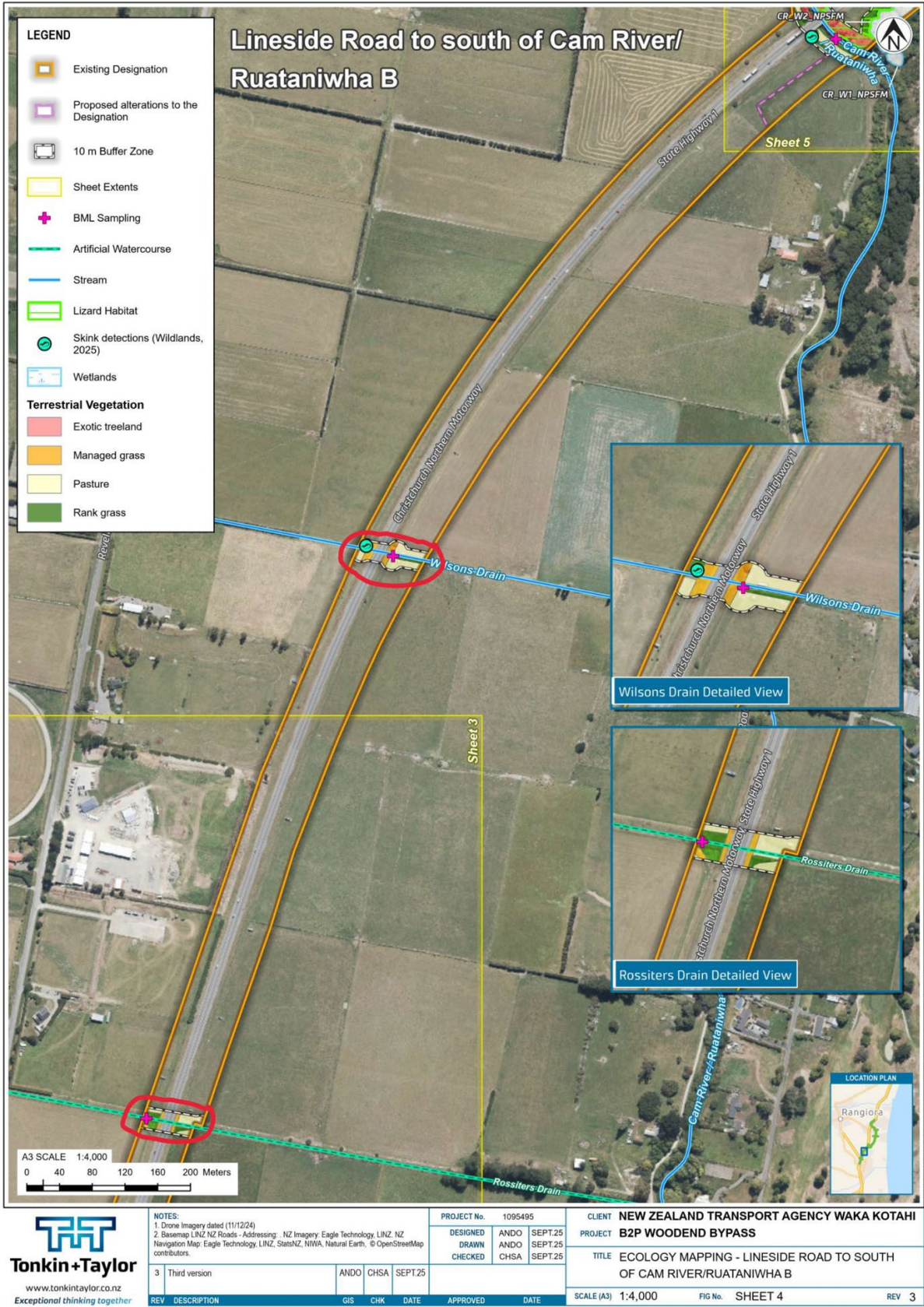
Appropriate action, if anything notable is found, would depend on the taxa. But most likely, restoration of additional similar habitat would be recommended.

Appendix 3 (cont.) Proposed areas for additional taxa surveys



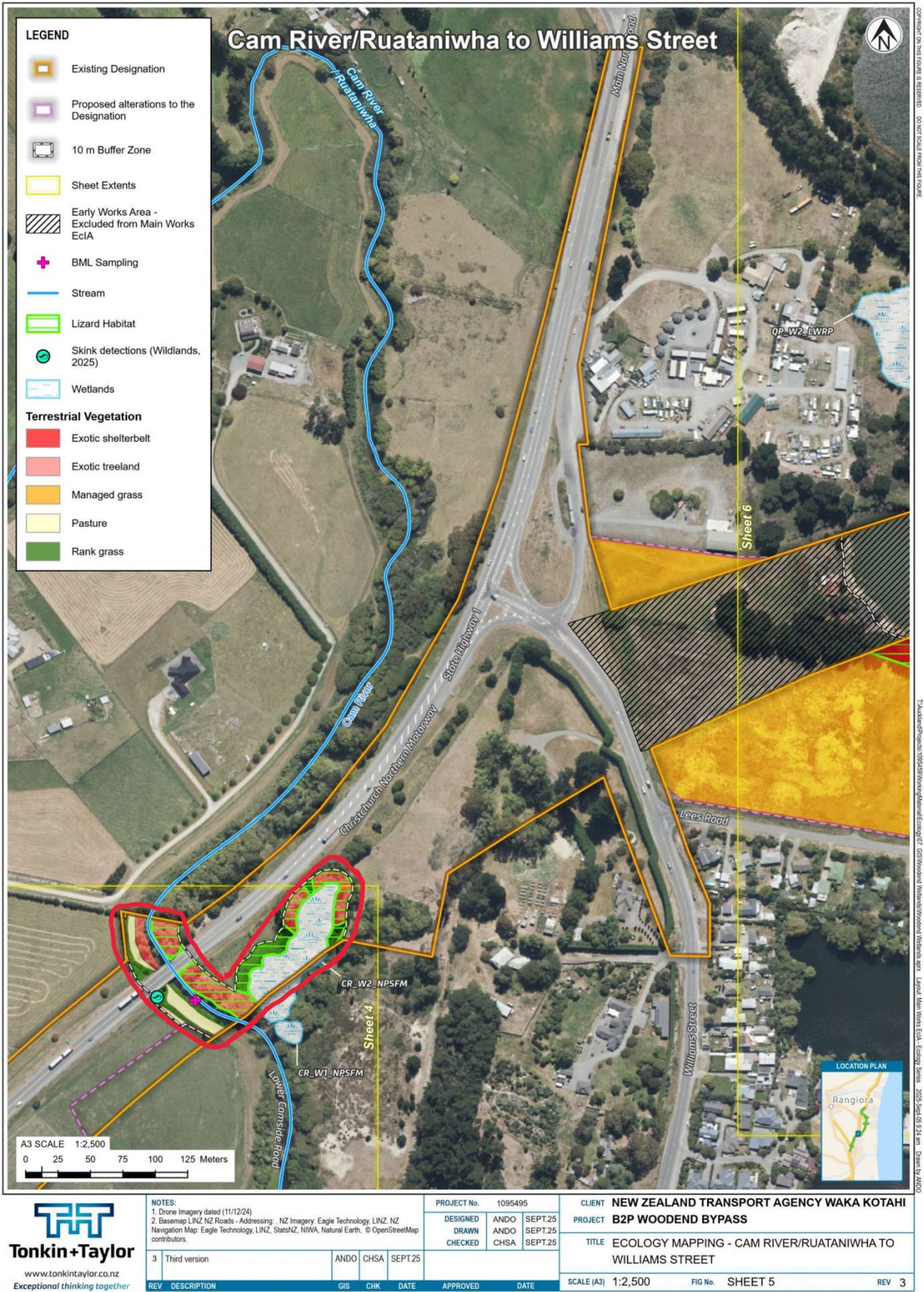


Appendix 3 (cont.) Proposed areas for additional taxa surveys



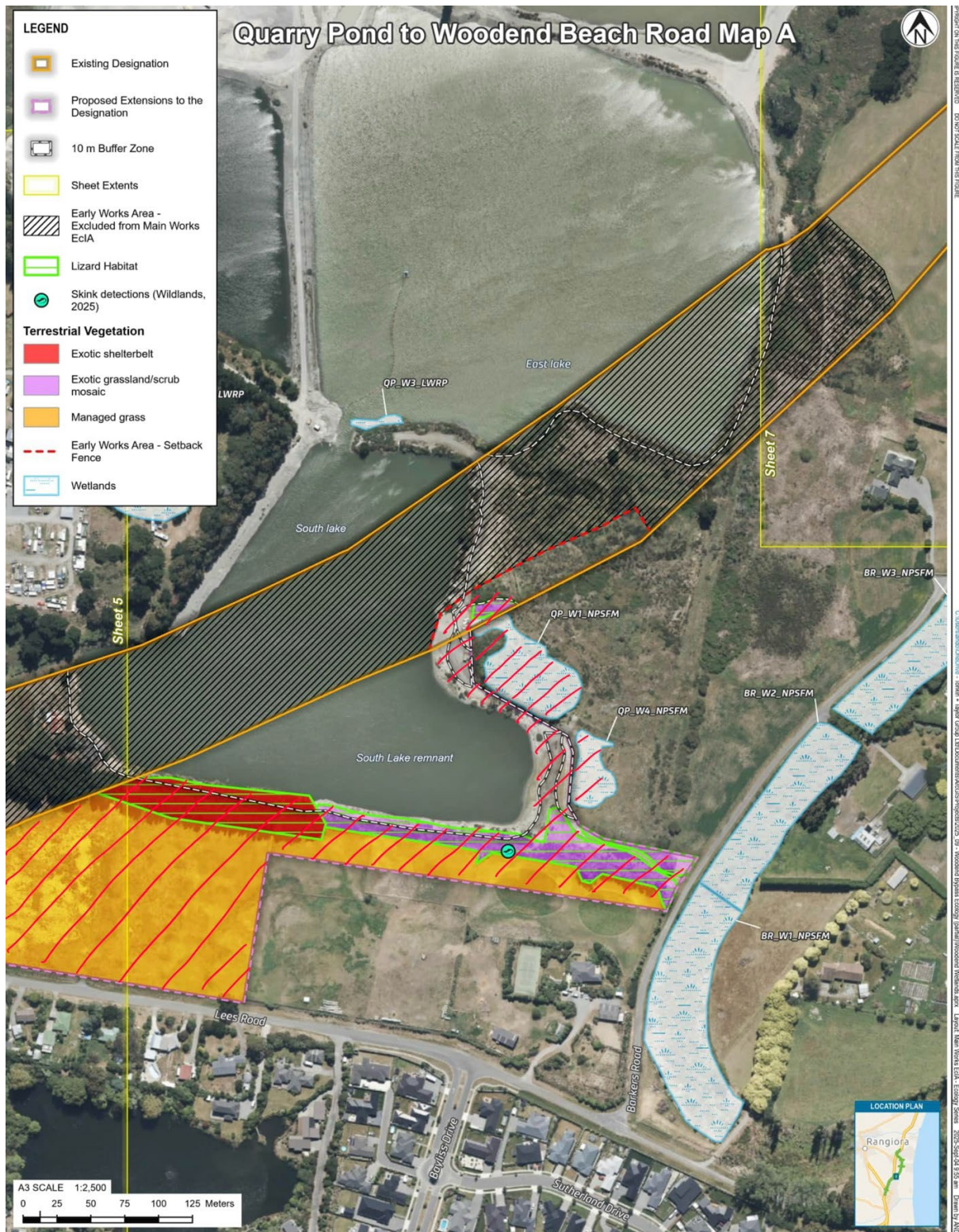


Appendix 3 (cont.) Proposed areas for additional taxa surveys





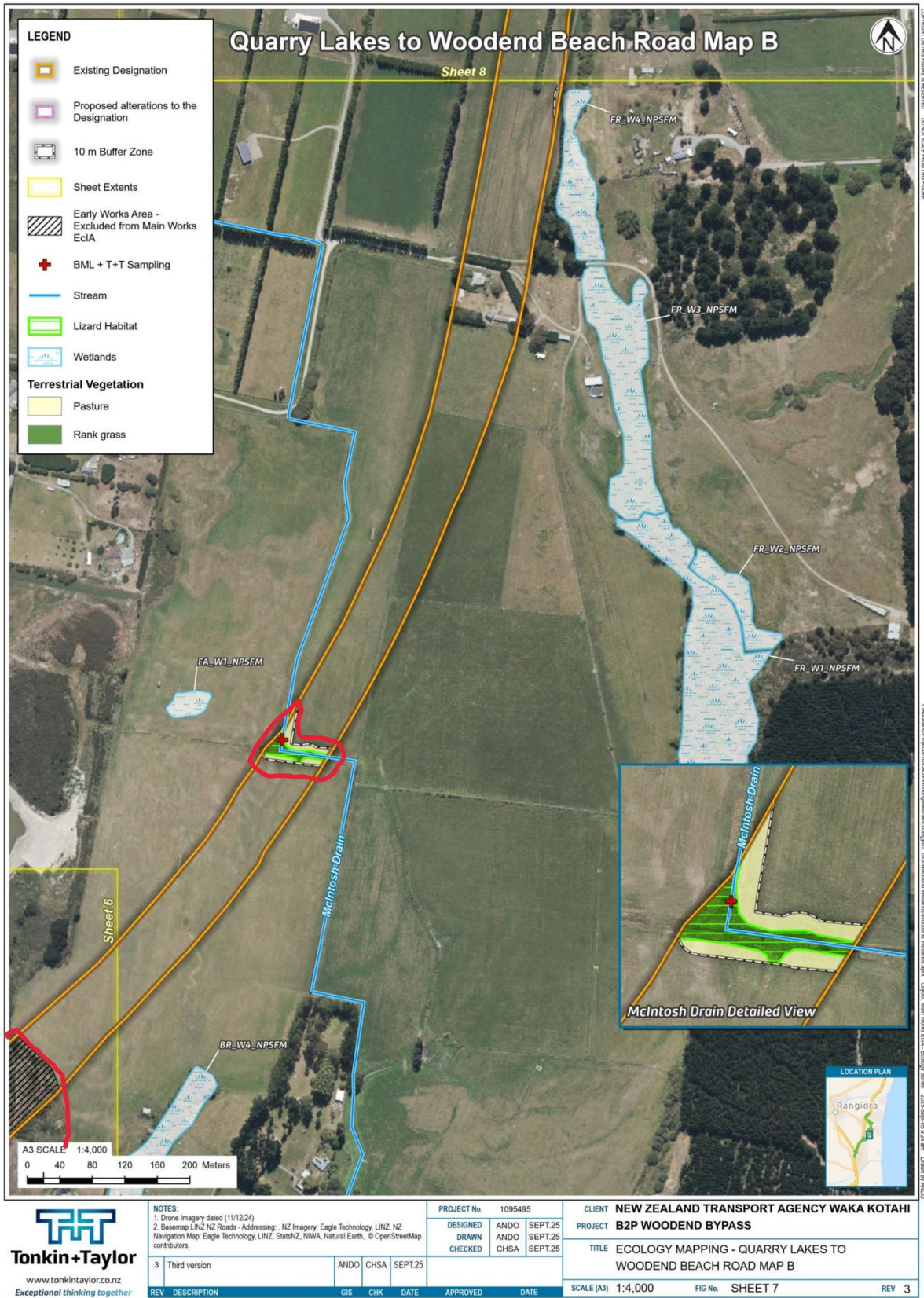
# Appendix 3 (cont.) Proposed areas for additional taxa surveys



Sheet 6

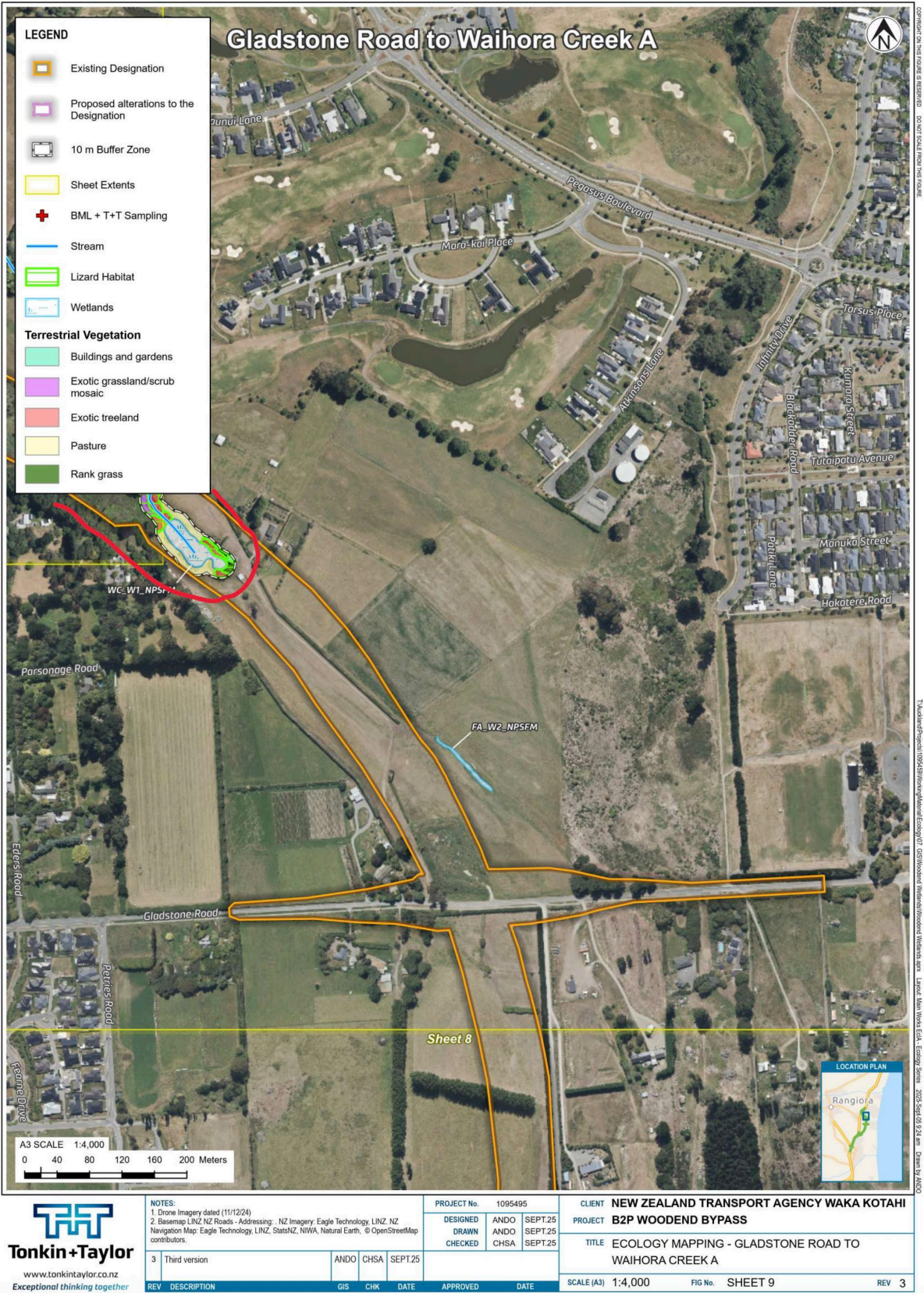


Appendix 3 (cont.) Proposed areas for additional taxa surveys





Appendix 3 (cont.) Proposed areas for additional taxa surveys



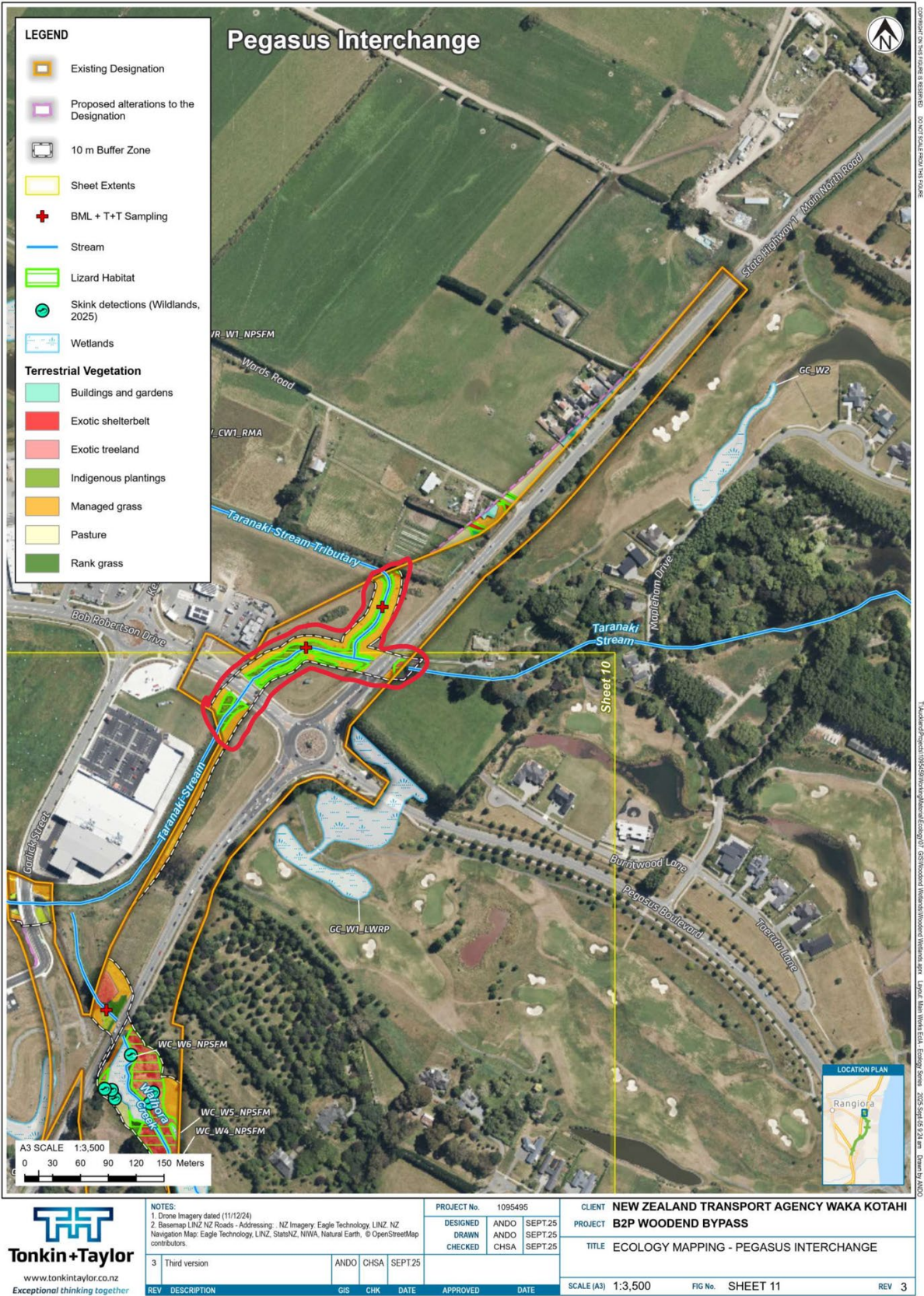


## UNCLASSIFIED





Appendix 3 (cont.) Proposed areas for additional taxa surveys



<sup>[1]</sup> *Oligosoma polychroma* Clade 4

<sup>[2]</sup> Hitchmough, R. et al. *Conservation status of reptiles in Aotearoa New Zealand*, 2025.

<sup>[3]</sup> Sometimes referred to as 'EclAG'. Roper-Lindsay J et. al. *Ecological Impact Assessment (EclA). EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems* 2nd EDITION. (2018)

<sup>[4]</sup> Volume 3J, pg.20

<sup>[5]</sup> For example, as specified for the Mt Messenger bypass project, see [https://www.npdc.govt.nz/media/wwelte5z/final-decision-and-conditions-mt-messenger-april-2021\\_1.pdf](https://www.npdc.govt.nz/media/wwelte5z/final-decision-and-conditions-mt-messenger-april-2021_1.pdf)

<sup>[6]</sup> Wildlands (2025) Lizard Management Plan for Southland Wind Farm. Contract Report No. 6656f. [https://www.fasttrack.govt.nz/\\_data/assets/pdf\\_file/0012/11703/J02.-Part-J-Southland-Wind-Farm-Lizard-Management-Plan\\_Redacted.pdf](https://www.fasttrack.govt.nz/_data/assets/pdf_file/0012/11703/J02.-Part-J-Southland-Wind-Farm-Lizard-Management-Plan_Redacted.pdf)

<sup>[7]</sup> Dymond, JR, Sabetizade, M, Newsome, PF, Harmsworth, GR & Ausseil, A.-G. Revised extent of wetlands in New Zealand. *New Zealand Journal of Ecology* 45, 8 (2021)

<sup>[8]</sup> Ministry for the Environment & Department of Conservation. Protecting our Places. Information about the Statement of National Priorities for Protecting Rare and Threatened Biodiversity on Private Land. (2007)

<sup>[9]</sup> Roper-Lindsay J et. al. *Ecological Impact Assessment (EclA). EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems* 2nd EDITION. (2018)

<sup>[10]</sup> Table 6.7: Summary of actual and potential ecological effects on wetland values, magnitude of effects, and overall level of effects following recommended measures to avoid, minimise, or remedy effects

<sup>[11]</sup> Myers, S. C., Clarkson, B. R., Reeves, P. N. & Clarkson, B. D. Wetland management in New Zealand: Are current approaches and policies sustaining wetland ecosystems in agricultural landscapes? *Ecological Engineering* 56, 107–120 (2013)

<sup>[12]</sup> Canterbury Regional Policy Statement p. 150

<sup>[13]</sup> Email from Kristina Mead to Sam Prystupa, 23 March 2026.

<sup>[14]</sup> Allen, W et al. Animals of New Zealand wetlands. *NZJE* <https://doi.org/10.20417/nzj ecol.49.3607> (2025)  
doi:10.20417/nzj ecol.49.3607

<sup>[15]</sup> Dunn NR et al. *Conservation status of New Zealand freshwater fishes*, 2023. (2025)

<sup>[16]</sup> Macfarlane, R *Styx Mill reserve: invertebrate assessment and guidance for management*. (2004).



