BEFORE

Under **The Resource Management Act 1991**

And
In the matter of **Proposed Timaru District Plan**

Technical Advice of Mike Harding

Terrestrial Ecology

July 2024

(edited September 2024)

Timaru District Council
PO Box 522
Timaru
New Zealand

Table of Contents

List of Abbreviations

CRPS	Canterbury Regional Policy Statement
DOC	Department of Conservation
ECAN	Environment Canterbury
LINZ	Land Information New Zealand
NPS-IB	National Policy Statement for Indigenous Biodiversity, 2023
RMA	Resource Management Act 1991
SNAs	Significant Natural Areas
PDP	Proposed Timaru District Plan
TDC	Timaru District Council
ODP	Operative Timaru District Plan
UCL	Unallocated Crown Land

Introduction

1. My full name is Michael Arthur Coupland Harding.

2. I have been asked by the Timaru District Council (TDC), to provide evidence on terrestrial ecology matters raised in submissions on the Proposed Timaru District Plan (PDP), as requested by Liz White (author of the s42A report).

Qualifications and Experience

3. I am an independent ecologist working from offices in Nelson and Dunedin. I hold papers in Botany and Geology from Otago University (1980) and a Diploma in Parks and Recreation Management (with Distinction) from Lincoln University (1986). I have seven years' experience in national park management and conservation advocacy, and a subsequent thirty years' experience as an independent ecologist.

4. My work as an independent ecologist has included field surveys of indigenous vegetation and habitat, assessments of ecological significance, assessments of priorities for protection of indigenous ecosystems, and advice on management of indigenous ecosystems, throughout New Zealand though principally in the South Island. Consultancy work relevant to the proposed Timaru District Plan (PDP) includes:

    a) Survey and assessment of Significant Natural Areas (SNAs) at more than 800 sites in Timaru District (2005 to 2023).

    b) Ecological survey and preparation of advice for management of reserves administered by Timaru District Council (TDC).

    c) Preparation of plant pest control strategies for sites in Timaru District, including Kakahu Bush, the braided bed of the upper Rangitata River, and Peel Forest.

    d) Provision of advice to Timaru District Council's Biodiversity Working Group (March 2017 to August 2019).

    e) Ecological monitoring of dryland reserves and the effects of sheep grazing on grassland ecosystems, High Plains Ecological District, Timaru District, 2012 to 2024 (independent advice to TDC).

f) Review of consent applications for vegetation clearance – and unconsented vegetation clearance – at sites in Timaru District, assessment of those applications against the Operative District Plan (ODP) vegetation clearance rules, and assessment of the ecological significance of those sites (independent advice to TDC).

g) Survey and assessment of SNAs in other parts of Canterbury Region including Ashburton, Selwyn, Mackenzie and Waitaki districts.

h) Preparation of a Canterbury Land Protection Strategy,[1] which describes the indigenous ecosystems of each ecological district in Canterbury Region, assesses the extent to which each ecosystem is depleted, and identifies priorities for protection.

i) Provision of advice for the preparation of guidelines[2] for application of the Canterbury Regional Policy Statement (CRPS) Appendix 3 ecological significance criteria.

j) Provision of ecological advice to the Biodiversity Collaborative Group for preparation of the National Policy Statement for Indigenous Biodiversity 2023 (NPS-IB) (2017-2019).

k) Provision of advice on SNA survey programmes, including implementation of the NPS-IB, to territorial authorities throughout the South Island (Tasman, Nelson, Kaikoura, Selwyn, Ashburton, Mackenzie and Waitaki).

l) Preparation of ecological advice on the Proposed Selwyn District Plan, in particular the plan's provisions for protection and maintenance of indigenous biodiversity (2023).

Code of Conduct

5. Although this is a Council hearing, I confirm that I have read the code of conduct for expert witnesses as contained in the Environment Court's Practice Note 2023 (the Code). I have complied with the Code when preparing my written statement of evidence.

6. The data, information, facts, and assumptions I have considered in forming my opinions are set out in my evidence to follow. The reasons for the opinions expressed are also set out in the evidence to follow.

[1] Harding, M.A. 2009. Canterbury Land Protection Strategy. Nature Heritage Fund, Wellington.
[2] Wildlands. 2013. Guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna in Canterbury Region. *Contract Report 2289i.* Environment Canterbury, Christchurch.

7. Unless I state otherwise, this evidence is within my sphere of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

8. With respect to the Code, I advise the Hearing Panel that I have been engaged by Timaru District Council to undertake Significant Natural Areas (SNA) surveys in Timaru District and to provide independent advice on other terrestrial ecology matters since 2005.

Scope

9. This evidence is prepared in accordance with s42A of the Resource Management Act 1991 (RMA). It provides technical information, assessment and, where relevant, recommendations to the Hearing Panel on ecological matters raised by submitters to the Proposed Timaru District Plan (PDP). A planning report has been prepared by Liz White, which provides a full assessment of the submissions on the PDP. As my evidence provides the technical basis for some of the recommendations made in her report, these documents should be read together.

10. In this evidence I specifically comment on:

    a) The Timaru District Council SNA Survey.

    b) Submissions to the PDP that refer to Significant Natural Areas (SNAs).

    c) Protection and maintenance of indigenous biodiversity outside SNAs.

    d) Indigenous vegetation clearance.

Material Considered

11. In preparing this evidence I have relied upon the following material:

    a) A report on Timaru District's SNA survey programme.[3]

    b) SNA reports and file material related to the district-wide SNA survey.

    c) Personal knowledge of SNAs and biodiversity values in Timaru District.

[3] Harding. 2016. Significant Natural Areas Timaru District. *Unpublished Report* to Timaru District Council, July 2016. 30p.

d) The PDP, in particular: the ECO – Ecosystems and Indigenous Biodiversity section (Part 2 – District-Wide Matters); the Definitions (Interpretation); Criteria for Identifying Significant Natural Areas (Appendix 5); Schedule of Significant Natural Areas (Schedule 7); and the PDP Map.

e) Submissions to the PDP that refer to SNAs, as advised by Liz White.

f) Indigenous biodiversity chapters of the proposed Selwyn and Mackenzie district plans.

Submissions to Proposed Timaru District Plan on SNAs

12. I have been asked to set out the process undertaken to identity SNAs referred to in submissions to the PDP. I have also been asked to confirm whether I remain confident of the significance of those SNAs, and whether further investigation is required. This advice is provided in turn for each of the seven submissions that refer to SNAs.

Submission 35 – Pye Group

13. The submission of Pye Group requests protection of a site as a new SNA. The site is covered by a Stakeholder Site Rehabilitation Agreement between Pye Group Ltd, Timaru District Council, Mr Hermann Frank and the Department of Conservation.[4] It comprises land within or adjacent to the flood channel of the South Branch Rangitata River just downstream (east) of State Highway 1.

14. Identification of the site, and development of the stakeholder agreement, arose from a complaint to TDC of vegetation/habitat clearance at the site in June 2014. A subsequent survey of the site by a lizard expert confirmed that at least parts of the site would have – prior to clearance – been ecologically significant. I reviewed that report at that time and concurred that the site would have met the criteria for an SNA.

15. An on-site meeting in July 2014 concluded with agreement that TDC would prepare a draft management plan for rehabilitation of the site, in lieu of a retrospective resource consent application by Pye Group. The meeting included representatives from Timaru District

[4] The Pye Group submission does not include TDC in the list of stakeholders. The copy of the agreement in my records includes TDC as a stakeholder (signatory to the agreement).

Council, Environment Canterbury, Pye Group, Fulton Hogan and the Department of Conservation. Also attending were a lizard expert (Hermann Frank) and ecologist (myself).

16. The outcome of this process is the Rangitata River South Branch Stakeholder Site Rehabilitation Agreement. The agreement describes the rehabilitation work required to address the adverse effects of the loss of lizard habitat and sets out the responsibilities of each party to the agreement. I have a pdf copy of the unsigned agreement, which has a document date of 29 May 2020.[5]

17. In an ecological significance assessment of the Rangitata River South Branch in May 2020, I provided a brief description of the site: "*This site is located on and adjacent to the South Branch channel just downstream from State Highway 1. It is not yet formally described as an SNA but does provide significant habitat for indigenous fauna (lizards). Also present is one small kanuka tree. Other native species, including kanuka, have been planted at the site to enhance the habitat for lizards. The extent of the site is approximately 1ha.*"[6]

18. Indigenous species were planted at the site and lizard habitat created by placement of stones. A local lizard expert (Hermann Frank) has been closely involved with protection and restoration of the site. The site provides important habitat for lizards, notably southern grass skink (*Oligosoma* aff. *polychroma* Clade 5), which is listed as an 'at risk; declining' species.[7]

19. Land tenure at the site is complex. The material available to me indicates that it includes Unallocated Crown Land (UCL) administered by Land Information New Zealand (LINZ), riverbed land administered by Environment Canterbury, fee simple land owned by Fulton Hogan, and land gazetted for railway purposes. Land adjacent to the site owned by Pye Group has AMF rights which extend to the centre of the river.[8]

20. The Pye Group submission is that because the Stakeholder Site Rehabilitation Agreement does not bind any future landowner, the site should be formally protected as an SNA. Pye

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[5] 150108 Lizard Farm South Rangitata Final Stakeholder Site Rehabilitation Agreement.
[6] Rangitata River South Branch/Middle Branch Ecological Significance Assessment. *Unpublished Report*, Timaru District Council. Mike Harding, May 2020. 7p.
[7] Hitchmough, R.; Barr, B.; Lettink, M.; Knox, C.; Monks, J.; Patterson, G.; Reardon, J.; van Winkel, D.; Rolfe, J.; Pascale, M. 2021. Conservation status of New Zealand reptiles, 2021. *New Zealand Threat Classification Series 35*. Department of Conservation, Wellington.
[8] AMF is the principle of *usque ad medium filum acquae*, which means the ownership of land adjoining the river is presumed by common law to extend to the middle line of the river.

Group submit that such protection is required to ensure biodiversity values at the site are protected in the long term.

21. I support the intent of the Pye Group submission. The ecological values of the site are likely to be significant, notably as habitat of indigenous fauna (southern grass skink). It is also a – now rare – example of undeveloped land in the Low Plains Ecological District. Identification of an SNA on land tenures other than fee simple (freehold) is not unprecedented.[9] There are other listed SNAs on riverbeds (UCL) elsewhere in Timaru District.

22. I support the submission of Pye Group Limited. I recommended (in July 2024) that – for consistency – the site should be formally assessed to confirm its ecological significance, as all other Timaru District SNAs have a report which describes the ecological values of the site and assesses those values against significance criteria. After the first draft of this evidence the site was surveyed and assessed in August 2024. The site was confirmed as ecologically significant. The SNA report is appended to this evidence (SNA 998).

Submission 113 – McArthur, K & J

23. The submission of Kerry and James McArthur expresses concern about SNAs on and adjacent to their properties. It requests that Council review new SNAs – especially those on roadsides – and provides clarity on long-term management, hazard maintenance, and responsibilities relating to those SNAs.

24. The first concern of the submitters is lack of consultation.[10] The submitters state that "many of our properties are impacted by SNA's" and that they were consulted during the assessment process for those SNAs. However, they submit that some sites are new, and they were not consulted about those sites becoming SNAs.

25. All SNA surveys of privately-owned (fee simple) land were undertaken with the consent of the landowner/landholder, except 10 properties for which permission for access was denied. Those properties were assessed towards the end of the district-wide SNA survey project. Consent for surveys of roadsides (public land) was not sought from adjacent landowners.

26. Many roadside SNAs, such as the cabbage trees described in the McArthur submission, were surveyed in 2022, after the main district-wide SNA survey. These roadside SNA surveys were

[9] The NPS-IB Clause 3.8 (2)(e) states that all areas – regardless of land tenure – can qualify as SNAs.
[10] Submission No.113, Paragraph 15.

undertaken in response to an instruction from Council. I understand the instruction was prompted by an acknowledgement that the Proposed Timaru District Plan did not – at that stage in the drafting process – provide protection for indigenous vegetation outside scheduled SNAs.

27. The location of roadside (public) land was determined by analysis of land parcel (cadastral) boundaries, as mapped by LINZ.[11] Cadastral mapping depicts indicative land parcel boundaries. Ground surveys with reference to permanent survey points (such as survey pegs) are required to precisely determine property boundaries.

28. Roadside vegetation, most commonly individual trees, assessed during roadside surveys was that present outside or on property boundaries as depicted by cadastral data. It is possible that some roadside SNAs lie on or just inside the legal property boundaries.

29. Roadside SNA surveys in the vicinity of the McArthur property were undertaken during February 2022. SNAs identified alongside Earl Road, upon which the McArthur property is located,[12] are SNAs 945, 966, and 967. Vegetation within those SNAs comprises single cabbage trees (*Cordyline australis*) and – at SNA 967 – a small patch of flax (*Phormium tenax*).

30. Roadside SNAs for single trees were mapped as points and described in a brief written report for each site. A shape file of the mapped points and pdf copies of the SNA reports were provided to TDC in 2022. My advice to Council was that copies of the SNA reports should be provided to the owners of adjacent land.

31. Upon receipt of the roadside SNA reports and shape file, Council requested that the SNAs be mapped as polygons, rather than points. The SNAs were remapped as polygons, based on the extent of the canopy of the tree or patch of vegetation at the location as depicted on the LINZ aerial image base layer.

32. The second concern of the submitters is whether cabbage trees qualify as significant.[13] The principal reason that vegetation at these roadside SNAs is assessed as ecologically significant is that it is indigenous vegetation in an ecological district (Low Plains)[14] and Land

[11] Land parcel boundaries were downloaded as shape files from the LINZ website and inserted into a computer-based GIS programme (QGIS), with LINZ aerial images as a base layer.
[12] Details of the location and extent of the McArthur properties were provided to me by Council staff.
[13] Submission No.113, Paragraph 16.
[14] McEwen, W.M. (editor) 1987. Ecological regions and districts of New Zealand, third revised edition (Sheet 4). *New Zealand Biological Resources Centre Publication No.5.* Department of Conservation, Wellington, 1987.

Environment (N3.1b)[15] within which indigenous vegetation is reduced to less than 20% of its former extent.[16] I am confident this vegetation meets the threshold for an SNA when assessed[17] against the CRPS ecological significance criteria[18] and the PDP criteria.[19]

33. The third concern of the submitters is responsibility for the SNAs.[20] Should landowners continue maintaining (mowing) the roadside to reduce fire risk, or would such an activity damage the SNA? Continued mowing of roadside vegetation along Earl Road would not damage or compromise those roadside SNAs, provided mowing machinery avoided the cabbage trees and the small patch of flax.

34. At other parts of the district, grassland vegetation on roadsides has been assessed and described as SNAs. At those locations mowing can continue if it does not result in clearance of indigenous vegetation.

35. The fourth concern of the submitters is the expansion and encroachment of SNAs and the subsequent effect on farming activities.[21] It is very unlikely that the vegetation assessed as roadside SNAs on Earl Road will expand to the extent that it encroaches on existing farmland. If such expansion did occur there – or at any other location – that would not alter the mapped SNA boundary. Landowners should be consulted as part of any reassessment of the extent (boundaries) of SNAs.

36. The fifth concern of the submitters is the responsibility for managing an SNA when it becomes a hazard.[22] This is a planning matter addressed by Ms White.

Submission 129 – Jamieson, CR & HA

37. The submission of Cassandra and Hamish Jamieson expresses concern that areas were assessed as SNAs on their 278 Pareora Ford Road property without their consent. The submitters state that the property is an operating sheep and beef farm, not an SNA.

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[15] Leathwick, J.; Wilson, G.; Rutledge, D.; Wardle, P.; Morgan, F.; Johnston, K.; McLeod, M.; Kirkpatrick, R. 2003. *Land Environments of New Zealand*. David Bateman, Auckland. 184p.
[16] Cieraad, E.; Walker, S.; Price, R.; Barringer, J. 2015. An updated assessment of indigenous cover remaining and legal protection in New Zealand's land environments. *NZ Journal of Ecology 39*: 309-315.
[17] Wildlands. 2013. Guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna in Canterbury Region. *Contract Report 2289i*. Environment Canterbury, Christchurch.
[18] CRPS Appendix 3 Ecological Significance Criterion 3 (rarity/distinctiveness).
[19] Proposed Timaru District Plan, Appendix 5.
[20] Submission No.113, Paragraph 16.
[21] Submission No.113, Paragraph 17.
[22] Submission No.113, Paragraph 18.

38. The Jamieson property was assessed for the presence of SNAs in October 2020, after completion of the main phase of the district-wide survey. The assessment was prompted by information provided to Council about the presence of indigenous vegetation and lizard habitat on the property.

39. The landowners declined permission for access to the property to undertake field survey of indigenous vegetation and habitat. The Council position in these situations was to assess the property by 'desk-top' analysis of available information, in consultation with the landowners. The justification for this approach was that failure to assess the property would be unfair to other landowners in the District, the majority (c.95%) of whom had provided access to their properties. This position is consistent with the subsequent requirements of the NPS-IB.[23]

40. Assessment of SNAs on the Jamieson property was based on analysis of aerial images (Google Earth), views from the roadside, species' records provided by Hermann Frank, my experience of SNA surveys on nearby properties, and my knowledge of South Canterbury limestone ecosystems. Three SNAs (857, 858 and 859), covering a total area of approximately 66ha, were identified.

41. There are three principal reasons that these areas were assessed as ecologically significant. First was the presence of indigenous vegetation (shrubland and rockland vegetation) on an 'originally rare' ecosystem (limestone) that is listed as nationally 'vulnerable'. Second was the presence of indigenous vegetation in an 'acutely threatened' land environment. And third was the presence of plant species listed as 'threatened' and 'at risk'. Such vegetation met – and still meets – the threshold for an SNA when assessed[24] against the CRPS ecological significance criteria[25] and the PDP criteria.[26]

42. Each of the SNA reports conclude that "there is sufficient information about this site to confirm that it supports significant indigenous vegetation, despite the absence of a field survey. Important ecological values are the presence of an originally rare ecosystem (limestone) and populations of 'threatened' and 'at risk' plant species." The site reports also state that "an on-site survey would be required to provide further information about the presence and extent of those values, and site condition."

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[23] NPS-IB, Clause 3.8 (2)(c).
[24] Wildlands. 2013. Guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna in Canterbury Region. *Contract Report 2289i*. Environment Canterbury, Christchurch.
[25] CRPS Appendix 3 Ecological Significance Criteria 3, 4 and 6 (rarity/distinctiveness).
[26] Proposed Timaru District Plan, Appendix 5.

43. With respect to the submission that the property is an operating sheep and beef farm, not an SNA, the two uses are not mutually exclusive. Most SNAs in Timaru District are on farmland. The presence of an SNA does not prevent continued farming. Instead, it protects vegetation/habitat at the SNA from deliberate clearance (such as via land-use change).

44. Analysis of aerial images (Google Earth) confirm that the vegetation present on the property at the time of the SNA assessment (October 2022) was still present in March 2024. I am confident that this vegetation meets the threshold for an SNA when assessed against the CRPS ecological significance criteria and the PDP criteria. Further confirmation or clarification of the extent of significant vegetation and habitat would require a field survey.

Submission 137 – McCullough, P & S

45. The submission of Peter and Stephanie McCullough expresses concern that "shelter belts planted under our care with natives and cabbage trees may be designated as an SNA in the next ten year plan." There are no proposed SNAs on or adjacent to the McCullough properties as depicted in the information provided to me by staff at Timaru District Council.

46. Identification of SNAs is based on the assessment of the ecological significance of indigenous vegetation and/or habitats of indigenous fauna. It is not based on the origin of that vegetation or habitat. However, it is unlikely that a planted shelterbelt would be assessed as an SNA.

Submission 171 – Fenlea Farms

47. The submission of Fenlea Farms Limited is to oppose the SNA overlay "together with any objectives, policies, rules, standards and schedules in respect of the overlay relating to the properties." The properties referred to in the submission are at 158 Prattley Road and 94 Milford-Clandeboye Road.

48. There are no proposed SNAs – as listed in Schedule 7 – on the two properties.

Submission 177 – Rooney, AJ

49. The submission of Alastair Rooney is to oppose the SNA overlay "together with any objectives, policies, rules, standards and schedules in respect of the overlay relating to the

properties." The properties referred to in the submission are at 0 Domain Avenue, 48 Milford-Clandeboye Road, and 32 Milford-Clandeboye Road, Temuka.

50. There are no proposed SNAs – as listed in Schedule 7 – on the three properties.

Submission 197 – KJ Rooney Ltd

51. The submission of KJ Rooney Limited is to oppose the SNA overlay "together with any objectives, policies, rules, standards and schedules in respect of the overlay relating to the property." The property referred to in the submission is at 0 Boiling Down Road, Temuka.

52. There are no proposed SNAs – as listed in Schedule 7 – on the property.

Summary of recommended responses to submissions

53. In summary, I recommend the following responses to the submissions on SNAs:

    a. 35: Pye Group Ltd: include the lizard rehabilitation area (SNA 998) in Schedule 7 of the PDP.

    b. 113: McArthur K&J: Advise the submitter/landowner that the Earl Road SNAs are ecologically significant, and that roadside mowing is permitted provided it does not result in clearance of indigenous vegetation.

    c. 129 Jamieson CR&HA: Retain the proposed SNAs but provide the opportunity to the submitter/landowner for a reconsideration or amendment of the SNAs on their property, through a field survey.

    d. 137 McCullough P&S: Advise the submitters that planted shelterbelts are unlikely to be assessed as SNAs.

Protection and Maintenance of Indigenous Biodiversity Outside SNAs

54. I have been asked to provide advice on the extent to which an additional rule in the PDP would assist in maintaining indigenous biodiversity outside SNAs in Timaru District.

55. I advised Council's Biodiversity Working Group in May 2017 that such a rule would assist with the maintenance of indigenous biodiversity outside SNAs. That advice included a draft list of indigenous biodiversity values that would benefit from such a rule.[27] The reasons that I continue to support addition of such a rule are set out below.

SNA Survey Method

56. The district-wide SNA survey was principally a survey of indigenous vegetation at terrestrial habitats. Known habitats of significant indigenous fauna – notably whio/blue duck and long-tailed bat – were surveyed, and advice on lizard habitat considered. Otherwise, assessment of fauna habitat was limited to observations of fauna (principally birds) and obvious habitats (notably lizard habitat) during the relatively brief vegetation surveys.

57. This SNA survey method is typical and appropriate. Comprehensive surveys of indigenous fauna require specialised sampling methods and equipment, favourable weather conditions, seasonal sampling and/or considerable time. Species identification for some fauna groups (notably invertebrates) is difficult and costly. The resources available for the SNA survey were insufficient for that level of fauna survey effort.

58. The protection of indigenous vegetation does – by default – provide protection for many habitats of indigenous fauna. However, further survey or increased knowledge about the presence and distribution of indigenous species' populations will likely reveal significant habitats for indigenous species that lie outside the SNAs listed in Schedule 7 of the PDP.

Assessment Method

59. During the first part of the SNA survey project, assessment criteria in Part B2 of the ODP were used to determine whether indigenous vegetation and habitat were significant in terms of section 6(c) of the Resource Management Act 1991. Guidelines for application of the

[27] Proposed Timaru District Plan Appendix 3. Revised draft at 23rd May, Mike Harding. 4p.

ODP criteria were prepared – and endorsed by the Rural 3 Working Party - prior to commencement of survey work.[28]

60. In 2013, after most SNAs in Timaru District had been surveyed, the Canterbury Regional Policy Statement (CRPS) became operative. The CRPS provided criteria for determining significant indigenous vegetation/habitat.[29] Guidelines were prepared to assist with the application of those criteria.[30]

61. The CRPS ecological significance criteria are different to the ODP (Part B2) criteria. The CRPS criteria effectively lowered the threshold for significance. Application of the CRPS criteria results in a greater number and larger extent of SNAs than results from application of the ODP criteria.

62. All previously surveyed Timaru District SNAs were reassessed against the CRPS criteria in 2016. SNAs surveyed since that time have been assessed against both sets of criteria. However, the parts of Timaru District surveyed prior to 2013 are likely to support areas of indigenous vegetation/habitat that meet the CRPS criteria but were not selected as SNAs under the ODP criteria.

SNA Survey Coverage

63. Selection of properties for SNA surveys was based on analysis of aerial images, views from places accessible to the public (such as roads), views from adjacent properties, documented biodiversity values, and local knowledge. It is likely that this method missed some smaller or more cryptic areas of indigenous vegetation, notably individual trees or shrubs at lowland sites and areas of non-woody vegetation.

64. Most (c.95%) of properties were assessed for SNAs by an on-site (field) survey. Permission for access for SNA surveys was declined by landowners of a small number (c.10) properties. These properties were surveyed remotely, by desk-top analysis of available data (including aerial images), roadside views, and knowledge of the indigenous vegetation and habitat present at locations nearby.

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[28] Survey and assessment of Significant Natural Areas (SNAs): Guidelines for the application of the District Plan criteria. Mike Harding, 2005. 10p.
[29] CRPS Appendix 3.
[30] Wildlands. 2013. Guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna in Canterbury Region. *Contract Report 2289i*. Environment Canterbury, Christchurch.

65. SNAs identified by remote assessment were those areas of indigenous vegetation/habitat that were clearly visible on aerial images or from roadside views. Other less-visible areas of indigenous vegetation, notably non-woody vegetation, are likely to have been missed during those surveys.

66. Permission for access to all high-country properties in the upper Rangitata River valley was declined. This part of Timaru District has important biodiversity values, notably those in naturally uncommon ecosystems such as moraines, outwash terraces, and wetlands. It is very likely that significant indigenous biodiversity values in that part of Timaru District lie outside the SNAs listed in Schedule 7 of the PDP.

67. Resources available for the district-wide survey of SNAs were limited. The budget during the first five years of survey was $30,000 per annum. The main survey was for a period of eleven years (2005 to 2016), though there have been further surveys since that time, notably roadsides. Surveys deliberately targeted high-value sites; low-value sites were a lower priority for survey. Some of those lower priority un-surveyed sites may support significant indigenous vegetation/habitat.

Threat Status of Species and Ecosystems

68. An important criterion for assessment of SNAs is the presence of 'at risk' or 'threatened' species[31]. The threat status of each species is determined by a defined method and presented in New Zealand Threat Classification System lists published by the Department of Conservation.[32] These lists were not designed for the assessment SNAs but are the best data available for that purpose.[33]

69. Species' populations and the threats facing those populations change over time. Populations of many indigenous species are declining due to ongoing habitat loss, the effects of ubiquitous plant and animal pests, and changing climate. For those reasons, the New Zealand Threat Classification System lists are reviewed every few years to reflect any changes to species' populations and threats to those populations.

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[31] CRPS Appendix 3 Criterion 4; PDP Appendix 5 Criterion 4.
[32] Townsend, A.J.; de Lange P.J.; Duffy, C.A.J.; Miskelly, C.M.; Molloy, J.; Norton, D.A. 2008. *New Zealand Threat Classification System Manual*. Department of Conservation, Wellington.
[33] NPS-IB Appendix 1 C (6)(a) requires use of the New Zealand Threat Classification System lists for the assessment of rarity.

70. The implications of the changing threat status are that some species which were not considered 'at risk' or 'threatened' at the time of the early SNA surveys are now listed as 'at risk' or 'threatened' species. Conversely, some species that were previously listed as 'at risk' or 'threatened' no longer have that status.

71. A good example of the former is southern grass skink (*Oligosoma* aff. *polychroma* Clade 5), which was previously known as 'common skink' and was listed as 'not threatened.' Since 2016 this species has been listed as an 'at risk; declining'.[34] Habitat of this species was not necessarily assessed as significant during the early period of the SNA survey, whereas the habitat of this species would now almost always be assessed as significant.

Ecosystem Depletion

72. One of the CRPS – and PDP Appendix 5 – criteria for assessment of ecological significance is "indigenous vegetation or habitat of indigenous fauna that has been reduced to less than 20% of its former extent in the Region, or relevant land environment, ecological district, or freshwater environment."[35] Continued loss of indigenous vegetation through land-use change, such as exotic afforestation, will likely increase the ecosystem and vegetation types that are depleted to less than 20% of their former extent.

73. Human-induced climate change may also hasten ecosystem depletion. Climate change is predicted to increase the frequency and severity of storm events. The warming climate is also predicted to increase the frequency and intensity of natural and human-induced wildfires.[36]

Mobile Fauna

74. Habitats that are used only occasionally or periodically by fauna (notably birds) are difficult to assess. As our knowledge of those mobile species improves, it is likely that additional habitats will be regarded as significant. The NPS-IB requires the recording of mobile fauna habitats that lie outside SNAs.[37]

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[34] Hitchmough, R.; Barr, B.; Lettink, M.; Monks, J.; Reardon, J.; Tocher, M.; van Winkel, D.; Rolfe, J. 2016. Conservation status of New Zealand reptiles, 2015. *New Zealand Threat Classification Series 17*. Department of Conservation, Wellington.
[35] CRPS Appendix 3 Criterion 3. The NPS-IB has a similar criterion (Appendix 1 C (6)(d)).
[36] Keegan, L.J.; White, R.S.A.; Macinnis-Ng, C. 2022. Current knowledge and potential impacts of climate change on New Zealand's biological heritage. *NZ Journal of Ecology 46(1)*:
[37] NPS-IB Clause 3.20.

National Policy Statement for Indigenous Biodiversity 2023

75. The NPS-IB requires the inclusion of additional SNAs in subsequent plan changes or plan reviews. However, the length of time required to complete plan changes or reviews, and Government's intention to review the NPS-IB[38] and to halt the listing of SNAs in plans or proposed plans,[39] provide no certainty that indigenous biodiversity outside SNAs will be protected in a timely manner.

Summary

76. In conclusion, I consider that an additional rule limiting the clearance of indigenous vegetation outside SNAs (and other areas currently identified in the PDP), would assist in maintaining indigenous biodiversity outside SNAs in Timaru District for the reasons outlined above.

Proposed Rule ECO-RX

77. I have provided input into the drafting of proposed Rule ECO-RX. I am supportive of the wording that Ms White is recommending for that rule.

Grazing in SNAs

78. I have been asked to consider whether it is appropriate to provide for grazing (i.e. where grazing would result in effects on indigenous vegetation) as a permitted activity within SNAs.

79. Some SNAs listed in Schedule 7 include areas of grassland or pasture dominated by naturalised or planted exotic pasture species. Common examples are areas of scattered indigenous trees (treeland) in grazed paddocks, and grassy slopes associated with limestone outcrops.

80. In both situations, the grassland vegetation may support "vascular and non-vascular plants that, in relation to a particular area, are native to the ecological district in which that area is located" and therefore meet the PDP definition for 'indigenous vegetation.' The PDP definition for 'clearance of indigenous vegetation' includes "…clearing or removal….by grazing…"

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[38] Coalition Agreement, New Zealand National Party & New Zealand First, 54th Parliament, Clause 14.
[39] Coalition Agreement, New Zealand National Party & ACT New Zealand, 54th Parliament, Clause 16; Resource Management (Freshwater and Other Matters) Amendment Bill (May 2024).

81. It is unlikely that continued grazing (at the same frequency, intensity and scale) at these sites would result in clearance or removal of indigenous vegetation. However, a change in the grazing activity, such as from extensive grazing to mob stocking, or from sheep grazing to cattle or deer grazing, may result in the clearance of indigenous vegetation.

82. The Partially Operative Selwyn District Plan addresses a similar situation by specifically providing for grazing that is not over-grazing/trampling, though only within an area of 'improved pasture.'[40] I support a similar rule being applied in the PDP.

ECO-R7 Planting of Potential Pest Species

83. I have been asked to comment on the submission of H Frank (Submission 90) with respect to the inclusion of additional cotoneaster species in NC1, and the need for NC2.

84. Each of the cotoneaster species listed by H Frank poses similar a threat to indigenous biodiversity. I support the inclusion of the following of those cotoneaster species in NC1: *C. simonsii*, *C. franchetii*, *C. glaucophyllus* and *C. laetus*. I also recommend inclusion of *C. microphylla*, which is naturalised in the upper Rangitata valley. I do not support inclusion of *C. harrowvianus* or *C. parneyi*. As far as I can ascertain those two species are not present (NZ records have proven to be *C. glaucophyllus*).[41]

85. I also support the inclusion of rowan (*Sorbus aucuparia*) in NC1 and – correspondingly – its removal from NC2. Rowan, with its fleshy bird-dispersed fruit and shade-tolerance, poses a significant threat to indigenous biodiversity throughout Timaru District.

86. The reason for a separate NC2 list is that the species in that list pose a threat to inland ecosystems, notably braided riverbeds, but do not pose a significant threat to indigenous biodiversity at lowland locations at which they are commonly planted (such as residential gardens). I support retention of NC2, with the removal of rowan (as recommended above).

New Zealand Coastal Policy Statement 2010

87. I have been asked whether identification of SNAs in the coastal environment was undertaken in consideration of Policy 11 of the New Zealand Coastal Policy Statement (NZCPS).

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[40] Partially Operative Selwyn District Plan (Appeals Version), Rule ECO-RC 3 (i).
[41] Webb, C.J.; Sykes, W.R.; Garnock-Jones, P.J. 1988. Flora of New Zealand Volume IV, DSIR, Christchurch; https://biotanz.landcareresearch.co.nz/

88. SNA surveys were undertaken in terrestrial and wetland habitats adjacent to the coast. Areas below Mean High Water Spring (MHWS) (i.e. beaches) and adjacent coastal cliffs were not surveyed. It was assumed at that time that significant indigenous vegetation and significant habitats of indigenous fauna in the coastal environment would be protected by other District Plan rules.

Mike Harding

30th September 2024.

TIMARU DISTRICT COUNCIL

SIGNIFICANT NATURAL AREAS SURVEY

RANGITATA RIVER SOUTH BRANCH LIZARD REHABILITATION AREA

Report prepared for Timaru District Council
Mike Harding
September 2024

TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY REPORT

PROPERTY DETAILS:

Landholder: ..... Pye Group (AMF rights to riverbed)
Valuation Reference: ... n/a
Location:..... State Highway 1, Rangitata
Ecological District:..... Low Plains
Land Environment: ..... n/a (adjacent to L1.2a)

LOCATION AND DESCRIPTION:

Location of SNA.

The lizard rehabilitation site is located on an alluvial terrace of the Rangitata River South Branch, just downstream from the State Highway 1 road bridge, north of Rangitata. Underlying geology is unconsolidated and recently deposited sand, gravel and stones of alluvial origin (flood flows of the Rangitata River). It lies adjacent to the channel of the South Branch, which most recently flowed in 2019.

ECOLOGICAL CONTEXT:

The property lies in Low Plains Ecological District (McEwen, 1987). Riverbeds are not classified in the Land Environments framework, though the site is surrounded by land within the L1.2a Level IV Land Environment as defined by Leathwick *et al* (2003).

It is likely that the original vegetation of this flood prone part of the ecological district was successional (seral), with its composition and stature determined by the timing and frequency of floods. The successional stages would most likely be stonefield-herbfield- grassland-tussockland-shrubland. Flood protection work on the main stem of the Rangitata River has interrupted this process, except in major flood events such as in 2019.

SURVEY METHOD AND COVERAGE:

The field survey upon which this report is based was undertaken over one hour on 18th August 2024. The purpose of the field survey was to determine the presence and extent of significant indigenous vegetation and significant habitats of indigenous fauna.

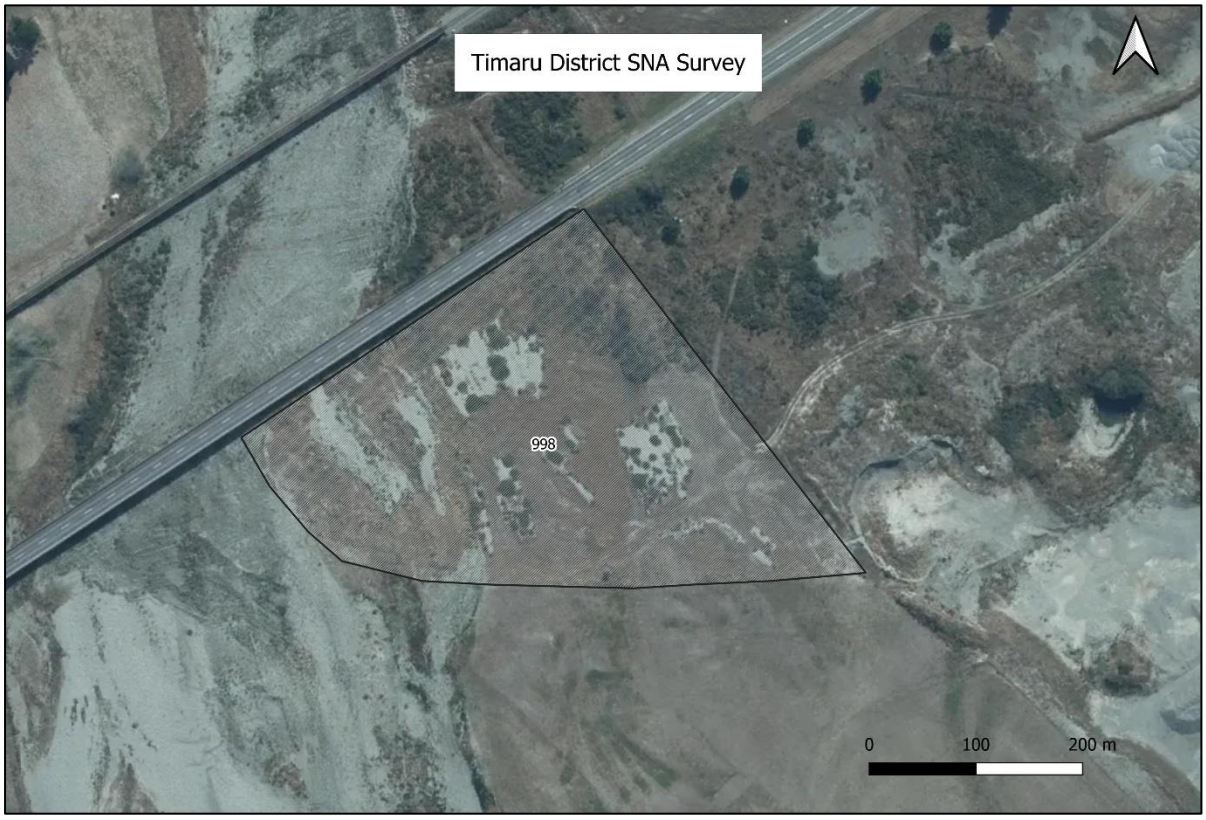
Names of indigenous plant species cited in this report are as listed on the Ngā Tipu o Aotearoa-New Zealand Plants database (Manaaki Whenua-Landcare Research). Plant community names follow the method proposed by Atkinson (1985). The threat status of indigenous species is as listed in publications of the Department of Conservation, as referenced in this report.

SIGNIFICANT NATURAL AREAS:

One area is assessed as a significant natural area (SNA) under the Timaru District Plan and Canterbury Regional Policy Statement (RPS) criteria. This area is an area of planted and managed vegetation that has been set aside under a stakeholder agreement for the rehabilitation and protection of lizard habitat.

SNA No.	Central Map Reference (NZTM)	Aprox. size(ha)	Vegetation/habitat type
998	1470620E-5120050N	1.75	Shrubland; grassland; mossfield; stonefield.

The extent of this SNA is illustrated on the aerial photograph below. The SNA is described in greater detail on the SNA Survey Form in this report.



Rangitata River South Branch SNA 998.

TIMARU DISTRICT SNA SURVEY SNA 998

Ecological District: Low Plains	**Nearest Locality:** Rangitata	
Map ref. (NZTM): 1470620E-5120050N	**Size (ha):** 1.75	**Altitude (m):** 100
Surveyor/Assessor: Mike Harding	**Survey Time:** 1 hour	**Survey Date:** 18-08-24

GENERAL DESCRIPTION:

This SNA comprises an area of seral shrubland, grassland and mossfield, within which piles of stones have been placed, and vegetation planted, to provide favourable habitat for lizards. It lies adjacent to a larger area of exotic scrub and rank exotic grass to the north-east, and sparsely vegetated open riverbed to the south-east. State Highway 1 forms the north-west boundary of the site.

VEGETATION/HABITAT TYPES:

Vegetation

Four main vegetation types are present: shrubland/scrub; grassland; mossfield; and stonefield. This vegetation is described below. Naturalised (exotic) species are indicated with an asterisk*. A list of species recorded at the site is appended to this report.

Shrubland/scrub:

Shrubland/scrub is present at the northern part of the site and extends onto the adjacent property. It is dominated by Scotch broom* (*Cytisus scoparius*), gorse* (*Ulex europaeus*), Chewings fescue* (*Festuca rubra*) and cocksfoot* (*Dactylis glomerata*). Other species present are browntop* (*Agrostis capillaris*), yarrow* (*Achillea millefolium*), catsear* (*Hypochaeris radicata*), narrow-leaved plantain* (*Plantago lanceolata*), sheep's sorrel* (*Rumex acetosella*), stonecrop* (*Sedum acre*), wire moss (*Polytrichum juniperinum*), *Hypnum cupressiforme* and other moss species.

Shrubland/scrub at and adjacent to the site; grassland in foreground.

Grassland:

Grassland is present in large patches throughout the site at locations which have not been modified by stone piles or planting. It is dominated by cocksfoot* and browntop*. Other grass species may be present but were not obvious at the time of the survey (mid-winter).

Grassland (rank exotic grasses) at the site.

Mossfield:

Mossfield is present at stony sites where soil depth is insufficient to support grassland. It is dominated by mosses, predominantly woolly moss (*Racomitrium pruinosum*). Other species present are browntop*, narrow-leaved plantain*, catsear*, sheep's sorrel*, storksbill* (*Erodium cicutarium*), wire moss, mosses and lichens. A single naturally occurring kanuka tree (*Kunzea ericoides* agg.) is present at the southern boundary of the site.

Stonefield:

Stonefield has been created at the site by depositing stones in linear raised piles. Native species have been planted on or adjacent to these piles, including pohuehue[1], mikimiki (*Coprosma propinqua*), matagouri (*Discaria toumatou*), *Olearia bullata*, *Olearia aviceniifolia*, manuka (*Leptospermum scoparium*), kanuka, *Coprosma virescens*, koromiko (*Veronica salicifolia*), toetoe (*Austroderia richardii*), ti/cabbage tree (*Cordyline australis*) and silver tussock (*Poa cita*).

Other species, which appear to have colonised the stone piles naturally, are bracken (*Pteridium esculentum*), *Hypolepis ambigua*, woolly mullein* (*Verbascum thapsus*), cocksfoot* and sheep's sorrel*.

[1] Most likely a hybrid: creeping pohuehue X scrub pohuehue (*Muehlenbeckia axillaris* X *complexa*).

Mossfield (foreground), with created stonefield (background).

Stonefield with pohuehue (centre) and planted shrubs (background).

Habitats of Indigenous Fauna

Native bird species observed at or adjacent to the SNA during this very brief survey were grey warbler (*Gerygone igata*), harrier (*Circus approximans*), southern black-backed gull (*Larus dominicanus*) and spur-winged plover (*Vanellus miles*). Other bird species likely to be present in the area are fantail (*Rhipidura fuliginosa*), paradise shelduck (*Tadorna variegata*) and possibly South Island pied oystercatcher (*Haematopus ostralegus*).

The rehabilitation area was originally identified because of the presence of southern grass skink (*Oligosoma* aff. *polychroma* Clade 5) (Frank, 2017). A local lizard expert, Hermann Frank, advises that southern grass skink is present at the site and that the population is estimated to comprise between 50 and 100 individuals.

RARE/NOTABLE SPECIES, HABITATS OR COMMUNITIES:

The site supports indigenous vegetation, albeit mostly planted, adjacent to an 'acutely threatened' Level IV land environment (L1.2a), within which less than 10% of indigenous cover remains nationally (Cieraad *et al*, 2015). The site is associated with a braided riverbed, which is a 'naturally uncommon' ecosystem (Williams *et al*, 2007) classified as 'threatened' 'nationally endangered' (Holdaway *et al*, 2012).

The site supports a single naturally occurring kanuka tree. Kanuka is listed by Lange *et al* (2018) as a 'threatened' 'nationally vulnerable' species. However, this listing results from the threat posed by myrtle rust and has the qualifiers DP (data poor) and/or De (taxon that does not fit within the criteria; designated to most appropriate listing). Nevertheless, kanuka is now rare in the ecological district and its presence at this site is ecologically significant.

Other notable species at the site – all of which have been planted – are:

- *Coprosma virescens*..... at risk; declining
- *Discaria toumatou* (matagouri)..... at risk; declining
- *Leptospermum scoparium* (manuka) ..... at risk; declining

Southern grass skink is listed as an 'at risk' 'declining' species (Hitchmough *et al*, 2021). Lizard habitat has been created and maintained. These habitats and the associated grassland support a good population of southern grass skink.

ASSESSMENT OF ECOLOGICAL SIGNIFICANCE:

Significant Natural Areas (SNAs) are determined by assessing indigenous vegetation and habitats of indigenous fauna against the criteria in Appendix 3 of the Canterbury Regional Policy Statement (RPS), with reference to the guidelines for application of these criteria (Wildlands, 2013); and by criteria in the Timaru District Plan, with reference to assessment guidelines (Harding, 2012).

Selecting boundaries for SNAs can be problematic, as vegetation boundaries are not precise (plant communities frequently grade from one type to another) and habitats of indigenous fauna are not easily determined through brief site surveys. However, this assessment is of the defined lizard rehabilitation site, so the boundary was predetermined.

Assessment against Canterbury Regional Policy Statement Appendix 3 criteria:

Criteria	Yes/No Rank	Assessment
Representativeness	**Yes** **M**	1. The vegetation/habitat at parts of the site is characteristic of the natural diversity of the ecological district: stonefield; mossfield and a single kanuka tree.
Rarity/Distinctiveness	**Yes** **M**	3. Habitat of indigenous fauna that has been reduced to less than 10% of its former extent in the ecological district. 4. Supports an indigenous species (southern grass skink) that is 'at risk'. 6. Indigenous vegetation/habitat that is associated with an 'originally rare' ecosystem (braided riverbed).
Diversity and Pattern	**No** **L**	7. A low diversity of indigenous ecosystems, habitat types, or taxa.
Ecological Context	**Yes**	8. Vegetation/habitat that provides a source for colonisation of the adjacent riverbed, within an area where such sources are scarce.

Assessment against Timaru District Plan Part B criteria:

Primary Criteria	Rank	Assessment
Representativeness	**M**	The site supports small, localised patches of mossfield, a single kanuka tree and restoration planting from locally propagated material.
Rarity	**M**	The area supports a population of an 'at risk' species (southern grass skink) and a single kanuka tree.
Diversity and Pattern	**L/M**	A substantially depleted indigenous plant community.
Distinctiveness/Special Features	**L**	The area does not support species at distributional limits, intact sequences, or other special features.
Other Criteria		
Size/Shape	**M/H**	The area is moderate-sized and with a good shape, but not well buffered.
Connectivity	**M**	The area adjoins other areas of lizard habitat and lies near to an indigenous vegetation remnant (SNA 116a).
Sustainability	**L/M**	The area is very modified and reliant on management to maintain the key biodiversity values.

The area is significant when assessed against the Canterbury Regional Policy Statement criteria, principally because it provides habitat for an 'at risk' 'declining' species (southern grass skink). It lies adjacent to an area that provides additional skink habitat. The site supports mossfield and a single naturally occurring kanuka tree. A remnant of plains grassland nearby (across State Highway 1) is scheduled as an SNA.

CONDITION AND MANAGEMENT:

Identification of this site, and rehabilitation of lizard habitat, arose from vegetation/habitat clearance at the site in 2014 (Frank, 2017). Subsequent survey of the site by a lizard expert confirmed that at least parts of the site would have – prior to clearance – been ecologically significant. This led to the Rangitata River South Branch Stakeholder Site Rehabilitation Agreement which describes the rehabilitation work required to address the adverse effects of the loss of lizard habitat.

The rehabilitation work appears to have been successful. Native plantings are well established, and the site supports a healthy population of southern grass skink. However, the site is vulnerable to infestation by invasive exotic grasses (notably cocksfoot and Chewings fescue) and exotic shrubs (notably broom and gorse). Rabbits and their effects were obvious at the time of the survey. It is unclear whether rabbits pose a significant threat to the rehabilitation plantings or lizard habitat.

The site lies on an alluvial terrace directly adjacent to the main channel of the South Branch Rangitata River. Flood protection works on the main stem of the Rangitata River are designed to prevent the river flowing down the South Branch channel. However, it is very likely that the channel will carry flood water again. The highway bridge abutments upstream from the site may protect the site from flood flows, though that is not certain.

Regardless of the threat of flooding, ongoing management of the site – principally plant pest control – will be required to maintain its indigenous biodiversity values.

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Species List

Species' scientific names are as listed in the Manaaki Whenua/Landcare Research Nga Tipu o Aotearoa New Zealand Plants database.

Abundance classes:
: r=rare; o=occasional; m=moderate numbers; lm= locally moderate; c=common; lc=locally common; f=frequent; lf=locally frequent; e=present only at edge/margin; x=present but abundance not noted; p=planted; a=adjacent/nearby (birds)

Indigenous Plant Species

Scientific name	Common name	Abundance
Trees, shrubs, sub-shrubs, lianes (woody plants)		
Coprosma propinqua	mingimingi	o
Coprosma virescens		r
Cordyline australis	cabbage tree/ti rakau	o
Discaria toumatou	matagouri	o
Kunzea ericoides agg.	kanuka	r
Leptospermum scoparium	manuka	o
Muehlenbeckia complexa	scrub pohuehue	o
Olearia avicenniifolia	mountain akeake	o
Olearia bullata	tree daisy	o
Veronica salicifolia	koromiko	o
Ferns and Fern Allies		
Hypolepis ambigua		r
Pteridium esculentum	bracken	o
Herbaceous (non-woody) plants		
Austroderia richardii	toetoe	o
Poa cita	silver tussock	o
Non-vascular plants (mosses and lichens)		
Hypnum cupressiforme	a moss	lc
Polytrichum juniperinum	wire moss	lc
Racomitrium pruinosum	woolly moss	lc

Naturalized (exotic) Plant Species

Achillea millefolium	yarrow	o
Agrostis capillaris	browntop	lc
Cytisus scoparius	broom	lc
Dactylis glomerata	cocksfoot	lc
Erodium cicutarium	storksbill	o
Festuca rubra	Chewings fescue	lc
Hypochaeris radicata	catsear	m
Plantago lanceolata	narrow-leaved plantain	o
Rumex acetosella	sheep's sorrel	o
Sedum acre	stonecrop	o
Ulex europaeus	gorse	o
Verbascum thapsus	woolly mullein	o

Native bird species observed during plant survey work

Circus approximans	harrier
Gerygone igata	grey warbler
Larus dominicanus	southern black-backed gull
Vanellus miles	spur-winged plover