VEGETATION MANAGEMENT PLAN
for the
Waitaha Hydro Scheme

Date: 11 July 2025

TABLE OF CONTENTS

1. INTRODUCTION

1.1 This Vegetation Management Plan (**VMP**) sets out the methods that will be used to avoid, remedy, minimise or mitigate adverse ecological effects on vegetation and associated terrestrial and wetland habitats during the construction and operational phases of the Waitaha Hydro Scheme (**Project**). It has been prepared with input from TACCRA Ltd and detailed information is included in the Assessment of Environmental Effects: Vegetation (**Vegetation Report**).

1.2 The indigenous vegetation types within the Project's footprint and its environs are resilient systems – natural replacement occurs in response to disturbance events that can be frequent in the environment in which the Project is located. Project effects (at scale of design) are expected to have little difference, if any, to effect of natural processes in this environment as they are within the scale of natural disturbance events and of similar nature. The Vegetation Report provides a fulsome background, context and detail as the potential effects of the project on vegetation.

1.3 A key consideration in formulating this VMP and in formulating the prescriptions it contains is that Project design has carefully considered potential effects on vegetation and has a.) kept the area required for both construction work and post-construction operation to the minimum required; and b.) already included adjustments to location of infrastructure (e.g., the proposed access road and transmission line) to avoid wetlands and large podocarp trees (and may include further adjustments where practicable) to minimise effects by avoiding some large hardwood trees.

1.4 Nevertheless, vegetation loss will occur within the Project footprint and will be permanent except where clearance is only required to enable construction (for example the construction staging areas at the headworks and power station sites and access road at the intake). Vegetation within these locations will be managed/rehabilitated as set out in **Sections 5 and 6**.

Plan Purpose

1.5 This VMP outlines how the earthworks and associated vegetation removal and rehabilitation methods to be used during the project will as far as practicable, avoid, remedy or mitigate any adverse environmental effects associated with those activities on vegetation and associated habitats for flora and fauna. The VMP is designed to be easy to understand and implement for the construction workforce.

Plan Objectives

1.6 **Compliance:** To ensure that all requirements of the VMP and statutory requirements of the Fast-track Approvals Act 2024 are complied with for the duration of the construction works.

1.7 **Minimisation of habitat disturbance**: To ensure all practicable steps are taken to care for and protect the environment including:

(a) avoiding, minimising or mitigating adverse effects on vegetation and associated habitats for flora and fauna;

(b) avoiding works in areas identified as having significant ecological value such as wetland and stable tributary areas and avoiding, as far as practicable, removal of individual trees possessing significant ecological values;

(c) Rehabilitating temporary construction sites and spoil disposal sites.

1.8 **Vegetation disturbance monitoring:** To establish a monitoring framework to confirm that requirements of consent conditions have been adhered to before, during and after vegetation removal.

1.9 **Records and reporting:** To establish a recording regime for monitoring compliance, including incidents, inspections and reporting, including to the Councils and DOC.

Regulatory Framework

1.10 The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna is a matter of national importance in s 6(c) of the Resource Management Act 1991.

Plan Structure

1.11 This VMP is set out as follows:

Introduction (this section).

Section 2 – Induction for implementing this VMP.

Section 3 – Summary of the existing environment relevant to terrestrial values.

Section 4 – Summary of the Scheme's effects on vegetation and their management.

Section 5 – Protocols for managing effects of vegetation removal.

Section 6 – Protocols for rehabilitating temporary loss of vegetation/habitats.

Section 7 – Compliance monitoring and reporting requirements.

Section 8 – Review requirements.

Implementation of the VMP

1.12 This VMP will take effect from the commencement of Project activities, including during pre-planning, and continue in effect for the duration of all construction operations and for the monitoring and control activity durations it prescribes as they relate to:

(a) Sites of temporary Project component occupancy i.e., construction affected areas that will not form part of the Project's operating footprint after construction completion.

(b) Sites to be permanently occupied by Project infrastructure i.e., ongoing operational areas.

Responsibilities and Competencies

1.13 The Principal, as the Approvals Holder (Westpower Ltd.), will be responsible for ensuring that the site works are undertaken in accordance with this VMP, and all relevant conditions set out in the Approvals.

1.14 Delivery of, and compliance with, the VMP will be the responsibility of the Project Engineer who will, with support from the Liaison Officer, liaise with the Project Ecologist or Ecologists (to be appointed by Westpower prior to Project commencement), Contractor and Site Construction Manager regarding all construction activities requiring vegetation clearance and earthworks.

1.15 The responsibilities of the Project Engineer include, but are not limited to:

(a) Reading and understanding the VMP.

(b) Facilitating a project start-up meeting with the Liaison Officer, Project ecologists, Contractor, Site Construction Manager, and any vegetation removal and earthworks contractors sub-contracted by the

Contractor before vegetation removal and earthworks commence for Project Construction Work Components involving vegetation clearance and earthworks. The objective of this meeting will be to determine habitats scheduled for clearance each season, enabling forward planning and avoiding delays in the construction schedule and to confirm all pre-clearance requirements.

(c) Contacting the Liaison Officer and Project ecologist(s) before any clearance.

(d) Maintaining clear lines of communication with the Contractor, Liaison Officer, Project ecologists, Site Construction Manager, other site engineer(s) and any vegetation and earthworks contractors regarding any changes in the works schedule.

(e) Briefing new personnel about the contractor's responsibilities under this plan.

1.16 The Contractor will be responsible for managing the physical vegetation removal and earthwork activities including the activities undertaken by vegetation clearance and earthwork sub-contractors employed by the Contractor.

1.17 The Contractor's personnel, and any employed subcontractors' personnel working on site are responsible for alerting the Site Construction Manager and Project Liaison Officer to the discovery of any 'At Risk' or 'Threatened' flora and fauna not otherwise identified in this management plan, the Bat Management Plan (**BMP**) and the Avifauna Management Plan (**AMP**).

1.18 The Project Liaison Officer or lead ecologist(s) is/are responsible for reporting the discovery of 'At Risk' or 'Threatened' flora and fauna to the Department of Conservation Local Area Manager and for maintaining a database with an incident register and file log of actions taken for each such discovery.

2. VMP INDUCTION

2.1 Westpower must ensure that a copy of this VMP is always available onsite during construction of the Project.

2.2 A site induction for all employees and contractors who are likely to be involved in vegetation removal is required to understand and comply with the specific constraints and requirements of this VMP.

2.3 This induction must include:

(a) the vegetation removal and protection protocols;

(b) the importance of compliance with the protocols and the reporting processes for observed breaches of required protocols; and

(c) contact details for the Site Construction Manager, Project Liaison Officer, bird and bat, reptile and invertebrate ecologist(s), and emergency numbers for any identified issues observed onsite.

3. EXISTING ENVIRONMENT TERRESTRIAL VAUES

Vegetation Cover

3.1 Vegetation present within the Project's footprint and in its environs is:

(a) Indigenous in Areas 1 and 2. Exotic species are present though extremely rare and confined to alluvial flats and recent disturbance areas where forest or shrub cover is not predominant. Vegetation type, species composition and stature are related to landform (type and age) and natural disturbance history.

(b) Predominantly exotic in Areas 3 and 4, where historical modification of original cover has occurred, and the areas have been subject to rural development principally for pastoral farming. There are some stands of indigenous vegetation within Area 4 however these occur infrequently in the Scheme's footprint.

3.2 The Project's components affecting indigenous vegetation are sited within two separate general areas (designated Area 1 and Area 2) in both cases at less than 320 metres above sea level. There is no evidence of major modification to vegetation by human activity e.g., clearance or logging, in either Area.

3.3 Key landforms in Area 1 include hill foot slopes, terraces and terrace faces associated with these, and an area of relatively recent alluvial terrace. The principal forest types present here can be broadly grouped as kamahi forest and seral forest using the classification described by James et al., (1973), and as lowland forest and seral low forest under the classifications described by Wardle, (1977, 1979 and 1991). Area 1 includes the Headworks and Access Road from the Headworks to Construction Staging Area 1.

3.4 Area 2 is larger and encompasses a greater range of landforms than does Area 1, in particular a sequence of alluvial terraces increasing in surface age with increased height in an eastward progression, from the relatively recent alluvial flats adjacent to the current active Waitaha Riverbed that have no closed forest species cover, to the higher terrace and hill foot slopes that carry mature podocarp/hardwood hill forest. Steeper terrace faces and foot slopes within this area have likely been subject to effects of shifts on the Alpine Fault resulting in periodic disturbance via slips and colluvium deposition and exhibit a hardwood predominant forest cover with very low incidence or absence of large podocarp trees. The principal forest types present here can be broadly grouped as kamahi forest and seral forest using the classification described by James et al., (1973), and as lowland forest and seral low forest under the classifications described by Wardle, (1977, 1979 and 1991). Area 2 includes the power station (and associated infrastructure site, construction staging area 2 and the access road and transmission line route.

3.5 Area 3 is the proposed site of some Project components (including staging area and spoil disposal). It is on private freehold land and predominantly semi-developed for pastoral grazing. Area 3 is referred to as McLean Farm and includes Construction Staging Area 3.

3.6 Area 4 encompasses the proposed route from Area 3 for vehicle access to connect to the Westland District Council (WDC) Anderson Road and then Waitaha Road, and for sections of transmission line, first a new section to connect to the existing line at Waitaha Road and thence line upgrade from there to connect to Westpower Ltd.'s existing 66 KV transmission network at the Waitaha Substation on Bold Head Road at Kakapotahi. The new section is on McLean Farm, with the remainder for upgrade being on land of varying tenure (including legal road, conservation land, and private freehold land other than that of McLean Farm). Indigenous vegetation is a far lesser component of cover in this rural development area, the majority being exotic as affected by the Project's footprint.

3.7 The assessment of the significance of the terrestrial ecology values in accordance with the relevant planning provisions in the RPS, TTPP, WDP and CMS has determined that the indigenous vegetation within the Scheme's footprint is of high natural value and significant.

4. SUMMARY OF SCHEME'S POTENTIAL EFFECTS ON VEGETATION AND THEIR MANAGEMENT

Effects on Vegetation/Habitat

4.1 The Project is expected to result in the permanent loss of approximately 5 hectares of indigenous vegetation/habitat. There will also be a temporary loss of approximately 2 hectares of indigenous vegetation/habitat in addition to the permanent area loss – this temporary area will be required to enable construction activities such as the construction staging areas in Area 1 (Headworks) and Area 2 (Power Station and associated infrastructure).

4.2 Potential adverse effects of the Project on indigenous vegetation were assessed in the Westpower Ltd. Proposed Waitaha Hydro Scheme Assessment of Environmental Effects – Terrestrial Flora (TACCRA Ltd. 2025). Key potential effects on vegetation/habitat include:

Area 1 – Headworks Including temporary access ao and Construction Staging Area 1

[Note: This VMP Section contains Scheme infrastructure components corresponding the LMP's *Table 1 Description of the Four Discrete Areas of the Scheme Footprint Where Lizards May be Present:*

Salvage Location = ***Headworks c. 0.5 ha.***

Weir/Training Wall and Kayak Access

4.3 The effect of weir and associated components' works on vegetation is negligible, given that construction activities and the weir structure are principally located in the active bed of the river on already exposed bedrock with minimal vegetative cover. The area of activity is not deemed to be in riparian margin as it is in the bed of the river.

4.4 Potentially affected areas (combined construction and permanent site occupancy by structure) by vegetation type are shown in Table 1. As a maximum, 25% is deemed to carry some vegetation, the remainder being un-vegetated bedrock and active river channel and therefore not included in the Table 1 areas.

4.5 Natural regeneration of current vegetation cover could be expected to occur relatively soon after cessation of construction activities on all but the permanently occupied area, as scale and type of disturbance is similar to that occurring at or about the site by natural causes e.g. minor slips and major flood events and existing vegetation has established following these disturbances.

Table 1: Combined Weir/Training Wall/Kayak Access Construction Distances and Potentially Affected Areas Within Vegetation Type.

Vegetation Type	Distance (m)	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Distance (m)	Placement Within Riparian Margins: Construction (ha)
1/1	True-right side of Waitaha River = 25%	0.0014	0.0003	0.0	0.0
1/1	True-left side of Waitaha River = 75%	0.0041	0.0010	0.0	0.0
Totals		**0.0055**	**0.0013**	**0.0**	**0.0**

Intake Channel and Sluice Channel

4.6 Effect of the intake channel and sluice channel structures on vegetation is negligible, given that construction activities and the intake channel are principally on already exposed bedrock or boulder covered areas with minimal if any vegetative cover. The area of activity is not deemed to be in riparian margin as it is in the bed of the river.

4.7 As a maximum, 25% of the affected area is deemed to carry some vegetation, the remainder being un-vegetated bedrock and boulder area and therefore not included in Table 2 area. Natural regeneration of current vegetation cover (such as it is) could be expected to occur relatively soon after cessation of construction activities on all but the permanently occupied area.

Table 2: Intake Channel and Sluice Channel Potentially Affected Areas Within Vegetation Type.

Vegetation Type	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Construction (ha)
1/1	0.0585	0.0485	0.0
Totals	**0.0585**	**0.0485**	**0.0**

Intake Structure and Intake Tunnel Portal

4.8 The bedrock walls at the entrance to, and within Morgan Gorge, are scoured clean of vegetation by flood events up to c. 8.0 meters. Sparse vegetation cover that is present above the clear zone contains liverwort/moss, herbaceous and monocot components in a narrow band of a few meters wide before merging to shrub cover in the gorge and about and upstream of the gorge entrance.

4.9 Scheme design plans give a construction affected area of 270 square meters, reducing to a permanent site occupancy area of 190 square metres for this component combination. An estimate is that 50% of total affected area may be vegetated, and that the construction area/permanently occupied area difference i.e., 80 square metres may become revegetated over time. Potentially affected areas by vegetation type are shown in Table 3.

4.10 Vegetation recovery on any disturbed area not occupied by structures is likely to occur naturally, and to exhibit the range of species currently present – this includes riparian area.

Table 3: Intake Structure Including Intake Channel Excavation and Intake Tunnel Portal Potentially Affected Areas Within Vegetation Types.

Vegetation Type	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Construction (ha)
1/1	0.0045	0.0032	True-right side of Waitaha River = 0.0023
1/2	0.0090	0.0063	True-right side of Waitaha River = 0.0045
Totals	**0.0135**	**0.0095**	**0.0068**

Headworks Access Tunnel Portal Entrance and Wingwall(s)

4.11 The indicative dimensions of the tunnel portal are 5 metres high x 5 metres wide giving 25.0 m^2 cleared (although this may need to be adjusted to suit construction plant requirements). To this is added an allowance for side margin vegetation clearance effect of 3 metres each side and top margin effect of 4 metres, giving an estimated total of 99.0 square metres or 0.0099 hectares for construction. It is assumed side wingwall and top margin areas can revegetate naturally, with just the portal entry area remaining

permanently occupied. Potentially affected area (combined construction and permanent site occupancy by structure) by vegetation type are shown in Table 4. Tunnel portal entrance siting at c. 6.0 metres higher than the intake portal should mean works are outside any riparian margin.

Table 4: Access Tunnel Portal Entrance and Wingwall(s) Potentially Affected Areas Within Vegetation Types.

Vegetation Type	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Construction (ha)
1/2	0.00495	0.00125	0.0
1/3	0.00495	**0.00125**	0.0
Totals	**0.0099**	**0.0025**	**0.0**

Access Tunnel Portal to Intake Structures Access Road and River Protection

4.12 A minor section (c. 66 metres long) of road is proposed providing ongoing/operational access between the headworks access tunnel portal and intake structures and portal. Width of this section varies for construction however average is expected to be 12.0 metres, so construction affected area is c. 792 square metres and expected permanent post-construction occupancy width is 10 metres – permanently affected area is therefore 600 square metres with c. 75% of width likely to be in riparian margin. Potentially affected areas are shown in Table 5.

Table 5: Access Tunnel Portal to Intake Structures Access Road and River Protection Potentially Affected Areas Within Vegetation Type.

Vegetation Type	Distance (m)	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Construction (ha)
1/2	66	0.0792	0.0600	0.0594
Totals	**66**	**0.0792**	**0.0600**	**0.0594**

Road to Construction Staging Area 1

4.13 Access to a proposed construction staging area on an alluvial terrace upstream of the headworks access tunnel portal entrance requires formation of c. 143 metres of road (in addition to the section described in 4.12 above), sufficient to allow machinery traverse, with the roading consisting of an average 1 metre wide water tabling disturbance, plus 3.5 meter wide cut/fill allowance and a 4.5 metre wide carriageway for the 143 metre distance. Therefore this section may affect c. 1287 square metres. It may be possible to position this road outside (north) of the Waitaha River riparian margin, however available area is narrow and may not allow complete riparian margin avoidance. For vegetation effect assessment purposes and contingency, it is assumed that c. 40 meters of the road distance will be partially in riparian margin, affecting a 5-metre-wide zone i.e., 200 m^2 of riparian margin predominantly within Vegetation Type 1/2.

4.14 Potentially affected areas by vegetation type are shown in Table 6. This section of road will not be required post-construction of the headworks infrastructure. The area can be rehabilitated or left to regenerate naturally (see **Sections 5** and **6** regarding proposed management).

Table 6: Road to Construction Staging Area 1 Distances and Potentially Affected Areas Within Vegetation Types.

Vegetation Type	Distance (m)	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Construction (ha)
1/2	107	0.0965	0.0	True-right side of Waitaha River 40 m x 5 m strip = 0.0200
1/4	36	0.0322	0.0	0.0
Totals	**140**	**0.1287**	**0.0**	**0.0200**

Construction Staging Area 1

4.15 A construction staging area of c. 6710 square metres is proposed, to be located in the most practicable siting on the first available flat zone of sufficient area upstream of Morgan Gorge. Final dimensions and location may be subject to change from those shown as a result of detailed design. However, this staging area may only be relocated no more than 15 metres beyond the area demarcated in Project mapping. Site configuration and placement should be able to be adjusted so as to avoid works in the Waitaha River riparian zone, and to maintain a margin of vegetation along the true right terrace edge. Table 7 gives potentially affected areas by vegetation type.

4.16 This staging area will not be required post-construction. The area can be rehabilitated or left to regenerate naturally (see **Sections 5** and **6** regarding proposed management).

Table 7: Construction Staging Area 1 Potentially Affected Area Within Vegetation Type.

Vegetation Type	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Construction (ha)
1/4	0.6710	0.0	0.0
Total	**0.6710**	**0.0**	**0.0**

Geophysical Drilling Test Site(s)

4.17 Four vertical test drilling sites are proposed on the forested terrace north-northwest along the tunnel-line from the intake portal. These are all included under Area 1 infrastructure description for simplicity, although sites 3 and 4 below are intermediate between headworks and power station. Locations are:

1. At or near the intake gate location at approximately NZTM2000 E1415830 N5222249.
2. At or near the headgate/stoplog location at approximately NZTM 2000 E1415783 N5222357 or an alternative at NZTM E1415775 N5222347.
3. Approximately 400 metres north-northwest along the tunnel line from the intake at approximately NZTM E1415721 N5222548 or an alternative at NZTM E1415721 N5222563.
4. Approximately 908 metres north-northwest along the tunnel line from the intake at approximately NZTM E1415566 N5223013 or an alternative at NZTM E1415570 N5223040.

4.18 Scheme plans provided by Westpower indicate 10 metre x 10 metre clearance areas for drill rig placement and operation, not be permanently occupied, and the sites could be expected to regenerate naturally (see **Sections 5** and **6** regarding proposed management).

Note: A fifth geophysical test drilling site is also proposed, this to be for horizontal drilling and sited c. NZTM E1415847 N5222176 between the intake and access tunnel portals and likely subsequently subsumed by the portal area(s). Therefore, no vegetation effect has been assigned to this horizontal test drilling site.

Table 8: Geophysical Test Drilling Potentially Affected Area Within Vegetation Type.

Vegetation Type	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Construction (ha)
1/3	0.0400	0.0	0.0
Total	**0.0400**	**0.0**	**0.0**

Area 2 – Power Station Site Including Construction Staging Area 2 And Access Road And Transmission Line

[Note: This VMP Section contains Scheme infrastructure components corresponding the LMP's *Table 1 Description of the Four Discrete Areas of the Scheme Footprint Where Lizards May be Present:*

Salvage Location = ***Transmission line and access road c. 5.6 ha.***

Salvage Location = ***Power Station c. 0.5 ha.***

Access Road and Transmission Line Sections From Southern McLean Farm (Freehold) Boundary to Power Station Site

4.19 It is likely that the majority of area required for access road/transmission line construction purposes in Area 2 will need to remain permanently cleared of vegetation to enable continued access and facility inspection and maintenance, however some natural regeneration of indigenous cover is expected on e.g., cut/fill surfaces and outer berm areas. Therefore, two widths are applied for affected area assessment a.) construction-affected width of 17.5 metres, and b.) permanently occupied width of 15.0 metres. Natural regeneration of the range of indigenous ground cover and shrub species present in the Vegetation Types affected is expected to occur relatively quickly (over one to three growing seasons post construction), with regeneration of tree species also occurring (at least as seedlings in this timeframe) to reduce the 17.5 metre construction width for the access road/transmission line combination to the 15 metre permanent occupancy width without need for remediation.

4.20 There is a requirement for a permanent single span bridge over Granite Creek. The affected area associated with the construction and permanent occupancy of this bridge as a component of the access road is included in road distance and affected area calculations, however Scheme roading plans include separate sections of side-cut on each side of Granite Creek to get access and grade from the principal road alignment on the terrace either side of the Granite Creek channel, to and from a temporary bridge crossing of the waterway. These separate cuttings and the temporary bridge will remain in place until the permanent bridge is completed and will then be removed. Each side-cut is estimated to be c. 30 metres long and 15 metres wide on average, giving total construction area of 900 square metres added to that of the main/permanent road alignment. Approximately 50% will be in each of Vegetation Types 2/4 and 2/9, 300 square meters of which is within the Granite Creek Vegetation Type 2/9 riparian margins. The sites could be expected to regenerate naturally.

4.21 Given the above, the most likely vegetation types affected under areas of each are shown in Table 9.

Table 9: Access Road and Transmission Line Distances and Potentially Affected Areas Within Vegetation Types in Area 2.

(Note: Table lists individual segments within vegetation type starting at the freehold farmland boundary on the true right side of Macgregor Creek and proceeding to the Power Station site). Permanent areas for Vegetation Types 2/4 and 2/9 are individual figures and NOT derived from construction distance multiplied by 15 metres because construction distance given for Vegetation Types 2/4 and 2/9 includes distances within each for the temporary cuttings associated with the proposed Granite Creek crossing. Permanent distances for these, to be multiplied by 15 metres, are shown italicised and in square brackets.

Access Road Separate From Transmission Line Segment (F.3.1)					
Vegetation Type	**Distance (m)**	**Construction (ha)**	**Permanent (ha)**	**Crossings of Riparian Margins: Distance (m)**	**Crossings of Riparian Margins: Construction (ha)**
2/10	175	0.1750	0.1750	True right side of Macgregor Creek 10.0	True right side of Macgregor Creek 0.010
N/A	388	0.0	0.0	0.0	0.0
Note: This section of access road is located south across (208 meters) and west down a true left part (180 meters) of what is deemed the active gravel outwash fan of Macgregor Creek that is predominantly bare and therefore not assessed/included as vegetated area.					
Transmission Line Separate From Access Road Segment (F.3.2)					
Vegetation Type	**Distance (m)**	**Construction (ha)**	**Permanent (ha)**	**Crossings of Riparian Margins: Distance (m)**	**Crossings of Riparian Margins: Construction (ha)**
2/10	175	0.1750	0.1750	0.0	0.0
N/A	208	0.0	0.0	0.0	0.0
Note: This section of transmission line is located south across (208 meters) of what is deemed the active gravel outwash fan of Macgregor Creek that is predominantly bare and therefore not assessed/included as vegetated area.					
2/3	250	0.2500	0.2500	0.0	0.0
Access Road And Transmission Line Combined Segment (F.3.3)					
Vegetation Type	**Distance (m)**	**Construction (ha)**	**Permanent (ha)**	**Crossings of Riparian Margins: Distance (m)**	**Crossings of Riparian Margins: Construction (ha)**
2/8	238	0.4165	0.3570	True left side of Macgregor Creek 10.0	True-left side of Macgregor Creek 0.0175
2/4	271 *[256]*	0.4743	0.3840	0.0	0.0
2/9	80 *[50]*	0.1400	0.0750	Both sides of Granite Creek (x 2) 40.0	Both sides of Granite Creek (x 2) 0.0700
2/4	96 *[81]*	0.1680	0.1215	0.0	0.0
2/4A	441	0.7718	0.6615	0.0	0.0
2/4	653	1.1428	0.9795	Both sides of Alpha Creek (Distance accounted for under separate waterway training/flood protection works at this site, see Component F.3.9, below, so not included again here)	Both sides of Alpha Creek (Area accounted for under separate waterway training/flood protection works at this site, see Component F.3.9, below, so not included again here)
2/3	69	0.1208	0.1035	0.0	0.0
2/1	44	0.0770	0.0660	0.0	0.0
Subtotal	*1892*	*3.3112*	*2.7480*	*50.0*	*0.0875*
Totals [Vegetated]	***2492***	***3.9112***	***3.348***	***60.0***	***0.0975***

Platform Area, Tunnel Portal Access and Turning Area, Batter Slopes, Tunnel Portal Exits, Portal Headwalling, Power Station, Switchyard, Tailbay, and Slope Protection Works

4.22 The twin tunnel portal exits are located at or about NZTM E1415349; N5223586. Removal of vegetation will be required across the east-west width of the foot slope at this site to access the foot of the main terrace riser, and for some distance north and south of the tunnel portal area, to give machinery access and allow room for construction, equipment, and spoil handling. A continuation of the power station access platform, the portal access turning bay includes a formed area to and at the access portal exit large enough to enable vehicles to turn 90 degrees into the tunnel. It is proposed to be either concrete or gravel and permanently occupied. The Power Station itself, along with its access platform, rockfill/batter slopes, switchyard, walling and tailbay are included and Project plans indicate the above infrastructure combination involves an area of c. 5180 square metres for construction and for permanent occupancy.

4.23 A concrete wall (permanent) approximately 6 metres high at its highest point will span between and around the tunnel portals. A provision for slope protection/stabilisation e.g., forepoling and shotcreting treatment above the portal structures is included in the vegetation disturbance allowance for construction, however a proportion of this area should regenerate naturally after cessation of construction, in the range of species currently present. Protection from falling rocks is necessary, and this may consist of a post and wire mesh system, possibly up to 70 metres long. Project plans show an anticipated slope protection area of 830 square metres in addition to the other infrastructure noted above. It is likely that some portion of this area will attain a vegetative cover of a range of herbaceous, monocot and fern species that are present in the surrounding area via natural processes post-construction This is estimated to be 33% for the purpose of permanently occupied area calculation, giving a permanently affected area for the slope protection works of 556 square metres. Table 10 gives potentially affected areas by vegetation type.

Table 10: Total Platform Area Including Tunnel Portal Access and Turning Area, Tunnel Portal Exits, Portal Headwalling, Power Station, Switchyard, Tailbay, and Slope Protection Works Within Vegetation Types.

Vegetation Type	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Construction (ha)
2/1	0.3005	0.2731	0.0
2/2	0.3005	0.3005	0.0
Totals	**0.6010**	**0.5736**	**0.0**

Tailrace

4.24 The tailrace will be of concrete construction, with tapering sides. Construction-affected and permanently occupied area is c. 1470 square metres. The excavation depth combined with extension beyond the river bank means not all construction or permanently occupied area will affect vegetation. Vegetated area potentially affected by construction and permanent occupancy is approximately 66% of total area i.e., c. 970 square metres. A component of this is in the Waitaha River true right riparian margin through which the tailrace passes obliquely – an average distance within the riparian vegetation is estimated as 40 metres, with the strip being 10 metres wide and

therefore affecting an area of c. 400 square metres. Table 11 gives Vegetation Type and affected areas.

Table 11: Tailrace and Tailrace Weir Potentially Affected Area Within Vegetation Type.

Vegetation Type	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Construction (ha)
2/2	0.0970	0.0970	0.0400
Totals	**0.0970**	**0.0970**	**0.0400**

Construction Staging Area 2

4.25 An area of clearance is proposed to provide for vehicle and machinery operation, materials handling and machine positioning/access to work on key construction components. This zone comprises:

1. Part of the alluvial flat commencing from a point abutting the tailrace and extending north along the upper margin of the Waitaha River true right bank for c. 85 metres and thence from the bank eastward to abut the access road/powerhouse access ramp and its batter slope, and southward to abut the powerhouse and tailrace. Predominant cover is Vegetation Type 2/2, within which is an estimated 100 metre long by 10 metre wide strip of riparian margin.
2. Part of the alluvial flat commencing from the power station retaining wall and tailrace and extending south along the upper margin of the Waitaha River true right bank for c. 125 metres, to meet the terrace foot slope margin, thence north again to the power station retaining wall. Predominant cover here is also Vegetation Type 2/2, within which is an estimated 125 metre long by 10 metre wide strip of riparian margin.

4.26 Project design indicates that the total area involved is c. 8185 square metres, however at least half of the proposed 1470 square metre tailrace area is also located within this, so if that half is deducted to avoid double counting the area specific to Construction Staging Area 2 becomes c. 7450 square metres.

4.27 This potential construction disturbance area will be minimised as far as practicable so may or may not be used in its entirety, with Table 12 giving estimated maximum affected area. It will not be permanently occupied and therefore can be rehabilitated and revegetated post construction. Remedial planting with a range of species naturally present on the site is recommended for the area affected (see **Section 6** for proposed management).

Table 12: Potential Construction Disturbance Affected Area Within Vegetation Type.

Vegetation Type	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Construction (ha)
2/2	0.7450	0.0	0.2250
Totals	**0.7450**	**0.0**	**0.2250**

Waterway Training and Flood Protection - Alpha Creek

4.28 An area of flood protection works is proposed on a portion of Alpha Creek where the creek exits the terrace/terrace face to the east where, until that point, it is in an incised/defined channel, but after exiting the terrace can flow in a number of directions. It is proposed to control and train any flow to a defined channel within the creek. Proposed works may include the development of a single, defined channel (including stopbanks on both sides) of a segment of the lower portion of Alpha Creek to train and divert flows, in particular flood flows, to a single flow path within the existing outwash fan. The aim of the works is to prevent large flood flows and associated alluvium affecting the access road and to contain the stream as a c. 4.0 metre wide channel by leading to and from the access road crossing point. This will be a concrete box culvert with upstream and downstream rock aprons. Stream containment is proposed to be by upstream (c. 90 metre long) and downstream (c. 36 metre long) sections of gravel bunding with rock rip rap. Construction affected area is assessed from the Project roading plan at c. 2142 square metres (126 metre distance and 17 metres average wide). This work will therefore involve a c. 126 metre long portion of riparian vegetation on each side of Alpha Creek.

4.29 The current stream course(s) run beneath closed canopy forest cover, and it is expected that regeneration of the range of indigenous species currently present would occur naturally and it is possible that a proportion of the construction-affected area could become revegetated, giving a permanently affected (deemed due to possible maintenance requirements) area of 50% of construction-affected area i.e., c. 1125 square metres. This is likely to also apply to a similar portion of any riparian margin area affected by construction. Areas potentially affected by this Project component are shown in Table 13.

Table 13: Waterway Training and Flood Protection Works (Alpha Creek) Distance and Potentially Affected Area Within Vegetation Type.

Vegetation Type	Distance (m)	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Distance (m)	Placement Within Riparian Margins: Construction (ha)
2/4	126	0.2142	0.1071	Both sides of Alpha Creek 2 x 126 m long strips = 252	Both sides of Alpha Creek 126 m x 2 x 10 m strips x 0.85 = 0.
Totals	**126**	**0.2142**	**0.1071**	**252**	**0.2142**

Geophysical Drilling Test Sites

4.30 Three geophysical test drilling sites are proposed:

1. A horizontal drilling site, to be located near the terrace base and the water tunnel portal exit. It is expected that area associated with this test drilling site will be subsumed within the area of the later excavation of the portal area. Therefore, no vegetation area effect has been assigned to this horizontal test drilling site.

2. A vertical drilling site, located within the proposed power station footprint, in Vegetation Type 2/2. The area associated with this test drilling site will be subsumed within the area of the later excavation for the power station. Therefore, no vegetation area effect has been assigned to this vertical test drilling site.

3. A vertical drilling site, located at c. NZTM E1415404 N5223549 on the upper terrace surface and approximately on the alignment of the proposed access tunnel. Project plans provided by Westpower indicate a 10 metre x 10 metre clearance area for drill rig placement and operation. This would not be permanently occupied, and the site could be expected to regenerate naturally (see **Sections 5 and 6** regarding proposed management).

Table 14: Geophysical Test Drilling Potentially Affected Area Within Vegetation Type.

Vegetation Type	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Construction (ha)
2/3	0.0100	0.0	0.0
Total	**0.0100**	**0.0**	**0.0**

Area 3 – McLean Farm (Part): Spoil Disposal Areas And Construction Staging Area 3

Spoil Disposal Areas

4.31 Two spoil disposal areas will be located on the private farmland and outside the true right margin of Macgregor Creek, the western of the two being c. 9.0 hectares, the eastern 8.12 hectares, to which excess spoil and vegetation material from Scheme construction activities will be carted and spread, buried or stored for subsequent relocation back to rehabilitation sites.

4.32 These combined areas (total 17.12 hectares) affect exotic vegetation deemed a non-indigenous community and will be appropriately levelled (and contoured where necessary to reduce risk of drainage impedance) and be rehabilitated to pasture post construction completion.

Staging Area 3

4.33 A staging area of c. 3.2 hectares will also be on the private farmland and outside the true right margin of Macgregor Creek. This area will be levelled and be the site of construction facilities/infrastructure including project management and staff facilities and buildings, storage areas and repair facilities for vehicles and machinery, and concrete batching plant.

4.34 This area affects exotic vegetation deemed a non-indigenous community, and will be rehabilitated to pasture post construction completion (or parts may be progressively rehabilitated during the construction phase as logistics permit, and where practicable to establish a pasture species cover to reduce sedimentation or runoff risk).

Access Road and Transmission Line

Note: Approximately 175 metres of the proposed access road/transmission line combined route is located within the spoil disposal areas and staging area. It will remain permanent and not be subject to pasture rehabilitation.

Area 4 – McLean Farm (Part): Access Road and Transmission Line to Existing Westland District Council (WDC) Road and Transmission Line at Anderson Road

[Note: This VMP Section contains Scheme infrastructure components corresponding the LMP's *Table 1 Description of the Four Discrete Areas of the Scheme Footprint Where Lizards May be Present:*

Salvage Location = **Transmission line and road access along Doughboy – c. 0.2 ha.**

Section of Transmission Line

4.35 This short (c. 85 metre distance) of new transmission line runs through the strip of indigenous Vegetation Type 4/1 that includes riparian vegetation along both sides of the unnamed waterway that bisects it. Vegetation present in the riparian margin in this area is not necessarily unique or distinguished floristically from its counterpart not occupying the riparian strip, and would not preclude the activity. Table 15 gives affected area details for this component. This 10 metre wide line section will remain cleared.

Table 15: Transmission Line Section (New) Bisecting Indigenous Vegetation - Distance and Potentially Affected Area Within Vegetation Type.

Vegetation Type	Distance (m)	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Distance (m)	Placement Within Riparian Margins: Construction (ha)
4/1	85	0.0850	0.0850	Both sides of unnamed waterway in freehold farmland 10 x 2	Both sides of unnamed waterway in freehold farmland 0.020
Totals	**85**	**0.0850**	**0.0850**	**20**	**0.020**

Section of Access Road

4.36 A section of access road traverses indigenous Vegetation Type 4/1 within the freehold farmland utilising the existing farm tracking, having a current carriageway width of c. 4.0 metres that is proposed for widening to 6.0 metres with an additional shoulder clearance of 0.5 metres each side and 1.0 metre on uphill side for water table/drain formation. The vegetation clearance width attributable to upgrade is a strip along the eastern side c. 5.0 metres wide for a distance of c. 240 meters giving affected area of 1200 square metres. This access road section includes a box culverted crossing of the unnamed waterway within Vegetation Type 4/1 however indigenous vegetation at the crossing point is minimal. Approximately half of the affected riparian margin area could be considered to carry some indigenous cover that may be affected by installation of the culvert and any associated upstream and downstream rock riprap/protection. An estimate of affected area is based on a 10 metre width applied to each side, with only half vegetated, giving 100 square metres possibly affected. Vegetation present in the riparian margin in this area is not necessarily unique or distinguished floristically from its counterpart not occupying the riparian strip, and would not preclude the activity. Table 16 gives affected area details for this component.

Table 16: Access Road Route (Existing Farm Tracking Upgrade Section) - Distance and Potentially Affected Area(s) that Include Sight Distance Clearance Within Vegetation Type.

Vegetation Type	Distance (m)	Construction (ha)	Permanent (ha)	Placement Within Riparian Margins: Distance (m)	Placement Within Riparian Margins: Construction (ha)
4/1	240	0.1200	0.1200	Both sides of unnamed waterway 2 x 10 m strips = 20	Both sides of unnamed waterway 2 x 10 m strips x 0.50 = 0.010
Totals	**240**	**0.1200**	**0.1200**	**20**	**0.010**

Transmission Line Upgrade from Waitaha Road End To Waitaha Substation at Bold Head Road (Farmland/Rural Development Area and Zero Nett Effect Podocarp/hardwood Area)

4.37 This Project component is the proposed upgrading of c. 13.4 kilometres of the existing transmission line along the Waitaha Road to its junction with State Highway 6, thence adjacent to State Highway 6 westward to the near the State Highway 6 Waitaha River Bridge, then north and north east to join with the existing Westpower network at the Waitaha Substation on Bold Head Road.

4.38 The non-indigenous assemblage of the rural development area contained in this segment is principally pasture or roadside grass verge and pertains to the majority (c. 10.6 kilometre distance or c. 79%) of the Area 4 Scheme footprint for this component of infrastructure. No rehabilitation measures are deemed necessary given works will likely only involve excavation of pole holes affecting minimal areas and of exotic vegetation cover, with infilling as soon as poles are stood in place, and possible occasional excavation for stay anchor blocks or stay poles, again infilled as soon as anchor blocks or poles are placed.

4.39 There is no attributable Project effect re indigenous vegetation clearance associated with proposed upgrading of the c. 2.8 kilometre section traversed by the existing transmission line adjacent to the Waitaha Road and the south side of State Highway 6 and through to the Waitaha Substation on Bold Head Road. This is because Project design limits upgrade effect to no more than that involved with the ongoing maintenance of the existing line that will occur irrespective of the Project, i.e., implementation of the Project will result in zero net effect on indigenous vegetation area here and therefore not require remediation.

Area Summary

4.40 Table A provides a reference summary of Project effects on vegetation by Area 1 – 4, and in total for the Project.

4.41 Table B lists the works components described in Section 4 and those components/sites where mitigation or rehabilitation actions are deemed necessary and what those activities are.

Table A: Indigenous Vegetation Potentially Affected by Scheme Components and in Total.

Scheme Component(s)	**Construction (ha)**	**Permanent (ha)**	**Riparian (Construction, ha)**
Area 1: Headworks and Associated Infrastructure Item(s)			
Combined Weir/Training Wall.	0.0055	0.0013	0.0
Intake Channel and Sluice Channel.	0.0585	0.0485	0.0
Intake Structure and Intake Tunnel Portal (and a Horizontal Geophysical Test Drilling Site Subsumed Within This Area).	0.0135	0.0095	0.0068
Headworks Access Tunnel Portal Entrance and Wingwall(s).	0.0099	0.0025	0.0
Access Tunnel Portal and Intake Structures Access Road.	0.0792	0.0600	0.0594
Road to Construction Staging Area 1.	0.1287	0.0	0.020
Construction Staging Area 1.	0.6710	0.0	0.0
Separate Geophysical Test Drilling Sites.	0.0400	0.0	0.0
Area 1 Sub-totals	***1.0063***	***0.1218***	***0.0862***
Area 1 Sub-totals Rounded Up	***1.01***	***0.13***	***0.09***
Area 2: Infrastructure Item(s)			
Access Road (Separate Section (part, c. 175 metres)) – true right margin of Macgregor Creek.	0.1750	0.1750	0.010
Transmission Line (Separate Section (part, c. 175 metres)), true right margin of Macgregor Creek.	0.1750	0.1750	0.010
Transmission Line (Separate Section (part, c. 208 metres)), crossing main active bed of Macgregor Creek.	Unvegetated	Unvegetated	Unvegetated
Access Road (Separate Section (part, c. 208 metres)), crossing main active bed of Macgregor Creek.	Unvegetated	Unvegetated	Unvegetated
Transmission Line (Separate Section (part, c. 250 metres)), - true left of Macgregor Creek.	0.250	0.250	0.0
Access Road (Separate Section (part, c. 180 metres)) – true left of Macgregor Creek.	Unvegetated	Unvegetated	n.a.
Access Road and Transmission Line Parallel, Macgregor Creek to Powerhouse (c. 240 metres west on true left of Macgregor Creek, thence 1604 metres from Macgregor Creek to Power Station Site).	3.3112	2.7480	0.0825
Total Platform Area Including Tunnel Portal Access and Turning Area, Batter Slopes, Tunnel Portal Exits, Portal Headwalling, Power Station, Switchyard, Tailbay, and Slope Protection Works, including a Geophysical Test Drilling Site Subsumed Within Portal Exit Area.	0.6010	0.5736	0.0
Tailrace.	0.0970	0.0970	0.040
Construction Staging Area 2.	0.7450	0.0	0.2250
Waterway Training and Flood Protection at Alpha Creek.	0.2142	0.1071	0.2142
Separate Geophysical Test Drilling Site.	0.0100	0.0	0.0
Area 2 Sub-totals	***5.5784***	***4.1257***	***0.5817***
Area 2 Sub-totals Rounded Up	***5.58***	***4.13***	***0.59***
Area 3: Infrastructure Item(s)			
Spoil Disposal Areas.	Non-indigenous	Non-indigenous	Non-indigenous
Construction Staging Area 3.	Non-indigenous	Non-indigenous	Non-indigenous
Access Road and Transmission Line Parallel.	Non-indigenous	Non-indigenous	Non-indigenous
Area 3 Sub-totals	***n.a.***	***n.a.***	***n.a***
Area 3 Sub-totals Rounded Up	***0.00***	***0.00***	***0.00***
Area 4: Infrastructure Item(s)			
Access Road from Area 3 section northern end terminus to Waitaha Road end.	0.1200	0.1200	0.010

Transmission Line (Separate Section (part)), from Area 3 section northern end terminus to Waitaha Road end.	0.0850	0.0850	0.020
Transmission Line upgrade in Rural Development/Farmland Area, commencing Waitaha Road end, then via Waitaha Road, S.H. 6, Beach Road and Bold Head Road to Waitaha Substation.	Non-indigenous or Nett Zero Effect on indigenous	Non-indigenous or Nett Zero Effect on indigenous	Non-indigenous or Nett Zero Effect on indigenous
Area 4 Subtotals	***0.2050***	***0.2050***	***0.0300***
Area 4 Sub-totals Rounded Up	***0.21***	***0.21***	***0.03***
Scheme Totals	**6.7897**	**4.4525**	**0.6979**
Scheme Totals Rounded Up	**6.80**	**4.46**	**0.70**

Note: Areas given as rounded sub-totals and totals in the above table are rounded up to two decimal places in every case so as to avoid dropping any area as could occur if using conventional rounding of figures less than five.

Note: Areas do not include non-vegetated zones affected by work components or parts thereof, e.g., where these are on exposed bedrock or in active river bed and are unvegetated pre-project, or the area of proposed transmission line upgrade where there is zero nett clearance effect attributable to the Scheme Neither are areas of predominantly non-indigenous vegetation (farmland) included. All are indicative based on the Project Description.

Table B: List of Project Works Components With Prescribed Mitigation and Rehabilitation Actions.
Note: Where mitigation and rehabilitation activities are prescribed in this table those activities are to be conducted according to their relevant protocols contained in ***Sections 5 and 6.***

Area 1: Headworks and Associated Infrastructure Item(s).	**Mitigation(s) Required**	**Rehabilitation Prescription(s)**
Combined Weir/Training Wall.	Machinery washdown prior to site entry.	None deemed necessary.
Intake Channel and Sluice Channel.	Machinery washdown prior to site entry.	None deemed necessary.
Intake Structure and Intake Tunnel Portal (and a Horizontal Geophysical Test Drilling Site Subsumed Within This Area).	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary, rely on natural regeneration.
Headworks Access Tunnel Portal Entrance and Wingwall(s).	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary, rely on natural regeneration.
Access Tunnel Portal and Intake Structures Access Road.	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary, rely on natural regeneration.
Temporary road to Construction Staging Area 1.	Machinery washdown prior to site entry. Weed monitoring and control.	Scarification at site decommission. Rely on natural regeneration.
Construction Staging Area 1.	Machinery washdown prior to site entry. Weed monitoring and control.	Scarification at site decommission. Rely on natural regeneration.
Separate Geophysical Test Drilling Sites.	Machinery washdown prior to site entry. Large tree avoidance where practicable. Branch trimming to avoid felling trees if practicable. Weed monitoring and control.	None deemed necessary, rely on natural regeneration.
Area 2: Infrastructure Item(s).	**Mitigation(s) Required**	**Rehabilitation Prescription(s)**
Access Road (Separate Sections).	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary, rely on natural regeneration.
Transmission Line (Separate Sections).	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary, rely on natural regeneration.
Access Road and Transmission Line Parallel, Macgregor Creek to Power Station.	Machinery washdown prior to site entry. Large tree avoidance where practicable. Branch trimming to avoid felling trees if practicable. Weed monitoring and control.	Relocate salvaged/stored organic matter/soil to site to maintain drainage pattern/avoid microsite ponding. Leave shrublands and large logs near clearance site where practicable to support rehabilitation. Rely on natural regeneration.

Table B: List of Project Works Components with Prescribed Mitigation and Rehabilitation Actions Ctd.
Note: Where mitigation and rehabilitation activities are prescribed in this table those activities are to be conducted according to their relevant protocols contained in ***Sections 5 and 6.***

Area 2: Infrastructure Item(s) Ctd.	**Mitigation(s) Required**	**Rehabilitation Prescription(s)**
Total Platform Area Including Tunnel Portal Access and Turning Area, Batter Slopes, Tunnel Portal Exits, Portal Headwalling, Power Station, Switchyard, Tailbay, and Slope Protection Works, including a Geophysical Test Drilling Site Subsumed Within Portal Exit Area.	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary, rely on natural regeneration for any areas not concrete, structures or other permanent hard fill.
Tailrace.	Machinery washdown prior to site entry.	None deemed necessary.
Construction Staging Area 2.	Machinery washdown prior to site entry. Weed monitoring and control.	Scarification at site decommission. Relocate salvaged/stored organic matter/soil to site. Leave shrublands and large logs near clearance site where practicable to support rehabilitation. Conduct supplementary planting.
Waterway Training and Flood Protection at Alpha Creek.	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary, rely on natural regeneration.
Separate Geophysical Test Drilling Site.	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary, rely on natural regeneration.
Area 3: Infrastructure Item(s)	**Mitigation(s) Required**	**Rehabilitation Prescription(s)**
Spoil Disposal Areas.	Machinery washdown prior to site entry. Weed monitoring and control.	Level, contour and establish pasture cover as soon as practicable after site use (or parts thereof) cessation.
Construction Staging Area 3.	Machinery washdown prior to site entry. Weed monitoring and control.	Level, contour and establish pasture cover as soon as practicable after site use (or parts thereof) cessation.
Access Road and Transmission Line Parallel.	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary.

Table B: List of Project Works Components with Prescribed Mitigation and Rehabilitation Actions Ctd.
Note: Where mitigation and rehabilitation activities are prescribed in this table those activities are to be conducted according to their relevant protocols contained in ***Sections 5 and 6.***

Area 4: Infrastructure Item(s)	***Mitigation Required***	***Rehabilitation Prescription(s)***
Transmission Line section in Vegetation Type 4/1.	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary, although natural regeneration will occur, area will be subject to periodic cutting back as line maintenance, therefore regarded as remaining cleared.
Access Road section in Vegetation Type 4/1.	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary, area to remain as cleared road carriageway, shoulder(s) and water tabling.
Access Road section(s) in McLean Farm developed pasture area.	Machinery washdown prior to site entry. Weed monitoring and control.	None deemed necessary. Area will remain as cleared road carriageway, shoulder(s) and water tabling.
Transmission Line upgrade from Waitaha Road end (southern) to Waitaha Substation.	Machinery washdown prior to site entry. Note: A variety of exotic weed species are already present in varying densities in the rural development/farmland area, and within parts of the existing transmission line corridor where it traverses indigenous vegetation, with presence of these not attributable as a Scheme effect, however that is no reason not to use best endeavours to prevent further introduction via machine entry.	None deemed necessary.

5. PROTOCOLS FOR MANAGING EFFECTS OF VEGETATION REMOVAL

5.1 Set out below are the management processes and protocols to avoid, remedy and mitigate adverse effects on vegetation removal once the project footprint has been confirmed through further surveys and detailed design.

Pre-clearance Protocols

Physical Delineation and Adjustments

Area 1 - Access Road To Headworks Construction Staging Area 1:

5.2 Within the access road corridor (15m either side of the indicative route) from the Headworks to Construction Staging Area 1 the incidence of large trees is extremely low (and may be zero). However, a check will be undertaken at the time of preliminary route layout (cutting and pegging of a route centreline) to ensure that the chosen route results in least damage to all vegetation, and especially any large (60+ cm dbh) hardwood trees and podocarp trees (30+ cm dbh) as a priority.

5.3 A component of this work will be to enumerate and mark all large trees within a fixed width of the road formation centreline and use these data to make any practicable road alignment adjustments (subject to engineering considerations) to avoid as many of these large trees as practicable.

5.4 The access road route (finalised after any tree avoidance adjustments are made) will be clearly delineated by an appropriate and obvious method e.g. painted peg/pole marking of the centreline and outer margin limits to ensure no inadvertent route deviation or exceedance of prescribed width (average 12 metres) occurs in clearance.

Area 1 - Construction Staging Area 1:

5.5 Boundaries of Construction Staging Area 1 will be clearly delineated by an appropriate and obvious method e.g. painted marking of vegetation around the perimeter, ensuring a margin (recommended width range 10 metres to 15 metres) of vegetation is retained along the terrace margin adjacent to the Waitaha River.

Area 1 - Geophysical Test Drilling Site(s):

5.6 If practicable, minor adjustment to location to avoid large (60+ cm dbh) hardwood trees and podocarp trees (30+ cm dbh) is desirable.

Area 2 - Power Station site (including Construction Staging Area 2) and Power Station Access Road and Transmission Line:

5.7 Within the road/transmission line corridor (15 metres either side of the indicative route) from the Power Station Site along the Power Station Access Road and Transmission Line route there is no uniqueness in terms of overall vegetation type(s), field observations indicate large trees are in very low densities, and Project design has already included route adjustment to avoid the few large podocarp trees and the wetlands identified. However, a check will be undertaken at the time of preliminary route layout (cutting and pegging of a route centreline) to ensure that the chosen route avoids small areas of identified wetland, and results in least damage to all vegetation, and especially large (60+ cm dbh) hardwood trees and podocarp trees (30+ cm dbh) as a priority.

5.8 A component of this work will be to enumerate and mark all large trees within a fixed width of the road formation centreline and use these data to make any practicable road alignment adjustments (subject to engineering considerations) to avoid as many of these large trees as practicable.

5.9 The access road and transmission line routes (finalised after any tree avoidance adjustments are made) will be clearly delineated by an appropriate and obvious method e.g. painted peg/pole marking of the centreline and outer margin limits to ensure no inadvertent route deviation or exceedance of maximum prescribed corridor width of 17.5 metres occurs in clearance.

5.10 Boundaries of Construction Staging Area 2 will be clearly delineated by an appropriate and obvious method e.g. painted peg/pole marking around the perimeter.

Area 3 - McLean Farm (Spoil Disposal Areas and Construction Staging Area 3)

5.11 The boundaries of both spoil disposal areas and Staging Area 3 will be marked on the ground e.g. by painted pegs/poles to ensure no cross boundary encroachment or clearance of indigenous vegetation present south of the freehold landholding boundary occurs.

5.12 No other pre-clearance measures are deemed necessary given Area 3 does not contain vegetation considered a viable an indigenous community.

Area 4 - Access Road And Transmission Line (McLean Farm) Indigenous Vegetation Type 4/1

5.13 Large trees are extremely rare or absent from the proposed clearance zones within indigenous Vegetation Type 4/1, however a component of this work will be to check for and mark any large trees within the proposed clearance strips and use these data to make any practicable alignment adjustments (subject to engineering considerations) to avoid large trees if practicable.

5.14 The access road route and transmission line clearance strips (finalised after any tree avoidance adjustments are made) will be clearly delineated by an appropriate and obvious method e.g. painted peg/pole marking of the outer margin limits to ensure no inadvertent route deviation or exceedance of prescribed width (10 metres for transmission line and 5 metres to east of existing farm track) occurs in clearance.

Clearance Protocols

Machinery Cleaning Requirements

5.15 Machinery must be thoroughly washed down (track-gear, undercarriage, engine bay, cab and engine covers, etc.) prior to entering any part of Area 1 or Area 2 to reduce risk of weed seed or vegetative transport.

Area 1 And Area 2 Excluding Geophysical Test Drilling Sites

5.16 Vegetation removal will commence only after all pre-clearance management measures (bird, bat, reptile and invertebrate) have been implemented and have been confirmed by the Project Ecologist(s).

5.17 Vegetation will only be cleared immediately prior to construction works beginning to reduce both habitat effects and the potential for erosion and sediment generation.

5.18 During vegetation removal activities, the CEMP will be implemented, including the maintenance of physical delineation barriers and erosion and sediment control measures.

5.19 Once a shrub or tree is felled, where practicable (and safe), the Construction Manager and Project Ecologist will consider what shrubbery or large logs can be left near the area felled without disrupting construction activities.

5.20 Non-tree material, along with excavated spoil, will be removed from site as clearance progresses (or as the Contractor and Site Engineer together determine). In Area 1 (if access allows) this may be carted to an Area 3 spoil disposal area and buried, and otherwise carted to and buried in trenching within Staging Area 1, along with the vegetation cleared from Staging Area 1 itself.

5.21 Trees and their root plates (whether stems are pushed over with root plates attached, or felled with subsequent stump removal) will be carted to an Area 3 Spoil Disposal Area. For Area 1, access may preclude cartage to Area 3 in which case access road and any Staging Area 1 tree and root plate material will be buried in trenching within Staging Area 1, along with the other smaller vegetation cleared from Staging Area 1 itself.

5.22 At Staging Area 3 a selection of larger tree trunk material (40+ cm diameter at centre of length, hereafter referred to as coarse woody debris) will be cut to lengths between 2.4 metres and 3.6 metres (these lengths fit between bolsters on log truck/trailer units and are more convenient for Hiab-grapple equipped self-loading truck/trailer units than shorter lengths) and stacked/stored at a

pad prepared for this purpose. Remaining root plate, trunk, branch and foliage material will be buried following salvage of the coarse woody debris component up to a maximum of 60 cubic metres (approximating 60 tonnes), or, if some lesser volume is yielded from the Area 2 access road/transmission line construction, then this lesser volume will apply.

5.23 Excess spoil from Area 2 access road and other excavations is to be carted to one or other Area 3 Spoil Disposal Area. Loads of this material that contain salvageable amounts of finer textured parent material, soil A-horizon material, or humified organic matter should be 'sorted through' e.g. by use of excavator equipped with a fine root rake to remove root and woody material and large stones, and stockpiled on a pre-prepared 'pad' (see Section 5.32) for subsequent relocation back to selected supplementary planting or micro topographical remediation sites. Note: If this stockpile is more substantial than needed for remediation in Area 2 the remainder will be beneficial for that purpose in Area 3.

Geophysical Test Drilling Sites

5.24 It is expected that minor, localised amounts of vegetation removal and some branch trimming of trees will be required for geotechnical access prior to the final design of the Project, prior to the main stages of the earthworks and construction. These works will include drilling into the substrate at the proposed tunnel locations. The Site Engineers will liaise with the Environmental Manager and relevant lead fauna Ecologists to determine the requirement for any fauna management (e.g. salvage and relocation, nest checks). TBC once understand what is happening here.

5.25 Any felled tree or trimmed branch material is to be left on site where felled (or in close proximity if cutting to smaller piece size and moving to provide drilling rig setup is required).

Area 4 - Access Road and Transmission Line (McLean Farm) Indigenous Vegetation Type 4/1

5.26 Vegetation removal will commence only after all pre-clearance management measures (bird, bat, lizard and invertebrate) have been implemented and have been confirmed by the Project Ecologist(s).

5.27 Vegetation will only be cleared immediately prior to construction works beginning to reduce both habitat effects and the potential for erosion and sediment generation.

5.28 During vegetation removal activities, maintenance of physical delineation barriers and erosion and sediment control measures as described in the CEMP will be ongoing.

5.29 Once a shrub or tree is felled, where practicable (and safe), the Construction Manager and Project Ecologist(s) will consider what shrubbery or large logs can be left near the area felled without disrupting construction activities .

5.30 Non-tree material, along with excavated spoil, will be removed from site as clearance progresses (or as the Contractor and Site Engineer together determine) and carted to an Area 3 Spoil Disposal Area and buried or spread, depending on the physical characteristics of the material.

5.31 Trees and their root plates (whether stems are pushed over with root plates attached, or felled with subsequent stump removal) will be carted to an Area 3 Spoil Disposal Area and buried.

Material (Coarse Wood And Site-Won Soil) Storage Protocols

Measures to Reduce Risk of Weed Seed or Vegetative Transport

5.32 Gorse (*Ulex europaeus*) seed, and possibly that of other weeds, will be present as a seed bank in the Spoil Disposal Areas of Area 3. Nearly all gorse seed comprising a seed bank is located within the top 20 centimetres[1] of most substrate (unless deeply fissure-riven or extremely loose) and occurs within a few metres of the parent plant, with c. 90% being in the top 6 centimetres[2].Gorse seed (and likely that of other species) is extremely unlikely to be present at depths of more than 30 centimetres, therefore, to reduce risk of conveyance back to other sites in site-won soil/organic matter to be used subsequently as site rehabilitation for planting or microtopography manipulation, or in coarse woody debris, an area in a suitable location and of adequate extent will be excavated as a 'pad' for storage of these materials prior to their relocation. This pad preparation will involve scraping off the surface layer of the areas of extent sufficient to contain the volume of material to be stored, plus a margin or buffer on all sides of at least 10 metres. Stored material may be collected from these pad areas for subsequent relocation back to site with a significantly reduced risk of weed transport.

Post-clearance Weed Management Protocols

Weed Risk Monitoring and Control

5.33 Applicable to those Scheme activities/infrastructure where weed risk is noted in Table B above, weed monitoring and control (focusing on, but not limited to the species listed in Table C) entails:

1. Detection monitoring for weed plant presence/occurrence on an annual basis, undertaken at least twice, with one time in the period September – November and one time in the period February – April of each year:
    i. For construction-only affected areas, during site use, and subsequently, ceasing at a site when no weeds have been found at that site for a period of two consecutive years, but in every case having been conducted for no less than five consecutive years from the date of completion of construction and site decommissioning. Note: This provides a practical balance of monitoring cessation at five years where weed establishment is not occurring, as well as a trigger for continued monitoring beyond five years if weeds are being found late in the initial (five-year) period. It would apply as shown for the hypothetical scenarios in Table D (and various other possibilities not included in those examples).
    ii. For operational areas, during the construction period and ongoing (i.e., of unlimited duration).
2. If found necessary as a result of Step 1. above, weed control undertaken as soon as practicable in the most effective season for best control results for the species concerned, but in any case prior to plants attaining seeding maturity.
3. Control monitoring for efficacy and success where control measures have been

[1] *Ref:* Moore, J., Sandiford, L., Austen, L. & Poulish, G. (Department of Agriculture and Food Western Australia). Controlling Gorse Seedbanks. *In: Fifteenth Australian Weeds Conference (pp. 283 – 286).*
[2] *Ref:* Zabkiewicz, J. A., & Gaskin, R. E. (1978). (Forest Research Institute, Rotorua). Effect Of Fire On Gorse Seeds. *In: Proceedings of 31st N.Z. Weed And Pest Control Conference, N.Z. Plant Protection Society (Inc).*

necessary. Timing for checking of post-control effectiveness will depend on the date of control application and method, however, should be undertaken within three months of the date of application of any control measure.

4. Subsequent control application (if found necessary as a result of Step 3. above) to be undertaken as soon as practicable in the most effective season for best control results for the species concerned, but in any case, prior to plants attaining seeding maturity.
5. Repeating Steps 3. and 4. for the durations prescribed in Step 1.
6. Records to be maintained for every monitoring and/or control event undertaken in accordance with Steps 1. - 4. will include:
    i. Where, when, and by whom the activity was undertaken.
    ii. Any weeds found (location, species, size, density/frequency).
    iii. Control measures implemented, with date, method, and herbicide and rate of application used if a chemical application.

Table C: List of Key Weed Species to be the Initial Focus of Monitoring and Control.

Woody/Shrub Species		
Botanical Name	**Common Name**	**Life Cycle**
Cotoneaster glaucophyllus	Large leaved cotoneaster	Perennial
Cytisus scoparius	Scotch broom	Perennial
Erica lusitanica	Spanish heath	Perennial
Leycesteria formosa	Himalayan honeysuckle	Perennial
Rubus spp.	Blackberry	Perennial
Solanum mauritianum	Woolly nightshade	Perennial
Ulex europaeus	Gorse	Perennial
Climbing Species		
Botanical Name	**Common Name**	**Life Cycle**
Clematis vitalba	Old man's beard	Perennial
Tropaeolum speciosum	Chilean flame creeper	Perennial
Broadleaved Herbaceous and Monocot Species		
Botanical Name	**Common Name**	**Life Cycle**
Cirsium arvense	Californian thistle	Perennial
Cirsium vulgare	Scotch thistle	Biennial
Crocosmia xcrocosmiiflora	Montbretia	Perennial
Digitalus purpurea	Foxglove	Biennial/Short lived perennial
Hypericum perforatum	Saint John's wort	Perennial
Jacobaea vulgaris	Ragwort	Biennial/Perennial
Reynoutria japonica	Asiatic knotweed	Perennial

Note: Species listing does not imply any order of threat/risk, or control priority – those listed are deemed most likely to present either introduction risk, competition risk to indigenous vegetation within the Project footprint, or both, and are drawn from McAlpine and Howell (2024)[3]. This list represents a starting point and may be expanded prior to, or at any time during Scheme activities if additional species posing risk in the Project's footprint environment are identified.

[3] *Ref:* McAlpine, K. G. and Howell, C. J. (2024). List of Environmental Weeds in New Zealand 2024 – Science for Conservation 340. *Department of Conservation*, Wellington, New Zealand.

Table D: Hypothetical Scenarios Demonstrating Weed Monitoring and Control Duration Undertaken as Per Prescription G.0 1(i) in Response to Varying Incidence of Weed Occurrence.

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Scenario 1	Site is decommissioned	Zero weeds	Zero weeds	Zero weeds	Zero weeds	Zero weeds	-	-	-	-
Scenario 2	Site is decommissioned	Zero weeds	Zero weeds	Weeds and control	Zero weeds	Zero weeds	-	-	-	-
Scenario 3	Site is decommissioned	Weeds and control	Weeds and control	Weeds & control	Weeds and control	Weeds and control	Zero weeds	Zero weeds	-	-
Scenario 4	Site is decommissioned	Zero weeds	Weeds and control	Zero weeds	Zero weeds	Weeds and control	Weeds and control	Zero weeds	Zero weeds	-
Scenario 5	Site is decommissioned	Weeds, no control	Weeds and control	Zero weeds	Zero weeds	Zero weeds	-	-	-	-

Notes to table:
"Zero weeds" means monitoring is undertaken, with no weeds found.
"Weeds and control" mean monitoring is undertaken, identifies weed presence, and control is undertaken.
"Weeds, no control" means monitoring is undertaken, weed presence is identified and control is undertaken but with control timing just beyond the year of occurrence identification.
Dashes mean monitoring and control has ceased and remains so.

6. PROTOCOLS FOR REHABILITATING TEMPORARY LOSS OF VEGETATION/HABITAT

Site Scarification

6.1 As a component of site decommissioning, scarification/ripping e.g., by use of excavator bucket (toothed) of compacted surfaces to loosen at least the top 150 centimetres will be undertaken at the following locations to allow natural regeneration of indigenous cover to occur relatively quickly, with that regeneration expected to comprise a range of species present prior to works:

(i) Temporary section of access road from Headworks to Construction Staging Area 1.

(ii) Construction Staging Area 1.

(iii) Construction Staging Area 2.

Microtopography and Drainage Maintenance – Access Road/Transmission Line Margins

6.2 At completion of road formation in Area 2, site-won parent material, soil A-horizon material, or humified organic matter salvaged and stored as per Section 5.23 will be used to infill any microsite depressions/pits caused by uprooting of trees or tree stump removal and prone to ponding, along the margins of the access road to maintain microtopography and drainage pattern consistent with the immediate site surroundings, and to provide improved conditions for regeneration establishment at such microsites.

Supplementary Planting

Background:

6.3 It is expected that natural regeneration would comprise a range of indigenous species present prior to works,and occur relatively quickly at all Project areas not permanently occupied. Although natural

regeneration is the preference, supplementary planting to enhance the speed of revegetation will be undertaken at Staging Area 2 because this area is open and some distance from a seed source of woody species with primarily wind dispersed seed e.g., *Pterophylla racemosa*, and *Metrosideros umbellata.* Furthermore, the area is likely to be heavily compacted by machinery and human use and be devoid of any cover that e.g., birds might use, and thereby transport seed. Likewise, the area will not be surrounded by shrub or tree vegetation and bird traverse across it is likely reduced compared to what would occur if surrounded, another likely limitation on seed dispersal for species present prior to clearance e.g., *Coprosma* spp., and *Carpodetus serratus* to the affected area. Both sections of Staging Area 2 i.e., the area south of the tailrace and the area north of the tailrace are to be subject to supplementary planting as this captures the key area of the Project footprint/infrastructure combination that would benefit from amelioration of effects from an aesthetics perspective, and where supplementary planting with nursery raised stock, is likely advantageous. Note: For the riparian margin, an important consideration is not to alter habitat by planting species that could cause change e.g., from a low stature, predominantly herbaceous/monocot predominance to shrub hardwoods as an overstorey. Therefore, for Staging Area 2 riparian margins, reliance will be on natural regeneration as the strategy with least risk of habitat alteration and highest likelihood of securing riparian community species diversity comprised of the range of species naturally present prior to clearance (anticipated diversity being broader than that obtainable via plantings). Therefore:

(a) Supplementary planting will be undertaken in the c. 0.75 hectares comprising Staging Area 2, following scarification as per Section 6.1, above.

(b) Planting stock is to be nursery raised, preferably from seeds/spores sourced from the Westland District (however if such stock is not available or practicable to obtain, then stock from either West Coast region or South Island seed sources will be acceptable).

(c) It is intended that a selection of woody, monocot and fern species present on the site prior to clearance are to be used. These are listed in Table E, along with indicative number of plants of each to enable ordering given most if not all will likely need to be grown to order, with an anticipated lead-in time of at least two years from time of ordering to delivery availability. Note: Actual numbers and proportions used may vary from those presented in Table E, which are based on a target stocking of 5000 stems per hectare equivalent (incorporates an allowance for some expected mortality), assigned between species in a ratio (with numbers rounded) aiming to broadly reflect site occurrence prior to clearance – variation may be due to final site attributes only discernible after construction cessation.

Table E: Target Species and Numbers for Supplementary Planting of Staging Area 2.

Tree/Shrub Species			
Botanical Name	**Maori Name (& Other Common Name)**	**Ratio**	**Indicative Number For Ordering**
Ascarina lucida	Hutu	0.05	200
Carpodetus serratus	Putaputaweta (Marble leaf)	0.05	200
Coprosma propinqua	Mingimingi	0.20	750
Griselinea littoralis	Kapuka (Broadleaf)	0.10	350
Metrosideros umbellata	Rata (Southern rata)	0.01	40
Myrsine divaricata	Mapou (Weeping mapou)	0.02	75
Pterophylla racemosa	Kamahi	0.02	75

Monocots			
Botanical Name	**Maori Name (& Other Common Name)**	**Ratio**	**Indicative Number For Ordering**
Astelia fragrans	Kahaha (Bush flax)	0.05	200
Austroderia richardii	Toetoe	0.26	1000
Ferns			
Botanical Name	**Maori Name (& Other Common Name)**	**Ratio**	**Indicative Number For Ordering**
Dicksonia squarossa	Wheki (Rough tree fern)	0.01	40
Lomaria discolor	Piupiu (Crown fern)	0.11	400
Polystichum vestitum	Prickly shield fern	0.11	400
	Totals	***1.0***	***3730***

Note: It is recommended that smaller sized planting stock (as provided in e.g., 0.2 litre – 2.5 litre pots (and c. 20 – 45 cm tall); and 0.3 - 1.5 litre pots for monocots and ferns) is used as there is lower risk of mortality in smaller plants due to factors including transplant shock, desiccation and wind thrashing.

6.4 To increase speed and success of plant establishment in naturally rocky or construction-rocked or landscape-rocked areas, selective deposition of site-won soil and organic material obtained from other Project component construction and stored for this purpose (see Section 5.23 above) will be highly beneficial.

6.5 A final detailed site planting plan will be formulated for Staging Area 2 as a component of site decommissioning and when attributes are known e.g., final extent, position of any area(s) rocked for landscape purposes. This detailed plan will outline the area for planting, grid it and assign specific plant numbers and species combinations to randomised locations to avoid regimented/fixed-pattern plantings. A component of this plan will be the designation of microsite relocation of soil/organic matter ex storage (as this is most expediently done when prospective planting locations have been determined and thereby site-specific placement and volumes are known).

6.6 When delivered from the source nursey, all plants will be held in a designated place in the Staging Area of Area 3 and prior to transfer into Area 2 for planting, will be subject to the following treatments to reduce risk of invertebrate or weed transfer:

(a) Sprayed/treated with an appropriate insecticide and held for a sufficient for this to be effective.

(b) Immediately prior to transport to planting sites, be removed from their bags/pots/containers and transported bare-rooted (bagged or boxed, with care taken to keep roots moist and prevent desiccation) for immediate planting. The growing medium emptied from pots/containers will be retained where emptied and disposed of by burial in a Spoil Disposal Area.

Pasture Establishment - Area 3

6.7 All areas of bare ground created by the activity and that have had necessary top dressing with soil or suitable substrate and levelling/contouring with any surface drainage pattern reinstated will be protected from soil erosion as soon as practicable by sowing with a mix of pasture species, this mix to be agreed between Westpower Ltd. and the landowners.

7. COMPLIANCE MONITORING AND REPORTING

7.1 Compliance or incident reports described in this section will be submitted to the West Coast Regional Council (WCRC) and Westland District Council (WDC).

Pre-clearance Reporting

Pre-clearance Report(s)

7.2 The pre-clearance report shall be submitted no less than 30 working days prior to commencement of construction activities and include:

(a) An updated project footprint and ecological constraints map that illustrates site specific vegetation removal effects management measures.

(b) Representative photographs showing physical delineation of vegetation within the project footprint (particularly wetlands), high-value trees immediately adjacent to the footprint, sediment control measures, and proposed stockpiling locations.

Clearance Reporting

Incident Monitoring and Reporting

7.3 Incident-based reporting will be provided to the WCRC and the WDC as soon as practicable but no more than five working days after an unscheduled event associated with vegetation removal. Such events include notable compliance failure that results in adverse ecological effects, or an event that causes vegetation damage on a scale that requires an urgent remedy according to the Project Ecologist to return to compliance with any section of the site's ecological management plans and planting programmes. The incident-based report will include the following information:

(a) The causes of the incident, the emergency response measures (if applicable), and the response proposed to avoid a recurrence of the issue.

(b) An assessment undertaken by a suitably qualified ecologist which details any adverse effects of the exceedance.

(c) Proposed, measures to avoid, remedy or mitigate effects or to offset or compensate for significant residual effects that cannot be avoided, remedied or mitigated.

(d) All incidents will be tracked to resolution through the Project's compliance management system and that (if any) pertaining to a specific site.

Post-clearance Reporting

Weed Monitoring and Control

7.4 An annual weed monitoring report covering all areas prescribed for weed monitoring/control in this VMP shall be submitted to the WCRC and the WDC within two months of the end of each calendar year, with the report detailing:

(a) Where, when, and by whom monitoring (and any control) activity was undertaken.

(b) Any weeds found (location, species, size, density/frequency).

(c) Control measures implemented, with date, method, and herbicide and rate of application used if a chemical application.

Area 1 - Temporary Access Road and Construction Staging Area 1 Site Rehabilitation

7.5 An initial post-clearance monitoring report shall be submitted to the WCRC and the WDC within two months of vegetation removal completion at the temporary access road and Staging Area 1. The report shall include:

(a) Confirmation and evidence (dated photographs) that the vegetation removal protocols were adhered to in accordance with this VMP.

(b) Maps and photographs illustrating area(s) of vegetation removal undertaken and where and how cleared vegetation disposal occurred.

7.6 Subsequent annual monitoring reports shall be submitted to the WCRC and the WDC within two months of the end of their preceding calendar year, the first of these reports covering the year following that of the initial post-clearance report. Annual reports are to be submitted for no less than five years and provide:

(a) Evidence that site rehabilitation protocols were adhered to in accordance with this VMP.

(b) A set of photographs showing vegetation recovery progress via natural regeneration and descriptions of this. For Construction Staging Area 1, photographs will be taken from fixed directions (magnetic N, E, S and W) from a relocatable photo point (marked by e.g., numbered pegging and with NZTM 2000 coordinates as recorded by handheld GPS) established in the middle of the cleared area.

(c) Any additional recommendations for site rehabilitation if deemed necessary after a minimum of four years post-clearance.

Area 2 – Access Road/Transmission Line

7.7 An initial post-clearance monitoring report shall be submitted to the WCRC and the WDC within two months of vegetation removal completion along the access road and transmission line. The report shall include confirmation and evidence (dated photographs) that the vegetation removal protocols were adhered to in accordance with this VMP and will include:

(a) Check measurement of corridor width taken at intervals along the route to confirm compliance with the maximum clearance width of 17.5 metres.

(b) Photographs illustrating area(s) of shrubbery and large logs felled and confirming where it is practicable to leave the vegetation in situ to minimise effects on lizards.

7.8 Subsequent annual monitoring reports shall be submitted to the WCRC and the WDC within two months of the end of their preceding calendar year, the first of these reports covering the year following that of the initial post-clearance report. Annual reports are to be submitted for no less than five years and provide:

(a) A list of sites (NZTM 2000 coordinates as recorded by handheld GPS) where placement of coarse woody debris occurred along the route, accompanied by photographs showing a random sub-set of placement sites/attributes.

(b) A set of photographs taken at fixed directions (magnetic N, S, E and W) from relocatable (marked by e.g., numbered pegging and with NZTM 2000 coordinates as recorded by hand held GPS) photo points the first located to capture the true left Granite Creek cutting on the permanent road, and thereafter at 300 metre intervals along the route as far as Alpha Creek, with a final point capturing the Alpha Creek crossing and training works, the purpose of these photographs being to provide a record of natural regeneration occurrence in the 2.5 metre temporary effect zone.

Area 2 – Construction Staging Area 2

7.9 An initial post-clearance monitoring report shall be submitted to the WCRC and the WDC within two months of vegetation removal completion at Staging Area 2. The report shall include:

(a) Confirmation and evidence (dated photographs) that the vegetation removal protocols were adhered to in accordance with this VMP.

(b) Maps and photographs illustrating area(s) of vegetation removal undertaken and where and how cleared vegetation disposal occurred.

(c) A detailed Planting Plan for supplementary planting (including spoil relocation) for the area, and establishing a set of relocatable (marked by e.g., numbered pegging and with NZTM 2000 coordinates as recorded by handheld GPS) photo points to provide a plant growth monitoring system.

7.10 Subsequent annual monitoring reports shall be submitted to the WCRC and the WDC within two months of the end of their preceding calendar year, the first of these reports covering the year following that of the initial post-clearance report and Planting Plan submission. Annual reports are to be submitted for no less than five years and provide:

(a) Evidence that site rehabilitation protocols (scarification) were adhered to in accordance with this VMP.

(b) Site mapping and photographs showing spoil deposition sites and the supplementary planting undertaken (this in the case of the first two annual reports).

(c) A summary of supplementary planting outcomes including plant mortality, surviving plant health status, and any effects attributable to environmental factors such as frost or desiccation, wind thrashing, animal browsing or insect/pathogen attack. This is to be supported by photographs taken at fixed directions (magnetic N, S, E and W) from each relocatable photo point.

(d) Details of any blanking undertaken to replace dead or moribund plants (replacement numbers, species, date of planting).

(e) Any additional recommendations for site rehabilitation if deemed necessary after a minimum of four years post-clearance.

Area 3 – Spoil Disposal Areas and Staging Area

7.11 An annual monitoring report shall be submitted to the WCRC and the WDC within two months of the end of each calendar year of operations, for the period of site use plus one additional year post cessation of site usage. The annual report shall include confirmation and evidence (dated

photographs) that the coarse wood and site-won soil salvage and storage protocols were adhered to in accordance with this VMP and will include:

(a) Locations, dimensions and depths of areas where woody and other vegetative material from Project works has been buried, with sample photographs illustrating material pitted or trenched prior to covering over and post covering.

(b) Locations and dimensions of 'pads' created for storage of coarse woody debris and soil/humic material for relocation back to sites for their rehabilitation, and illustrative photographs of these facilities.

(c) Volume estimates for stored coarse woody debris and soil/humic material present on site, and illustrative photographs of stacks/piles.

(d) Areas of rehabilitation undertaken (spoil spreading/contouring) and date(s) and areas of sowing of pasture species to establish cover, with supporting photographs.

Area 4 – Access Road and Transmission Line (McLean Farm) Indigenous Vegetation Type 4/1

7.12 An initial post-clearance monitoring report shall be submitted to the WCRC and the WDC within two months of vegetation removal completion within Vegetation Type 4/1. The report shall include:

(a) Confirmation and evidence (dated photographs) that the vegetation removal protocols were adhered to in accordance with this VMP.

(b) Maps and photographs illustrating area(s) of vegetation removal undertaken and where and how cleared vegetation disposal occurred.

8. REVIEW REQUIREMENTS

8.1 This VMP and its implementation will be reviewed on an as needs basis during operation of the Project. The review will consider the following:

(a) Efficacy of management practices and mitigation strategies.

(b) Variations required to integrate with changes to other management plans.

(c) Complaints.

(d) Incident reports.

(e) Changes in organisational structure.

(f) Changes in novel monitoring and mitigation strategies.

(g) Weed species risk and any additions to target species listed for monitoring and control.

(h) Changes in legislation and standards.

(i) Incorporating new scientific findings, technological advancements, or changes in regulatory requirements.

(j) To update in response to any feedback from stakeholders and experts that will improve fauna management practices.

(k) To accommodate sequencing and changes to the construction programme and design.