

Mt Cass Wind Farm Construction Management Plan



Revision 5 – 02 May 2023

| Revision H | Revision History | | |
|------------|----------------------------------------------|------------|--|
| Version | Status | Issue Date | |
| Rev 1 | Draft for Consultation | Dec 2022 | |
| Rev 2 | MCD Updates post SQIP and MCWF Review | 16/12/22 | |
| Rev 3 | Updates to dates due to changes in programme | 23/02/23 | |
| Rev 4 | Post CLG Review and submission to HDC | 22/03/23 | |
| Rev 5 | Amend dates and laydown yard | 02/05/23 | |

| Approvals | | | | | |
|-----------|-------------|---------------|-----------------------------|----------|-----------|
| Revision | Action | Name | Position | Date | Signature |
| Rev 4 | Originator | David Kidd | MCD Construction Manager | 22/03/23 | Blidd |
| Rev 5 | Reviewed By | Mike Carstens | Civil Project Engineer | 2/05/23 | Pot |
| Rev 5 | Approved By | Greg Gummer | Project Director | 2/05/23 | h |

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Cross-Reference Table to Conditions of Consent

For ease of review a matrix of the HDC consent conditions is provided in Appendix A of this management plan as a means of cross-referencing the conditions of consent with this plan and its sub plans.

In the individual sub-plans, there is a more detailed table which states how each plan meets the specific conditions.

Terms & Definitions

| TERM | DEFINITION |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accidental Discovery Protocol (ADP) | The ADP shall set out the steps to take should any prehistoric (Māori) or historic archaeological site be found as a result of any earthmoving or ground modification that occurs during the construction and operation of the wind farm at any time. |
| Boulder Field | Boulder field means land in which the area of unconsolidated bare boulders (> 200 mm diam.) exceeds the area covered by any one class of plant growth-form |
| Civil Balance of Plant (cBoP) Contractor | Company engaged by MCWFL to design and build the civil scope of the project. Namely McConnell Dowell Constructors Ltd |
| Community Liaison Group (CLG) | A group offered to be established by way of public notice. Consisting of |
| | 1x East ward representative of property owners |
| | 1x South ward representative of property owners |
| | 1x Representative of Mt Cass Rd residence |
| | 1x Representative from the consent holder |
| | 1x Observer from the Hurunui District Council |
| Consent Holder | Mt Cass Wind Farm Limited |
| Construction Management Plan (CMP) | This document |
| CMP Review Panel | A Review Panel formed from a nominated member from each of the contracting entities, MCWFL and their relevant technical experts who are tasked with carrying out an annual review of the CMP |
| Construction Laydown Yard | A laydown area at the intersection of Symonds Rd and Mt Cass Rd specifically constructed for SGRE to handle the WTG units as they come to site. |
| еВоР | Electrical Ballance of Plant – Company engaged by MCWFL to design and build the electrical scope of the project. Namely ElectroNet Services Ltd |
| ECan | Environment Canterbury (Canterbury Regional Council) |
| ESCP | Erosion Sediment Control Plan |
| Exposed Limestone Pavement | Exposed limestone pavement means those areas, in situ or otherwise, that consist of a continuous, relatively flat or moderately inclined surface with an organised system of open sub-vertical joints which fully penetrate the surface limestone bedding as identified on Golder |

| | Associates plans CG181.3, CG182.3, dated 27 May 2011 attached as Appendix 2. |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HDC | Hurunui District Council |
| Independent Suitably Qualified Person (SQIP) | A company agreed between HDC and MCWFL who is engaged to review the CMP and certify its compliance against the resource consent conditions. Namely Stantec Ltd. |
| Inspection Test Plan (ITP) | Contractor produced check list demonstrating how compliance with the specification will be met to ensure quality control |
| Job Safety and Environmental Analysis (JSEA) | A risk assessed method statement which aims to identify and mitigate environmental and safety hazards. |
| Landscape Panel | A panel to provide expert guidance to the project on the implementation of the landscape conditions in the resource consent. The panel is formed of 1x MCWFL and 1x HDC Appointed Land Scape Architect. |
| Micro Siting | The process of relocating the turbine within the limits of the consent conditions to optimise site conditions for the turbine. |
| Mt Cass Wind Farm | The Project |
| Mt Cass Wind Farm Limited | The Consent Holder and Principal |
| Mt Cass Rd Upgrade | A scope of work yet to be designed and procured that involves the upgrade of the Mt Cass Rd between Denis O'Rourke Drive and the access to the Wind Farm. |
| Permanent Stockpile | A stockpile (Disposal Site) location which will receive fill from the project and is to be left after the project. These must meet RC requirements for design, contouring and rehabilitation. |
| Port of Entry (POE) | The port that imported goods first enter New Zealand |
| Regulator | Relevant council to the consent |
| Safe Work Method Statement (SWMS) | A risk assessed method statement which aims to identify and mitigate environmental and safety hazards. |
| Siemens Gamesa Renewable Energy (SGRE) | S&I contractor supply and installing the wind turbine generators. |
| Site Cultural Sensitivity Protocol (SCSP) | Protocols and process for dealing in a culturally safe manner with all sites identified under condition [126] as being of potential cultural concern or significance to Waitaha. |
| Site Construction Camp | The main construction camp built at the base of the wind farm access track. |

| Site Traffic Management Supervisor (STMS) | Is the supervisor responsible for managing all temporary traffic management aspects of a roadworks site. They ensure effective protection for all road workers and road users at and near the site, correct direction of the traffic through the site as well as compliance with all necessary standards, and responsibility for traffic-related safety at all times. |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Stantec Ltd | The Suitably Qualified Independent Person |
| Suitably Qualified Independent Person (SQIP) | An individual who is suitably qualified to review and certify that this CMP meets the requirements of the resource consents. They are to be approved by HDC and engaged by MCWFL. – Namely Tim Morrison from Stantec Ltd |
| S & I Contractor | The supply and install contractor – Namely Siemens Gamesa Renewable Energy (SGRE) |
| Temporary Speed Limit (TSL) | A speed limit implemented under a traffic management plan to temporarily reduce the speed limit from the legal posted limit. |
| Temporary Stockpile | A stockpile that is used to facilitate construction but not left on site on completion of the project. These are used for short durations and are stabilised using permanent means. I.e., an aggregate stockpile. |
| Traffic Management Diagram (TMD) | A site-specific traffic management layout drawing |
| Traffic Management Plan (TMP) | is developed by a qualified person and describes all the co-ordinated measures that detail how a safe environment will be created for all road users while work or activity takes place on the roading corridor (road, footpath, or berm). |
| Work Pack | A document compiled by the contractor for all construction tasks. Comprises of a method statement, JSEA / SWMS Inspection test plan, permits to work and SOPs and demonstrates how the construction will comply with the resource consent, law, specification, industry best practice company and project procedures. |
| WTG | Wind Turbine Generator |

1 Introduction

1.1 Purpose

This Construction Management Plan (CMP) has been prepared to

- Avoid environmental harm
- Mandate how compliance will be achieved
- Meet the requirements of the resource consents
- Meet the requirements of the overarching Mt Cass Wind Farm Environmental Management Plan

Its purpose is to communicate the construction management procedures and construction methods that are to be implemented throughout the course of the Mt Cass Wind Farm Project by each of its contractors and how the project will meet the conditions of the resource consents.

1.2 Objectives

This Construction Management plan has been prepared to meet the following objectives.

- a. To minimise the overall area of disturbance (by cuts, fills and placement of cover) of karst limestone features and indigenous vegetation, but in any event, to ensure compliance with the maximum levels of indigenous shrubland and forest clearance and disturbance of limestone pavement and boulder field set out in RC070250 Condition 13 and CRC214150 Condition 2.
- b. Avoid disturbance of vegetation and limestone features within the exclusion zones as set out in RC070250 condition 6 and CRC214150 Condition 3.
- c. To minimise sediment generation and sediment-laden runoff in accordance with RC070250 condition 37.
- d. To maintain existing surface and subsurface drainage patterns and pathways.
- e. To ensure that appropriate monitoring and reporting of all activities are undertaken in accordance with these conditions.
- f. To ensure that the earthworks and spoil disposal areas are contoured so that, to the greatest extent practicable, the finished landform will blend with the surrounding landscape so as not to be visually dominant from any public viewing point (excluding unformed legal roads).
- g. To ensure that the earthworks are undertaken in a manner which provides for final surfaces which are suitable for rehabilitation and/or recolonisation by native vegetation to achieve vegetative cover that is effective at minimising sediment run-off.
- h. To ensure that only those areas identified in the Plan CRC214150B and CRC214150C dated April 2019 plans referred to in conditions 3, 4 and 5 are used as spoil disposal areas.
- i. To ensure matters relating to the extent and timing of construction traffic and the traffic management provisions to be put in place during this time, achieve a safe and efficient road network.
- j. To ensure that CRC214150 Condition 21 relating to visual effects mitigation can be met.
- k. To identify threatened indigenous flora within the construction zone and provide for their safe relocation as required under the Environmental Management Plan in Consent CRC214150 Condition 19.
- To identify the Waitaha gecko (Canterbury gecko) and other lizard species within the construction zone and provide for their safe relocation as required by the Environmental Management Plan in Consent CRC214150 Condition 19 and Consent RC070250 condition 79.
- m. To identify snails and other snail species within the construction zone and provide for their safe relocation as required by consent CRC214150 Condition 28
- n. Minimise the potential for disruption to any active New Zealand falcon nest identified within 200 m of any construction or earthwork area, and Consent RC070250 condition 73.
- o. To minimise the introduction and spread of weeds.
- p. Control construction noise.

1.3 Plan Overview

The CMP applies to all works up to and including the completion of commissioning and rehabilitation of construction activities.

This CMP is a requirement of the HDC Land Use consent RC070250 and the Canterbury Regional Council (ECan) Consent CRC214150.

These consents are the overarching regulatory documents that form this CMP. MCWFL has developed an Environmental Management Plan (EMP) which provides the overall governance and strategy for the lifecycle of the project.

The EMP sets out construction ecology risks and associated management processes to mitigate the identified project risks. During construction, each contractor engaged by MCWFL will be responsible for ensuring that this plan is correctly implemented and will review all documentation relating to this plan before it is finalised and issued.

The overhead transmission lines from the substation to the electrical grid are covered under different resource consents and do not form part of the scope of work covered by this CMP or its subplans.

1.4 Document Interface

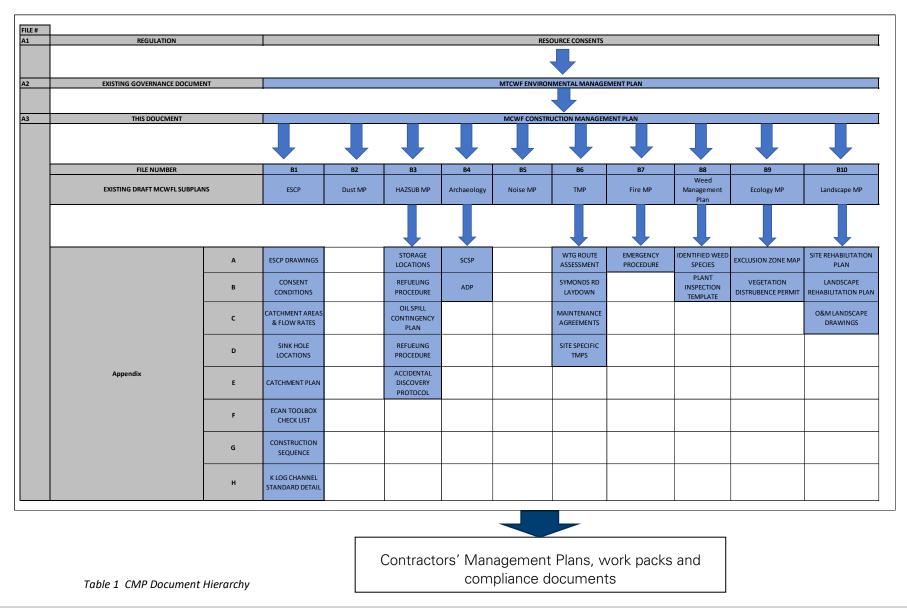
The CMP is governed by the resource consents and the MCWFL EMP, which are the overarching documents.

This CMP sets out how the construction will be managed and consent conditions met and is supplemented by Sub-Management plans which detail how specific risks are managed.

The individual contractors engaged by MCWFL will require their own individual management plans under their internal policies. These plans will be written to ensure that they meet the requirements of this CMP which has precedence.

The flow chart in

Table 1 below shows the hierarchy of documents and how they interface with each other.



1.5 Sub-Management Plans

The sub-management plans in Table 2 have been developed and form part of the CMP.

| Plan Number | Title | Revision |
|-------------|--------------------------------------------|----------|
| B1 | Erosion Sediment Control Plan (ESCP) | 5 |
| B2 | Dust Management Plan (DMP) | 4 |
| В3 | Hazardous Substance Management Plan (HSMP) | 4 |
| B4 | Archaeology Management Plan (AMP) | 4 |
| B5 | Noise Management Plan (NMP) | 4 |
| B6 | Traffic Management Plan (TMP) | 5 |
| B7 | Fire Management Plan (FMP) | 10 |
| B8 | Weed Management Plan (WMP) | 4 |
| В9 | Ecology Management Plan (EcoMP) | 4 |
| B10 | Landscape Management Plan (LMP) | 4 |

Table 2 Sub-Management Plans

1.6 Relevant Consent Holder Documents

Table 3 provides a list of the relevant overarching project documents.

| Title | Revision |
|-----------------------------------------------------|-------------------------|
| Mt Cass Wind Farm Environmental Management Plan | Rev 12 (06/12/22) |
| Mt Cass Wind Farm Health and Safety Management Plan | Rev G (16/08/22) |
| Wildlife Act Authority | 98153-FAU (29/11/22) |

Table 3 Relevant Overarching Project Documents

1.7 Relevant Consents

| Number | Title | Regulator |
|-----------|----------------------------------------------|-----------|
| CRC214150 | Land for Earthworks-Construction | ECan |
| CRC214152 | Construction Stormwater Discharge to Land | ECan |
| CRC214153 | Dust Discharge solids materials handling | ECan |
| CRC214154 | Dust Discharge from outdoor material storage | ECan |
| CRC214156 | Water Discharge - Construction | ECan |
| RC070250 | Land Use Consent | HDC |

Table 4 provides a list of the consents for the construction of the Mt Cass Windfarm.

Table 4 MCWF ECan and HDC Consents

1.8 Relevant Consent Conditions

Appendix C of the Construction Management Plan includes a matrix of all consent conditions that are included in the Construction Management Plan and Subplans. Table 5 below shows the specific conditions that pertain this plan:

| Consent Conditions | Control |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| 31). The objective of the Construction Management Plan shall be to set out the practices and procedures to be adopted to ensure compli- the following objectives: | ance with consent conditions and to meet |
| a. To minimise the overall area of disturbance (by cuts, fills and placement of cover) of karst limestone features and indigenous vegetation, but in any event to ensure compliance with the maximum levels of indigenous shrubland and forest clearance and disturbance of limestone pavement and boulder field set out in condition [13]; | Refer sub-plans B9 – EcoMP and B10 – LMP |
| b. Avoid disturbance of vegetation and limestone features within the exclusion zone as set out in condition [6]; | Refer sub-plans B9 – EcoMP and B10 – LMP |
| c. To minimise sediment generation and sediment laden runoff in accordance with condition [37]; | Refer sub-plan B1 - ESCP |
| d. To maintain existing surface and subsurface drainage patterns and pathways; | Refer sub-plan B1 - ESCP |
| e. To ensure that appropriate monitoring and reporting of all activities is undertaken in accordance with these conditions; | Refer to Section 9 of this CMP |
| f. To ensure that the earthworks and spoil disposal areas are contoured so that, to the greatest extent practicable, the finished landform will blend with the surrounding landscape so as not to be visually dominant from any public viewing point (excluding unformed legal roads); | Refer sub-plans B10 – LMP |
| g. To ensure that, the earthworks are undertaken in a manner which provides for final surfaces which are suitable for rehabilitation and/or recolonisation by native vegetation; | Refer sub-plans B10 – LMP |
| h. To ensure that only those areas identified in the Golder Associates plans referred to in conditions [3] and [4] and MainPower Plans referred to in condition [5] are used as spoil disposal areas; | Refer sub-plans B1 ESCP and B10 LMP |
| i. To ensure matters relating to the extent and timing of construction traffic, and the traffic management provisions to be put in place during this time, achieve a safe and efficient road network; | Refer sub-plan B6 - TMP |
| j. To ensure that conditions of this consent relating to visual effects mitigation can be met; | Refer sub-plans B10 – LMP |
| k. To identify threatened indigenous flora within the construction zone and provide for their relocation as required by condition [32.n]; | Refer to EMP |
| I. To identify Canterbury gecko and other lizard species within the construction zone and provide for their relocation as required by condition [79]; | Refer sub-plan B9 EcoMP (also MCWFL EMP) |

| m. Minimise potential for disruption to any active New Zealand falcon nest identified within 200 m of any construction or earthwork area; and | Refer sub-plan B9 EcoMP (also MCWFL EMP) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| n. To minimise the introduction and spread of weeds. | Refer subplan B8 - WMP |
| 32) The Construction Management Plan shall include, but not be limited to: | |
| a. The methods and techniques to achieve the above (condition 31) objectives. | Consent matrix in Appendix C: outlines where each consent condition is controlled, and how it is controlled. |
| b. Assigning roles and responsibilities, including appointment of a representative to be the primary contact person in regard to construction matters relating to this consent | Refer to Section 3 Roles and Responsibilities of this CMP |
| c. Details of a training programme for machinery operators working on the site who will be involved in indigenous vegetation or limestone pavement or boulder field disturbance. The training programme will include, but not be limited to, education on using least impact techniques when disturbing or clearing limestone or indigenous vegetation. | Refer to section 7 of this CMP |
| d. Limits of disturbance to indigenous vegetation and karst landforms in accordance with condition [13]. | Refer sub-plan B9 Ecology |
| | And Pre-construction Management Plan |
| e. Location of soil stockpiles and spoil disposal areas. | Refer sub-plans B1 – ESCP and 12 - LMP |
| f. Construction staging and sequencing over the entire site. | Refer to section 5 Construction Method of this CMP |
| g. A description of the sources of noise and the methods to be used to meet condition [131]. | Refer sub-plan B5 – NMP |
| h. Management of construction traffic as provided for in condition [63]. | Refer sub-plan B6 – TMP |
| i. Procedures for earthworks, erosion and sediment control, stabilisation of the site (including the removal or stabilisation of any unstable boulders) and revegetation of existing vegetation sites with locally eco-sourced indigenous species and non-invasive, low stature grasses such as perennial ryegrass (Lolium perenne) and annual poa (Poa annua) grass species only. Aggressive exotic grasses such as browntop (Agrostis caprillaris), cocksfoot (Dactylis glomerata) and brome (Bromus spp.) shall not be used. | Refer sub-plans B1 – ESCP and B10 – LMP Also refer to EMP |
| j. Contouring of all spoil disposal sites to visually integrate into the natural landform. | Refer sub-plan B10 – LMP |

| k. Procedures for management, control and maintenance of runoff processes and patterns | Refer sub-plan B1 – ESCP |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| I. Procedures for the management of dust. | Refer sub-plan B2- DMP |
| m. Procedures for the management of weeds. | Refer sub-plan B9 – WMP |
| n. Methods for the relocation of threatened indigenous flora (as defined by de Lange et al (2009)) identified within the construction zone, and where practicable, At-Risk indigenous flora (defined be de Lange et al (2009)) identified within the construction zone. | Refer sub-plan B9 EcoMP (also EMP) |
| o. Methods for location and relocation of lizards as required by condition [79]. | Refer sub-plan B9 EcoMP (also EMP) |
| p. Procedures for management of fire risk and for fire suppression. | Refer sub-plan B7 – FMP |
| q. Adoption, if appropriate, of the principles identified in the Ministry for the Environment publication "A Cultural Health Index for Streams and Waterways, June 2003, Technical Paper 75". | Not considered applicable to this site as there are no permanent waterways. |
| r. Spill contingency measures and procedures for the management of hazardous substances. | Refer sub-plan B3 – HSMP |
| s. Procedures for rehabilitation of the areas directly affected by the construction and roading activities and the ongoing maintenance of the rehabilitation work. | Refer sub-plan B10 – LMP |
| t. Monitoring, record-keeping and reporting requirements. | See reporting and monitoring section of this plan and all sub-plans. |
| u. Procedures for minimising the visual effect of any removal or stabilisation of unstable boulders for safety reasons during construction and operation. | Refer sub-plan B10 – LMP |
| v. Procedures to ensure compliance with conditions [45] and [46] for the treatment of identified areas of limestone pavement. | Refer sub-plan B10 – LMP |
| | |

Table 5 MCWF Consent Conditions Applicable to the CMP.

2 CMP Review and Approval

2.1 Mt Cass Approvals

This CMP is drafted in collaboration between Mt Cass Windfarm Limited (MCWFL) and their contractors. The approval process is demonstrated in the flow chart in Figure 1 below.

On completion of the draft the CMP is to be issued to MCWFL for review as the consent holder.

Stantec are approved as the Suitably Qualified Independent Person (SQIP) to certify that the CMP meets the requirements of Consent CRC214150 condition 8 and 9 and the CMP requirements of Consent RC070250.

The CLG have also been given the opportunity to provide comment at the initial draft and final review stage.

As required by the resource consent, MCWFL will issue the CMP to the Regulator for review prior to commencing with construction.



Figure 1 Approval Flow Chart

2.2 Approval Timeline

The CMP is to be issued to the Regulator 30 working days prior to construction starting on site. The target start date for construction is the 31st of October 2023.

To achieve this the following milestones in Table 6 must be met.

| Date | Milestone | Responsible Entity |
|------------------------------------|---------------------------------------------------------|-----------------------|
| 2/12/22 | Issue first drafts of CMP to MCWFL | cBoP eBoP S&I |
| 9/12/22 | Issue draft review comments Independent review comments | MCWFL Stantec |
| 28/02/23 23/12/22 to 3/02/23 | Amendments made by MCD | сВоР еВоР |
| 6/03/23 to 17/03/23 | Community Liaison Group review | S&I MCWFL |

| 20/03/23 to 29/05/23 | Final Amendment post CLG Review | MCD |
|-------------------------|-----------------------------------------------------------------|------------|
| 30/5/23 | Issue CMP to Regulator | MCWFL |
| 28/06/23 | ECan review period completed in 20 Working days | ECan |
| 12/07/23 | HDC review period completed 30 Working days | HDC |
| 16/10/23 (TBC) | Provide 10 working Days' notice to Iwi of earthworks activities | MCWL |
| 24/10/23 (TBC) | Provide 5 working day notice of construction starting | MCD/ MCWFL |
| 31/10/23 (TBC) | Construction commences on site | сВоР |

Table 6 Proposed CMP Timeline

2.3 Lodgement of the CMP

Copies of the CMP shall be lodged in the Hurunui Memorial Library in Amberley and the Christchurch Public Library so that there is public access to them. In addition, copies shall be publicly available on the Consent Holder's website <u>https://www.mtcasswindfarm.co.nz/</u>

2.4 Amendments

The CMP is a live document and will be reviewed and updated throughout the duration of the project.

The consent holder may make any reasonable amendments to the CMP (including any submanagement plans which are prepared as part of the CMP). Any changes to the management plans shall remain consistent with the objectives of the CMP and be certified by an independent, suitably qualified certifier(s).

The Consent Holder shall provide any amended plan to the Hurunui District Council and ECan (Marked Attention Regional Leader, monitoring and compliance) for certification that it will achieve compliance with the relevant consent conditions.

The flow chart in Figure 2 below demonstrates the amendment process.



All activities shall be undertaken per the latest versions of management plans.

2.5 Annual Review

This document is to be formally reviewed every 12 months throughout construction (including rehabilitation) as required in by Consent RC070250 Condition 26 or if it is found that the management practices are not achieving the objectives of the Management Plan, which are outlined in section 1.2.

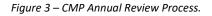
A Review Panel will be formed from a nominated member from each of the contracting entities, MCWFL and their relevant technical experts.

The review will assess whether management practices are resulting in compliance with the conditions of the relevant consents, and whether the objectives of the management plans are being met through the actions and methods undertaken.

The Consent Holder shall amend the plans where it is necessary to better achieve the objectives of the management plans and the conditions of this consent. The Consent Holder shall provide any amended plan to the Hurunui District Council and ECan for certification that it will achieve compliance with the relevant consent conditions. The management plans shall not be amended in any way that contravenes the objectives set out for the respective plans.

The flow chart in Figure 3 below demonstrates the annual review process.





3 Roles and Responsibilities

3.1 Project Structure

Mt Cass Windfarm Limited are the principal consent holder and have chosen a multi-contract model for the construction of the windfarm. This contract model sees the principal engaging separate contractors to design and construct their relevant scope of works working in collaboration with each other while the principal is responsible for the overall project management of the project. This differs from a traditional construction project where a head contractor is engaged to manage all of the project's scope and who engages specialist subcontractors.

This is important to understand in relation to the presentation of the CMP as it requires a collaboration of different companies to provide relevant information and agree on the best project construction methods and procedures.

The Mt Cass Wind Farm Project organisational structure is shown in Figure 4 below

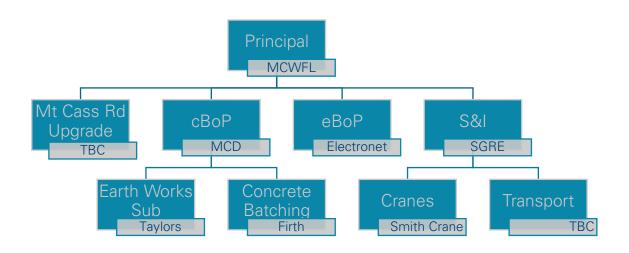


Figure 4 Mt Cass Wind Farm Project Structure

3.2 Key Project Contacts List

The project key contacts are list in Table 7 below.

| Consent Holder – Mt Cass Windfarm Ltd | | | | |
|----------------------------------------------------|-----------------------------------------------------|------------------|---------------|----------------------------------|
| Role | Company | Name | Phone | Email |
| Project Director (Primary Contact) | MCWFL | Greg Gummer | 021 738 995 | greg.gummer@mainpower.co.nz |
| Construction Manager | MCWFL | твс | | |
| Project Engineer (Civils) Secondary Contact | MCWFL | Michael Carstens | 027 247 1713 | michael.carstens@mainpower.co.nz |
| Project Engineer (Electrical) Secondary Contact | MCWFL | Neil Wiggins | 021 027 33133 | neil.wiggins@mainpower.co.nz |
| Senior Project Coordinator | MCWFL | Lisa Yuyi | 021 779 380 | lisa.yuyi@mainpower.co.nz |
| Ecology | RMA Ecology | Graham Ussher | 027 272 7930 | ahurley@geotech.co.nz |
| Herpetofauna (Lizard) Management | RMA Ecology | Graham Ussher | 027 272 7930 | gkessels@bluewattle.co.nz |
| Avifauna (Bird) Management | Kessels & Associates (T/A Bluewattle Ecology) | Gerry Kessels | 027 286 8449 | gkessels@bluewattle.co.nz |
| Plant Management | RMA Ecology | Tony Payne | 027 807 9018 | tony.payne@rmaecology.co.nz |

| Weed Management | Wai-Ora | Lauren Scott | 027480 8007 | lauren@wai-ora.nz |
|------------------------------------|---------------------------|-----------------|--------------|---------------------------|
| Land Scape Panel MCWF Appointed | Glasson Huxtable | Chris Glasson | 021 571 669 | chris@ghla.co.nz |
| Landscape Panel HDC Appointed | Rough & Milne | Nikki Smetham | 027 532 6676 | nikki@roughandmilne.co.nz |
| Animal Pest Management | Pest Control Solutions | Fraser Maddigan | 027 525 3619 | Bradley855@gmail.com |
| Other advisors | Geotech Consulting Ltd | Andrew Hurley | 027 479 1516 | ahurley@geotech.co.nz |

| cBoP – McConnell Dowell | | | | |
|-------------------------------|--------------------|-----------------|------------|----------------------------|
| Role | Company | Name | Phone | Email |
| Project Manager | MCD | Phil Owen | 021638726 | Phil.owen@mcdgroup.com |
| Construction Manager | MCD | David Kidd | 0277039803 | David.kidd@mcdgroup.com |
| Site Manager | MCD | ТВС | | |
| HSEQ Manager | MCD | Clint Hill | 0277028309 | Clint.hill@mcdgroup.com |
| Project Environmental Advisor | MCD | Caitlin Burns | 021759938 | caitlin.burns@mcdgroup.com |
| Foreman (Environmental) | MCD | ТВС | | |
| Earthworks Manager | Taylor Contracting | Shannon Proctor | 021501894 | shannon@taycon.co.nz |

| Batching Plant Manager Firth Ma | 1ark Cresswell 0274776958 | mark.cresswell@firth.co.nz |
|---------------------------------|---------------------------|----------------------------|
|---------------------------------|---------------------------|----------------------------|

| eBoP – Electronet | | | | |
|-----------------------|------------|-------------|------------|--------------------------|
| Role | Company | Name | Phone | Email |
| Project Manager | ElectroNet | Matt Daffin | 0275869102 | MDaffin@electronet.co.nz |
| Environmental Advisor | ElectroNet | Sandy Keown | 0272354021 | sandyk@electronet.co.nz |
| | | | | |

| S&I Contractor – Siemens Gamesa Renewable Energy | | | | |
|--------------------------------------------------|---------|---------------|-------|--------------------------------|
| Role | Company | Name | Phone | Email |
| Project Manager | SGRE | Akshar Sheth | ТВС | aksar.sheth@siemensgamesa.com |
| Project Director | SGRE | Sumblli Rohit | ТВС | rohit.sumbli@siemensgamesa.com |

Table 7 Project Key Contact Lists

3.3 Responsibilities

Table 8 below defines the key responsibilities for the project.

| Role | Responsibility |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCWFL Project Director | Has ultimate responsibility for compliance with the specification and resource consent conditions. Reports to MCWF senior management on environmental compliance |
| MCWFL Construction Manager (Primary Contact) | Has ultimate responsibility for construction activities on and ensuring implementation of this CMP Reports to the Project Director. Is the primary point of contact as required under the resource consent conditions |
| MCWFL Civil Project Engineer | Is responsible for compliance with the specification and resource consent conditions for the civil scope of work Reports to the Construction Manager. |
| MCWFL Electrical Project Engineer | Is responsible for compliance with the specification and resource consent conditions for the electrical scope of work Reports to the Construction Manager. |
| MCWFL Consultant Advisors | Provide input to MCWF Environmental Manager regarding aspects of the CMP Participate in monitoring and audits of the contractor's compliance with the CMP Provide ongoing advice to address environmental issues raised during construction. |
| MCWFL Archaeologist | Available to advise the project team on any discovery. |
| MCWFL Environmental Advisor | Develops, implements, and reviews environmental management systems and plans Provides leadership to ensure all staff comply with environmental management systems Co-ordinates environmental management interfaces with external agencies and stakeholders Notifies the consent authorities of any non-compliance Responsible for reporting major defects and non-compliances and arranging appropriate corrective actions Trains staff in environmental objectives and procedures |

| Role | Responsibility |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Primary contact for environmental complaints and enquiries. |
| ECan Field Officer | Undertakes compliance inspections as necessary Attends early meeting to contribute to development of CMP Attends environmental review meetings. |
| HDC Environmental Services Manager | • Reviews submitted information as required in the resource consent. |
| Community Liaison Group | Maintain effective working relationships and mutual trust between the local community and MCWF To provide a forum for communication between the local community, MCWF, the contractors and the Consent Authority Oversee a community complaints procedure Respond to matters which may arise. |
| Contractors Project Manager or Nominated Environmental Representative | Overall environmental performance of their scope of works Ensure their scope of works achieves legislative compliance Provide leadership in the development of this plan and co-ordinate with other contractors Nominate key personnel, assigning environmental responsibilities and allocating sufficient resources to achieve implementation of this plan Ensure all personnel are familiar with and implement all relevant environmental controls as required Monitor environmental performance to ensure compliance and continued improvement Report any environmental incidents to the MCWFL Construction Manager. |
| Contractors Environmental Advisor | Support the Contractors Project Manager/ Environmental Manager/ HSE Manager to ensure that all key environmental aspects and associated impacts are incorporated into the CMP and Contractors EMP, and that suitable control measures are proposed to minimise the Project's environmental impact. Ensure all staff and contractors engaged to work on/ at the Project are appropriately inducted and trained in environmental issues and controls relevant to the Project. Ensure monitoring programs which assess the performance of the CMP, and any associated documents are implemented. Report any environmental incidents to the Contractors Project Manager / Environmental Manager/ HSE Manager. |

| Role | Responsibility | |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| | Investigate and report incidents and non-conformance and ensure corrective and preventive action is taken and is effective. | |
| Contractors Design Manager | Provide effective environmental leadership Ensure designs are undertaken in accordance with the requirements of the scope of works, technical requirements, relevant standards and this plan Ensure design has minimal environmental impact Ensure an ESCP is designed in conjunction with the permanent works design Ensure processes and resources are in place to adhere to environmental and sustainability obligations where they affect design or are affected by design Participate in incident and non-conformance report investigations and ensure that corrective and preventative action proposed is implemented effectively. | |
| Contractors Site Supervisor | Ensures environmental, erosion and sediment control works are implemented and maintained Leads the emergency response crew with advice from the Environmental Manager Reviews and authorizes the closure of Site Access Points to reduce the risk of dirt on roads Reviews the need to use a water cart to control dust. | |
| Contractors Environmental Site Team | • A crew / small team responsible for implementing specialist environmental control measures e.g. erosion and sediment retention ponds and decanting earth bunds, topsoil bunding, silt fences, pond maintenance etc | |
| Construction Plant Operators | To ensure that weed control measures are implemented To ensure that indigenous vegetation disturbance is limited To ensure that limestone pavements are protected To ensure that no work is carried out in exclusion zones To ensure that site refuelling procedures are followed To ensure that ESC is in place prior to work To follow the permit to work systems Responsible for reporting incidents and other problems to senior staff. | |

| Role | Responsibility | |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Site Personnel | Responsible for reporting incidents, defects, and other problem areas to senior site staff as they arise on site. Standard forms will be used for all incident reporting. Carry out routine maintenance and emergency work when directed. Care for all environmental works. Ensure the site is kept tidy and litter is placed in bins. Act in an environmentally responsible manner always to reflect the contractor's commitment to environmentally responsible environmental practices | |

Table 8 Project Roles and Responsibilities

4 PROJECT OVERVIEW

4.1 **Project Summary**

The Mt Cass Windfarm (MCWF) Project aims to design and construct 22 Siemens Wind Turbine Generators (WTGs) along the 7.5km ridge between Mt Cass and Oldham Peak including associated roads, drainage, hardstands, substation, and O&M buildings. In terms of the resource consent the R90 turbine layout will be used.

The project will be the largest wind farm on the South Island with a maximum capacity output of 94MW.

This <u>YouTube Link</u> provides a computer-generated fly over of the project.

4.2 Location

The Mt Cass Wind Farm (MCWF) project is located east of Waipara in North Canterbury and is 15km northeast of Amberley, New Zealand. The site access is via Mt Cass Road.

The location map in Figure 5 provides the sites location in relationship to Christchurch.

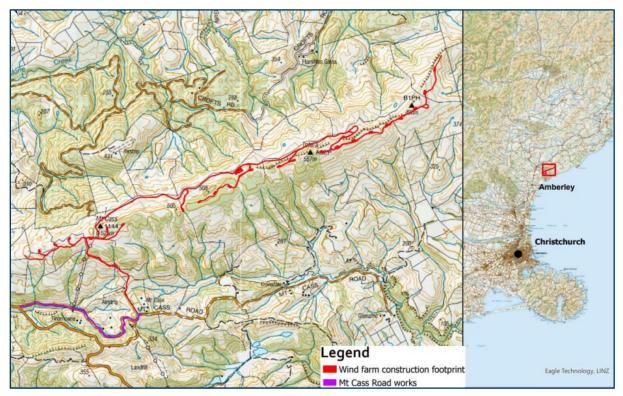


Figure 5 – Mt Cass Location Map.

4.3 Site Description

The site is within the territorial authority jurisdiction of Hurunui District Council (HDC). The Site includes the Mt Cass Conservation Management Area which is outlined in Figure 6 below – This is a significant area of indigenous vegetation. The limestone-associated vegetation types and habitats present are regarded as regionally rare and underrepresented within the current protected area network in Canterbury.

This unique location requires MCWFL to undertake a programme of conservation protection and restoration, which adds significant management responsibility throughout the construction phase of the project.

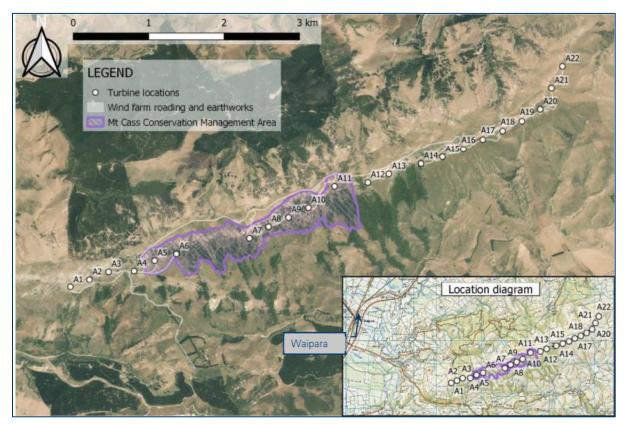


Figure 6 Site map with Mt Cass CMA shown in purple

4.4 Project Scope

The individual contractor's scope covered by this CMP is defined in Table 9 and shows which contractor is responsible for which aspects of the project.

| Mt Cass Wind Farm Limited | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------|------------------------------------|--|
| | | | | |
| cBoP Contractor | eBoP Contractor | S&I Contractor | Unallocated | |
| Erosion and Sediment Control Site Laydown Site Construction Camp Earthworks Access Road Construction Storm Water WTG Crane Pads O&M Building Pads Substation Pad Batching Plant WTG Foundation Construction Installing Hold Down Bolts Grouting of Hold Down Bolts Fencing Remediation | Trenching Underground cables Substation | Tensioning of Hold Down Bolts Supply and Installation of WTG | Mt Cass Rd Upgrade O&M Building | |

Table 9 Mt Cass Wind Farm Contractor Scope

4.5 Stake Holders

4.5.1 Key Stake Holders

The MCWF project takes its obligations in relation to understanding the needs and expectations of interested parties seriously. The parties in Table 10 on the next page are identified as having a specific interest in the project.

| Stakeholder | Interests | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| HDC Councillors | Political, positive benefits | | |
| HDC consent compliance team | Compliance with consent conditions, minimising the actual and potential effects on the environment | | |
| HDC Road Corridor team | Works on Mt Cass Road, compliance with TMP and temporary traffic management controls | | |
| lwi (Te Ngāi Tūāhuriri Rūnanga and Waitaha ki Waitaha) | Potential areas of cultural significance, water quality, indigenous flora and fauna | | |
| Heritage New Zealand Pouhere Taonga | Potential archaeological site or materials | | |
| | Development of site-specific Accidental Discovery Protocol | | |
| Transpower | Connections to transmission lines | | |
| Waka Kotahi New Zealand Transport Agency | Transportation of Project components using State Highway 1, compliance with TMP and temporary traffic management controls | | |
| Kate Valley | Shared access road with the construction site which needs maintenance and access considerations | | |
| Department of Conservation | Indigenous flora and fauna (lizards, birds) | | |
| Environment Canterbury (ECan) | Compliance with consent conditions, minimising the actual and potential effects on the environment | | |
| Community Liaison Group (CLG) | Group required by HDC consent conditions and to function as a forum for relying concerns, to discuss and provide feedback on management plans and to discuss results of monitoring and reports required by the conditions | | |
| Statutory Liaison Group (SLG) | DoC and an HDC approved independent peer reviewers experienced in the field of terrestrial ecology and restoration ecology | | |
| Landowners | Ongoing consultation in regard to access arrangements and impacts on farming operations | | |
| Adjacent landowners | Potential effects of the Project in relation to visual amenity and noise (predominantly operational noise) | | |
| Local organisations (Waipara District Residents Association, Waipara Valley Promotions Association Incorporated, Omihi Ratepayers, Waipara Valley Winegrowers Incorporated and Waipara Wine Village developers) | General interest in Project and potential adverse effects | | |

Table 10 Project Stakeholders

4.6 Land Access Agreement Requirements

MainPower owns the 168ha ridge property that covers a 3km length of the ridge, the remaining land that the project sits on is owned by six other parties that have signed access agreements with MCWFL which has established and easement for access.

The properties are shown in Figure 7 below. The properties are used for farming operations and each property has independent requirements for access which are detailed in Appendix N of the Mt Cass Wind Farm Site Access Instruction.

Two key requirements that are not common practice on farms are:

- 1. All machinery and boots are to be cleaned and free of mud prior to entering Dovedale Farm
- 2. Mt Cass Station has Organic Holdings Ltd which is certified organic, and consideration must be given to this when considering herbicides etc for weed maintenance.

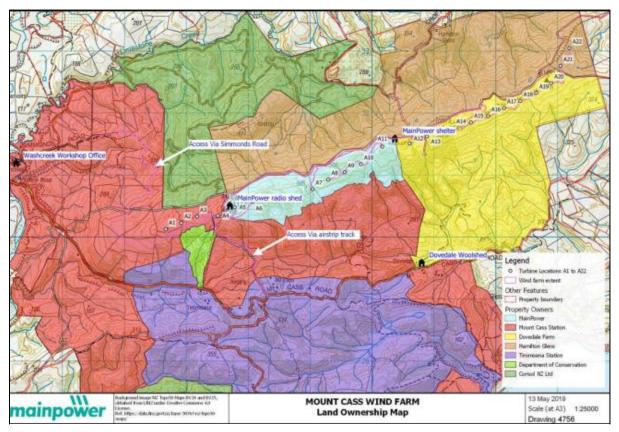


Figure 7 Mt Cass Landowner Map

4.7 Complaints

4.7.1 Complaints Process

The Consent Holder shall establish and publicise contact details for a liaison officer, so that members of the local community have a specified and known point of contact should they wish to raise any issues that may arise during construction and operation of the wind farm. A logbook detailing all calls and any action taken shall be kept and made available to Hurunui District Council on request.

Detail MCWFL Complaints process

- 1. Complaint issued via
 - a. Website https://www.mtcasswindfarm.co.nz/contact-us,
 - b. Phone 0800 309 080 Greg Gummer Project Director / liaison officer
 - c. Direct engagement from site staff via contact details provided at the project notice board at the site entrance.
 - d. Hurunui District Council 03 314 8816
- 2. MCWFL direct complaint to the relevant contractor or address inhouse if operational
- 3. Record complaint on complaints register at noted in 4.7.2 below
- 4. Rectify issue
- 5. Provide feedback and closes out on register

4.7.2 Complaints Register

A register for any complaints shall be maintained for the construction activities and operation of the wind farm received by the Consent Holder including complaints in relation to traffic, noise, dust, shadow flicker or blade glint. The register shall record, the following:

- The date, time and duration of the incident that has resulted in a complaint.
- The location of the complainant when the incident was detected.
- The possible cause of the incident.
- Any corrective action undertaken by the Consent Holder in response to the complaint, including timing of that corrective action.
- The date and details of the response given to each complainant.

The complaints register shall be available to the Council and the Community Liaison Group at all reasonable times upon request.

Within 5 days of receipt of any complaint in accordance with condition [0], the Consent Holder shall advise the Hurunui District Council of the details of any complaint received and, where appropriate, of any remedial or corrective action taken, including the response provided to the complainant.

A template of this register is available in Appendix A:

5 Construction Method

5.1 Construction Overview

The project consists of building 7.5 km of access tracks along the Mt Cass Ridge Line to access the 22 WTG locations shown in Figure 8 below.

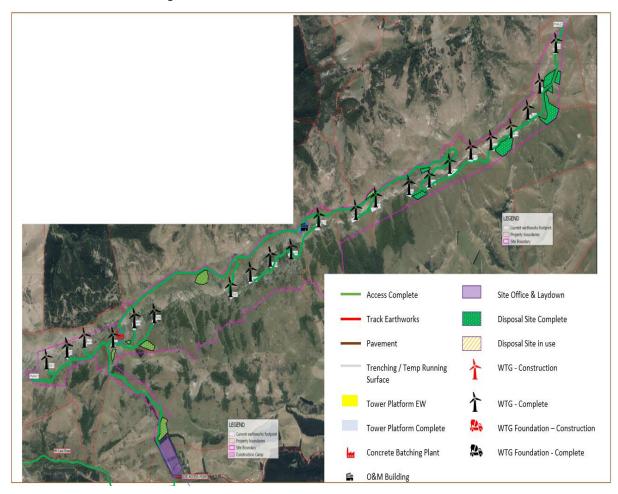


Figure 8 Mt Cass Wind Farm Schematic

5.1.1 Construction Zones

The site will be broken in to six zones to stage the construction. They are intended to follow a logical construction sequence and provide a staged entry to the site to ensure that all ecological controls and consent / landowner agreements are implement via a permit to work system.

The Six Zones are shown in Figure 9 below and are colour coded for easy identification.

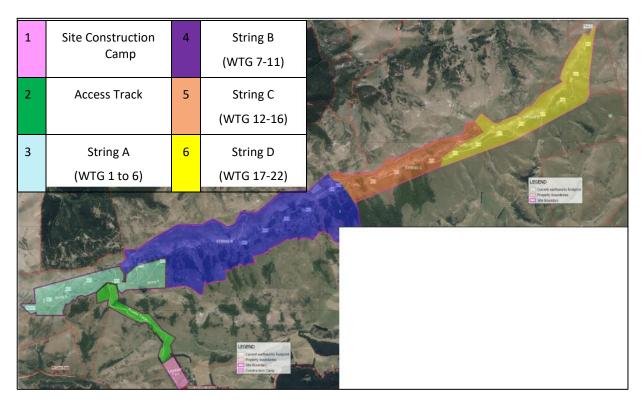


Figure 9 Mt Cass Construction Zone Boundary Plan

Prior to earthworks occurring the Project team is to ensure the site has had the appropriate preconstruction hold points completed i.e., lizard and rare plants surveys and snails on Mt Cass Public Road, the team is to be trained and inducted onto the site protocols.

5.1.2 Site Lay Down

Two site lay downs will be constructed by removing and stockpiling topsoil for later re-instatement. Imported aggregates will be used to form a hard stand area in both yards.

Site Office & Laydown

The site office is located at the site entrance. The trees through the middle of the site will be removed and placed into stockpiles where they will be mulched for future landscaping on the project. Once this is completed, the topsoil stripping operations will commence using one of the main earthwork crews.

The topsoil will be placed in a stockpile area outside of the yard outline, where it will be stored for the duration of the project prior to being re-spread over the yard area at the disestablishing stage. Some of the topsoil will also be utilised as a form of erosion control creating an earth bund around the yard area, which will stop water runoff to the outlying areas.

Where required, localised casting and filling of in situ material will be undertaken to ensure a flat surface is available for the purpose of running the project from the yard area.

Aggregate will then be imported from the yard and spread and compacted to a minimum depth.

An indicative layout of the site office is shown in Figure 10 below.



Figure 10 Main Construction Camp

Symonds Rd Site Laydown Yard

A second hard stand will be built at the intersection of Mt Cass and Symonds roads. This yard is used to store the wind turbine tower and blade units prior to transporting them to the site.

The construction method will be the same as the main site construction camp. Traffic management will be required to control the site entrance at this location which for construction will be via Symonds Road and then will change to the Mt Cass Rd for the turbine delivery. An indicative layout is shown in 11 below.

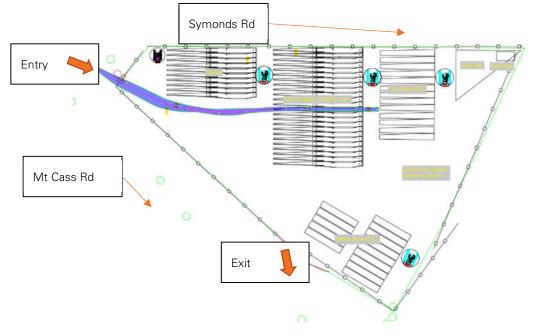


Figure 11 Indicative Construction Yard Layout at the intersection of Mt Cass and Symonds Rd

5.1.3 Erosion and Sediment Control

Where required on site, erosion and sediment control devices will be installed. This may be in the form of decanting earth bunds, clean or dirty water diversion drains, earth bunds, and sediment control ponds.

An Erosion and Sediment Control Plan forms part of this CMP and is located in Appendix D.

The controls will be installed progressively ahead of the earthworks taking into account exclusion and ecologically sensitive zones. They will be maintained by the site environmental team.

5.1.4 Access Track Construction

The access tracks will be constructed using a cut to fill and cut to waste (disposal site) operation. In the first instance site won fill will be used to construct the fill sections of the project. If there is a deficit in suitable material, then the project will revert to importing material to site. A temporary running course will be applied to allow access to the site to allow works to progress while the eBoP contractor installs electrical cabling.

Drains will be cut to the side of the track where required and culverts installed where water course from the track. Where the track is of a sufficient grade it may be cement stabilised and then an aggregate pavement will be constructed as the final wearing course.

5.1.5 Protection of Limestone at Golf Link Road

Where the road shown as MC50 crosses the limestone areas show in Figure 12 below, no equipment will be allowed to travel directly on top of the exposed rock.

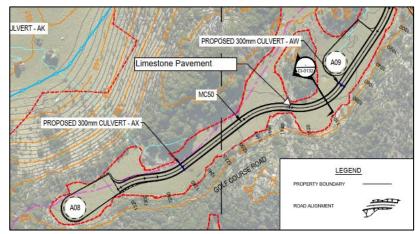


Figure 12 Limestone Pavement MC50 Golf Course Road

In accordance with HDC consent condition 45 crushed limestone will be tipped off prior to the area and pushed forward using a dozer to create the required road width. Works will progress forward using this methodology with trucks reversing along the alignment and tipping off at the tip head until the area is cleared. At no point will any heavy equipment be allowed to drive off the surface. The design will call for sufficient pavement thickness so that when the aggregate is compacted it does not damage the limestone below. An indicative cross section of this section of road taken from the Landscape Pattern Book is shown in Figure 13 below.

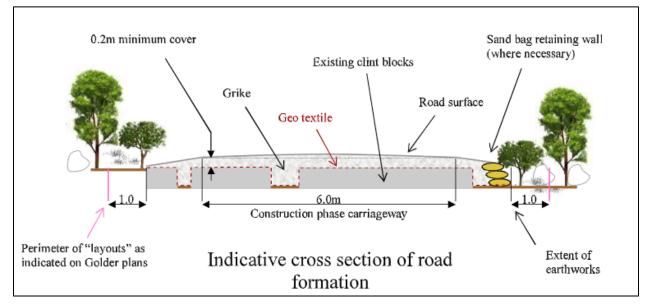


Figure 13 Indicative Protection of limestone at Golf Link Rd

For the electrical contractor to meet this requirement their cable conduits will be brought above ground at this location so that the pavement is not trenched into.

5.1.6 Disposal Sites

A number of disposal site locations have been consented along the project. These will be stripped of topsoil and used to accept excavated material that will not be used in the project. These will be reinstated progressively and contoured into the local landscape.

5.1.7 Turbine Pads and Excavation

Each turbine location requires a large flat area to be constructed to act as an assembly area and crane pad. These will be constructed as part of the earthwork's operation.

The location of the turbine foundations will be inspected using GPR survey after excavation to ensure that no tomos are present under the foundation base and the rock will be tested to ensure that it has suitable bearing capacity for the foundations.

5.1.8 Concrete Batching Plant

A concrete batching plant will be assembled at the consented location near WTG 04. The area will be constructed using the same method as the laydown areas and the concept layout is shown in Figure 14 below. The plant will be feed from a cement silo and three aggregate bins. Water will be carted to the batching plant and stored in tanks. The batching plant will be removed from site within 6 months after completion of the project.



Figure 14 Batching Plant Pad Concept Layout

5.1.9 Cable installation

The cables that are to run from the turbines to the substation will be installed by the eBoP contractor. These will be trenched within the existing disturbed areas of the access tracks.

5.1.10 Tower Foundations

Each turbine requires that a large reinforced concrete foundation is constructed to bolt the turbine tower to. These will be constructed below the finished level of the turbine pad. A hole is excavated, and a blinding lay of concrete is poured, then the reinforcing cage is tied, and formwork installed. The concrete is then pumped into the forms and the excavation is backfilled once the concrete meets the required strength. An example of this is shown in Figure 15 below.



Figure 15 Example of a Tower Foundation Concrete Pour

5.1.11 Installation of Turbines

Once the foundations are of sufficient strength and backfilled, the S&I contractor will transport the turbines components from the construction laydown yard to the allocated hard stands and assemble them with a crane. An example of these activities is shown in Figure 16.



Figure 16 Example of Tower Section Delivery from a Historic Project

5.1.12 Remediation

Where the site has been disturbed during construction outside of the ongoing operational areas it will be reinstated to meet the requirements of the consent and the site rehabilitation pattern book. This is located in Appendix A of B10 Landscaping Management Plan.

The remediation will be staged and progressively stabilised to ensure the resource consent requirements are met to reduce the sediment risk. This will be defined in more detail once the final scope of work is established after detailed design and the construction programme is finalised.

The concrete batching plant is to be removed from site within 6 months of completion of the wind farm construction.

5.1.13 Limits of disturbance

One of the key consent requirements is the limits of disturbance of sensitive ecological areas.

Site clearing will be restricted to areas of the Project site within the outline of the earthwork area to comply with the limits in Condition 13 of the HDC land use consent, which is shown in Table 11:

| Ecosystem type | Limit | | | | |
|------------------------------------|--------|--|--|--|--|
| Exposed limestone disturbance (hec | tares) | | | | |
| Pavement and boulder field | 2.04 | | | | |
| Pavement | 0.89 | | | | |
| Vegetation clearance (hectares)* | | | | | |
| Indigenous shrubland | 0.71 | | | | |
| Indigenous forest | 0.08 | | | | |

To ensure that these disturbance limits are not exceeded, the design team will overlay the design model with the ecological survey data uploaded into a GIS map.

The mapping overlay will be completed once the design footprint has been finalised

The project team will conduct as-built surveys throughout the earthworks phase, which calculate the actual areas disturbed and report on them fortnightly to HDC per ecosystem type in table 11.

At the completion of construction, as built plans shall be provided and will be independently verified using an independent third-party and submitted to HDC.

This is further detailed in the Ecology and Landscape Management Plans in Appendix L and M respectively.

5.2 Construction staging

The construction is very linear due to the topography of the site. Once the project is established the general sequence of each turbine string is shown in the flow chart in Figure 17.



Figure 17 General Construction Sequence

Appendix B contains a month-by-month sequence which demonstrates the construction sequence in more detail.

6 Control Measures

Specific control measures for each aspect of the environment and details of how consent conditions will be complied with is set out in the sub-plans in Appendices D to M.

These plans are designed to be high level and are the framework which provides the delivery team with the information required to develop construction work packs specific to the individual scopes of work that they are assigned to carry out.

Construction Work Packs are a collection of documents that cover a definable portion of work performed by the project and/or subcontractor. The project team divides the work scope into manageable portions (Work Packs) so that activities can be planned and executed with an appropriate level of detail. This may be by trade, geographical location, area, structure, stage of project, etc.

They describe how work is going to be carried out; who is responsible for it; what checks, inspections and tests are going to be carried out and what records are going to be maintained. Work Pack documentation is compiled progressively during construction and commissioning to verify compliance to the Contract codes and specifications.

Work Packs are typically aligned with the work breakdown structure and contain information form the following sources:

- New Zealand Law
- Design drawings
- Specification
- Contract documents

Generally, the work packs will contain:

- Site Specific Method Statement
- Job Safety and Environment Analysis (JSEA)
- Inspection test plans (ITPs)
- Standard Operating Procedures (SOPs)

- Resource consents
- Management Plans
- Best practice guidelines
- Relevant Standards
- Permits to work
- Traffic Management Plans
- Lift Plans
- Emergency Plans

7 Training

All staff working on the contract will be suitably experienced and competent for the tasks they are assigned to perform. This training will be a mixture of formal qualifications and informal onsite training depending on the persons role on the project and requirements by their employer and compliance with relevant legislation.

Training and awareness programmes are critical to ensuring that there is an appropriate level of environmental and sustainability knowledge for those staff and subcontractors involved in the project.

Training of site staff will be provided through project inductions, weekly toolbox talks, information posters such as spill response plans and any site-specific training considered necessary such as archaeological discovery protocols, spill kit training, erosion and sediment control training etc. Notice boards will include environmental information including EHS Alert and relevant updates.

All staff and subcontractors will be inducted to the site prior to starting works. This induction will include the items identified in the training matrix in Table 12 below and is specific to the persons role on the project.

| Mt Cass Windfarm Training Matrix | | | | | | | | |
|----------------------------------|------------------------------------|-------------------------------------|--------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------|-----------------------------------|--|--|
| Training Area | Construction Worker | Machine Operator | Management | Fire Response Team | Enviro Team | Visitor | | |
| Emergency Response | Site Evacuation Procedure | Site Evacuation Procedure | Site Evacuation Procedure | Site Evacuation Procedure | Site Evacuation Procedure | Site Evacuation Procedure | | |
| | Site First Aiders | Site First Aiders | Site First Aiders | Site First Aiders | Site First Aiders | Site First Aiders | | |
| | First Aid Locations | First Aid Locations | First Aid Locations | First Aid Locations | First Aid Locations | First Aid Locations | | |
| | Fire Extinguisher Locations | Fire Extinguisher Locations | Fire Extinguisher Locations | Fire Extinguisher Locations | Fire Extinguisher Locations | Fire Extinguisher Locations | | |
| | Muster Points | Muster Points | Muster Points | Muster Points | Muster Points | Muster Points | | |
| | | | | Water Storage locations | | | | |
| ESCP | ESCP awareness | ESCP – Design and Implementation | ESCP – Design, Implementation and monitoring requirements | N/A | ESCP – Design, Implementation and monitoring requirements | ESCP awareness | | |
| Dust Management | Dust Management Plan Awareness | Dust Management Plan Awareness | Dust Management Plan Awareness | N/A | Dust Management Plan Awareness | Dust Management Plan Awareness | | |
| | Complaint procedure | Control measures | Control measures | | Control measures | | | |
| | | Complaint procedures | Monitoring Requirements | | Monitoring Requirements | | | |
| | | | Complaint procedures | | Complaint procedures | | | |
| Hazardous Substance | Storage & Handling Requirements | Storage Requirements | HASNO Requirements | MSDS Locations HASNO Register | Storage Requirements | MSDS Locations Spill Response | | |
| | MSDS locations | MSDS locations | 1 | Location | MSDS locations | | | |

| | Refuelling procedure Spill Response Plan Spill Kit Location & Use | Refuelling procedure Spill Response Plan Spill Kit Location & Use | Storage Requirements MSDS locations Refuelling procedure Spill Response Plan Spill Kit Location & Use | | Refuelling procedure Spill Response Plan Spill Kit Location & Use | |
|-----------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Archaeology and Cultural | ADP SCSP | ADP SCSP | ADP SCSP | N/A | ADP SCSP | ADP SCSP |
| Noise Management | Noise Management Plan Awareness Complaint procedure | Noise Management Plan Awareness Complaint procedure | Noise Management Plan Awareness Complaint procedure Noise Monitoring | N/A | Noise Management Plan Awareness Complaint procedure Noise Monitoring | Noise Management Plan Awareness Complaint procedure |
| Traffic Management | TMP – TSL Requirements & Site- Specific Requirements | TMP – TSL Requirements & Site- Specific Requirements | TMP Requirements Monitoring Requirements CAR requirements | N/A | TMP – TSL Requirements & Site-Specific Requirements | TMP – TSL Requirements & Site-Specific Requirements |
| Fire Management | FMP awareness Smoking policy Permit to work system Mitigation Requirements | FMP awareness Smoking policy Permit to work system | FMP awareness Smoking policy Permit to work system | FMP awareness Smoking policy Permit to work system | FMP awareness Smoking policy Permit to work system | FMP awareness Smoking policy Mitigation Requirements |

| | Firefighting equipment locations Key Staff trained in fire extinguisher use Emergency and contact numbers Emergency Muster points | Mitigation Requirements Firefighting equipment locations Key Staff trained in fire extinguisher use Emergency and contact numbers Emergency Muster points Additional plant checks and requirements | Mitigation Requirements Firefighting equipment locations Key Staff trained in fire extinguisher use Emergency and contact numbers Emergency Muster points Additional plant checks and requirements | Mitigation Requirements Firefighting equipment locations Trained in fire extinguisher use Trained in water cart use. Site water sources Emergency and contact numbers Emergency Muster points Additional plant checks and requirements | Mitigation Requirements Firefighting equipment locations Key Staff trained in fire extinguisher use Emergency and contact numbers Emergency Muster points Additional plant checks and requirements | Firefighting equipment locations Emergency and contact numbers Emergency Muster points |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Pest Weeds | Weed Management Plan Awareness Plant Hygiene procedures. | Weed Management Plan Awareness Plant Hygiene procedures. Plant Inspection requirements. Basic pest weed identification training | Weed Management Plan Awareness Plant Hygiene procedures. Plant Inspection requirements. Basic pest weed identification training | N/A | Weed Management Plan Awareness Plant Hygiene procedures. Plant Inspection requirements. Basic pest weed identification training | Weed Management Plan Awareness |
| Ecology | Exclusion Zones NZ Falcon vs Hawk identification training | Exclusion Zones NZ Falcon vs Hawk identification training | Exclusion Zones | N/A | Exclusion Zones | Exclusion Zones Sink Holes / Tomos |

| | Lizard awareness training | Lizard awareness training | NZ Falcon vs Hawk identification training | | NZ Falcon vs Hawk identification training | |
|-----------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| | Vegetation Permit to work requirements | Vegetation Permit to work requirements | Lizard awareness training | | Lizard awareness training | |
| | Sink Holes / Tomos Key ecology contacts | Least impact technics for indigenous vegetation disturbance | Vegetation Permit to work requirements | | Vegetation Permit to work requirements | |
| | | Indigenous vegetation limitation and survey requirements Basic indigenous flora and fauna training Sink Holes / Tomos Key ecology contacts | Least impact technics for indigenous vegetation disturbance Indigenous vegetation limitation and survey requirements | | Least impact technics for indigenous vegetation disturbance Indigenous vegetation limitation and survey requirements | |
| | | | Basic indigenous flora and fauna training Sink Holes / Tomos | | Basic indigenous flora and fauna training Sink Holes / Tomos | |
| | | | Key ecology contacts Reporting requirements Micro-siting requirements | | Key ecology contacts | |
| Landscape | N/A | Landscape Management Plan Awareness | Landscape Management Plan Requirements | N/A | Landscape Management Plan Awareness | N/A |

| | | The requirements of the landscape rehabilitation handbook. least impact techniques when disturbing or clearing limestone Methods for working on limestone pavements Limits of disturbance and reporting requirements | The requirements of the landscape rehabilitation handbook. least impact techniques when disturbing or clearing limestone Methods for working on limestone pavements Limits of disturbance and reporting requirements | | The requirements of the landscape rehabilitation handbook. least impact techniques when disturbing or clearing limestone Methods for working on limestone pavements Limits of disturbance and reporting requirements | |
|---------------------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Landowner Requirements | Requirements of landowner agreements | Requirements of landowner agreements | Requirements of landowner agreements | Requirements of landowner agreements | Requirements of landowner agreements | Requirements of landowner agreements |
| Dealing with Public | Complaints process Media protocols | Complaints process Media protocols | Complaints process Media protocols | Complaints process Media protocols | Complaints process Media protocols | Complaints process Media protocols |

Table 12 MCWF Training Matrix

8 Emergency Response

The Contractors shall develop and implement a process to address the management of all potential crises and emergencies involving Project activities, and that personnel while on the project will adhere to and operate under the Contractors respective procedures and requirements.

The Contractor will have in place an Emergency Response Plan (ERP) in accordance with its HSE responsibilities. The ERP is to effectively respond to any foreseeable emergency or potential catastrophe and that in the event of an emergency, plans and capabilities are in place or dealing with such situations so as to preserve the health and safety of all personnel on the Site, protect the environment and preserve company capability and reputation.

The Contractors will have in place emergency response procedures that identify its respective muster points, details on the communication processes, schedules for exercises and adequate provision of resources including people and equipment.

MCWF will establish communication with the emergency services and ensure that they are familiar with the site.

MCWF will ensure effective coordination of Contractors emergency procedures via the implementation of a site wide Emergency Management Team (EMT) consisting of Contractor representative and safety representatives as appropriate.

A high-level emergency response plan is provided in the table below which will form the basis for the contractors Emergency Response Plans.

WHEN AN EMERGENCY SITUATION ARISES, IT IS MOST IMPORTANT TO

Remain Calm •

- Don't Panic
- Respond Quickly and Decisively •
- Remember Your Own Safety

IF IT IS SAFE TO DO SO

- Wait at the location for further instructions
- e.g. evacuation or return to work
- Check for injured or trapped people
- Reduce or eliminate the hazard
- Extinguish ignition sources .
- Disconnect clastrical aquin

FOR ALL CONSTRUCTION EMERGENCIES

- Notify your supervisor or the site office
 - Number of people involved?
- Evacuate if advised to do so
- Follow actions "In the Event of" below. (Apply one or •

IF YOU ARE NOTIFIED TO EVACUATE

- Emergency Response Co-ordinator to inform all work . group leader to evacuate site use two-way communication
- Move in an orderly fashion **Do not run** •
- . Go directly to the designated emergency muster point location unless otherwise advised
- Have your name noted at the muster point . Remain at the muster point and await further .
- instructions Return to normal duties when directed by McConnell

IN THE EVENT

| CONTACT WITH UNDERGROUND OR OVERHEAD SERVICES | SERIOUS INJURY OR MEDICAL EMERGENCY & NATURAL EVENT | THE COLLAPSE OF TEMPORARY STRUCTURES | EXTERNAL THREAT | SPILLAGE | A FIRE | A MOTOR VEHICLE OR PLANT INCIDENT |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UNDERGROUND SERVICES Stop work immediately Ensure someone has contacted the Emergency Response Co-ordinator Secure or evacuate the area to prevent others from risk of injury Warn others in the immediate vicinity Shut off sources of ignition (if gas) Ensure that the relevant services company has been contacted OVERHEAD SERVICES Stop work immediately Ensure someone has contacted the Emergency Response Co-ordinator Secure or evacuate the area to prevent others from risk of injury Warn others in the immediate vicinity Ensure that the relevant services company has been contacted Stay in plant item Do not make contact with plant and ground at the same time If a fire occurs, jump well clear | SERIOUS INJURY OR MEDICAL EMERGENCY Contact the First Aid Attendant and Emergency Response Co- ordinator Stay with the injured person until assistance arrives Do not move the injured person unless the person is at risk of further injury First Aider to take charge of situation until emergency help arrives Vacate the area when assistance arrives NATURAL EVENTS Move to a point or area of safety Contact the Emergency Response Co- ordinator Assist any injured person if safe to do so. Follow site specific response instructions | Stop work immediately Notify the supervisor/site office Move all persons away from the collapsed area Aid any injured persons when safe to do so. Evacuate site if required to do so. Re-enter area when safe to do so and advised that structural collapse is no longer likely. | RAGE / UNREST Stop work immediately Contact the supervisor/foreman for assistance. Move to a position/area of safety Do not engage external threat(s) Evacuate if /when advised to do so. | Shut down / isolate spillage source Report the incident to your supervisor Contain the contaminant or spillage Secure sources of ignition Shut down non- essential plant Stop hot work in the immediate area Don't smoke or cause sparks Move upwind Remain at the scene until made safe Provide further help if required If a witness to incident provide information for uncident report Prevent contaminant from entering stormwater system and / or watercourses HOSING DOWN IS TO BE AVOIDED Clean up of contaminant to be undertaken as priority once it has been contained and it is safe to do so | Ensure someone has contacted the Emergency Response Co- ordinator and evacuate if advised to do so. Select the correct extinguisher and be sure you know how to use it If in doubt READ THE INSTRUCTIONS If possible do not let the fire get between you and your escape route Do not get too close to the fire Test the extinguisher to ensure it works before approaching the fire Direct the extinguisher at the flame not the smoke NOTE: Do not attempt to fight the fire if you do not feel safe to do so. Raise the alarm and leave the area in accordance with | Check for danger to you or any injured person. Don't move injured person unless in immediate danger. Do not move plant or vehicle(s) unless their location presents an immediate danger to others. Ensure the vehicle is stable. Turn engine off and isolate the battery. Keep watch for fuel leaks/fire. Contact the First Aid Attendant and the Emergency Response Co- ordinator and advise injury type, severity, location, numbers First Aider to take charge of the situation until emergency help arrives Person sent to access point (if possible, with a radio or mobile phone) to guide emergency vehicles and ensure no unauthorised entry |

• What has happened? Where?

- more actions depending on the emergency)

• Stop work • Warn other people who may be at risk

EMERGENCY CONTACTS Emergency Services Emergency Response Co-ordinator [name & contact number] - TBC First Aid Attendant (s) [name & contact number] TBC [other - eg client representative, safety regulator, emergency

9 Monitoring and Maintenance During Construction

As part of the control measures, on-going site monitoring by the contractor and wider project team will be undertaken. This will ensure that all the control measures detailed in this plan and all sub-plans have been properly implemented and are functioning effectively.

Routine inspections of site and any mitigation measures in place will be undertaken daily by visual inspection as part of our usual work. Spot checks will be carried out by a suitable person and, depending on the findings, control measures and processes may be reviewed and improved.

The overall monitoring requirements for each environmental aspect are summarised in Table 13 below. Further detail of the monitoring, inspections and reporting required is detailed in the relevant sub-plans.

| Relevant Management Plan (MP) | Aspect | Туре | Frequency | Activity | Responsibility |
|-------------------------------------|----------------------------------|--------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Dust MP, | Dust | Visual/ Written | Daily | Check weather forecast for high winds, inspect site to ensure effectiveness of controls and maintain a monitoring log. | All Contractor Project Managers & Environmental Advisors |
| Section 3.6 | | | Weekly | Environmental controls site check and inspect adjacent sites for dust. | |
| Noise MP, Section 6 | Noise | Sound/ Written | Fortnightly for first 2 months | Verify noise levels assumed and to ensure ongoing compliance. | Environmental Advisor |
| | Plant Condition | Visual | Daily | Visually check Plant prior to operating at start of day. | All Contractor Project Managers & relevant trained staff |
| Hazardous | Site Maintenance | Visual/ Written | Weekly | Spill Kit inventory & site inspection | Environmental Advisor |
| Substance MP, Section 8 | | | Monthly | Check quantities and ensure all hazardous substances have been noted with relevant SDS | |
| | Hazardous Substance Spills | Training | Bi-annually | Spill response drill | All Contractor Project Managers |

| Erosion and Sediment Control Plan, Appendix F | Erosion and Sediment | Visual | Weekly or after a Storm Event | Refer to Appendix F for the ESCP – Toolbox checklists for control devices. | MCWF Project Engineers & Environmental Advisors |
|--------------------------------------------------------|--------------------------|--------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| | Landscape disturbance | Visual/ Written | Fortnightly | Survey disturbed locations and report to MCWFL. | Civil Contractor Project Manager |
| Landscape MP, Section 6 & 7 | | | Full Duration of Works | A general overview of site and mention to manager if any unplanned disturbance is noted. | All Staff |
| | Karst | Advice | Ad hoc | Provide advice for micro- siting, training and information for site induction. | Karst Specialist |
| | Site Audit | Visual/ Written | Monthly | Site audit to ensure compliance with plan. | Environmental Advisor & MCWFL Engineers |
| Weed MP, Section 5 | | | Annual | Monitoring to detect and remove any ecologically important weeds – recorded and removed if found. | MCWFL's Ecologist |
| Fire MP, Appendix B | Emergency | Training | First arrival on Site | Inductions will address the smoking policy on site, Hot Work Permits, emergency phone numbers, and aspects of the Emergency Response Plan and the muster area. | All Contractor Project Managers |
| Accidental Discovery Protocol Plan, Section 6 | Cultural | Written | As Required | Training records, visitor records from representatives of Waitaha Ki Waitaha, Te Runanga o Ngāi Tahu and Te Ngāi Tūāhuriri Runanga or Heritage New Zealand Pouhere Taonga with notes made of any observations made. | All Contractor Project Managers & wider team |
| | | | | Make records of any relevant discovery and implement relevant Accidental Discovery Protocol | |

| Accidental Discovery Protocol Plan, Section 6 | | Training | First arrival on site | Ensure that contractors involved with earthmoving activities have received appropriate training and are aware of the requirement to undertake and monitor earthmoving activities in a way that enables the identification of Wāhi Tapu, Wāhi Taonga, Urupā or historic cultural sites. | Construction Manager |
|--------------------------------------------------------|-------------------|----------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Traffic Management Plan | Site Awareness | Visual | Daily | Consistently inspecting and being aware of controls confirming the effectiveness. | All Contractor Project Managers and Staff site wide. |

Table 13 Monitoring and Maintenance Summary

10 Audits Process

10.1 Audit Schedule

This audit schedule in Table 14 is an integral part of the Construction Management Plan for the wind farm. MCWFL have engaged independent auditors to inspect construction compliance with the CMP and relevant subplans. In addition to the independent auditors MCWFL Project Engineers will also carry out monthly audits assessing compliance with CMP.

The individual contractors will also carry out daily, weekly and monthly inspections as per their internal procedures. This will be addressed in their individual management plans for their relevant scope of work.

| Audit Type | By Whom | |
|---------------------------|-----------------------------------|------------------|
| Environmental Compliance | MCWFL Engineering Specialist | Monthly |
| Erosion Sediment Controls | cBoP MCWFL Independent Auditor | Daily Monthly |
| HSE Compliance | HSE Advisor | Monthly |
| Traffic Management | STMS | Daily |

Table 14 CMP Audit Schedule

10.2 Corrective Actions

Corrective and preventative actions resulting from compliance monitoring, routine inspections, internal and external audits and regulatory compliance monitoring will be undertaken in a timely manner. Ultimate responsibility for this sits with the Construction Manager, however this will be appropriately delegated to the relevant contractors Project Manager.

Appendix A:

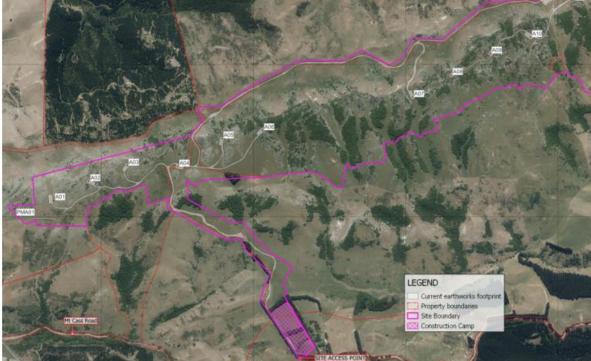
Complaints Register

| | Mt Cass Wind Farm - Complaint Register | | | | | | | | | | | |
|------|----------------------------------------|------------------|-----|-----------------------|-------------------|------------------------------------------------------------------------------|---------------|-----------------------------------------|----------------------------------------------|---------------|-----------|--|
| Date | Time | Name and address | Via | Location of Compliant | Type of Compliant | Details, including the possible cause, the duration the incident occurred | Response Type | Response noting the preventative action | Time when the preventative action took place | Response From | Date Sent | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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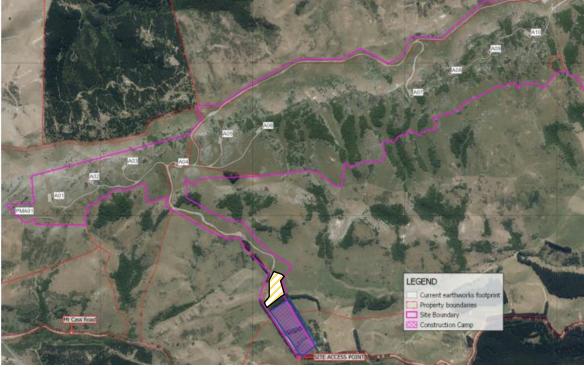
Appendix B:

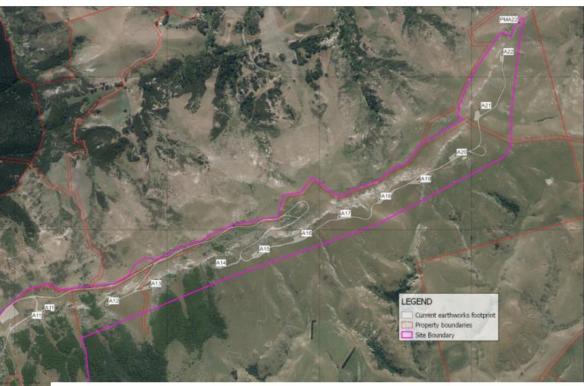
Construction Sequencing











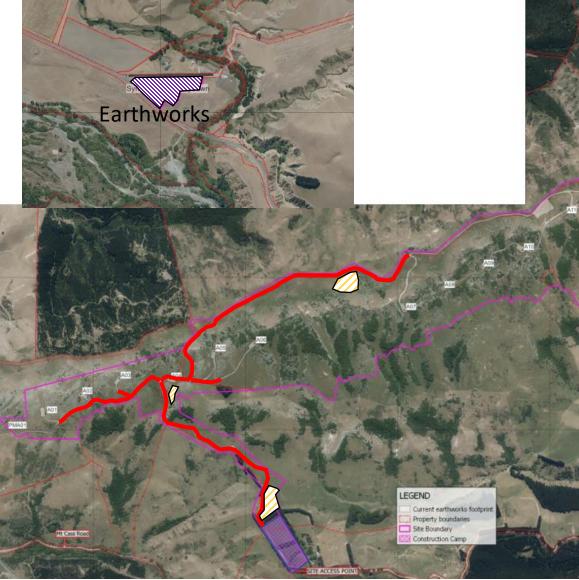
- Access Complete
- Track Earthworks
- Pavement
- Trenching / Temp Running Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant
- O&M Building

Site Office & Laydown Disposal Site Complete

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- Disposal Site in use
- WTG Construction
- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete





- Access Complete
 Track Earthworks
- Pavement
- Trenching/TempRunning Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant

O&M Building

⊞n

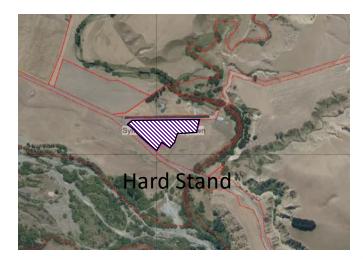
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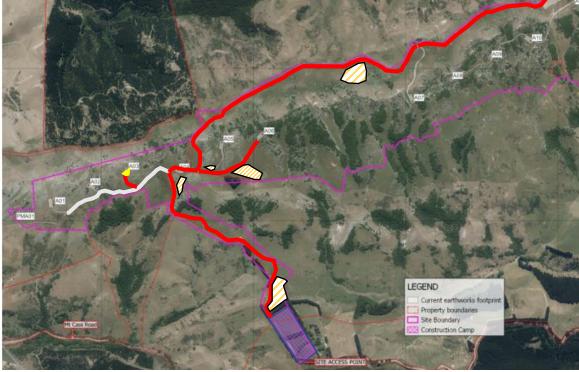
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- Disposal Site in use
- WTG Construction

Disposal Site Complete

- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete







- Access Complete
- Track Earthworks
- Pavement
- Trenching / Temp Running Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant

O&M Building

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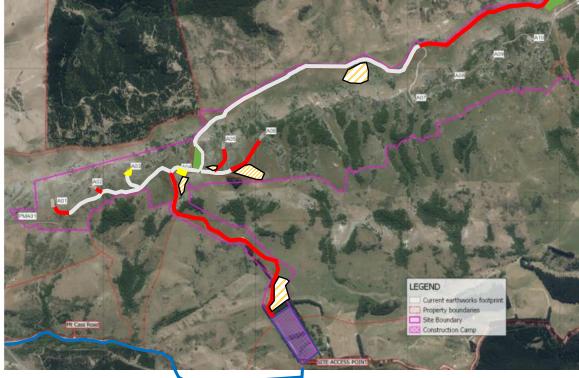
- Disposal Site in use
 - WTG Construction

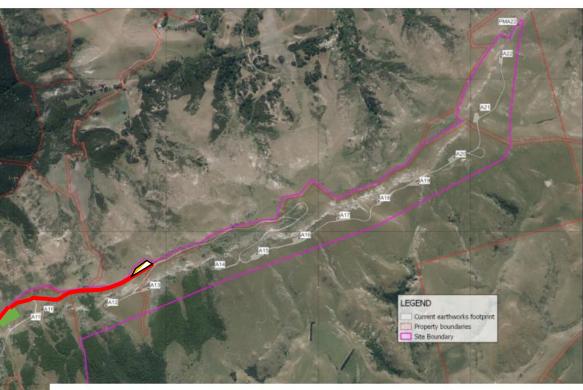
Site Office & Laydown

Disposal Site Complete

- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete







- Access Complete
- Track Earthworks
- Pavement

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- Trenching / Temp Running Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant

O&M Building

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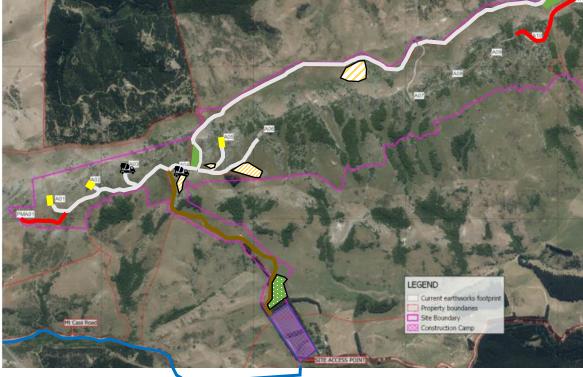
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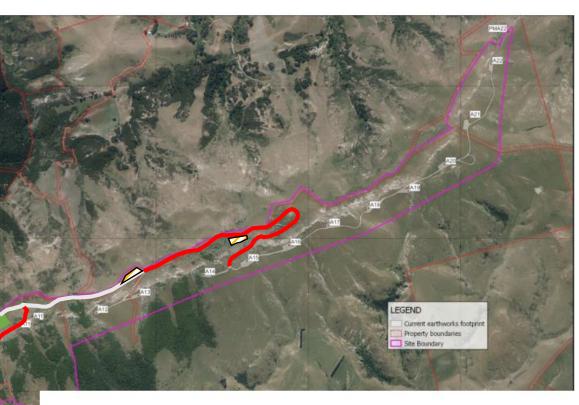
- Disposal Site Complete
- Disposal Site in use
- WTG Construction

Site Office & Laydown

- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete







- Access Complete
- Track Earthworks
- Pavement

⊞n

- Trenching / Temp Running Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant

O&M Building

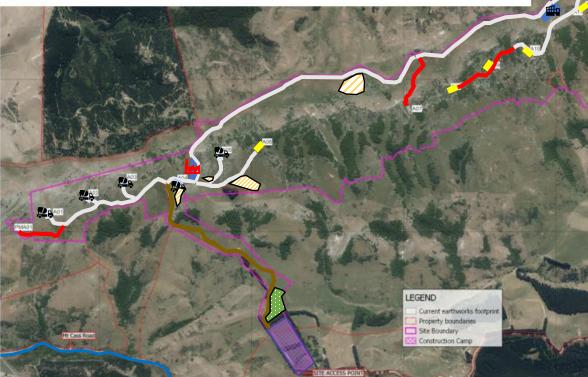
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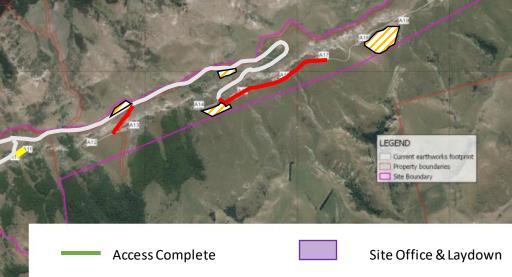
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Disposal Site Complete

Site Office & Laydown

- Disposal Site in use
- WTG Construction
- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete





Track Earthworks

Trenching / Temp Running

Tower Platform Complete

Concrete Batching Plant

Tower Platform EW

O&M Building

Pavement

Surface

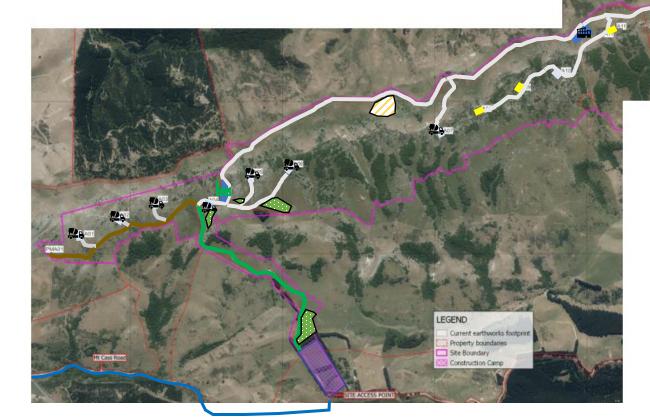
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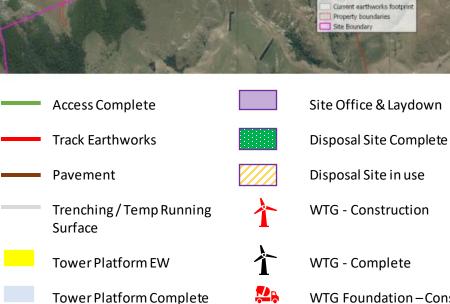
Disposal Site Complete

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- Disposal Site in use
- WTG Construction
- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete



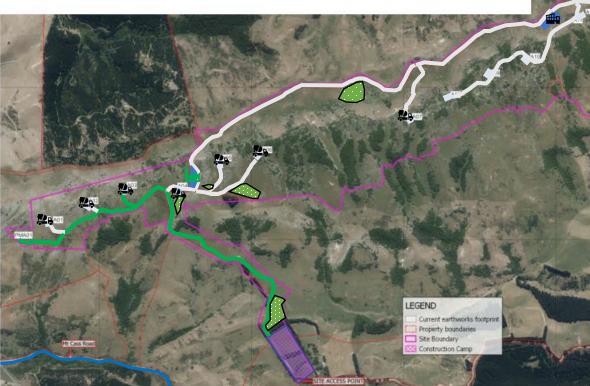


- Tower Platform Complete
- Concrete Batching Plant
- ⊞n **O&M** Building

WTG - Construction WTG - Complete WTG Foundation – Construction

LEGEND

WTG Foundation - Complete





- Access Complete
- Track Earthworks
- Pavement

⊞n

- Trenching / Temp Running Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant

O&M Building

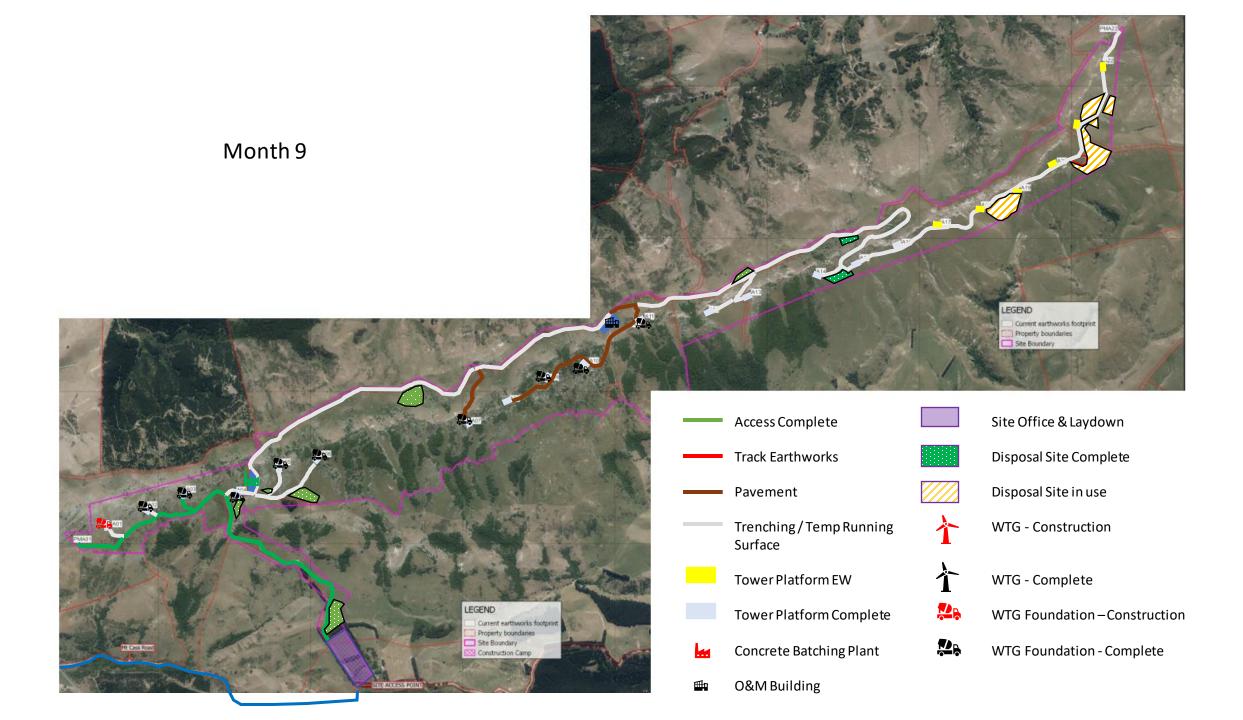
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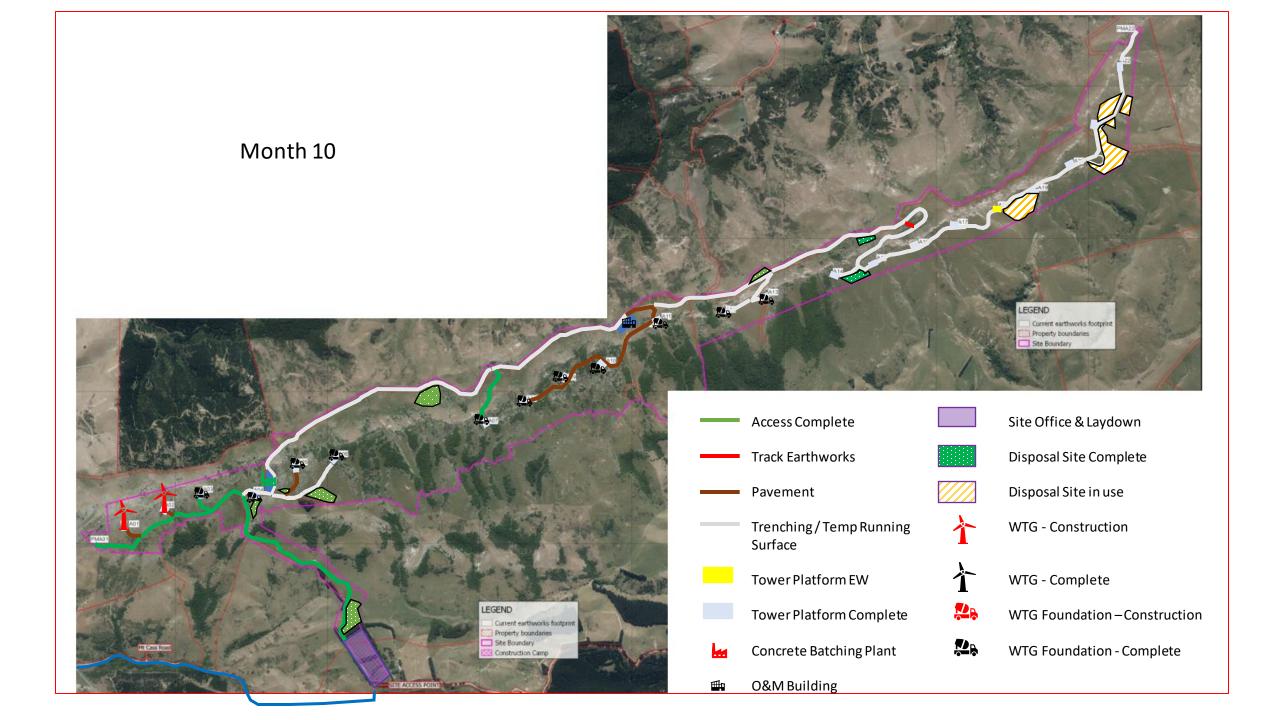
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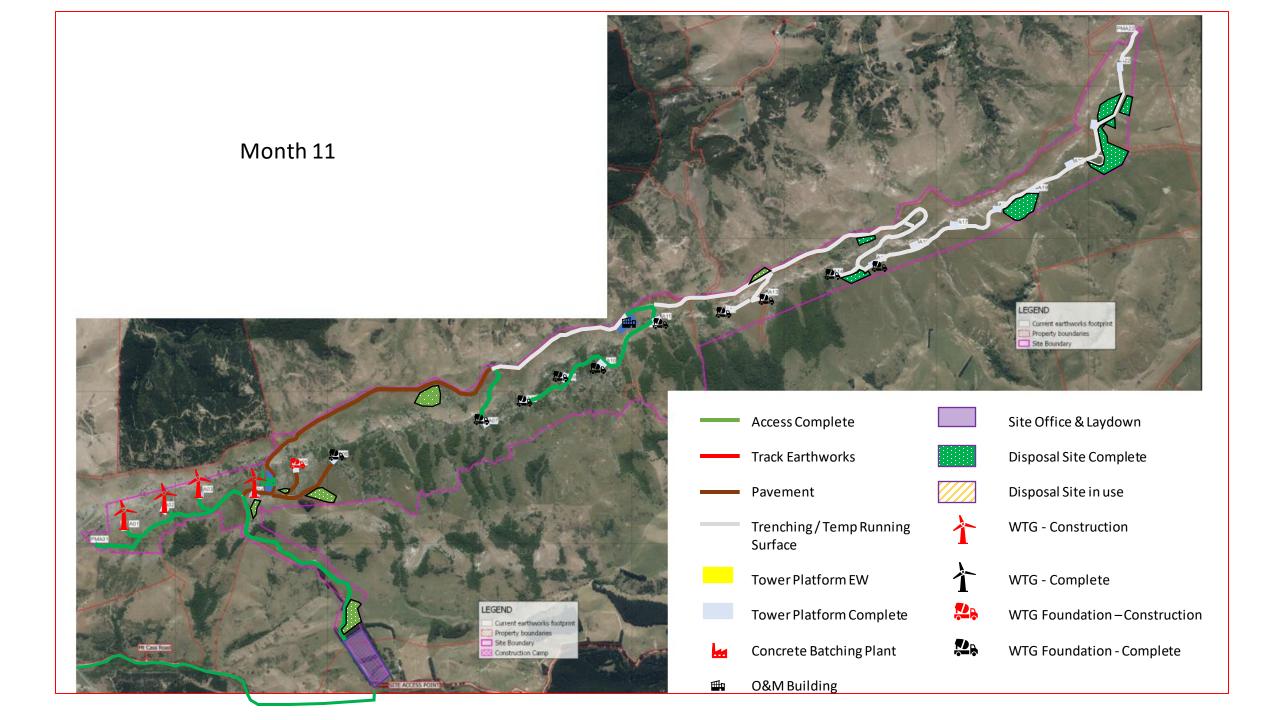
Disposal Site Complete

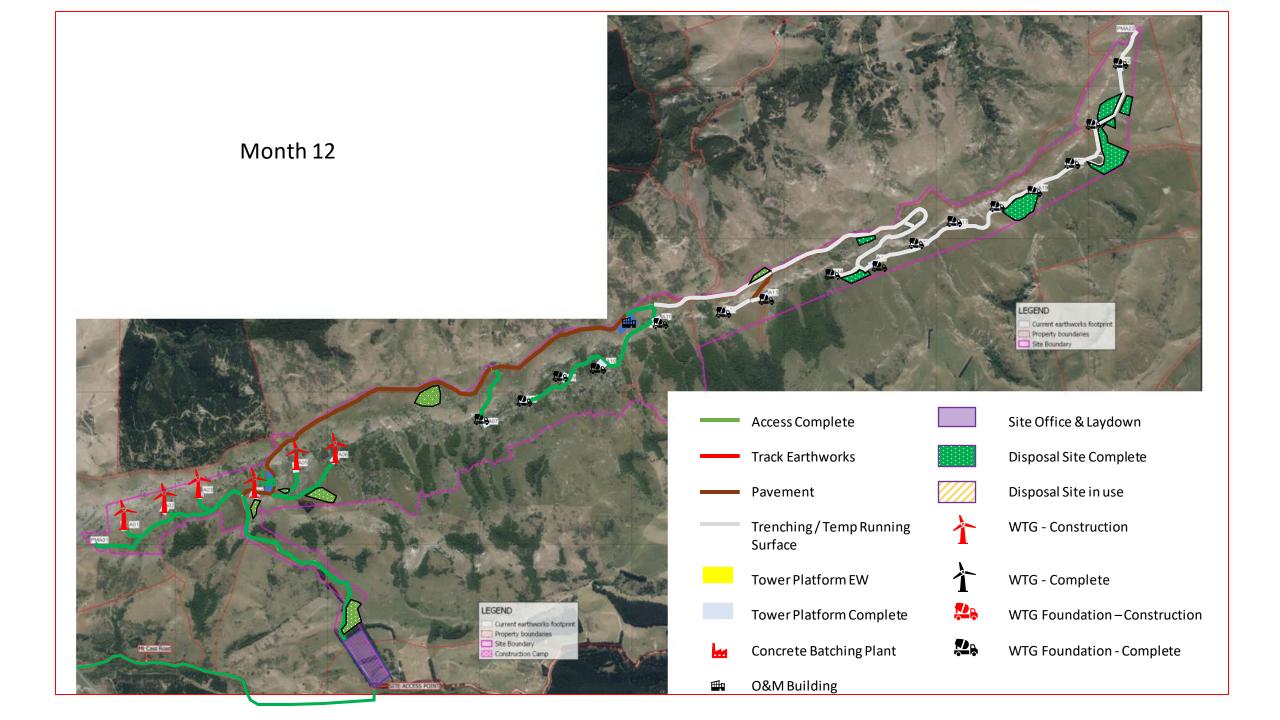
Site Office & Laydown

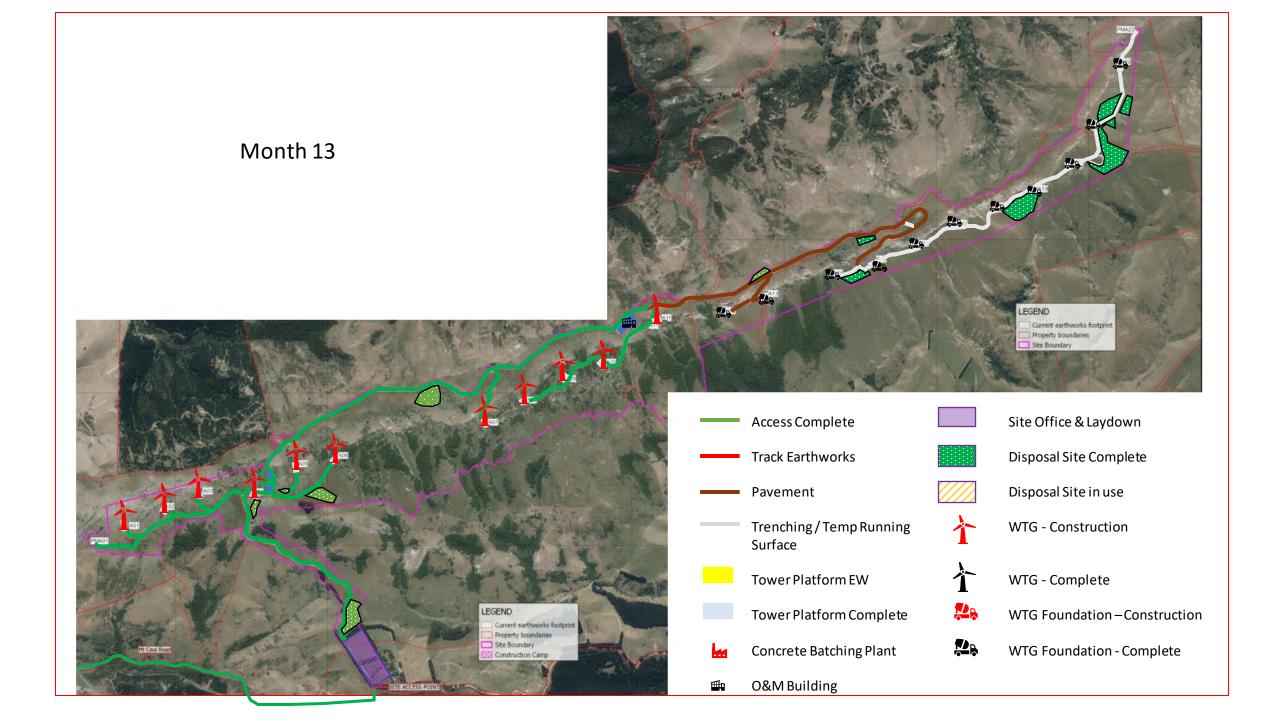
- Disposal Site in use
- WTG Construction
- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete

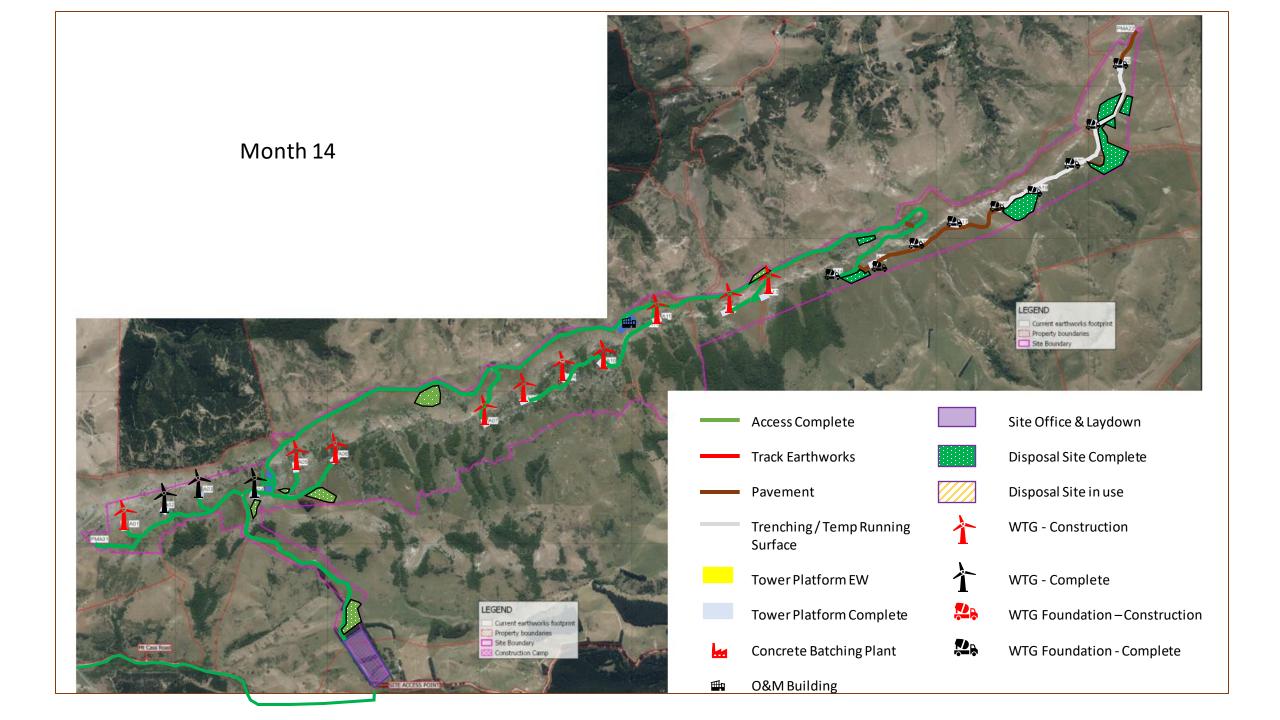


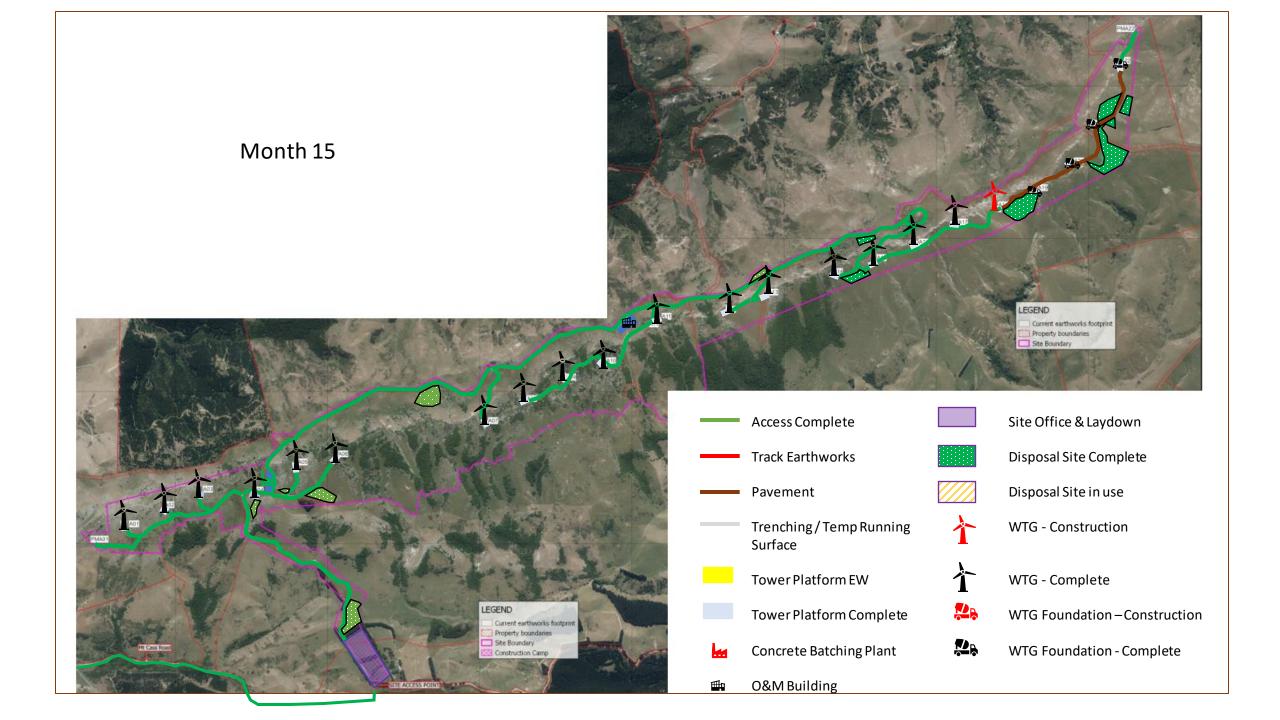


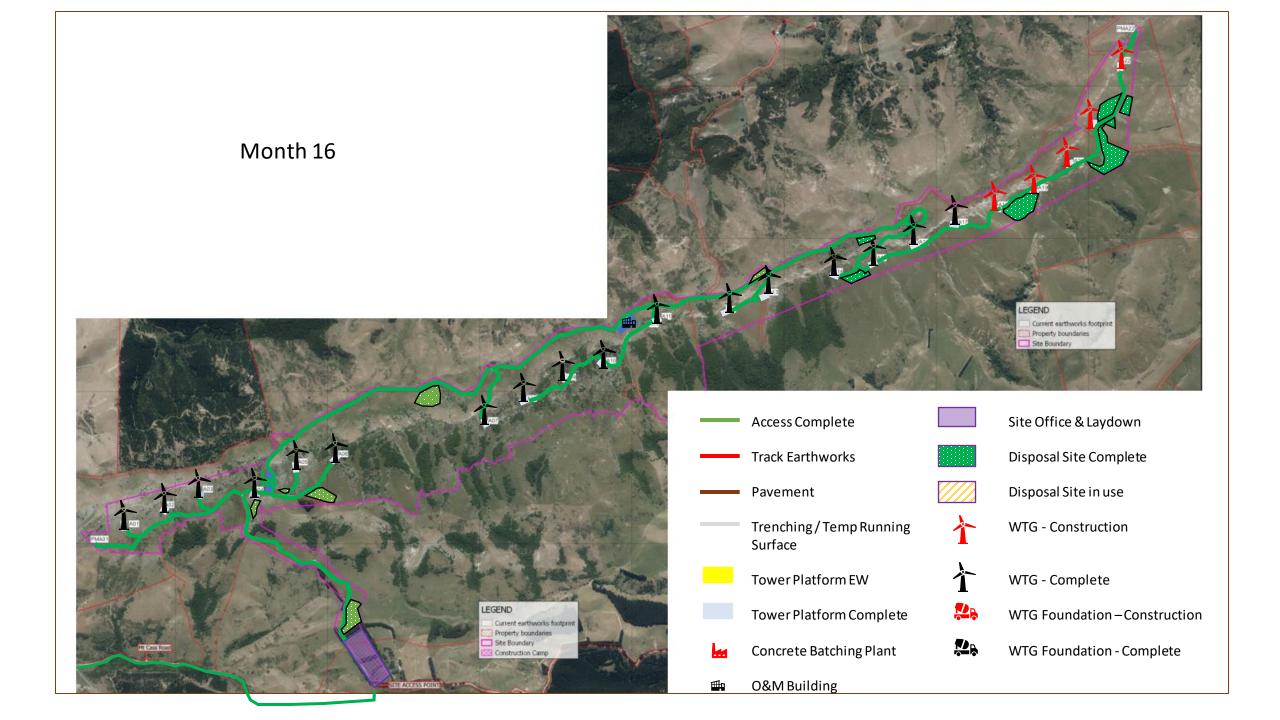


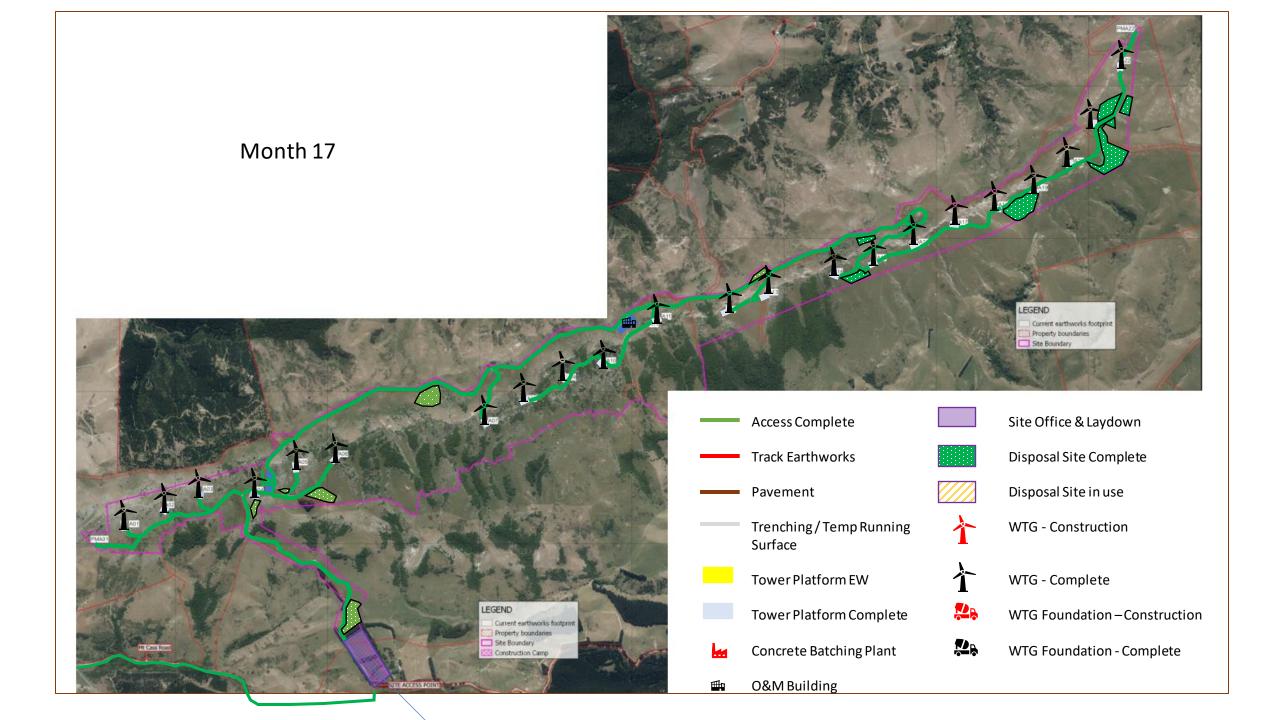












Appendix C:

Consent Conditions Compliance Matrix

| HDC | | A3 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | | |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|-----|--------|------|-----|--------|-----|-----|--------|-----|--------|-----------------|
| Clause 1 | Summary of Condition Build the Mt Cass wind farm to one of three layouts - restricted by tip height and number of turbines. | СМР | ESCP | DMP | HAZSUB | ARCH | NMP | тмр | FMP | WMP | Eco MP | LMP | ЕМР | N/A to CMP Y |
| 2 | Advise HDC of turbine choice at least 6 months prior to construction. N/A – R33 turbine conditions. | | | | | | | | | | | | | Y Y |
| 4 | N/A – R60 turbine conditions. If R90 turbine layout is selected, constructed layout, construction and operation shall be in accordance with plan | | | | | | | | | | | | | Y |
| | 4755.1 and 4755.2 Rev B (4 May 2021). Aspects affected: | | | | | | | | | | | | | |
| | Location of roads and carparks Location and extent of construction laydown areas (excluding turbine platforms) | | | | | | | | | | | | | Y |
| | Extent of area disturbed by earthworks Location and extent of spoil disposal areas | | | | | | | | | | | | | |
| | Location of the exclusion zone. | | | | | | | | | | | | | |
| 6 | No construction activities within the exclusion zones identified in condition 3, 4 (Golder Associate plans) and 5 (MCWF plans) except for fencing, the walking track (condition 143) and stabilisation of rocks. | | | | | | | | | | Y | | | |
| 7 | Boundaries of exclusion zones identified on Golder Associates plans CG161.3-166.3 dated 20 December 2010 (being parts of those exclusion zones within 10 metres of proposed activities) shall be physically identified and marked on the ground prior to any construction activities taking place within 50 metres of those areas. | | | | | | | | | | Y | | | |
| 8 | Brown provide an activities taking place within 50 metres of those areas. Micrositing is allowed within 140m radius of nominated positions in conditions 3, 4 (Golder Associate plans) and 5 | | | | | | | | | | | | | |
| | (MCWF plans), shall not be in exclusion areas shown in CG161.3 and 164.3, and shall aim to avoid, or secondly, minimise effects on biodiversity. | | | | | | | | | | Y | | | |
| 9 10 | Micrositing is permitted provided that it does not exceed clearance limits in condition 13. In undertaking the micrositing process engage suitably qualified and experienced ecologist and suitably qualified and | | | | | | | | | | Y | | | |
| | experienced expert in karst landscape to advise on placement and loc ation of turbines (approved by HDC and in consultation with DoC). | | | | | | | | | | Y | | | |
| 11 | Take advice of ecologist and karst expert when micrositing. If not able to follow advice, then reasons must be reported to Council. | | | | | | | | | | Y | | | |
| 12 | Any additional limestone or vegetation that is able to be avoided through micrositing must be identified and marked prior to construction activities in that location. | | | | | | | | | | Y | | | |
| 13 | Vegetation clearance and exposed limestone disturbance as a result of construction activities including pre- construction geotechnical investigations (excluding effects from fencing and the construction of the walking track | | | | | | | | | | Y | | | |
| 14 | under condition 143) must not exceed specified limits. Minimise effects of fencing and walking track covered in condition 143 in the exclusion zones by: | | | | | | | | | | | | | |
| | Finalising detailed alignment by providing outline plan to be certified by HDC Environmental Services Manager at least one month prior to any construction occurring. Hand cutting of indigenous vegetation. | | | | | | | | | | | | | |
| | Avoiding use of wheeled mechanical equipment or tracked vehicles on in-situ limestone pavement. Otherwise minimizing disturbance to limestone surfaces. | | | | | | | | | | Y | | | |
| | The maximum extent of vegetation clearance for the construction of the walking track shall not exceed 0.25ha of | | | | | | | | | | | | | |
| | indigenous shrubland and 0.05 ha of indigenous forest. | | | | | | | | | | | | | |
| 15 | Concrete batching to be located on area identified on plan 4755.1 (10 April 2019) referred to in conditions 3, 4 (Golder Associate plans) and 5 (MCWF plans). Beauirements for substation construction | Y | | | | | | | | | | | | |
| 16 | Requirements for substation construction. | | | | | | | | | | | | | Y |
| 17 | Turbine finish. | | | | | | | | | | | | | Y Y |
| 18 19 | N/A - Turbine Maintenance. Reporting during Construction: | | | | | | | | | | | | | Y |
| | Consent holder to confirm to HDC total extent of clearance fortnightly during construction. | Y | | | | | | | | | Y | Y | | |
| 20 | Reporting Post Construction: | т | | | | | | | | | | | | |
| | On completion of works provide as built plans to HDC. Provide independently verified written confirmation that maximum limits of shrubland and forest clearance and | | | | | | | | | | Y | Y | | |
| | disturbance of limestone landforms are within condition 13 limits and condition 12 areas have been avoided. | | | | | | | | | | | | | |
| 21 | NA - Lapsing of the Consent. | Y | | | | | | | | | | | | Y |
| 22 22a | General requirements for management plans. Provide a draft environmental management plan (condition 66) to HDC Environmental Services Manager within 6 months of date of grant of consent. | Y | | | | | | | | | | | | Y |
| 23 | At least 3 months prior to undertaking any consent activities, provide a completed Environmental Management Plan | | | | | | | | | | | | | |
| 24 | to HDC Manager Environmental Services for certification. Outcome of CMP and EMP review by HDC. CMP provided to HDC for review at least 30 working days prior to any | | | | | | | | | | | | | Y |
| 25 | activities. All activities shall be undertaken in accordance with latest versions of management plans. | Y Y | | | | | | | | | | | | |
| 26 | Construction Management Plan annual review. Environmental Management Plan three-yearly review. | Y | | | | | | | | | | | | Y |
| 28 29 30 | Requirements for consent review and certification of changes. Management plans to be publicly available. Construction management plan to apply to all works up to and including completion of commissioning and | Y | | | | | | | | | | | | |
| 31 | rehabilitation of construction activities. | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | | |
| 32 33 | Contents of Construction Management Plan. Pre-construction Plan Lodgement to HDC Environmental Services Manager at least 20 working days prior to | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | | |
| | construction works commencing incorporating the following elements: | | | | | | | | | | | | | |
| | (a) Turbine layout (b) Engineering plan for roads | | | | | | | | | | Y | | | |
| | (c) Results of prior drilling and ground penetrating radar traverses to ascertain subsurface cavities (d) Relation of construction works to karst features | | | | | | | | | | | | | |
| 34 | Notification of commencement of construction at least five days prior to work commencing. | Y | | | | | | | | | | | | |
| 35 | No offensive dispersal of dust beyond site boundary. Concrete batching plant to be removed within 6 months of construction completion. | | | Y | | | | | | | | Y | | |
| 37 | Undertake Erosion and Sediment control measures. | | Y | | | | | | | | | | | |
| | Erosion and Sediment control measures to be installed, operated & maintained. | | Y | | | | | | | | | | | |
| 39 40 | Design storm for detention features for runoff and sediment control. Sufficient provisions in the construction contract to allow accurate tenders for erosion and sediment control measures. | | Y Y | | | | | | | | | | | Y |
| 41 | Groundwater monitoring: | | | | | | | | | | | | | |
| | Prior to construction activities commencing the Consent Holder shall undertake water quality monitoring at the main springs and at the Smothering Gully stream, for a period sufficient to establish baseline conditions to the satisfaction | | | | | | | | | | | | | |
| | of Hurunui District Council - at least two winter wet season unless more frequent storms. | | | | | | | | | | | | Y | |
| | Aquatic indicator species; and Suspended and dissolved water quality measures, including hydrocarbon indicators. | | | | | | | | | | | | | |
| 42 | Groundwater monitoring - repeat monitoring annually | Y | | | | | | | | | | | Y | |
| 42 | Groundwater monitoring - repeat monitoring annually Groundwater monitoring: | T | | | | | | | | | | | | |
| | Results of monitoring to be forwarded to HDC within 5 working days of the analytical results being available. | Y | | | | | | | | | | | Y | |
| 44 45 | Audit the design of Erosion and Sediment Control measures against the Construction Management Plan. Treatment of Identified Limestone Pavement Areas: | | Y | | | | | | | | | | | |
| | Limestone pavement areas marked on Golder Associates plan CG161.3 and CG163.3. | | | | | | | | | | | Y | | |
| 46 | Partial rehabilitation of Limestone pavement areas identified in condition 45. N/A - Condition not relevant to R90 layout. | | | | | | | | | | | Y | | |
| */ | N/A - Condition not relevant to K90 layout. If a road is constructed at NZMG coordinates 2496126E, 5792235N or thereabouts | | | | | | | | | | | | | Y |
| 48 | Road running surface provided from site material. | Y | | | | | | | | | | | | |
| 49 50 | On-site parking to be provided. Use local materials for earth fill. | Y Y | | | | | | | | | | | | |
| 51 52 | Protect road surface with basecourse. Prevent scour from temporary discharge diversion channels. | | Y Y | | | | | | | | | | | |
| 53 54 55 | Turbine platforms shall be designed to provide for erosion and sediment control. Location and management of spoil disposal sites. Specifics of spoil disposal design, construction & management. | | Y Y Y | | | | | | | | | | | |
| 55 56 57 | Divert surface water around spoil disposal. Stabilisation and planting of spoil sites. | | Y Y Y | | | | | | | | | | | |
| 58 59 | Erosion & sediment control of long-term (4 consecutive weeks) topsoil stockpiles. Uphill bunding of all topsoil stockpiles. | | Y | | | | | | | | | | | |
| 60 | Engage an ecologist to undertake vegetation survey in construction areas prior to undertaking construction activities. | | | | | | | | | | Y | | Y | |
| 61 62 | Temporary pre-construction site rehabilitation. Confirm to HDC Environmental Services Manager in writing within 3 months of completion of construction that all relevant construction conditions have been complied with | v | | | | | | | | | | Y | | |
| 63 64 | relevant construction conditions have been complied with. Traffic management during construction to be provided for in the Construction Management Plan. Road vesting requirements (if required). | Y | | | | | | Y Y | | | | | | |
| 65 66 | Noad vesting requirements (in required). Deposit of debris on public roads during construction is to be avoided. Environmental management plan to be prepared to ensure compliance with conditions of consent in areas of: | | | | | | | Y | | | | | | |
| | a. Avifauna management conditions | | | | | | | | | | | | v | |
| | b. Herpetofauna management conditions c. Weed control conditions | | | | | | | | | | | | Y | |
| 67 | d. Habitat enhancement and pest control conditions Annual report be provided to HDC by the anniversary of commencement of this consent. | | | | | | | | | | | | | Y |
| 68 69 | Avifauna monitoring and management. Avian ecologist to be engaged to undertake pre-construction survey of avifauna populations and species abundance at | | | | | | | | | | Y Y | | | |
| 70 | site. Monitoring requirements for avifauna survey. Post-commissioning bird monitoring. Annual survey for a minimum of two years. Mortality monitoring once per season | | | | | | | | | | | | Y | |
| 71 | Post-commissioning pird monitoring. Annual survey for a minimum of two years. Mortality monitoring once per season for a min of two years. Report to HDC of any injury or mortality of Kereru, NZ falcon or NZ pipit through interaction with windfarm | | | | | | | | | | | | | Y |
| 72 | Report to HDC of any injury of mortainty of Refere, NZ factor of NZ pipit through interaction with windrarm infrastructure. Falcon monitoring. | | | | | | | | | | | | Y Y | |
| 74 75 | Design of avifauna monitoring programme. Engagement of avifauna expert to prepare avifauna monitoring and management section of Environmental | | | | | | | | | | | | Y | |
| 76 | Management Plan. Avifauna provisions in EMP. | | | | | | | | | | | | Y Y | |
| 77 | Herpetofauna (Lizard) management. | _ | | | | | | | | | Y | | Y | |

| | Herpetofauna section of the EMP. Requirements of herpetofauna management section of EMP. | | | | | | | | | | | | Y | |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|--------|---|--|---|---|---|--------|--------|---|
| | Register a covenant over Mt Cass Conservation Management. Area no later than 3 months after commissioning the | | | | | | | | | | | | т У | + |
| | wind farm. | | | | | | | | | | | | Y | |
| | Conservation Management Area to comply with consent conditions. Weed monitoring and control programme within Mt Cass Conservation Area and other areas subject to disturbance | | | | | | | | | | | | Y | |
| 02 | by the wind farm. | | | | | | | | | Y | | | Y | |
| 83 | Ecologist to prepare weed monitoring and control plan as part of Environmental Management Plan in consultation | | | | | | | | | Y | | | Y | |
| | with DoC. | | | | | | | | | | | | - | - |
| | Weed monitoring detail. Habitat enhancement and pest control programme. | | | | | | | | | Y | | | Y | + |
| - | Habitat enhancement and pest control within Mt Cass conservation area and seasonal pest control in the remainder of | | | | | | | | | | | | | - |
| | the windfarm. | | | | | | | | | | | | Y | |
| 87 | Restoration Ecologist to prepare habitat enhancement and pest control section of Environmental Management Plan. | | | | | | | | | | | | Y | |
| 88 | Fire user plan for helitet enkensement and next central | | | | | | | | | | | | Y | + |
| | Five year plan for habitat enhancement and pest control. Research and monitoring for success of habitat enhancement and pest control. | | | | | | | | | | | | Y | |
| | Habitat Enhancement and Pest Control section of EMP shall include measures for threatened plant species | | | | | | | | | | | | Y | |
| | management. | | | | | | | | | | | | | |
| | Performance indicators for success of the EMP | | | | | | | | | | | | Y | |
| | Silver tussock rehabilitation in areas of temporary disturbance for pre-construction. | | | | | | | | | | Y | Y Y | | + |
| | Silver tussock replacement of equivalent areas if permanently removed. Surplus limestone disposal locations as indicated in conditions 3 and 4 (Golder Associates) and 5 (MCWF). | | | | | | | | | | | Y | | |
| | Surface finishing of spoil disposal areas. | | Y | | | | | | | | | Y | | - |
| 96 | Uphill cut faces and edges of Amuri limestone finishes to be irregular. | | | | | | | | | | | Y | | |
| | In condition 96, avoid straight line interfaces between cut faces and original surfaces. Amuri limestone cuts to emulate naturally occurring patterns. | | | | | | | | | | | Y Y | | |
| | The Northern Terrace Rd and associated ridge road/ramps cut material disposal, material shall not be side cast down | | | | | | | | | | | | | |
| | slope but shall be removed from the work area and disposed of in disposal sites indicated on Golder Associates Plans | | Y | | | | | | | | | Y | | |
| | CG151.4-152.4 and Mt Cass Wind Farm plans 4755.1 and 4755.2 Rev B dated 4 May 2021. | | | | | | | | | | | | | |
| 100 | Mitigation measures for outside treatment of roads in condition 99. | | | | | | | | | | | Y | | + |
| | Relocation of limestone boulders. | | | | 1 | | | | | | | Y | | + |
| 102 | Development of landscape pattern book. | | | | | | | | | | | Y | | |
| | Form a landscape panel and have that panel available during earthworks - one nominated by HDC. | | | | | | | | | | | Y | | + |
| 104 | The landscape expert panel shall liaise with geomorphological, geotechnical and ecological experts as necessary. | | | | | | | | | | | Y | | |
| 105 | Trial of limestone treatment within 3 months of commencement of consent. | | | | | | | | | | | Y | | |
| 106 | Methods for trialling limestone treatment. | | | | | | | | | | | Y | | 1 |
| | Notification of remediation method for Amuri limestone. | | | | | | | | | | | Y | | + |
| 108 109 | Rehabilitation of cuts and fills other than limestone. Locations for the establishment of woody plants and silver tussock within the wind farm site for visual mitigation. | | | | | | | | | | | Y | | + |
| 109 | constant of the establishment of woody plants and siver tussouk within the wind farm site for visual mitigation. | | | | | | | | | | | Y | | |
| 110 | Visual mitigation and remediation plantings to reflect natural patterns as illustrated in landscape pattern book in | | | | | | | | | | | Y | | 1 |
| | condition 102. | | | | | | | | | | L | · · | | - |
| 111 | The use of plants for mitigation and remediation of visual and landscape effects associated with cut and fill occupations | | | | | | | | | | | Y | | |
| 112 | excavations. Location and bunding of contaminant storage. | | | | Y | | | | | | - | - | | + |
| | Site refuelling & oil spill contingency plan submitted to HDC. | | | | Y | | | | | | | | | 1 |
| 114 | Machinery and plant maintenance requirements to avoid leakage. | | | | Y | | | | | | | | | |
| | Site spill kits. | | | | Y | | | | | | | | | |
| | Removal of contaminants at end of construction process. Hazardous substances to be stored in accordance with HSNO Act. | | | | Y | | | | | | | | | |
| | Transformer containment requirements. | | | | Y | | | | | | | | | |
| | Fire Management Plan. | | | | | | | | Y | | | | | |
| 120 | Fire Management Plan shall be available. | | | | | | | | Y | | | | | |
| | Minimum requirements of the Fire Management Plan. | | | | | | | | Y | | | | | |
| | Accidental discovery of archaeological remains protocol. Offer to enter into discovery protocol for Wähi Tapu, Wähi Taonga and Urupå with Te Runanga o Ngäi Tahu and Te | | | | | Y | | | | | | | | |
| | | | | | | Y Y | | | | | | | | |
| 124 125 | The consent holder shall comply with any accidental discovery protocol entered into under condition 123. Notification to Te Runanga o Ngãi Tahu, HPT and Te Ngãi Tūãhuriri Runanga at least 10 days prior to earthworks | | | | | | | | | | | | | |
| 11.5 | commencing. | | | | | Y | | | | | | | | |
| 126 | Engage with Waitaha prior to commencing construction. | | | | | Y | | | | | | | | |
| 127 | The Site Cultural Sensitivity Protocol prepared after the site visits in condition 126 shall be included in the Construction | | | | | Y | | | | | | | | |
| 128 | Management Plan. Accidental Discovery Protocol – Waitaha. | | | | | Y | | | | | | | | - |
| | Definitions for Noise conditions. | | | | | | Y | | | | | | | |
| 130 | Construction Noise shall comply with NZS 6803:1999. | | | | | | Y | | | | | | | |
| - | Noise limits for windfarm other than construction activities or turbine operation. | | | | | | | | | | | | | Y |
| | Wind farm operational sound levels. | | | | | | | | | | | | | Y |
| | Wind farm sound levels apply to the high amenity area at NZMG coordinates 2500630E 5796970N for purposes of NZ56808:2010, as long as a person on the autism spectrum permanently resides at that dwelling. | | | | | | | | | | | | | Y |
| | webbold zord, as long as a person on the autom spectrum permanently resides at that a weining. | | | | | | | | | | | | | |
| 133a | Acoustic Emissions Report to be provided to HDC Environmental Services Manager prior to commissioning of any | | | | | | | | | | | | | Y |
| | turbine. | | | | | | | | | | | | | |
| | Requirements for assessing compliance with conditions 132 and 133. | | | | | | | | | | | | | Y |
| 134a 135 | Testing for special audible characteristics prior to commissioning. Remedial measures if the wind farm does not comply with noise consent conditions. | | | | | | | | | | | | | Y |
| 136 | Assessment of special audible characteristics. | | | | | | | | | | | | | Y |
| 136a | Additional noise monitoring. | | | | | | | | | | | | | Y |
| 137 | Installation of cables to avoid Earth Potential Rise interference with existing communications infrastructure. | | | | | | | | | | | | | Y |
| 138 | Television interference. | | | | | | | | | | | | | Y |
| 139 | If requested by an operator, ensure turbines outside '1st Fresnel zone'. | | | | | | | | | | | | | Y |
| 140 | If requested within 12 months of the wind farm becoming operational, investigate reflection/ loss of radio linking | | | | | | | | | | | | | Y |
| 141 | service and remedy the loss of service. If requested within 12 months of the wind farm becoming operational investigate scattering interference/loss of wide | | | | | | | | | | | | | |
| | If requested within 12 months of the wind farm becoming operational, investigate scattering interference/loss of wide area coverage service and remedy loss of service. | | | | | 1 | 1 | | | | | | | Y |
| | Visibility of aviation navigational lights on turbines or meteorological masts. Provide Council with copy from CAA | | | | | | | | | | | | | Y |
| | within 7 days of receiving such advice. | | | | | | | | | | | | | |
| | Provision of a public walking track. Public access to the walkway route is to be provided in perpetuity. Cetificate of title within 60 days of construction | | | | | | | | | | | | | Y |
| 144 | Public access to the walkway route is to be provided in perpetuity. Cetificate of title within 60 days of construction completion. | | | | | | | | | | | | | Y |
| 145 | Access restrictions. | | | | | | | | | | | | | Y |
| 146 | Interpretive signage. | | | | | | | | | | | | | Y |
| | Community Liaison Group. | | | | | | | | | | | | | Y |
| 148 149 | Liaison group meetings. Objective of the Liaison Group is to facilitate information flow between the consent holder and the community. | | | | | | | | | | - | | | |
| | | | | | | | | | | | | | | Y |
| | Community Liaison Group input into preparation and review of management plans. | Y | | | | | | | | | | | | |
| | The consent holder shall coordinate the community liaison group. | | | - | - | | | | | | | | | Y |
| 152 | The consent holder not in breach if any one of specified parties does not wish to be members of Community Liaison Group or attend any particular meeting. | | | | | | | | | | | | | Y |
| 153 | Group or attend any particular meeting. Consent holder to establish and publicise contact details for a liaison officer. Contact log shall be kept & available to | | | | | | | | | | | | | 1 |
| | HDC on request. | Y | | | | | | | | | | | | |
| 154 | A complaints register shall be kept & made available to the Liaison group & HDC at all reasonable times on request. | | | | | | | | | | | | | |
| 155 | Advise HDC of any complaint within 5 days of receipt, and where appropriate, any remedial or corrective actions taken. | Y | | | | | | | | | | | | + |
| 122 | nor of any complaint within 3 days of receipt, and where appropriate, any remedial or corrective actions taken. | Y | | | | | | | | | | | | |
| 156 | Statutory Liaison Protocol to be established with Department of Conservation. | | | | | | | | | | Y | | | Y |
| 157 | DOC site visits during construction. | Y | | | | | | | | | | | | |
| | Purpose of annual meeting with DOC. | v | | | | | | | | | | | | Y |
| | Peer reviewer to be engaged and approved by the HDC. Peer reviewer experience. | Y | | | | | | | | | | | | + |
| - | Annual report to be provided by the peer reviewer. | | | | 1 | | | | | | | 1 | | Y |
| 162 | Peer reviewer may engage appropriate experts. | | | | | | | | | | | | | Y |
| | HDC annual review of consent conditions. | | | | | | | | | | | | | Y |
| | Consent holder to meet costs of review. | | | | | | | | | | | | | Y |
| | Consent holder performance bond requirements. 165 - 179 Wind Farm decommissioning. | | | 1 | | | | | | | | | | Y |
| 100 104 | | | | | | | | | | | | | | |

Appendix D

B1 Erosion and Sediment Control Plan



Mt Cass Wind Farm Erosion and Sediment Control Plan



Revision 7 – 23 March 2023

This document has been prepared for the benefit of Mt Cass Wind Farm Ltd (MCWF). No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person. This disclaimer shall apply notwithstanding that the report may be made available to other persons of an application for permission or approval to fulfil a legal requirement.

Revision History

| Version | Description | Date | Prepared by | Approved By |
|---------|----------------------------------------------------|-----------|-------------|-------------|
| Rev 1 | Draft | 03 Mar 21 | HW | SB |
| Rev 2 | Draft | 19 Apr 21 | HL, SS | SB |
| Rev 3 | IFC | 1 Dec 22 | BT | MC |
| Rev 4 | MCD Amendments post review comments | 22 Dec 22 | ВТ | MC |
| Rev 5 | MCD Amendments post review comments (second round) | 14 Feb 23 | BT | МС |
| Rev 6 | MCD updated last 4 comments from SEQP | 07 Mar 23 | DK | MC |
| Rev 7 | Post CLG Review, for HDC submission | 22 Mar 23 | MC | GG |

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1. Introduction

This Erosion and Sediment Control Plan (ESCP) is intended as a general overview of the erosion and sediment control principles, practices that are commonly adopted in ESCP's and Environment Canterbury's Erosion and Sediment Control Toolbox (ESCT). This document outlines industry best practice measures that may be adopted by Mt Cass Wind Farm's (MCWF) Contractors in association with the Mt Cass Wind Farm project and is to be read in conjunction with the Construction Management Plan (CMP).

The purpose of this document is also to describe methods to ensure Hurunui District Council (HDC) and Environment Canterbury (ECan) that various consent conditions specific to Erosion Sediment Control (ESC) are being met. To achieve this, the below consents were interpreted as summarised in Appendix B:

• ECan Consents:

- **CRC214150:** To use land for earthworks and vegetation clearance within erosion prone and riparian areas. (Land for Earthworks-Construction).
- **CRC214152:** To discharge construction phase stormwater to land (Construction Stormwater Discharge).
- **CRC214156:** To discharge water within 100m of a natural wetland during construction of specified infrastructure (Construction Water Discharge).
- HDC Consents:
 - **RC070250:** Land use consent

Please note, this ESCP focuses only on 'construction phase' consent conditions and excludes 'developed phase' operations and maintenance.

It is noted that the measures outlined in this plan are not the only way in which to manage these issues and different contractors may have alternative management strategies. It is intended that the measures outlined in this ESCP are considered a baseline for compliance with the resource consent. This plan is to be certified by an independent, suitably qualified and experienced certifier/auditor and the plan document and accompanying certification provided to Environment Canterbury within the required duration prior to the commencement of construction.

1.1 General

Mt Cass Wind Farm Limited (MCWFL) has proposed the development of a wind farm, near Mt Cass in North Canterbury. Construction of the scheme will require the development of an access road to the proposed site, internal roads, a temporary concrete batching plant and construction of a number of platforms at the location of each wind turbine.

The construction activities, particularly those associated with earthworks, have the potential to adversely impact the natural environment if not managed in an appropriate manner. This ESCP outlines mitigation measures that will be implemented in order to manage the erosion and sediment generated by the earthwork's activities during construction.

1.2 Site Description

The proposed wind farm will be constructed partially along the top of a topographic ridge, and partially along the lower terrace to the north of this ridge. The ridge extends approximately 7.5km and trends in a north-easterly direction from Mt Cass towards Oldham Peak. The proposed development includes the construction of the wind turbines and associated 15km of access, ridge, ramp and terrace roads, and upgrades to Mt Cass Road as indicated in Figure 1.

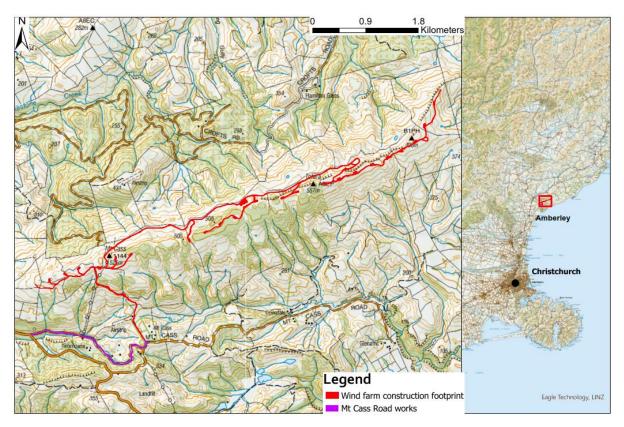


Figure 1 Site Location

The ridge is aligned approximately southwest to northeast and forms an escarpment, with a steep northerly face and a gentler southerly slope. The escarpment is marked by limestone cliffs, with perpendicular ribs, comprising limestone pavement and boulder fields, and dry valleys, forming features on the southern slopes. The existing land use on the ridge is pastoral farming with grazing by sheep and cattle. On very steep slopes and on rock pavements and boulder fields where grazing is difficult, native broadleaved forest and shrubland of variable density are the main vegetation.

The wind farm would extend from a point 1.1km west of Mt Cass Peak to the forked east end of the ridge some 800m to the northeast, southeast of Oldham Peak. The elevation of the wind farm site is between 400m and 569m. At its closest point, the wind farm is approximately 5.5km to the south-east of Waipara and about 10km northeast of Amberley. Access to the ridge is currently made possible by a number of farm tracks off Mt Cass Road which links the site to State Highway (SH) 1 at Waipara.

The proposed wind farm will consist of turbines located along the ridge line. The site will be serviced by a new access road connecting the western end of the wind farm site to the existing road network at Mt Cass Road. From the top of the new access road, the turbines to the west are accessed via a 1km road along the ridge and turbines to the east are accessed via the 5km Northern Terrace Road with ramp roads from the Northern Terrace Road to the ridge. At the end of the Northern Terrace Road the road climbs back up to the ridgeline and follows the natural contours to the end of the wind farm beyond Oldham Peak. For detailed illustrations of the access road, refer the drawings in Appendix A.

At each turbine location, a temporary flat platform of approximately 45m by 26m will need to be formed to provide working space to site the crane and for turbine component lay down, as well as to contain the turbine foundation. Most turbine locations will require a permanent, smaller flat platform for maintenance purposes. Excess excavated material from these earthworks would be used as fill on the access and ridge road or disposed of at selected spoil disposal sites across the site.

Other facilities required for the wind farm include:

- Temporary laydown areas for materials.
- Temporary concrete batching plant.
- Temporary offices, workshops, stores and staff facilities.
- An electrical substation, located about 2.8km along the Northern Terrace Road, comprising a switchyard and two buildings which will house switchgear, the wind farm central control centre.
- Toilets and staff facilities.
- An internal transmission network between the substation and the turbines.
- An overhead transmission line between the substation and the external power grid.

The 33kV reticulation network within the wind farm site will be underground and will be cabled into the proposed substation. It will then feed into the 66kV network via a 3-phase 66kV transformer. Power transmission from the site will be via a single 66kV overhead line that will connect into the national grid at Waipara.

The transmission line from the substation will approximately follow the northern terrace road back to the top of the access road, then descend down to Mt Cass road near the Tiromoana homestead. These are covered in separate resources consents and are not covered in this plan.

1.3 Mt Cass Rd Upgrade

The section of Mt Cass Road from the Kate Valley Turn off to the Site Entrance will be upgraded under and is to be covered under the construction management plan.

Currently the detailed design is not advanced enough to provide accurate controls for incorporation into this plan. It is anticipated that a separate erosion sediment control plan will be written for this section of work once the design has been completed and the Contractor engaged to carry out this work. This document should align with the CMP and all subplans and will be sent to ECAN for review and approval. The document shall then be appended as a separate sub-plan to the ESCP.

1.4 Development of the ESCP

The proposed sequence of development of this ESCP is set out in the following sections. This plan has been updated jointly by engineering consultants Tonkin + Taylor, McConnell Dowell (MCD) and their earthworks subcontractor Taylors, and appropriate consultation with Electonet Ltd the eBoP contractor. Please note, this ESCP has been completed in parallel to detailed design and as such, some details and/or figures are indicative and subject to change. This includes the final number and location of culverts; extent of rip rap scour protection, laydown areas; soil disposal areas and road geometry. It is unlikely however that the ESC controls will change.

1.4.1 Submission

This plan will be reviewed by MCWF and certified by Stantec as their suitably qualified independent person. It will then be submitted to ECan and Hurunui District Council (HDC) for comment. Any comments from ECan, HDC or MCWF would be included in a revised plan and that final plan distributed.

1.4.2 Site-Specific Erosion and Sediment Control Work Plans

Before starting each section of construction, a work plan 'checklist' is to be prepared. This work plan will supplement the existing ESC drawings to provide higher resolution details for installation of controls at each sub-catchment. The work plan is designed to provide:

- A method statement of how the controls will be built to meet the resource consent conditions.
- Drawings and specifications of designated sediment control measures.
- Details of any stockpiling locations within the catchment, including erosion and sediment control measures to minimise construction-phase discharges from the stockpiles.
- Details of methods to minimise discharges into exclusion zones.
- Definition of the discharge points where stormwater is discharged to waterways within site, or the overland flow path of stormwater discharged to land where it may enter waterways.
- Sign off for the relevant control against the ECan and HDC check lists in Appendix E.

The ESCP drawings and positioning of control devices were completed through desktop analysis. Control devices supplied in Appendix A are a selection of appropriate solutions, however further information relating to the exact position and design of each device will follow detailed design. Due to the vast nature of the site, indicative locations were provided to the closest 10m scale. It may be possible that the control devices outlined in the drawings need to be re-positioned or substituted based on changes to the design, discovery of other overland flow paths or features such as rocks onsite.

It will be the Contractors responsibility to reference the drawings for the general location of devices (silt fences and/or channels). It will also be the Contractors responsibility to ensure that the most practical device is installed prior to any earthworks taking place based on being on the ground. This relates to clean water diversion bunds, all of which have not been able to be shown due to the scale of the site being reflected in five drawings and purposes of clarity.

1.4.3 Implementation, Monitoring and Adaptation

The contractor will install the agreed erosion and sediment control measures as detailed in the approved ESCP. The control measures would be monitored at the agreed intervals, and regular maintenance carried out. The effectiveness of the controls would be re-assessed, and the plan adapted, and control measures modified if necessary.

If modifications are made then

- They will be for the purpose of improving the efficiency of the erosion and sediment control measures and shall not result in reduced discharge quality.
- Be consistent with the conditions of the resource consent.
- Be certified by the agreed SEQP as per condition 13c.

The consent holder shall provide a copy of any such amendment to the ESCP and the certification to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance, prior to giving effect to the amendment.

Audits of ESC measures would be completed in accordance with Section 0. Records of these audits will be maintained by the Contractor and provided to HDC and ECan if requested.

2. Extent of Land Disturbance

The extent of works covered by this ESCP are listed in Table 1. For the purposes of adhering to a construction programme, this ESCP has been submitted in parallel to detailed design. Therefore, exact figures (such as areas and degrees of slopes for certain areas) are unable to be supplied at this time.

| Description: | Area (m2) | Drawing reference | | | | | |
|-----------------------|-----------|-------------------------------------|------------------------|--|--|--|--|
| Construction stage 1 | 4,400 | 1017740.2000-311 | | | | | |
| Construction stage 2 | 32,809 | 1017740.2000-311 - 1 | 017740.2000-312 | | | | |
| Construction stage 3 | 19,956 | 1017740.2000-312 | | | | | |
| Construction stage 4 | 52,023 | 1017740.2000-312 - 1017740.2000-313 | | | | | |
| Construction stage 5 | 27,865 | 1017740.20 | 000-314 | | | | |
| Construction stage 6 | 56,269 | 1017740.2000-314 - 1 | 017740.2000-315 | | | | |
| Spoil disposal areas: | Area (m2) | Average Slope (degrees) | Drawing reference | | | | |
| Area D-1 | 29,951 | 20° | 1017740.2000-311 | | | | |
| Area D-2 | 8,268 | 18° | 1017740.2000-312 | | | | |
| Area D-3 | 9,836 | 19° | 1017740.2000-312 | | | | |
| Area D-4 | 1,906 | 20° | 1017740.2000-312 | | | | |
| Area D-5 | 13,591 | 18° | 1017740.2000-313 | | | | |
| Area D-6 | 7,967 | 22° | 1017740.2000-314 | | | | |
| Area D-7 | 8,650 | 8° | 1017740.2000-314 | | | | |
| Area D-8 | 5,506 | 24° | 1017740.2000-314 | | | | |
| Area D-9 | 26,852 | 32° | 1017740.2000-315 | | | | |
| Area D-10 | 13,644 | 20° | 1017740.2000-315 | | | | |
| Area D-11 | 1,737 | 9° | 1017740.2000-315 | | | | |
| Area D-12 | 25,660 | 25° | 1017740.2000-315 | | | | |
| Laydown areas: | Area (m2) | Average Slope (degrees) | Drawing reference | | | | |
| Area L-1 | 27,000 | 4° | Figure 4 Section 3.1.2 | | | | |
| Area L-2 | 13,300 | 8° | 1017740.2000-311 | | | | |
| Area L-3 | 5,300 | 6° | 1017740.2000-313 | | | | |

| Concrete batching plant | 9,836 | 11° | 1017740.2000-312 |
|--------------------------------------------------|-------------------------------------------|-------------------------------------------|------------------|
| Substation / Operations and maintenance areas | To be completed following detailed design | To be completed following detailed design | All drawings |
| Turbine platforms | 0 0 | 0 0 | All drawings |
| Total | 0 0 | 0 0 | |

Table 1 Extent of Work

3. Construction sequence and methodology

The site will be broken in to six zones to stage the construction. These zones are shown in Figure 2 and are intended to follow a logical construction sequence and provide a staged entry to the site to ensure that all ecological controls and consent / landowner agreements are implement via a permit to work system.

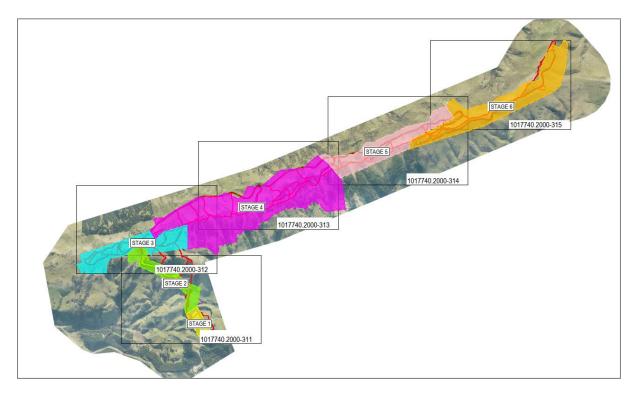


Figure 2 Mt Cass Construction Zone Boundary Plan (refer Appendix A sheet 1 for more detail)

Construction is likely to occur in a linear and progressive manner along the ridge. The sequence is likely to follow the 13 steps provided below. A more detailed description of works including dates are provided in the construction sequence in Appendix G.

- 1. Installation of sediment control measures in sequence with earthworks.
- 2. Earthworks for and construction of the access road and the construction camp and laydown area at the foot of the access road.
- 3. Earthworks for and construction of the western extension followed by the northern terrace, ramps roads, and sections of road starting at the western end and with the Cass Spur Road and the Southern Spur Road. This would include the creation of the spur roads and the turbine platforms. The concrete batching plant area and other laydown areas would be created as the earthworks moved through that area.
- 4. Construction of the Northern Terrace Road and the Ramp Roads, starting at the western end and continuing progressively east along the terrace.
- 5. Construction of the Ridge Road progressively to the east.
- 6. Spoil disposal areas close to the current earthworks work front would be developed to minimise the haul to more distant spoil disposal areas and to prevent weed spread.
- 7. Cable reticulation along the Ridge and Northern Terrace Roads would be installed once the road is initially cut to subgrade and prior to basecourse placement.
- 8. Substation and transmission line construction.

- 9. Mt Cass Road will be upgraded, under a separate contract so as to not affect earthworks on the wind farm site.
- 10. The concrete batching plant would be established and excavation for the turbine foundations undertaken, permitting construction of the turbine concrete foundations.
- 11. Turbine foundation construction would progressively move along the wind farm, some distance behind the earthworks.
- 12. Turbine erection would similarly follow along the wind farm behind foundation construction.
- 13. Progressive commissioning.
- 14. DOC track extension

3.1 Site Laydown Areas

Two site lay downs will be constructed by removing and stockpiling topsoil for later re-instatement. Imported aggregates will be used to form a hard stand area in both yards.

3.1.1 Site Office & Laydown

The main site office is located at the entrance of the site as illustrated in Figure 3. The trees through the middle of the site will be removed and placed into stockpiles where they will be mulched for future landscaping on the project. Once this is completed, the topsoil stripping operations will commence.

The topsoil will be placed in a stockpile area outside of the yard outline, where it will be stored for the duration of the project prior to being re-spread over the yard area prior to disestablishing from site. Some of the topsoil will also be utilised as a form of erosion control creating an earth bund around the yard area, which will stop water runoff to the surrounding areas.

Where required, localised casting and filling of in situ material will be undertaken to ensure a flat surface is available for the purpose of running the project from the yard area. Aggregate will then be imported from the yard and spread and compacted to a minimum depth. A silt fence, K-Log channel and sediment decant earth bund (optional) have been specified on the northern edge of the carpark to treat any sediment mobilised due to vehicle movements in the carpark.

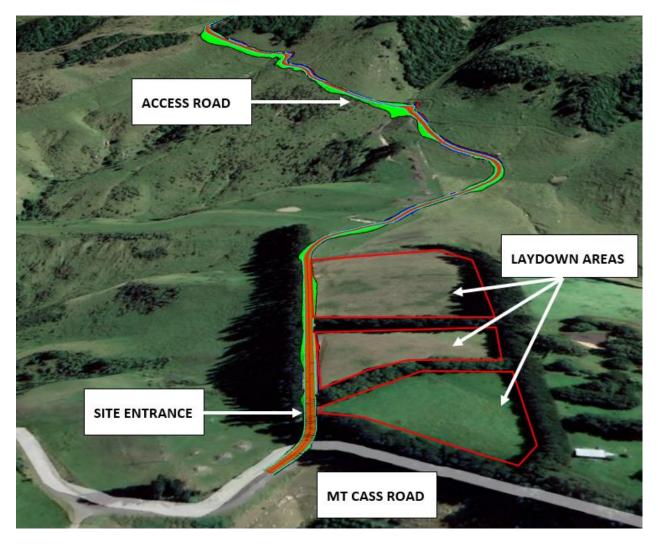


Figure 3: Illustration of three separate laydown areas located on right of entrance to project site (Note internal shelter belts will be cut down and mulched).

3.1.2 Symonds Road Construction Yard

A second hard stand will be built at the intersection of Mt Cass and Symonds Rd. This yard is used to store the wind turbine tower and blade units prior to transporting them to the site. The site is flat and poses very little risk from an erosion and runoff management perspective. The construction method will be the same as the main site laydown area. This is shown in figure 3 below.

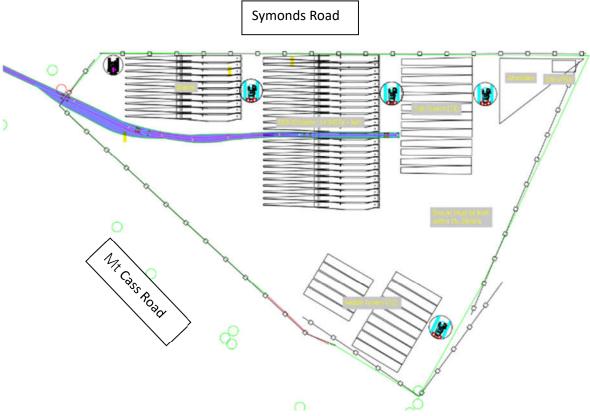


Figure 3 Illustration of 'Symonds Rd construction yard' used to store the wind turbine tower and blade units

4. Erosion and Sediment Control Principles

4.1 Overview

The key principles to be employed for this ESCP are to stage and undertake the earthworks in a manner that minimises the potential for erosion of the exposed soils, and to employ control devices to manage all sediment-laden water prior to discharging from the site. Control of water runoff or concentrated water flows is one of the key focuses for this project given the topography. The ECan ESCT and this ESCP take a best practicable option (BPO) approach to the management of erosion and sediment control.

4.2 Principles

4.2.1 General

Guidance on the appropriate control measures is provided by ECan's ESCT which sets out guidelines for land and waterway-disturbing activities that can cause sediment and dust discharge to water and air. The guidance and all associated resources are available at <u>https://esccanterbury.co.nz</u>. The key principles of the ESCT are summarised below and incorporated throughout this document:

- Minimise disturbance
- Do the construction in stages
- Protect slopes
- Protect waterways
- Stabilise exposed areas quickly
- Consider the weather
- Install perimeter controls and diversions
- Use sediment control tools, including mixing and matching tools as necessary
- Adjust the plan as needed
- Monitor and adjust tools
- Training and developing experience.

4.2.2 Design Storms

Rainfall for the design storm events has been obtained from the High Intensity Rainfall Design System (HIRDS). This software provides rainfall intensities for events of variable duration and variable return period specific to the location being assessed and the runoff characteristics of the catchment under consideration. The runoff coefficients are based on HDC's Development Engineering Standard for bush, pasture and berms on poor draining soils with additional factor for >20% ground slopes for overland flow and unsealed metalled pavements.

Two rainfall scenarios form the design basis of detention features and permanent road relating to ESC measures. These scenarios are commonly referred to as the Annual Exceedance Probability (AEP) or the Average Return Interval (ARI) and were agreed during the Environment Court proceedings. Key features of the rainfall design scenarios are as follows:

1. 5% AEP) / 20-year ARI:

- All ESC runoff and sediment control (detention features) during construction.
- Based on 10-minute duration storm.
- o 50.7 mm/hr (HIRDS, 10 min duration)
- Collected runoff is designed to pass through culverts under the road located at appropriate low points.
- o Runoff coefficient 0.40 (overland flow), 0.5 (unsealed metalled pavements)
- No climate change allowance has been made as detention features are designed and constructed for the purposes of construction phase only.

2. 2% AEP / 50-year ARI:

- All runoff and sediment control (detention features) for permanent roads.
- For the larger flood flows the road may be overtopped briefly during the flow peak but flow will remain confined to the same flow channel either side of the road formation.
- No climate change allowance has been made as the road and drainage is designed and constructed for the purposes of access for the next five years only.

Please note, the primary stormwater conveyance network (v drains and culverts) is designed convey events up to (and including) the 10% AEP 24 hr rainfall event. Please refer to T+T report Access Road Design Report - 80% Detailed Design, December 2022 (1017740.2000 v1.0) for further information on stormwater and pavement design.

4.2.3 Specific Principles in Relation to Mt Cass

A key requirement of the ESC measures is the control of sediment in relation to the sinkholes. The principles for managing sediment in relation to discharges in the vicinity of sinkholes are:

- Use of ESC measures to provide diffuse discharge of runoff from disturbed sites to vegetated surfaces rather than point discharge.
- Avoidance of additional runoff to catchments with sinkholes.
- Maintenance of the natural style of runoff and percolation, and wherever possible flow paths which convey flow overland to sinkholes.

Areas of sinkholes near the construction footprint are identified in Appendix D and will be identified on any Site-Specific Erosion Sediment Control Plans. Refer section 4.3.5.

The project site is described as land of gentle to steep slope, soft rock country and other land with moderate to steep slopes. Importantly, there are no permanently running watercourses crossing the site. The proposed works however cross several gullies that would carry flow under high rainfall conditions. The waterways considered to meet the definition of river, and the wetlands considered to meet the definition of natural wetland within the project site are identified in Figure 6. The buffer areas adjacent to the waterways and wetlands are identified in Figure 6 and 7. Refer to ESC drawing 1017740.2000-313 for detail on dirty water diversion and treatment measures specific to these wetlands.

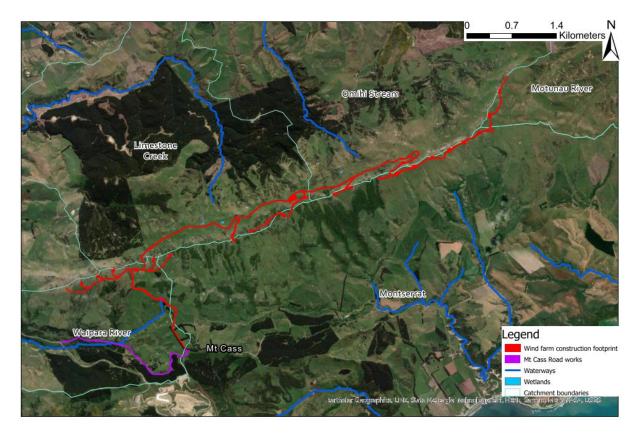


Figure 4 Waterways within and near the Project Site. Please note, due to the scale the wetlands are illustrated more clearly in Figure 7.

With reference to the two wetlands located adjacent to the northern terrace road west (figure 7); a series of preventative controls will be installed to reduce runoff into these low areas. These controls include:

- **Silt fences**: Placed immediately beside the road on the northern (lower) side to capture and contain any silt runoff and/or dust from the road. These fences will essentially line the entire length of road to protect the wetlands as a primary measure.
- Dirty water diversion channels: Placed on the outside (lower) side of the silt fence as a secondary measure to divert any runoff that has passed through the silt fence. These channels will essentially run the entire length of road to protect the wetlands. They will be constructed to on a gentle cross-grade to the natural contours to ensure 'dirty water' is routed around the wetlands to discharge downhill.
- Clean water diversion bunds: Installed in strategic locations on the uphill side of the road, to route clean water sheet flows away from soil disposal site D5 (as illustrated on ESCP drawing 1017740.2000-313).
- **K Log channels:** Mesh tubes filled with bark chips and a granular anionic polyacrylamide (PAM) flocculant designed to be installed at the end of each dirty water diversion channel. The K logs will essentially treat the dirty water to ensure settled site remains contained. For further information refer section 4.3.4.
- Sediment decant earth bunds: To be installed where overlands flows converge resulting in elevated flow requiring pre-treatment. For example, downhill from turbine platform 8F. These will be established using level spreaders and/or cut off drains to aid in the collection and dispersal of sheet flows across a wider area.

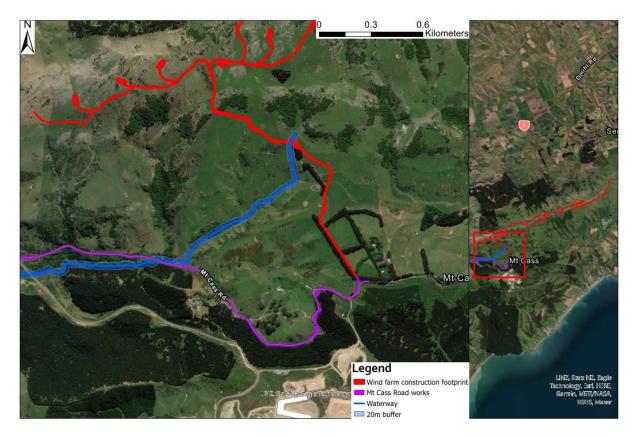


Figure 5 20m Buffer around Waterways within the Project Site.

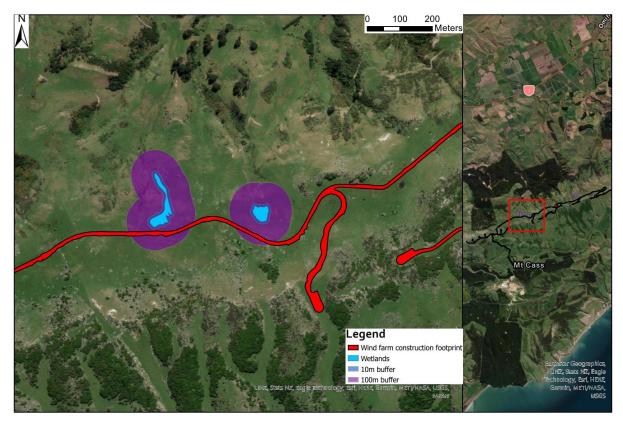


Figure 6 10m and 100m Buffers Around Natural Wetlands Within the Project Site

Deploying the best practicable option method involves choosing one of the control mechanisms described in the following sections. These have been taken predominantly from the ESCT and the New Zealand Forest Road Engineering Manual (NZFREM). The selected methods shall be reviewed

and adapted as necessary throughout the project based on the success of the particular method in achieving sediment and erosion control. For the purposes of erosion and sediment control the project can broadly be broken into five segments, namely:

- 1. The Ridge Road, Western Road, and turbine platforms, constructed along the ridge of the site, with limited catchment from either direction.
- 2. The Access Road, constructed on moderately steep side slopes.
- 3. The Northern Terrace Road, constructed at the base of the north scarp face.
- 4. The Ramp Roads constructed on the steep scarp face.
- 5. Disposal areas, constructed on shallow to moderately steep slopes.

The catchment areas and size of each catchment within the project site are identified in the table in Appendix C and catchment plans in Appendix E. Most of the ground exposed during construction will be limestone, with varying degrees of weathering, which has a high natural resistance to erosion. The soils most susceptible to erosion will be the topsoil and other near surface soils which overlie the rock. Small quantities of these soils will be exposed in the cut faces; however, they will be at their most vulnerable to erosion when stored in stockpiles.

In order to manage these issues, the following strategies will be adopted:

- Topsoil required for re-vegetation of permanent slopes will be stored along the alignment.
- Other soils will be taken directly to spoil disposal sites.
- Spoil disposal areas will be re-vegetated progressively as material is placed. In practice this is likely to involve sowing areas with pastoral grasses in blocks of approximately 1 ha, although this would depend on weather or seasonal conditions and the quantities of material being moved at any particular time. While awaiting re-vegetation, topsoil surfaces will be stabilised using methods such as soil binders, geotextiles, erosion control blankets and mulching.
- As far as is practical, permanent slopes will be covered in topsoil and re-vegetated as soon as possible following formation.

4.3 Erosion and Sediment Control Measures

The following sections provide a preliminary assessment of how it is intended to control sediment and runoff for the proposed project options. The actual measures used in construction may vary, depending on contractor preference and the final design layout. However, all measures either currently proposed or as modified for construction, will be compliant with the ESCT.

4.3.1 Install Perimeter Controls and Diversions

A key method to minimise erosion and the discharge of sediment laden runoff is to prevent water entering from outside of the earthworks site. The ESCT promotes the separation of clean water (that which has run across undisturbed ground) from dirty water (that which has run across disturbed ground). Water which falls within the construction zone ideally should be treated before reaching a clean water body.

For many parts of the site, particularly along the initial uphill section of the access road, the relatively small catchment areas involved would make this separation overly complex and impractical to build

and maintain the necessary devices. It is our view that the less soil disturbance the better. Given the steep topography, extensive clean water diversion channels (or stabilised earth bunds) would have to be constructed approx. 10m away on the uphill side, effectively 'above' the access road. It is likely that the excavations involved to establish these clean water diversion bunds will cause unnecessary sediment release and pose safety issues to the excavator operator.

If clean water diversion bunds were constructed (indicated by the yellow line in Figure 7), they would need to be extensive to avoid any spill over into the road below. To divert clean water from mixing with sediment from the road, they would also need to run parallel to the constructed road for the entire length of the road where they would discharge to a localised area. Significant surveying and construction techniques would need to be employed to ensure that flow does not concentrate at low points and spill out (for instance in gullies), rendering the channel impractical.

For these reasons we consider the construction of clean water diversion bunds on a steep hillside (above the primary conveyance channel) as being complex to construct, capable of creating more sediment release and an unnecessary health and safety risk. Our approach therefore is to allow clean overland flows to run into the rock lined channel on the interior side of the access road where necessary. If any mixing occurs with 'dirty' water residing in the drain; coarse sediment capture will be provided 'in-situ' within the rock lined channel, followed by sediment traps described further in section 4.3.4. Treated water will then be dispersed downhill into long grasses to replicate natural processes through culverts at designed locations. The actual extent of the work site requiring the combining of clean and dirty water on steep uphill slopes will be defined following detailed design.



Figure 7 Photo Depicting the Steep Slopes Above and Below Where the Access Road will be Constructed.

In lower grade areas that allow for controlled overland flows, the approach will involve stripping of topsoil and some of this material will be used to form bunds along the uphill edge of the construction. These bunds (approximately 0.5m high) will prevent overland flows from entering the construction zone. Water re-directed by these bunds will be taken to natural low points where adequately sized

culverts will be used to bypass the water beneath the construction zone and long-term corridor. In limestone areas, point discharges of the water into sinkholes will be avoided.

4.3.2 Minimise Disturbance and Stabilise Exposed Areas Quickly

As previously mentioned, most of the ground exposed during construction will be limestone, with varying degrees of weathering, which has a high natural resistance to erosion. The soils most susceptible to erosion will be the topsoil and other near surface soils which overlie the limestone. It is noted that parts of the construction footprint are located within identified high soils erosion risk areas, as shown in Figure 8.

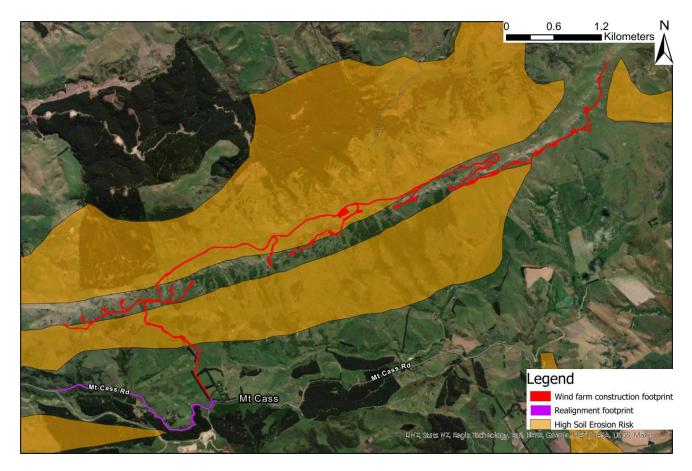


Figure 8 Areas of High Soil Erosion Risk

Small quantities of these soils will be exposed in the cut faces; however, they will be at their most vulnerable to erosion when stored in stockpiles. In order to manage these issues, the following strategies would be adopted:

- No earthworks shall occur within active flow paths of water, areas of saturated soils, or where soils are unstable due to transient water content for the period of the rainfall and the following 12 hours after cessation of the rainfall.
- Only topsoil required for re-vegetation of permanent slopes will be stored along the alignment.
- Topsoil which is surplus to these requirements will be taken to spoil disposal areas immediately.

- Spoil disposal areas will be re-vegetated promptly and progressively as material is placed. In practice this is likely to involve sowing areas with pastoral grasses in blocks of approximately 1 ha, although this would depend on weather or seasonal conditions and the quantities of material being moved at any particular time.
- While awaiting re-vegetation, topsoil surfaces will be roughened in accordance with Checklist 6 of the ESCT or protected with straw mulching pressed into the surface with crimping discs in accordance with checklist 11 of the ESCT. Refer to Figure 9 and Figure 10 below.
- As far as is practical, permanent slopes will be topsoiled and re-vegetated as soon as possible following formation. Any topsoil stockpile that is intended to remain in situ for more than 4 consecutive weeks shall be hydroseeded if intended to remain for more than 4 months.
- Roadside channels will incorporate check dams and hard armouring as required to slow flow velocity to below levels that cause scouring in the channel.
- Culvert inlet/outlet energy dissipation devices will be constructed early to provide protection against concentrated flows. Refer stormwater design report.



Figure 9 Soil Surface Roughening to be Employed Downstream of Areas Where the Soil has been Disturbed.



Figure 10 Straw Mulching to be Used in Conjunction with Surface Roughening.

4.3.3 Sediment Control Tools to Prevent Sediment Leaving the Site

Prevention of sediment leaving the site will be achieved by appropriate treatment of all collected rainfall runoff and the removal of soil from vehicle tyres at or prior to the exit points. The earthworks operation will essentially be self-contained within the construction site. Earthworks trucks will not generally use public roads during the project, except for limited quantities of specialist materials which cannot be supplied from on-site excavations.

Movement of vehicles from the construction site onto public roads will consist mostly of turbine delivery trucks, material delivery vehicles e.g. reinforcing steel, and light vehicles to transport the workforce to and from site. The concrete trucks may also return to home base between pours. Access onto public roads will be restricted to one access point off Mt Cass Road where the rumbled strip will be established. In order to mitigate the transfer of sediment onto the public road system, the following measures will be implemented:

- Haul roads traversed by road vehicles will be sealed (southern access road), surfaced in limestone or imported basecourse to form an "all weather" surface that will minimise the sediment that can be picked up by vehicles.
- Rumble strip (cattle stop or similar) will be utilised at the formal exit points to remove sediment before vehicles leave the site, such as the example shown in Figure 11.
- Sweeping of intersection points with public roads from time to time as required to keep them to a standard acceptable to the district council.
- The section of access road immediately in from Mt Cass Road may be sealed (for dust control) which will also help to avoid sediment pick up over this section of road.
- Reference to protecting the road surface with basecourse will be covered in the geotechnical / pavement design scope.

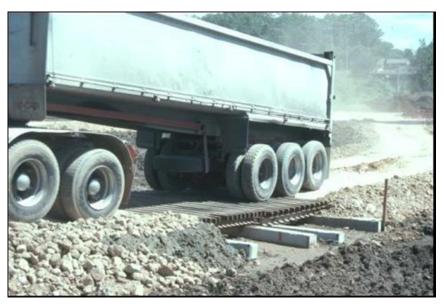


Figure 11 Rumble strip similar to that illustrated above will be placed at the main site access.

4.3.4 Sediment Control and Treatment Devices

The erosion and sediment control methodologies adopted for this project are aimed at ensuring a high level of treatment for low and medium intensity rainfall. Control devices have been selected from the ESCT, NZ Forest Road Engineering Manual and recent industry innovations. Where feasible,

some of the below devices will be employed in specific areas (refer appendix E – ESCT checklists) for detailed descriptions on their purpose, installation requirements and standard detail.

One particular sediment control device suited to this type of topography are Kiwi Logs, (or 'K-log channels' as depicted in the Appendix A - ESCP drawings; and Appendix F for standard details). These devices are mesh tubes filled with bark chips and a granular anionic polyacrylamide (PAM) flocculant. They are available in varying sized lengths, up to 3m long. K-log channels can be used either on their own, or interspersed with non-active sediment logs, to capture sediment as it flows through in the form of dirty water. The use of K-log channels support or ESC philosophy of in-situ treatment as opposed to construction of extensive sediment basins on the ridgeline. Further, K-log channels enable 'diffuse' treatment by maintaining existing surface drainage patterns and pathways; and natural processes such as long grasses over broad areas as opposed to point source discharges from a pipe outlet.

K-Log channels have been specified downstream of sediment disposal areas at the confluence of overland flow paths (as illustrated in Figure 12). The K-log channels will primarily be used for treatment of dirty water only. It will be the Contractor's responsibility to ensure the K-log channels are installed in areas of shallow grades (refer supplier specification). In some cases, K-log channels can be used in conjunction, or in replacement of sediment decant bunds depending on the extent of disturbed land and confluence of channels. It will also be the Contractors responsibility to size the K-log channels (treatment is a function of length) for each location.

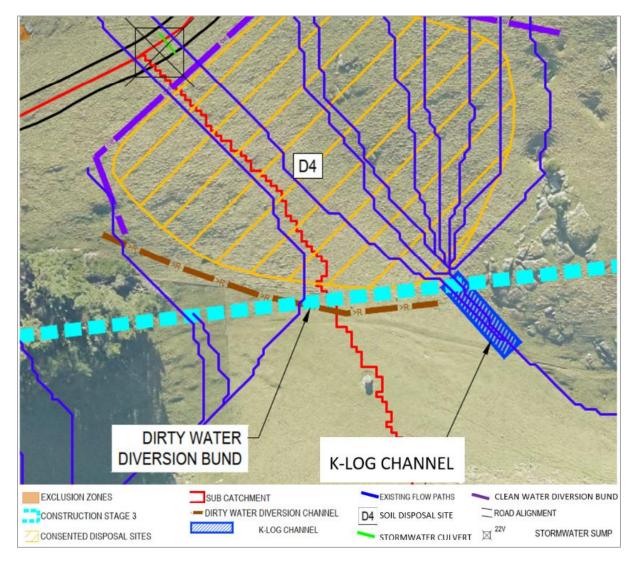


Figure 12 Example of typical K log channel placement.



Figure 13 illustration of K-log channels and natural fibre matting successfully retaining fine sediment. (Source: EnviroCo)

• Sub-strata and topsoil samples have been taken and bench tested with PolyDADMAC organic coagulant to ensure optimal performance of the K-log channels. It is vital that the K-Logs are

installed and accordingly to the suppliers specification to ensure TSS concentrations are less than 100mg/L. For larger catchments (disturbed area exceeding 0.3 ha), sediment retention ponds constructed in accordance with the ESCT may be appropriate. An example of ESC measures set up within a catchment where access or haulage road construction is occurring is shown in Figure 14. This identifies the contributing upgradient catchment as the purple dashed line.

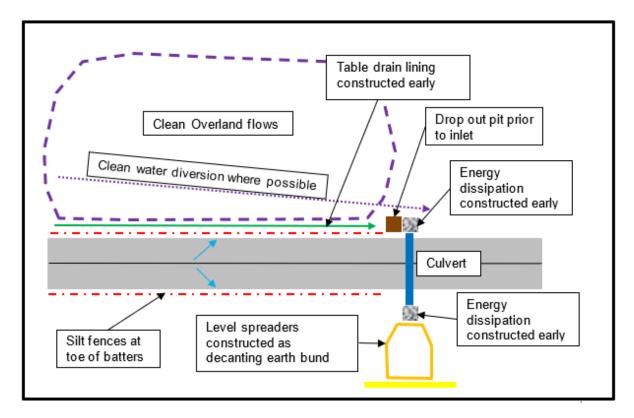


Figure 14 Example set up of ESC measures for a sloping catchment with road construction



Figure 15 Example of energy dissipation rip rap (left) that will be employed in steep grade areas within the channel; and a sediment trap (right) that may be dug upstream of culverts. (Source: NZ Forest Road Engineering Manual).

Sediment traps will be constructed upstream of culverts throughout the access road. Given the confined nature of the road, they will be excavated on the interior side and be approx. 1.5m deep, 2.5m long and 1.0m wide. Water will enter the sediment trap having passed through approximately 45-100mm sized rip rap to absorb energy and provide some coarse sediment capture.

For any section of the works located within a natural depression, rainfall runoff within this catchment will continue to infiltrate into the ground as it currently does. The disturbed formation within this area will be bound by silt fences where necessary while the side batters are being re-grassed. Silt fences will be design and installed in accordance with ESCT.

4.3.5 Sinkholes

The objectives for sediment control around sinkholes is to:

- Prevent further sediment entry into the sinkhole due to construction earthworks
- At completion, re-form slopes to a form resembling a natural contour and redirect rainfall run-off into the sinkhole; this re-directed runoff is to be of a similar quality and quantity (both rate and volume) to that which would have entered the sinkhole prior to the earthworks.

Due to the significant number of small karst features, control measures have not been illustrated on the drawings. As required under condition 37b of HDC consent RC070250; sediment entering subterranean karst features will be minimised in the following manner:

- Runoff should provide diffuse discharge to vegetated surfaces.
- Additional runoff to sinkholes should be avoided.
- Aim to maintain the natural runoff and percolation and if possible, the flow paths.
- Development should be staged to ensure exposed earthworks are kept to a minimum and revegetated promptly and progressively.
- Where practical, install silt fences as per Appendix A drawing 1017740.1000-323) on the side of each karst feature that is exposed to the highest risk of sediment.
- Sinkholes should generally be avoided rather than built over.
- If the incoming water is considered 'dirty' install a dirty water diversion channel (as per Appendix A drawing 1017740.1000-320).
- Monitor the karst feature to assess draw down and if necessary, pump out any sediment laden water following rainfall.

In locations where the sink holes natural catchment has been reduced by the proposed works, a suitable portion of clean or treated run-off will be diverted from an adjacent catchment to maintain a similar natural catchment area. In locations where the sink holes natural catchment has been increased by the proposed works a suitable portion of clean run-off will be diverted away from the sink hole to maintain a similar natural catchment area. In all cases, runoff directed towards a sinkhole will be via a vegetated catchment.

In other areas there are likely to be sinkholes or ground fissures which are unavoidably on the road alignment. These sinkholes or fissures will be investigated with ground penetrating radar to establish size. It will be possible to "bridge" such sinkholes/fissures with a filtered and reinforced arrangement of fill. This would allow water to percolate in but without carrying sediment with it. Alternatively, a decanting earth bund and/or K-log channel shall be positioned upstream.

4.3.6 Spoil Disposal Sites

Indicative spoil disposal areas have been identified by MCWF using criteria which seek to avoid or minimise impacts on the biodiversity and geomorphological features at Mt Cass. Stockpiles and spoil sites will need to be individually managed for sediment generation.

Prior to soil being spread onto a consented disposal area, the area will be clearly marked out, and topographic features (such as overland flow paths or gullies) identified. A site specific workplan (refer section 1.3.2) checklist(s) will be carried for each disposal area out at this time. As part of this process, a site-specific checklist will be completed depending on which control measure(s) will be installed (refer Appendix F).

Due to the steep terrain and volume of spoil at sites D9, D10 and D11, clean water cut off bunds will be established during the site specific workplan phase. For the purposes of this desktop-based assessment, silt fences and sediment decant earth bunds have been provided only. Most likely, the primary road drains (on the interior side) will act as the clean water diversion channel. This 'v' channel will collect all runoff from the road and route flows above and away from the spoil down gradient. Emphasis will be ensuring road runoff discharging from the culvert(s) does not scour and/or undermine the spoil sites.

Due to the steep terrain and rock features at sites D9, D10 and D11, there is potential to create unnecessary sediment release due to topsoil disturbance required to establish clean water diversions. As per HDC consent condition 56, a clean water diversion shall be constructed where there is a 'significant catchments' above the spoil disposal site. Due to the elevated position of the soil disposal sites D9, D10 and D11, and the fact that the road 'v' drain will intercept and rerouted upstream runoff away from the soil below; we do not consider these catchments as significant. Following the site specific workplan, silt fences will be installed on the downhill side of the soil disposal perimeter.

Depending on the grade, and the site will then be prepared by way of stripping the topsoil and using that as uphill bunding. Any soft soils from the surface will be stockpiled for landscaping use at a later date. Where necessary, steep slopes will be benched, and sub-surface drainage installed. The foundation of each spoil site will then be contoured and compacted if required. Supervision and sampling of this process will be carried out by Tonkin + Taylor Geotechnical Engineers. Particular attention will be made to the toe bund to prevent subsidence. The toe bund will be constructed of compacted soil of low organic matter to ensure structural integrity.

The spoil sites will upon completion be covered with original topsoil and vegetated with suitable ground cover. This will include non-invasive grass species or re-vegetated with silver tussock to no less than 20% cover, as soon as practicable after it has been fully utilised, in order to prevent scour and avoid sediment being washed into adjacent watercourses. Further information on the planting methodology will be provided following detailed design.

4.3.7 Works Near Waterways

There are no permanently flowing waterways within the project site however there are two areas where works will be within the riparian margin of ephemeral streams (refer Figure 6). Given waterways are not permanently flowing and works will be in dry conditions, diversions are generally not expected to be required, and if necessary due to significant rainfall events would be for a short duration. SSESCPs are to be developed for all works within riparian margins. No earthworks shall occur within active flow paths of water, areas of saturated soils, or where soils are unstable due to transient water content for the period of the rainfall and the following 12 hours after cessation of the rainfall.

5. Performance Inspection and Maintenance

5.1 Overview

Erosion and sediment control measures will be installed, maintained, monitored and audited throughout the contract works. Table 2 Outlines the performance inspection and maintenance requirements of the control measures put in place. An independent appropriately qualified person will be engaged by MCD to audit bulk earthwork activities on an as – required basis during construction to ensure that the sediment and erosion control measures are being constructed and maintained in accordance with this plan. This person will be approved by ECan's Regional Leader – Monitoring and Compliance as being competent and suitable to provide such certification. Confirmation of this appointment will be made in January 2023.

Meeting environmental compliance measures as outlined in the consent conditions relies heavily on the performance and maintenance of control measures. Much of the ability to prevent sediment laden runoff resides with the innovative K log channels. These devices have been specified due to their high performance with silt soils, the vast scale of the project site, and approach to minimise earthworks in order to construct larger, more conventional controls such as sedimentation ponds. To maximise their performance, topsoil and deeper clay samples from across the project site have been analysed and bench tested in the laboratory to ensure the PolyDADMAC organic coagulant concentration is calibrated correctly to the soil chemistry and particle size distribution. Results of this testing will be available in January 2023.

| Control Measure | Performance Inspection and Maintenance | Frequency |
|------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Sediment Retention Ponds | In accordance with ESCT checklist 15 | Daily, when > 5mm/hr of rain is forecast, and After Storm Event |
| Decanting Earth Bunds | In accordance with ESCT checklist 16 | Daily, when > 5mm/hr of rain is forecast, and After Storm Event |
| Silt Fences | In accordance with ESCT checklist 17 and 18 | Daily, when > 5mm/hr of rain is forecast, and After Storm Event |
| Diversion bunds, check dams and channels | In accordance with ESCT checklist 1, 2 and 3 | Daily, when > 5mm/hr of rain is forecast, and After Storm Event |
| Stabilising areas | In accordance with ESCT checklist 6, 7, 8, 9, 10, 11, 12 and 13 | Daily, when > 5mm/hr of rain is forecast, and After Storm Event |
| K-Log channels | In accordance with supplier recommendations | Daily or After Storm Event, replacement of flocculant media 2-3 times per year |

Table 2 Performance inspection and maintenance plan.

Due to the use of the K-Log innovation, the earthworks Contractor will be supported by EnviroCo as proprietary owners of the K-log devices to ensure their performance. EnviroCo will also provide technical support and supply of replacement materials. MCWF's Project Engineers shall independently audit the erosion and control measures at monthly intervals at least twice per year during construction. The earthworks Contractor will also have their environmental team carrying out regular inspections of the controls and their environmental advisor carry out a monthly inspection as required in their procedures. For detailed device – specific inspection and maintenance checklists, refer to Appendix F.

To minimise the risk of significant sediment runoff from the construction works, the earthworks Contractor shall inspect and ensure effective functioning of devices daily and if rain is forecast with a total rainfall depth of greater than ten millimetres per 24 hours, or at an intensity exceeding five millimetres per hour.

5.1.1 Water Quality Monitoring

The monitoring will support an adaptive water management approach where it can provide feedback on the effectiveness of controls and the need for modified or additional controls. Water quality monitoring will be carried out by a suitably qualified person during construction and will include at least the following:

- Earthworks should be programmed based on weather outlook, i.e. if heavy rain are forecast, consideration should be given to delay or limit the earthworks;
- Visual inspections of the receiving environment while works are being undertaken i.e. looking for any noticeable changes in water clarity or colour between upstream and downstream of the works areas;
- Responding to deficiencies observed during inspections (e.g. modifying diversion/cut-off berms/canals, modifying erosion control measures, etc.); and
- De-silting the sediment control channels and /or bunds as required. The sediment control ponds will be cleaned out when sediment has accumulated to 20% of the total pond volume.

To meet conditions 28 - 35 of combined ECan consents CRC214152 and CRC214156 the following approach will be taken:

- Audited erosion and sediment control measures at least twice per calendar year during construction to ensure that the erosion and sediment control measures are constructed and maintained in accordance with the relevant SSESCP by the independent, suitably qualified person(s).
- Records of the audits and any resulting on-site amendments shall be kept and provided to Canterbury Regional Council, on request.
- Deploy a Total Suspended Solids (TSS) meter or any other recognised measuring device to determine the concentration of TSS in the discharge from representative sites. The TSS meter or measuring device shall be:
 - Used by a suitably qualified person in accordance with the manufacturer manual specific to the device used;
 - o Calibrated to the soil and environmental conditions found on the site; and
 - Used in general accordance with the Erosion and Sediment Control Toolbox for Canterbury (2017).

- During works and when a discharge of construction phase stormwater is occurring from disturbed areas, the discharge from the site shall be visually assessed for any sheen of oil or grease or discolouration.
 - Observations shall be photographed and recorded; and
 - Records of visual assessments including photographs shall be kept and provided to Canterbury Regional Council on request.
- If the visual assessment and observations undertaken in accordance with Condition (29) indicate a direct overland flow connection from the activity to a surface waterway (not connected to any other activity or sources) which results in a decrease in visual clarity, water quality monitoring shall be undertaken to ensure compliance with Condition (3) in accordance with a method provided for under Condition (31).
- If the visual assessments and observations undertaken in accordance with condition (30) indicate a sheen of oil or grease or discolouration. If the water quality monitoring required by condition (31) identifies an exceedance of the TSS limit in condition (3)(c), then:
 - The discharge shall cease immediately;
 - The discharge shall only recommence once amendments have been made to the treatment process such that:
 - A TSS concentration of 100 milligrams per litre in the treated discharge is achieved; and
 - The source of the sheen of oil or grease or discolouration has been removed.
- MCWF shall maintain a record of any water quality monitoring undertaken in accordance with condition (31) and any of the actions undertaken in accordance with condition (32). This record shall be provided to the Canterbury Regional Council on request.
- Once a year during the period of construction and for one year following the completion of construction activities, the Consent Holder shall undertake the following monitoring:
 - The monitoring shall be carried out by a suitably qualified person at the following NZTM locations shown on Plan CRC214152D, attached to and forming part of this consent:
 - 1589202E, 5230108N (Dovedale);
 - 1587336E, 5229983N (Cass Middle);
 - 1586490E, 5229918N (Homestead); and
 - 1588492E, 5232496SN (Mothering Gully stream)
 - Water quality shall be monitored in terms of:
 - Suspended and dissolved water quality measures, including hydrocarbon indicators which detect the presence of fuel, hydraulic oils and lubricants; and
 - Deposited fine sediment surveys (following the procedures set out in pages 17-20 Clapcott et al (2011)
 - Results of the sampling shall be compared with the following alert trigger water quality measures Schedule 5, Table S5A/B 'Hill fed lower' If there is more than 20% increase on past survey results
 - for:
 - Temperature
 - pH
 - Visual clarify
 - Total Petroleum Hydrocarbons (TPH)

- Poly Aromatic Hydrocarbons (PAH)
- Should any sample results record above water quality or deposited sediment alert triggers in Condition (34)(c) (I and ii) the following actions shall be undertaken
 - The on-site controls are to be inspected and where additional controls are required these are implemented; and
 - Sampling set out in Condition (34)(a) to (34)(b) shall be repeated one month after any alert trigger level exceedances.
- Should three consecutive follow up monitoring rounds required by Condition (34) (d)
 (i) have results which exceed the alert level triggers the following actions shall be undertaken:
 - Notification of the exceedances to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance
 - An investigation into the water quality effects shall be undertaken and shall include the following:
 - Determine if the exceedances are a result of the discharges of stormwater from the site
 - Identify the risk by the environment from the exceedances;
 - Identify and undertake mitigation and actions to prevent further exceedances (this could include flushing of any deposited sediment from the site); and
 - Provide a report within 3 month(s) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, that documents the investigation.
- MCWF will submit laboratory results for all water quality samples collected as per Conditions (32) to Canterbury Regional Council, Attention, RMA Compliance and Enforcement Manager within five working days of the laboratory results being reported to the consent holder. The data shall be provided in a format suitable for electronic upload to the Council's water quality database.

5.1.2 Post Construction

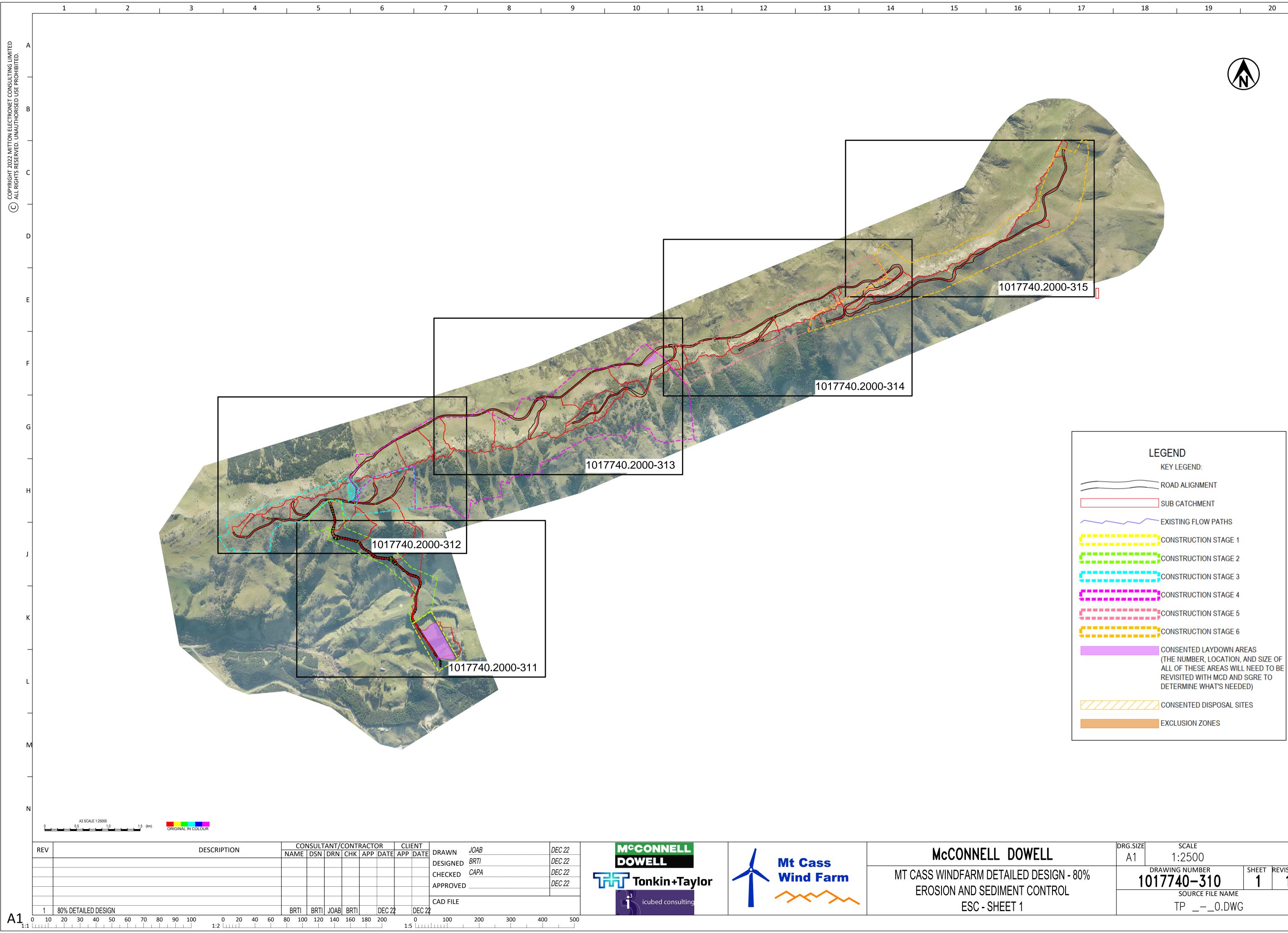
In the event of MCWF or its contractors ceasing work on-site, adequate preventative and remedial measures shall be taken to control sediment discharged exposed or unconsolidated surfaces. These measures shall be maintained for so long as necessary to prevent sediment discharges from the earth worked areas.

All erosion and sediment control measures shall not be decommissioned until the works area is stabilised. Decommissioning measures shall be undertaken in the following order:

- All disturbed areas shall be stabilised and/or re-vegetated following completion of the works to achieve vegetation cover that is effective at minimising sediment run-off;
- Any visible debris, litter, sediment and hydrocarbons shall be removed from all sediment control measures; and
- Erosion and sediment control measures shall be removed.
- Any material removed in accordance with Condition (23)(b) shall be disposed of at a facility authorised to receive such material.

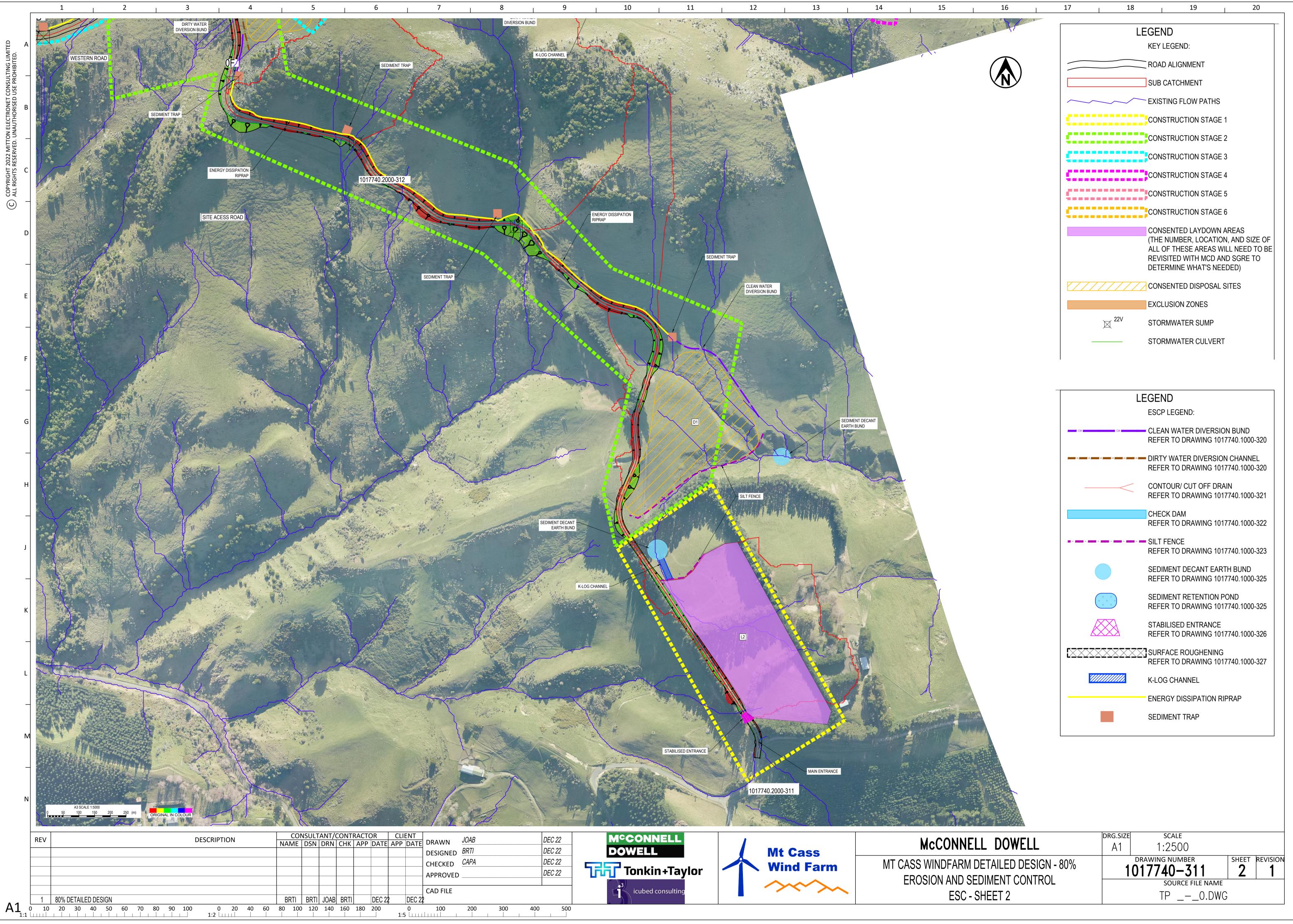
6. Appendices

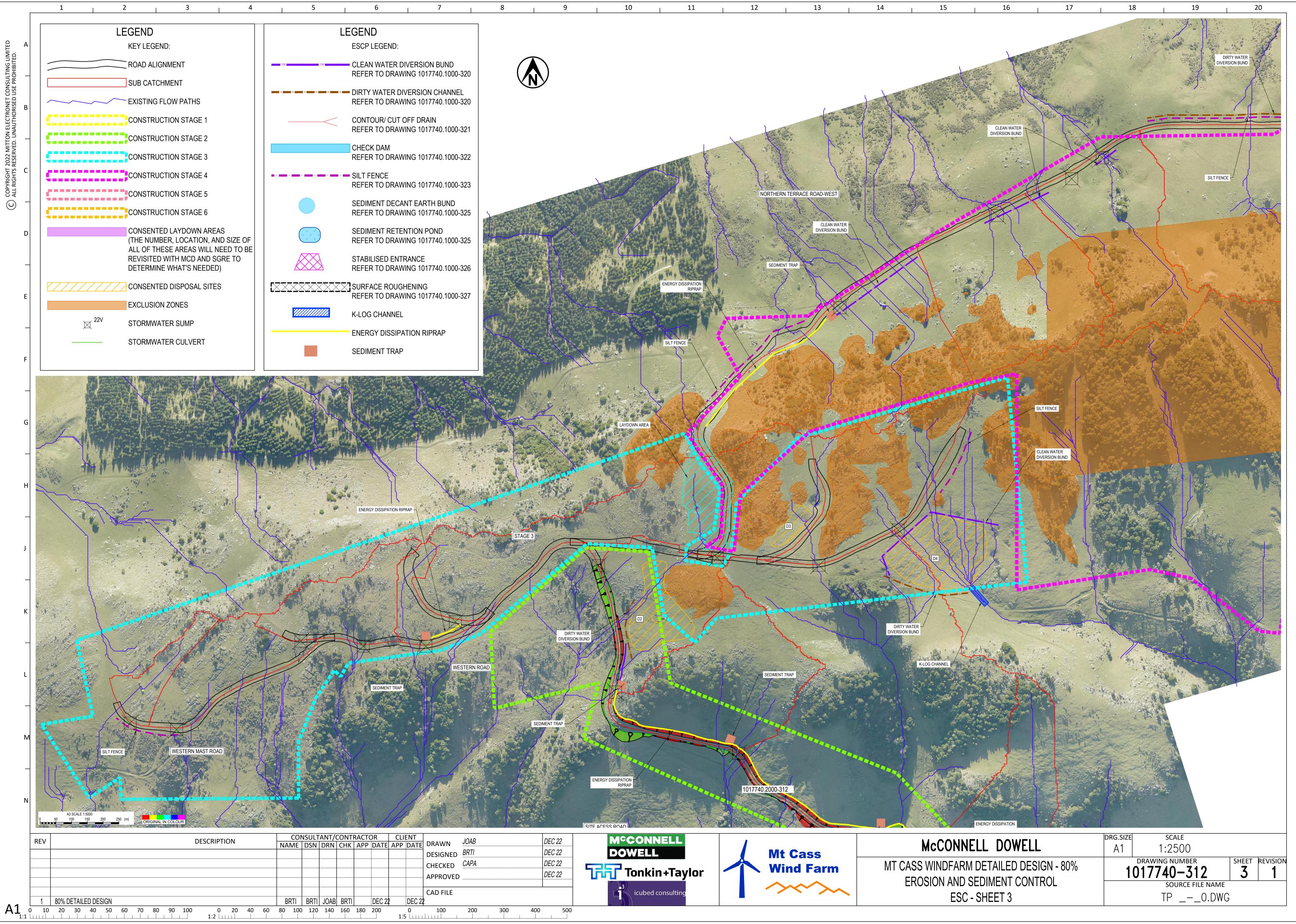
| Appendix | Description |
|----------|------------------------------------|
| А | ESCP Drawings and Standard Details |
| В | Consent Conditions |
| С | Catchment Areas and Flow Rates |
| D | Sink Hole Locations |
| E | ECan Toolbox Checklists |
| F | Sub Catchment Extents and Labels |
| G | Construction Sequence Dates |
| н | K Log channel standard Detail |

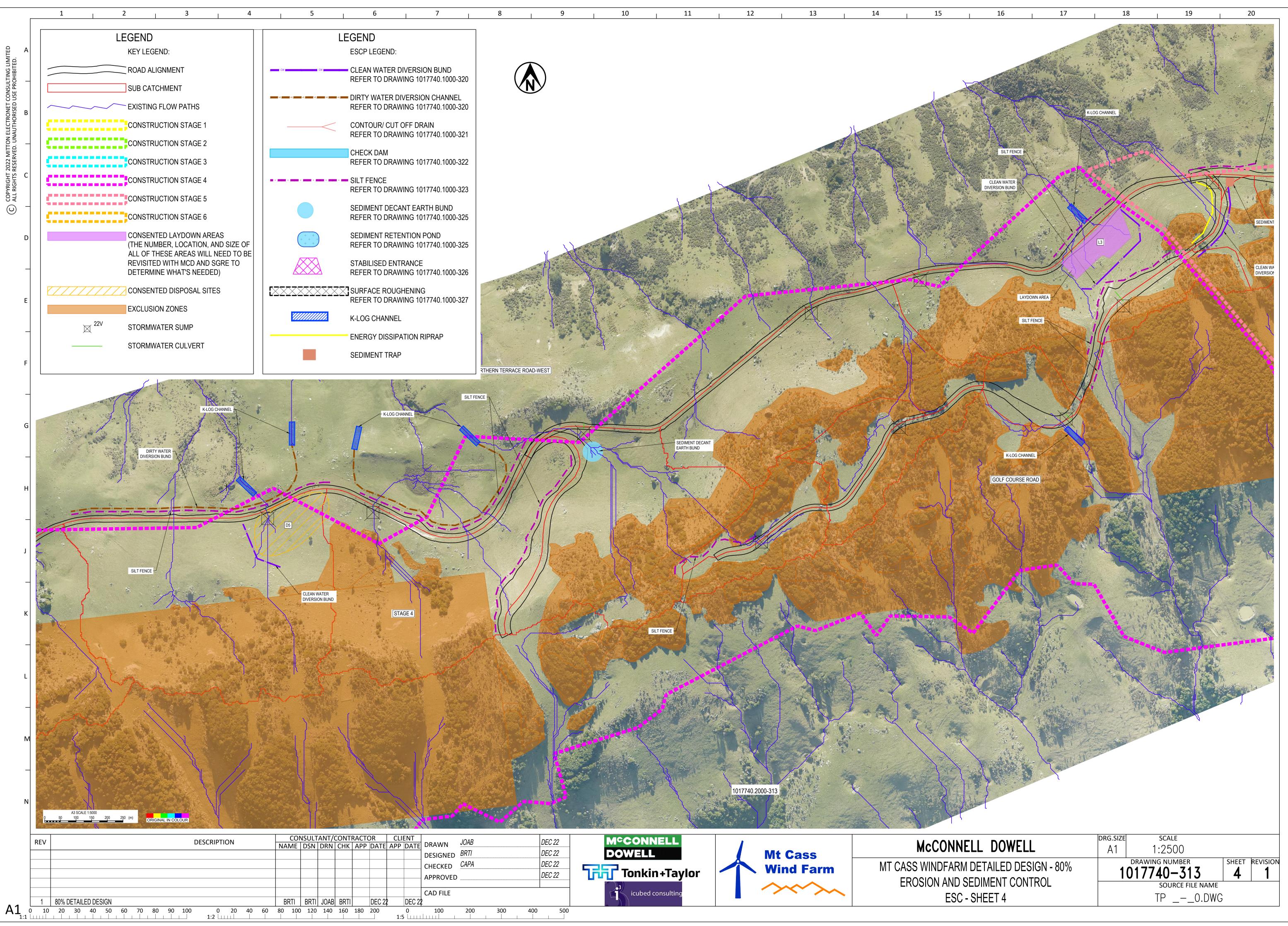




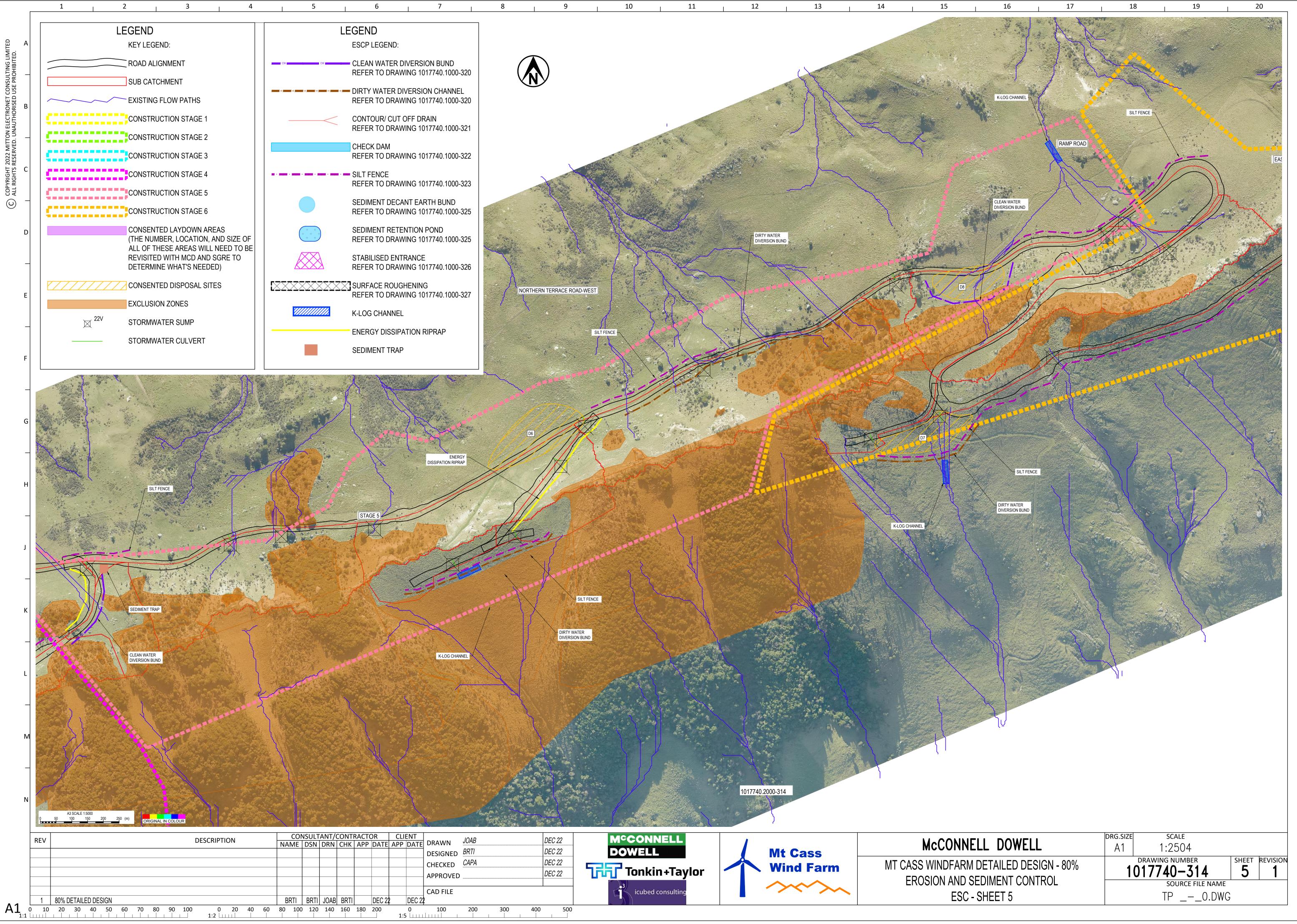
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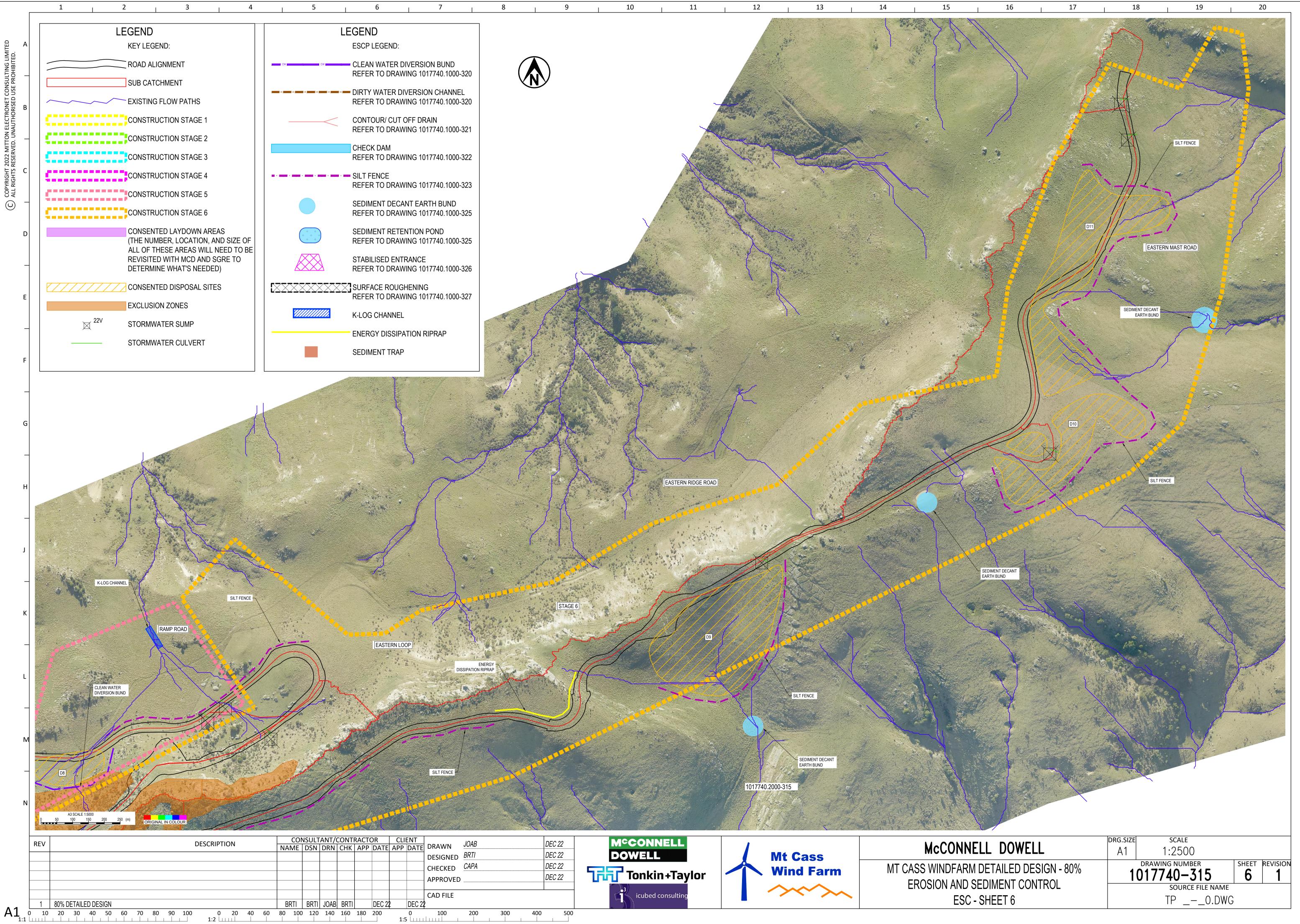




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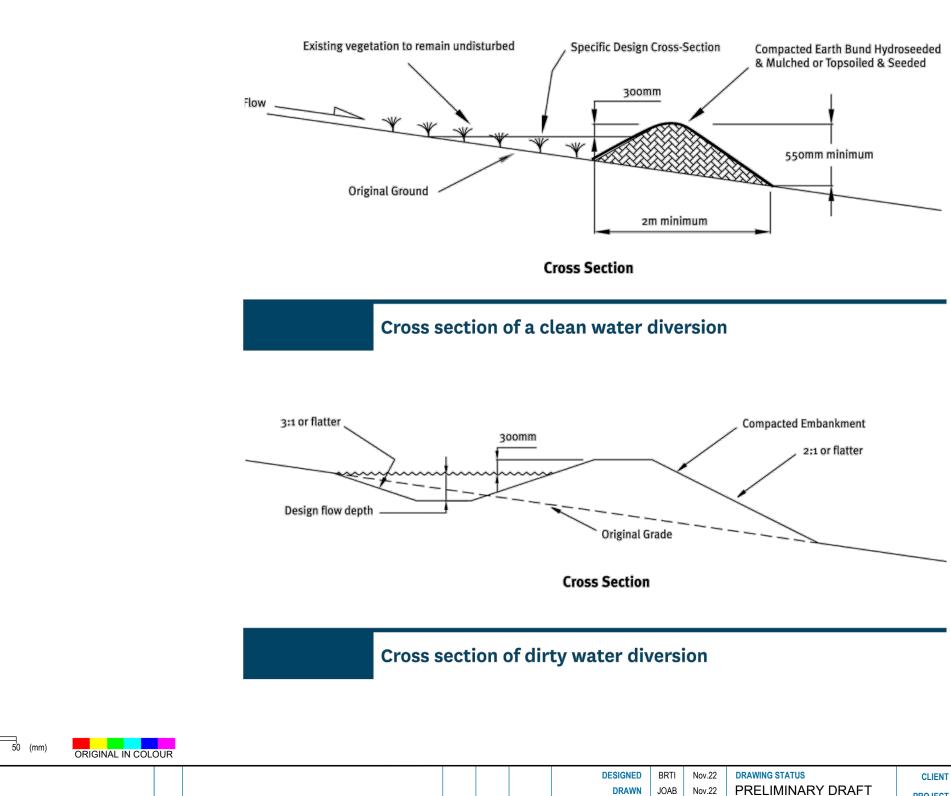
NOTES: 1. EROSION AND SEDIMENT CONTROL STANDARD DETAILS SOURCED FROM ENVIRONMENT CANTERBURY REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY

'Clean water' or 'dirty water' diversion channel and bund

DESIGN CHECKED

DRAWING CHECKED

NOT FOR CONSTRUCTION



JOAB

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BRTI 29.11.22

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Exceptional thinking together www.tonkintaylor.co.nz REV DESCRIPTION

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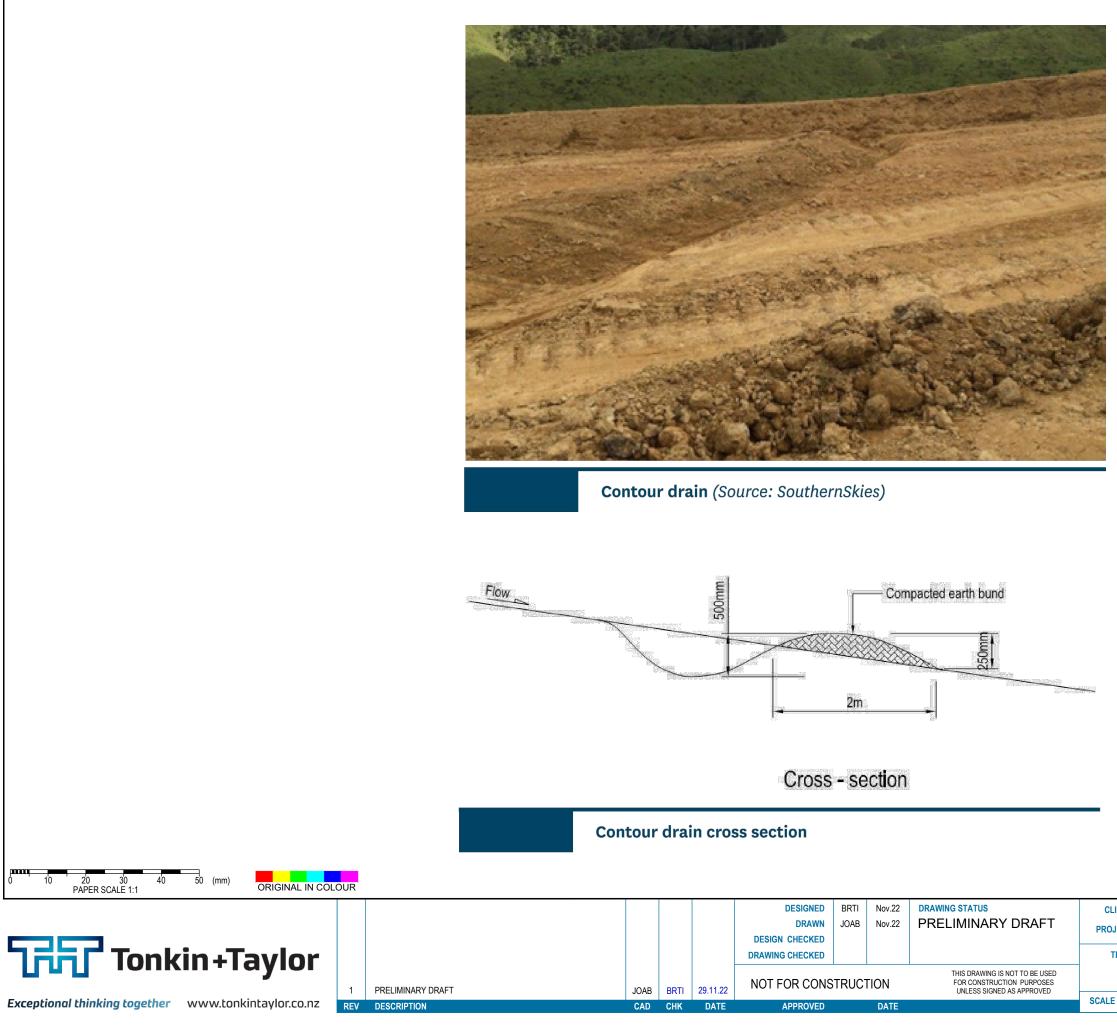
CLIENT MCCONNELL DOWELL CONSTRUCTORS LTD PROJECT MOUNT CASS WINDFARM DETAILED DESIGN

TITLE EROSION & SEDIMENT CONTROL STANDARD DETAIL CLEAN OR DIRTY WATER DIVERSION CHANNEL

SCALE (A3) N.T.S. DWG No. 1017740.1000-320

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NOTES: 1. EROSION AND SEDIMENT CONTROL STANDARD DETAILS SOURCED FROM ENVIRONMENT CANTERBURY REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY



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CLIENT MCCONNELL DOWELL CONSTRUCTORS LTD PROJECT MOUNT CASS WINDFARM DETAILED DESIGN

TITLE EROSION & SEDIMENT CONTROL STANDARD DETAIL CONTOUR/ CUT-OFF DRAIN

SCALE (A3) N.T.S. DWG No. 1017740.1000-321

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NOTES: 1. EROSION AND SEDIMENT CONTROL STANDARD DETAILS SOURCED FROM ENVIRONMENT CANTERBURY REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY



Check dam (Source: Auckland Council)

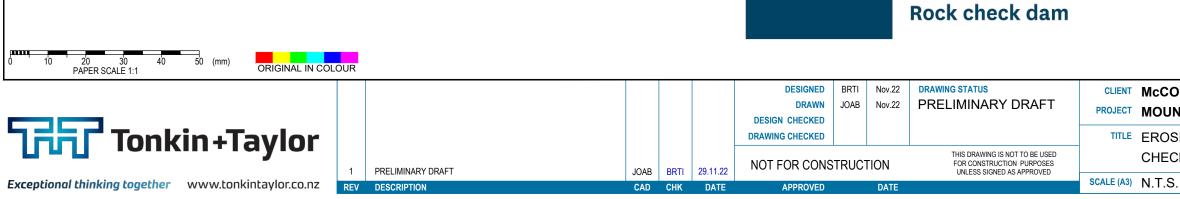
| Slope of site (%) | Spacing (m) between dams with a 450 mm centre height | Spacing (m) between dams with a 600 mm centre height |
|-------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|
| Less than 2% | 24 | 30 |
| 2-4% | 12 | 15 |
| 4-7% | 8 | 11 |
| 7–10% | 5 | 6 |
| >10% | Unsuitable – use stabilised channel or specific engineered design | Unsuitable – use stabilised channel or specific engineered design |

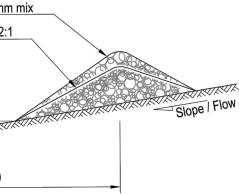
Rock size to be 100mm to 300mm mix Downstream face at a slope of 2:1 300mm minimum 450mm minimum 600mm maximum TATA Spacing (see table)

Elevation

50-200mm minimum

Cross - section







TITLE EROSION & SEDIMENT CONTROL STANDARD DETAIL CHECK DAM

DWG No. 1017740.1000-322



NOTES: . EROSION AND SEDIMENT CONTROL STANDARD DETAILS SOURCED FROM ENVIRONMENT CANTERBURY REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY

| Slope steepness % | Slope length (m) (maximum) | Spacing of returns (m) | Silt fence length (m) (maximum) |
|-------------------|-------------------------------|---------------------------|------------------------------------|
| Flatter than 2% | Unlimited | N/A | Unlimited |
| 2 - 10% | 40 | 60 | 300 |
| 10 - 20% | 30 | 50 | 230 |
| 20 - 33% | 20 | 40 | 150 |
| 33 - 50% | 15 | 30 | 75 |
| > 50% | 6 | 20 | 40 |

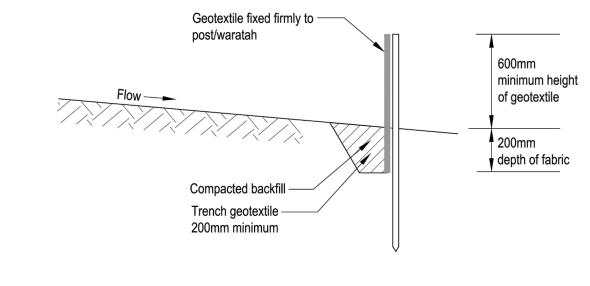
Ground level TRININI Steel standards such as waratahs or Flow Flow standard wooden fenceposts (no.3 rounds minimum) driven a minimum of 400mm into the ground Elevation

Returns 1-3m in length to reduce velocity

impoundment

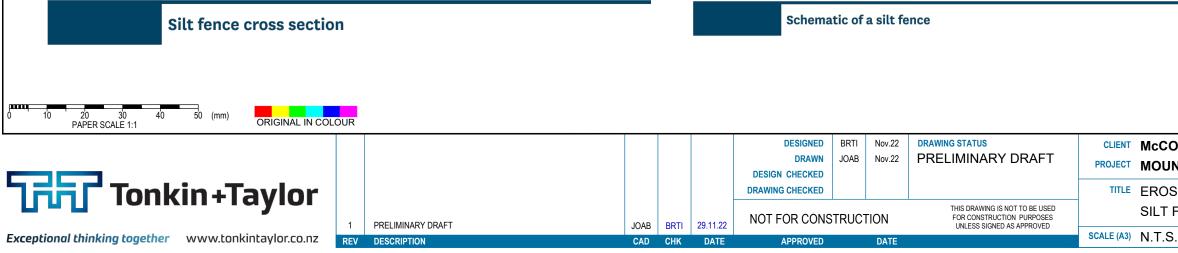
along the silt fence and provide intermediate



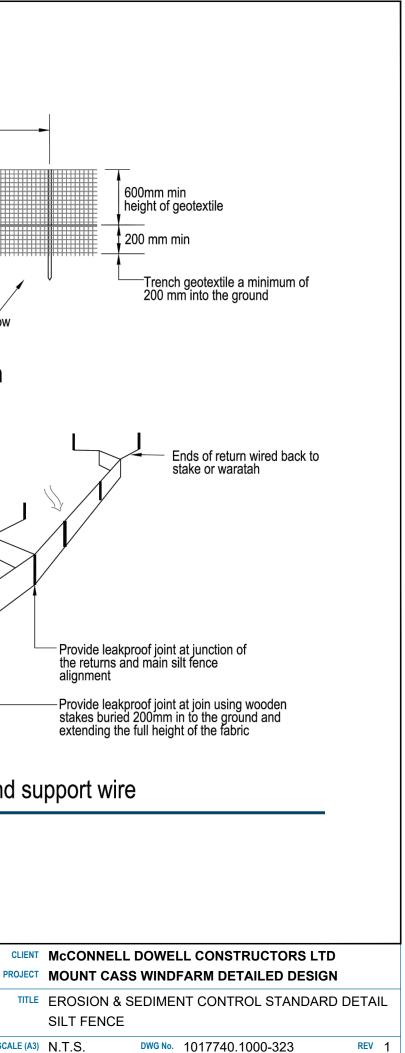


Cross - section

Silt fence with returns and support wire



2-4m

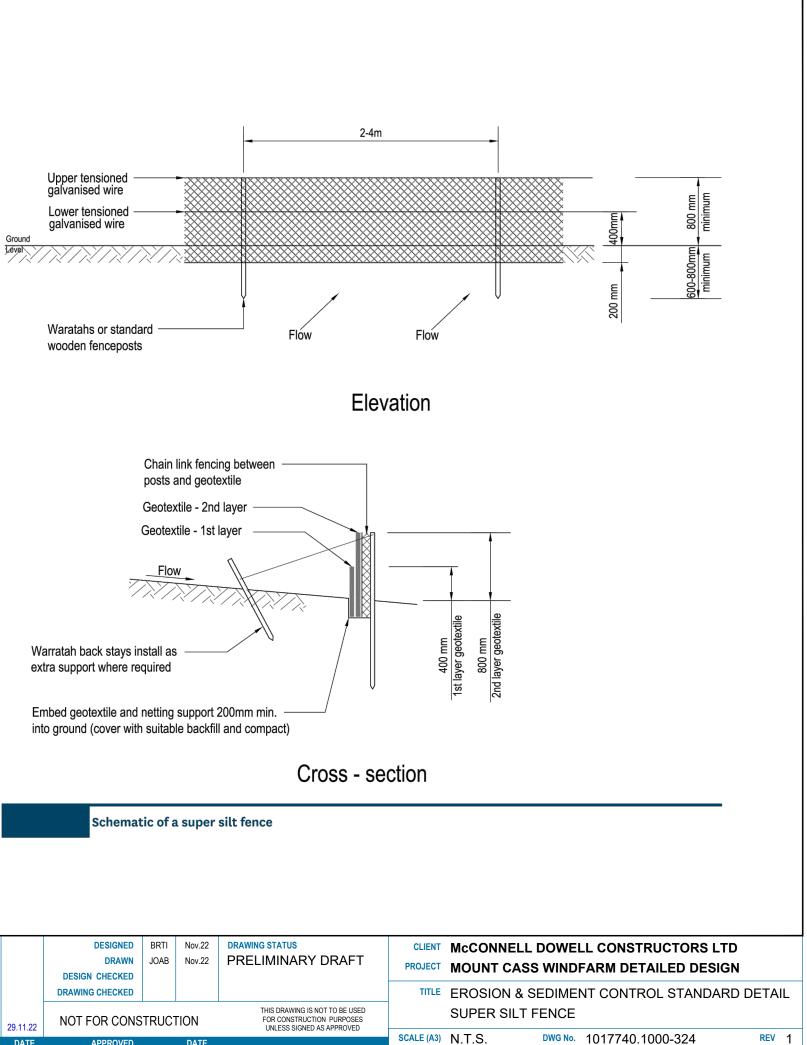


NOTES: 1. EROSION AND SEDIMENT CONTROL STANDARD DETAILS SOURCED FROM ENVIRONMENT CANTERBURY REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY

Super silt fence

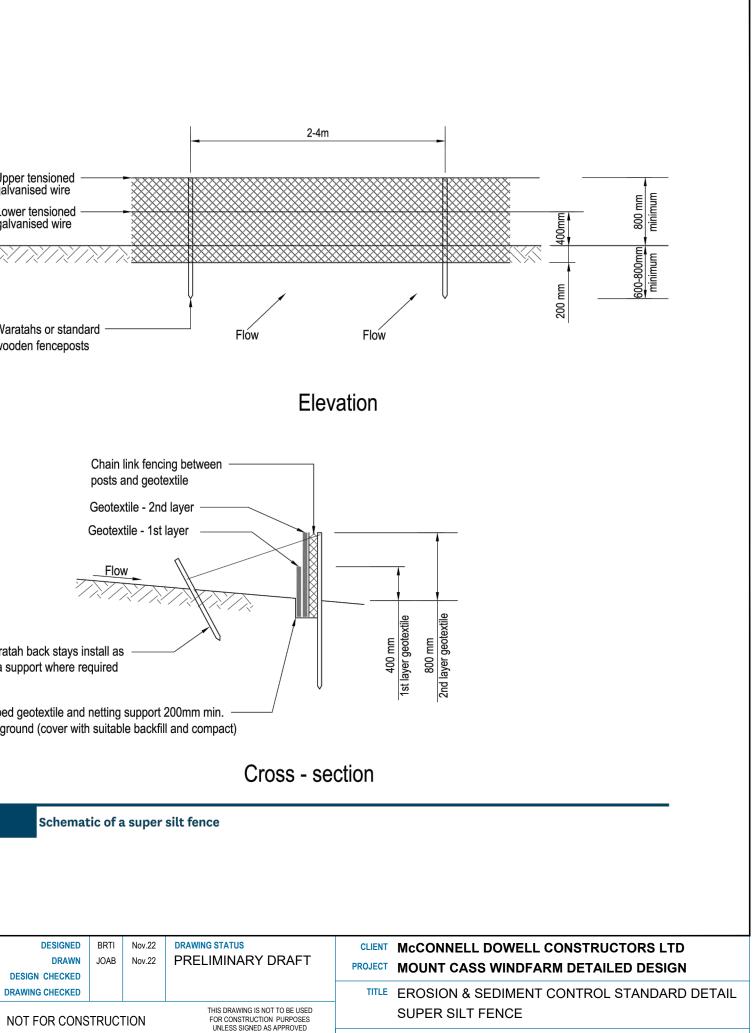
| Slope steepness % | Slope length (m) (maximum) | Spacing of returns (m) | Silt fence length (m) (maximum) |
|-------------------|-------------------------------|---------------------------|------------------------------------|
| 0-10% | Unlimited | 60 | Unlimited |
| 10-20% | 60 | 50 | 450 |
| 20-33% | 30 | 40 | 300 |
| 33-50% | 30 | 30 | 150 |
| > 50% | 15 | 20 | 75 |

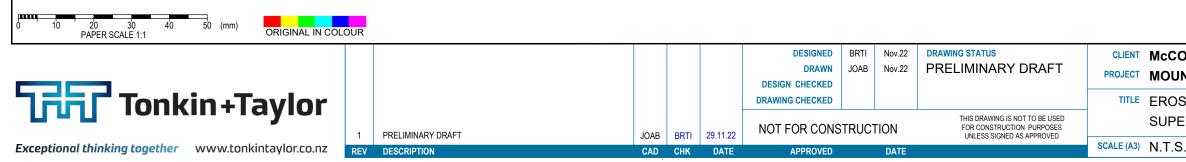
Super silt fence design criteria

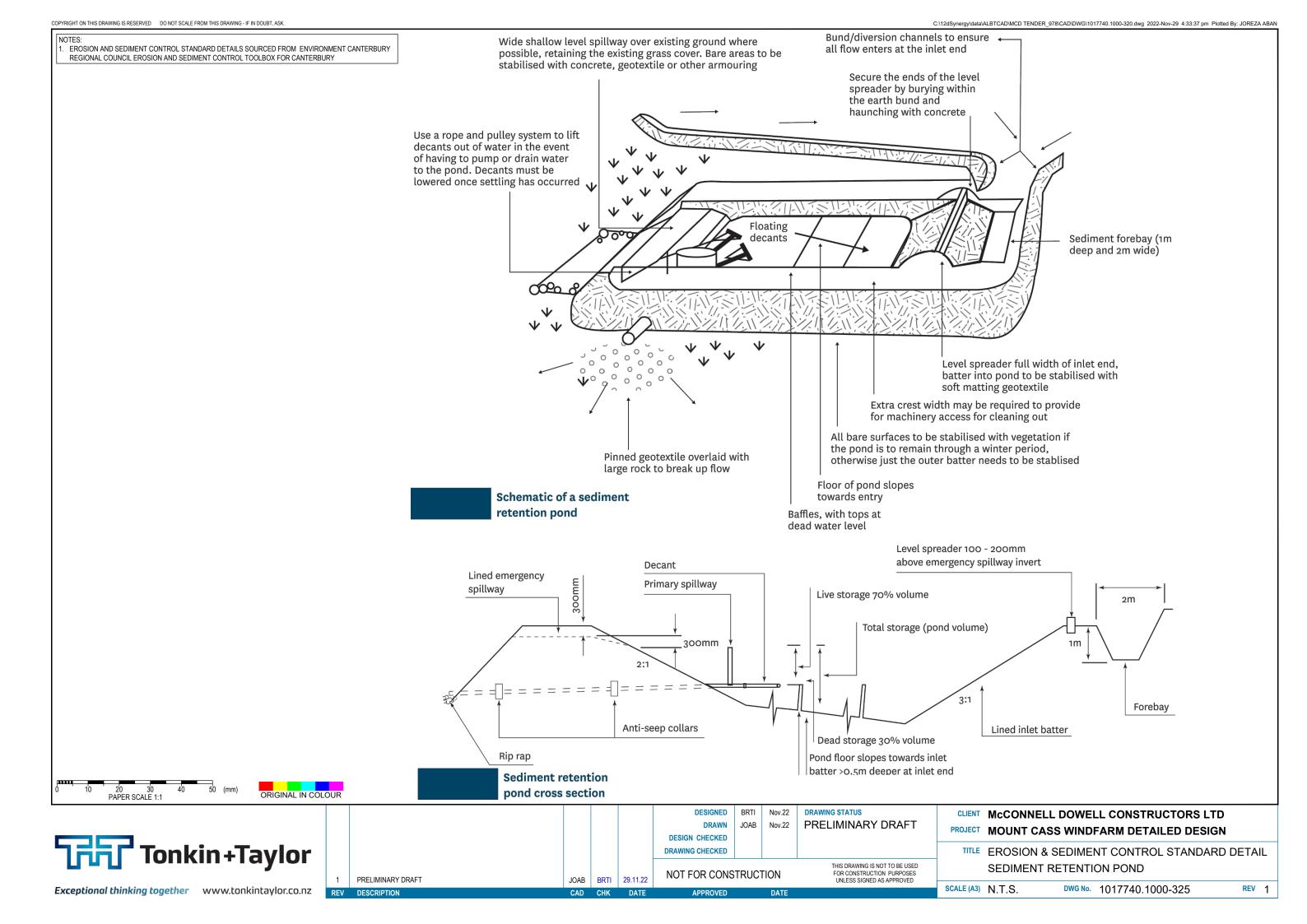




Super silt fence





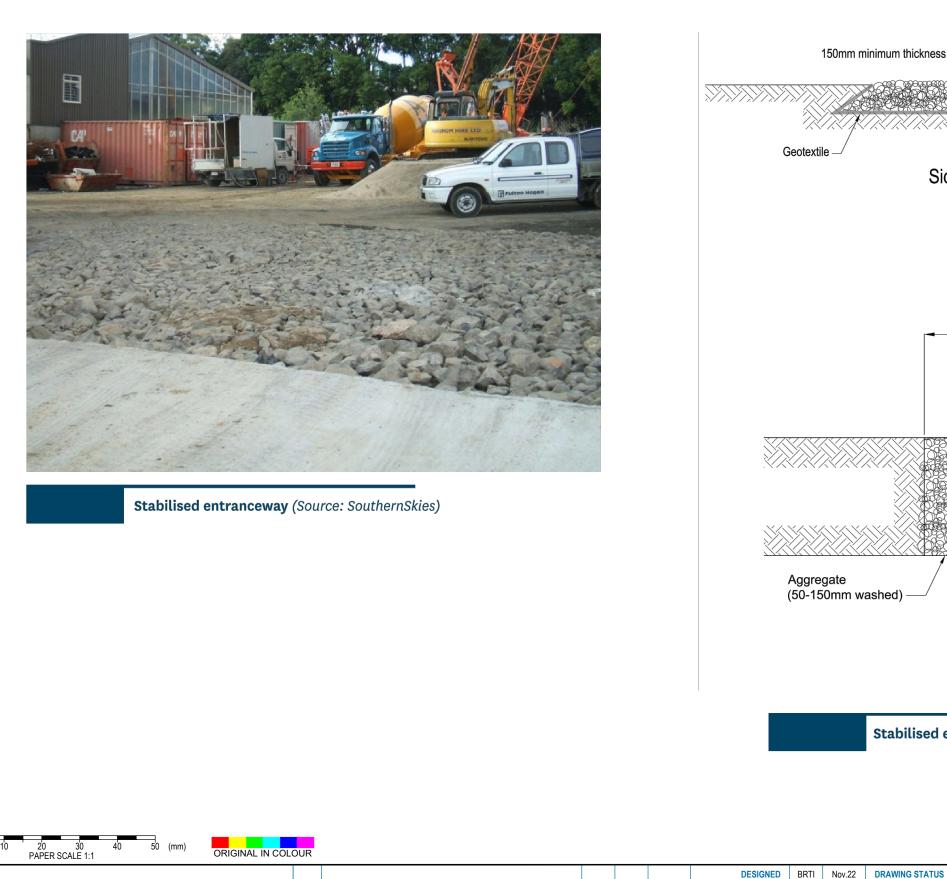


NOTES:

1. EROSION AND SEDIMENT CONTROL STANDARD DETAILS SOURCED FROM ENVIRONMENT CANTERBURY REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY



Side elevation





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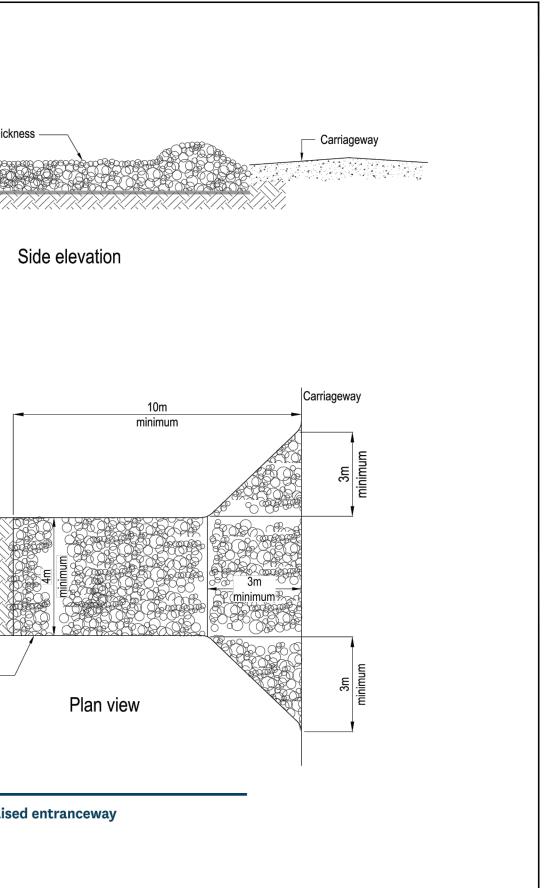
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Stabilised entranceway

Plan view

SCALE (A3)



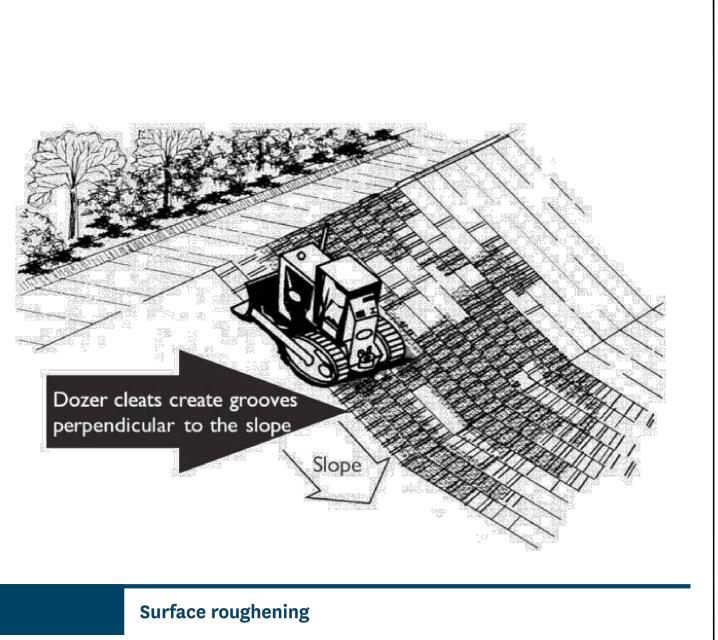
McCONNELL DOWELL CONSTRUCTORS LTD MOUNT CASS WINDFARM DETAILED DESIGN

EROSION & SEDIMENT CONTROL STANDARD DETAIL STABILISED ENTRANCE

NOTES:

1. EROSION AND SEDIMENT CONTROL STANDARD DETAILS SOURCED FROM ENVIRONMENT CANTERBURY REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY

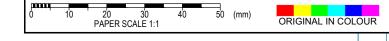




Surface roughening of a slope. Note that the hollows act as 'micro' sediment traps

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CLIENT MCCONNELL DOWELL CONSTRUCTORS LTD PROJECT MOUNT CASS WINDFARM DETAILED DESIGN

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TITLE EROSION & SEDIMENT CONTROL STANDARD DETAIL SURFACE ROUGHENING

SCALE (A3) N.T.S. DWG No. 1017740.1000-327

Summary of consent conditions and control measures specific to erosion sediment control requirements

Environment Canterbury (ECan) Consents:

• CRC214150: To use land for earthworks and vegetation clearance within erosion prone and riparian areas. (Land for Earthworks-Construction)

• CRC214152: To discharge construction phase stormwater to land (Construction Stormwater Discharge)

• CRC214156: To discharge water within 100m of a natural wetland during construction of specified infrastructure (Construction Water Discharge) Hurunui District Council (HDC) Consents:

• RC070250: Land use consent

<u>Guidance note:</u>

•To avoid duplication, we have combined both ECan consents into a single table

• For consent conditions relating to dust (commonly involved in ESCP's), please refer to separate Dust Management Plan.

Combined ECan consents CRC214152 and CRC214156 (sections 3, 4, 6 - 8, 12 - 16, 28 - 35)

| Condi | tion | LIMITS | Control for Consent Conditions | |
|-------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 3 | | The discharges specified in Condition (1) shall not at, any time, result in: | | |
| | a. | The production of oil or grease films, scums, foams, floatable or suspended materials, nor any conspicuous change in colour in the receiving surface waterbody at the edge of the mixing zone; or | Refer ESCP section 5.11 'Water Quality Monitoring' | |
| | b. | The emission of an objectionable odour from the receiving surface water body; or | Ŭ | |
| | с. | A concentration of Total Suspended Solids (TSS) that exceeds 100 milligrams per litre. | | |
| 4 | | Where construction phase stormwater enters surface water, the discharge shall not cause the erosion or scour of the bed or banks of the receiving surface water body. | There are no permanently running watercourses crossing the site. However, refer ESCP sections 4.3.4 'Sediment Control and Treatment Devices' where it discusses energy dissipation design; and section 4.3.2 Minimise Disturbance and Stabilise Exposed Areas Quickly' where is discusses scour protection | |
| 6 | | The discharge of water to land within 100 metres of a natural wetland, as provided for by Condition (1)(b) of this resource consent, shall only be within the area identified on Plan CRC214152B , attached to, and forming part of this resource consent. Prior to the discharge to land: | Defen FCCD excition 4.2.2 konsettie Driveinkes in | |
| | a. | Water collected from disturbed areas shall be directed via cutoff drains to a decanting earth bund or a sediment retention bund to remove sediment and then be discharged to vegetated areas within the same wetland catchment via level spreaders to diffuse flow; and | Refer ESCP section 4.2.3 'Specific Principles in Relation to Mt Cass' where it discusses preventative controls and management of runoff around wetlands | |
| | b. | Water from overland flows above disturbed areas shall be collected and diverted around disturbed areas prior to discharge to vegetated areas within the same wetland catchment using level spreaders. | | |
| 7 | | To minimise the risk of significant sediment runoff from the construction works, the consent holder shall ensure that if rain is forecast: | | |
| | a. | with a total rainfall depth of greater than ten millimetres per 24 hours; or | | |
| | b. | at an intensity exceeding five millimetres per hour; | Refer ESCP section 5.1 which overviews | |
| | | then the erosion and sediment control measures required to be installed and maintained during the works in accordance with the relevant ESCP and SSESCP required by Condition (13) of this resource consent shall be inspected prior to the rainfall occurring to ensure their effective functioning. | Contractors responsibilities prior to rainfall. | |
| 8 | | No earthworks shall occur within active flow paths of water, areas of saturated soils, or where soils are unstable due to transient water content for the period of the rainfall and the following 12 hours after cessation of the rainfall. | Refer ESCP section 4.3.2 Minimise Disturbance and Stabilise Exposed Areas Quickly' where is outlines that earthworks during and 12 hours after rainfall. | |
| Condi | tion | EROSION AND SEDIMENT CONTROL | Control for Consent Conditions | |
| 12 | | During construction works at the site the consent holder shall: | | |
| | a. | Utilise the best practicable option erosion and sediment control measures to minimise the discharge of sediment from the site; and | Discussed at various stages throughout ESCP, re staging / sequence drawings. | |
| | b. | Stage construction works and progressively stabilise worked areas to minimise the area of disturbed land. | | |
| 13 | | The discharges authorised under Condition (1) shall occur in accordance with an Erosion and Sediment Control Plan (ESCP) and a Site Specific Erosion and Sediment Control Plan (SSESCP). The ESCP and any SSESCP shall: | Refer ESCP report | |
| | a. | Detail best practicable erosion and sediment control measures that will be taken to ensure compliance with this resource consent. | Refer ESCP report | |

| | b. | | Be prepared by a suitably qualified person with experience in erosion and sediment control in accordance with: | Tonkin + Taylor have prepared the ESCP with | |
|----|----|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--|
| | | i. | Environment Canterbury's Erosion and Sediment Control Toolbox (ESCT), which can be accessed under http://esccanterbury.co.nz/; or | review by Stantec | |
| | | ii. | An equivalent industry guideline. If an alternative guideline is used, the ESCP shall provide details of the relevant alternative methods used and an explanation of why they are more appropriate than the ESCT. | Due to the temporary nature of the road, New Zealand Forest Road Engineering Manual (NZFREM) was referenced extensively in the ESCP | |
| | c. | | Be certified by an independent, suitably qualified and experienced certifier/auditor with experience in erosion and sediment control, in accordance with Condition (14) , confirming that the erosion and sediment control measures for the site are appropriately sized and located in accordance with the ESCT and meets the requirements of Conditions (16) and SSESCP. | Stantec has been engaged by MCWFL and approved by HDC. | |
| .4 | | | Within three months of the date of the grant of this resource consent, the Consent Holder shall provide to the Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance information to demonstrate that the proposed certifier/auditor(s) of the: | | |
| | a. | | Erosion and Sediment Control Plan (ESCP); | | |
| | b. | | Site Specific Erosion and Sediment Control Plans (SSESCP); and | | |
| | c. | | | All discussed in ESCP section 5.1. | |
| | | | Is independent, suitably qualified and has experience in erosion and sediment control. If the Regional Leader – Monitoring and Compliance does not approve the person(s) proposed by the Consent Holder, reasons should be provided to indicate why the person(s) is not considered suitable. | | |
| .5 | | | The independent approval required by Condition (13)(c) shall be provided to the Canterbury Regional Council, Attention Regional Leader Monitoring and Compliance at least one month prior to the commencement of construction at the site. | | |
| .6 | | | The ESCP shall: | | |
| | a. | | Include a map showing the location of all works, including an earthworks staging plan and the maximum area of disturbance for each stage; | Refer to ESCP Figure 2 Appendix A ESC Drawings Appendix G Sequence Drawings | |
| | b. | | Detail how best practicable measures are taken to minimise discharges of construction- phase stormwater run-off beyond the boundaries of the site; | Refer to section 4 of the ESCP. | |
| | c. | | Include a programme of works, including a proposed timeframe for each stage of the works and the earthworks methodology; | Appendix G Sequence Drawings | |
| | d. | | Detail the management of any stockpiled material; | Refer to section 4.3.6 of ESCP | |
| | e. | | Detail methods to minimise disruption and interruption to the natural drainage pattern; | Refer to 4.2.3 of ESCP | |
| | f. | | Methods to minimise the amount of sediment that is discharged as a result of construction works into subterranean karst features and the water courses, both surface and subsurface, that drain the site; | Section 4.3.5 of ESCP | |
| | g. | | Detail inspection and maintenance of the sediment control measures; | Section 5 of ESCP | |
| | h. | | Detail sampling procedures and protocols as set out in Conditions (29) of this resource consent; | Section 5.1.1 of ESCP | |
| | i. | | Detail the methodology for stabilising the site if works are abandoned; and | Section 5.1.2 | |
| | j. | | Detail the methodology for stabilising the site and decommissioning erosion and sediment control measures after works have been completed. | Section 5.1.2 | |
| .7 | | | The consent holder may make any reasonable amendments to the ESCP at any time. Any changes to the ESCP shall be: | | |
| | a. | | For the purpose of improving the efficacy of the erosion and sediment control measures, and shall not result in reduced discharge quality; | | |
| | b. | | Consistent with the conditions of this resource consent; and | | |
| | c. | | Certified by the agreed independent certifier(s), as per the requirements outline in Condition (13)(c). | Section 1.4.3 of the ESCP | |
| | | | The consent holder shall provide a copy of any such amendment to the ESCP and the certification to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance, prior to giving effect to the amendment. | | |
| L8 | | | Site Specific Erosion and Sediment Control Plans (SSESCP) shall be prepared for each catchment where construction works are proposed and shall include: | | |
| | a. | | Detailed plans showing the location of sediment control measures, on-site catchment boundaries, and sources of runoff; | | |
| | | | | | |

| | e. | Detail methods to minimise discharges into exclusion zones identified on Plans CRC214152B and CRC214152C , attached to and forming part of this consent. | Further information will follow detailed design. | |
|-------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--|
| | f. | Define the discharge points where construction phase stormwater is discharged to waterways within the site. | | |
| 19 | | Each SSESCP shall be certified by the independent, suitably qualified person(s) (approved by regional Leader – Monitoring and Compliance as being competent and suitable to provide such certification as per Condition (14)) that it is prepared in accordance with the ESCP . If changes are required by the certifier these changes shall be made before the certification is confirmed. Documentation of the certification shall be maintained and provided to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance on request. | Discussed in Section 5 of ESCP 'Performance Inspection and Maintenance.' | |
| Condi | tion | DURING WORKS | Control for Consent Conditions | |
| 20 | | During construction works, the Consent Holder shall adopt the best practicable option to: | | |
| | a. | Minimise soil disturbance and prevent soil erosion; | Refer ESCP 4.3 Erosion and Sediment Control | |
| | b. | Prevent sediment from leaving the site; | Measures where this is discussed in detail. | |
| | c. | Avoid placing cut or cleared vegetation, debris or excavated materials in a position such that it may enter stormwater runoff or surface water. | | |
| 21 | | During construction works, all erosion and sediment control measures shall be inspected at least once per day, as well as following any rainfall event that results in more than five millimetres of rainfall at the site. Any accumulated sediment shall be removed, and repairs made, as necessary, to ensure effective functioning of devices. Records of any inspections shall be kept and provided to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance on request. | Discussed in Section 5 of ESCP 'Performance Inspection and Maintenance.' | |
| 22 | | If the consent holder abandons work on-site, adequate preventative and remedial measures shall be taken to control sediment discharged exposed or unconsolidated surfaces. These measures shall be maintained for so long as necessary to prevent sediment discharges from the earth worked areas. | | |
| 23 | | All erosion and sediment control measures shall not be decommissioned until the works area is stabilised. Decommissioning measures shall be undertaken in the following order: | | |
| | a. | All disturbed areas shall be stabilised and/or re-vegetated following completion of the works to achieve vegetation cover that is effective at minimising sediment run-off; | Refer ESCP Section 5.1.2 | |
| | b. | Any visible debris, litter, sediment and hydrocarbons shall be removed from all sediment control measures; and | | |
| | c. | Erosion and sediment control measures shall be removed. | | |
| 24 | | Any material removed in accordance with Condition (23)(b) shall be disposed of at a facility authorised to receive such material. | | |
| Condi | tion | MONITORING | Control for Consent Conditions | |
| | | The erosion and sediment control measures shall be audited at least twice per calendar year during construction to ensure that the erosion and sediment control measures are constructed and maintained in accordance with the relevant SSESCP by the independent, suitably qualified person(s) (approved by regional Leader – Monitoring and Compliance as being competent and suitable to provide such certification as per Condition (14)). Records of the audits and any resulting on site amendments shall be kept and provided to | Refer ESCP Section 5.1.1 Water Quality Monitoring where it outlines these control measures | |
| 28 | | Canterbury Regional Council, on request. | | |
| 28 | | Canterbury Regional Council, on request. Where required under Condition (31) , a Total Suspended Solids (TSS) meter or any other recognised measuring device shall be used to determine the concentration of TSS in the discharge, the TSS meter or measuring device shall be: | | |
| | a | Where required under Condition (31) , a Total Suspended Solids (TSS) meter or any other recognised measuring device shall be used to determine the concentration of TSS in the | Refer ESCP Section 5.1.1 Water Quality Monitoring where it outlines these control measures | |
| | a | Where required under Condition (31) , a Total Suspended Solids (TSS) meter or any other recognised measuring device shall be used to determine the concentration of TSS in the discharge, the TSS meter or measuring device shall be: Used by a suitably qualified person in accordance with the manufacturer manual specific | , , | |

| 30 | | | During works and when a discharge of construction phase stormwater is occurring from disturbed areas, the discharge from the site shall be visually assessed for any sheen of oil or grease or discolouration; | Refer ESCP Section 5.1.1 Water Quality Monitoring | |
|----|----|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--|
| | a. | | Observations shall be photographed and recorded; and | where it outlines these control measures | |
| | b. | | Records of visual assessments including photographs shall be kept and provided to Canterbury Regional Council on request. | | |
| 31 | | | If the visual assessment and observations undertaken in accordance with Condition (29) indicate a direct overland flow connection from the activity to a surface waterway (not connected to any other activity or sources) which results in a decrease in visual clarity, water quality monitoring shall be undertaken to ensure compliance with Condition (3) in accordance with a method provided for under Condition (31) . | Refer ESCP Section 5.1.1 Water Quality Monitoring where it outlines these control measures | |
| 32 | | | If the visual assessments and observations undertaken in accordance with condition (30) indicate a sheen of oil or grease or discolouration. If the water quality monitoring required by condition (31) identifies an exceedance of the TSS limit in condition (3)(c), then: | | |
| | а | | The discharge shall cease immediately; | Refer ESCP Section 5.1.1 Water Quality Monitoring | |
| | b | | The discharge shall only recommence once amendments have been made to the treatment process such that: | where it outlines these control measures | |
| | | i. | A TSS concentration of 100 milligrams per litre in the treated discharge is achieved; and | | |
| | | ii. | The source of the sheen of oil or grease or discolouration has been removed. | | |
| 33 | | | The consent holder shall maintain a record of any water quality monitoring undertaken in accordance with condition (31) and any of the actions undertaken in accordance with condition (32). This record shall be provided to the Canterbury Regional Council on request. | Refer ESCP Section 5.1.1 Water Quality Monitoring where it outlines these control measures | |
| 34 | | | Once a year during the period of construction and for one year following the completion of construction activities, the Consent Holder shall undertake the following monitoring: | | |
| | a. | | The monitoring shall be carried out by a suitably qualified person at the following NZTM locations shown on Plan CRC214152D , attached to and forming part of this consent: | | |
| | | i. | 1589202E, 5230108N (Dovedale); | | |
| -+ | | ii. iii. | 1587336E, 5229983N (Cass Middle); 1586490E, 5229918N (Homestead); and | | |
| | | iv. | 1588492E, 5232496SN (mothering Gully stream) | | |
| | b. | | Water quality shall be monitored in terms of: | | |
| | | i. | Suspended and dissolved water quality measures, including hydrocarbon indicators which detect the presence of fuel, hydraulic oils and lubricants; and | | |
| | | ii. | Deposited fine sediment surveys (following the procedures set out in pages 17-20 Clapcott et al (2011) | | |
| | с | | Results of the sampling shall be compared with the following alert trigger levels: | | |
| | | | water quality measures - Schedule 5, Table S5A/B 'Hill fed lower' for a. Temperature | | |
| | | | b. pH | | |
| | | i. | c. Visual clarify | | |
| | | | d. Total Petroleum Hydrocarbons (TPH) e. Poly Aromatic Hydrocarbons (PAH) | | |
| | | ii. | More than 20% increase on past survey results | Refer ESCP Section 5.1.1 Water Quality Monitoring | |
| | d. | | Should any sample results record above water quality or deposited sediment alert triggers in Condition (34)(c)(I and ii) the following actions shall be undertaken | where it outlines these control measures | |
| | | i. | the on-site controls are to be inspected and where additional controls are required these are implemented; and | | |
| | | ii. | sampling set out in Condition (34)(a) to (34)(b) shall be repeated one month after any alert trigger level exceedances. | | |
| | e. | | Should three consecutive follow up monitoring rounds required by Condition (34) (d) (i) have results which exceed the alert level triggers the following actions shall be undertaken: | | |
| | | i. | notification of the exceedances to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance | | |
| | | | An investigation into the water quality effects shall be undertaken and shall include the following: | | |
| | | | a. Determine if the exceedances are a result of the discharges of stormwater from the site | | |

| | ii | b. Identify the risk by the environment from the exceedances; c. Identify and undertake mitigation and actions to prevent further exceedances (this could include flushing of any deposited sediment from the site); and | |
|----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| | | d. Provide a report within 3 month(s) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, that documents the investigation. | |
| 35 | | The consent holder shall submit laboratory results for all water quality samples collected as per Conditions (32) to Canterbury Regional Council, Attention, RMA Compliance and Enforcement Manager within five working days of the laboratory results being reported to the consent holder. The data shall be provided in a format suitable for electronic upload to the Council's water quality database. | Refer ESCP Section 5.1.1 Water Quality Monitoring where it outlines these control measures |
| | | | |

ECan consent CRC214150 (sections 7 - 8, 16)

| Cond | ition | | Control for Consent Conditions |
|------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | | Any discharges of construction phase stormwater shall occur in accordance with CRC214152. | Refer ESCP section 5.11 'Water Quality Monitoring' |
| 8 | с | To minimise sediment generation and sediment laden runoff through the inclusion of an Erosion and Sediment Control Plan; | |
| | d | To maintain existing surface and subsurface drainage patterns and pathways; | |
| | e | To ensure that appropriate monitoring and reporting of all activities is undertaken in accordance with these conditions; | Refer ESCP report to be updated following detailed |
| | f | To ensure that the earthworks and spoil disposal areas are contoured so that the finished landform will blend with the surrounding landscape; | design. Refer also Appendic A drawings. Refer als to Appendix A of Landscape Management Plan; (section 2.7.3 of the Pattern Book in for rehabilitation of spoil disposal sites. |
| | g | To ensure that, the earthworks are undertaken in a manner which provides for final surfaces which are suitable for rehabilitation and/or recolonisation of vegetation to achieve vegetative cover that is effective at minimising sediment run-off; | |
| | h | To ensure that only those areas identified in Plans CRC214150B and CRC214150C are used as spoil disposal areas; | |
| 16 | | During works, the consent holder shall adopt the best practicable options to: | |
| | а | Minimise soil disturbance and prevent soil erosion; | Section 4.3.2 |
| | b | Minimise the area of disturbed land at any one time; and | Section 4.3.2 |
| | с | Avoiding placing cut or cleared vegetation, debris, or excavated material in a position that it may enter groundwater or surface water. | Section 4.3.7 |
| | | | |

HDC consent RC070250 (sections 37 - 40, 44, 52 - 59)

| Clau | se | | Control for Consent Conditions |
|------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 37 | | The Consent Holder shall undertake erosion and sediment control measures, the purpose of which is to: | |
| 37 | a) | Minimise disruption, and interruption to the natural drainage pattern | Covered in ESCP and site-specific drawings 1017740-315 (sheets 1-6). Natural drainage patterns are represented by blue overland flows. |
| 37 | b) | Minimise the amount of sediment that is discharged as a result of construction works into subterranean karst features and the water courses, both surface and subsurface, that drain the site; and | Refer Section 4.3.5 where is discusses management and installation of controls around karst features. Appendix D illustrates locations of sinkholes. |
| 37 | c) | Minimises the discharge of silt or sediment into the exclusion zones indicated on Golder Associates plans CG161.3-166.3 dated 20 December 2010. | The exclusion zones indicated in Golder Associates plans CG161.3-166.3 dated 20 December 2010 have been inserted into the Tonkin + Taylor ESC drawings 1017740-315 (sheets 1-6). Exclusion zones are illustrated as orange shaded areas. Attention has been made to ensure the construction of the road (and potential for discharge of silt or sediment) is reduced by placement and control measures. For this reason, the Golder drawings have been superseeded. |
| | -1 -1 | All erosion and sediment control measures shall remain the responsibility of the Consent | Refer ESCP section 1.3 on implementation, monitoring and adaptation. |

| 38 | | Holder, and be installed, operated and maintained in accordance with these conditions of consent | Refer also section 5 of ESCP, performance inspection and maintenance which outlines responsibilities. | |
|------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 39 | | The design storm for detention features for runoff and sediment control shall be 5% AEP of the appropriate design duration. The design storm for runoff and sediment control for permanent roads shall be 2% AEP. | Refer ESCP section 4.2.2 design storms. Further more detailed sizing calculations will be provided in the stormwater design report (currently being prepared by Tonkin + Taylor December 2022). Further, we have purposely specified the use of 'in- situ' treatment through a a channel, as oppossed to constructing large detention basins, thus causing more earthworks. | |
| 40 | | The Consent Holder shall ensure that appropriate construction contract provisions are included within the contract documents to allow construction contractors to tender accurately for the scope of the proposed erosion and sediment control measures. | Consent Holder has engaged the contractor via design and build contract. | |
| 44 | | The Consent Holder shall engage an independent and appropriately qualified person in consultation with the Manager Environmental Services of the Hurunui District Council to audit the design of the erosion and sediment control measures against the Construction Management Plan required by condition [23], to audit the procedures for stabilisation as required by condition [32.i], and to audit bulk earthwork activities on an as-required basis to ensure that the sediment and erosion control measures are being constructed and maintained in accordance with the plan. The Consent Holder shall be responsible for the reasonable direct costs associated with this engagement. | Stantec has been engaged by MCWFL and approved by HDC as the SEQP and MCWFL will engage an external consultant to carry out site audits. | |
| SOIL | DISPOS | AL SITES | | |
| 52 | | Prevent scour from temporary discharge diversion channels. | Refer ESCP | |
| 53 | | Turbine platforms shall be designed to provide for erosion and sediment control. | ESC measures during turbine platform excavation shall follow the same approach and procedure as dealing with subterranean karst featires. See ESCP section 4.3.5. | |
| 54 | | All spoil disposal sites shall be located in accordance with the Golder Associates plans referred to in conditions [3] and [4] and Mt Cass Wind Farm plans referred to in condition [5] and subject to condition [10], and be managed to ensure that: | Refer ESC drawings 311 – 315 that illustrate locations of spoil disposal sites, clean-water cut-off drains and sediment control measures. Further detailed information will be provided | |
| | d) | Suitable locations for clean-water cut-off drains can be provided; | | |
| | e) | A sediment control measure appropriate to the size of the disposal area can be provided to treat all run-off from the disposal area. All spoil disposal sites shall be designed, constructed and managed in accordance with the | following the detailed design. | |
| 55 | f) | following: The toe bund shall be a structural fill; | | |
| | g) | The amount of surface area within the spoil site that is exposed at any one time shall be minimised; | Refer section 4.3.6 of ESCP that describes the methodology of establishing spoil locations. Refer | |
| | h) | Exposed areas shall be stabilised to the greatest extent practicable at the end of each day, and temporarily covered if possible prior to any storm event that is likely to cause erosion or mobilise sediment | also to Appendix A of Landscape Management Plan; (section 2.7.3 of the Pattern Book in for rehabilitation of spoil disposal sites. Further information will be supplied following detailed | |
| | i) | All sediment ponds shall be constructed to provide for retrofitting of flocculation if needed | design. | |
| | j) | Contouring of all spoil disposal sites to visually integrate into the natural landform. | | |
| 56 | | A clean water diversion shall be constructed around each spoil site where there is a significant catchment above the spoil disposal site. | Refer ESC drawings (and section 4.3.4 Figure 13 of ESCP) that clearly illustrate clean water diversion bunds on the uphill side of some spoil disposal sites. The construction of these bunds will be in accordance to Appendix E, drawing 320. | |
| 57 | | Each spoil site shall be stabilised and planted over including being grassed (non-invasive species) or re-vegetated with silver tussock to no less than 20% cover, as soon as practicable after it has been fully utilised, in order to prevent scour and avoid sediment being washed into adjacent watercourses. Stabilisation may be staged, and stabilised areas diverted to a clean water diversion, to maintain a suitably small working catchment area | Refer section 4.3.6 of ESCP that describes the methodology of establishing spoil locations. Refer also to Appendix A of Landscape Management Plan; (section 2.7.3 of the Pattern Book in for rehabilitation of spoil disposal sites. Further information on the planting methodology will be provided following detailed design' | |

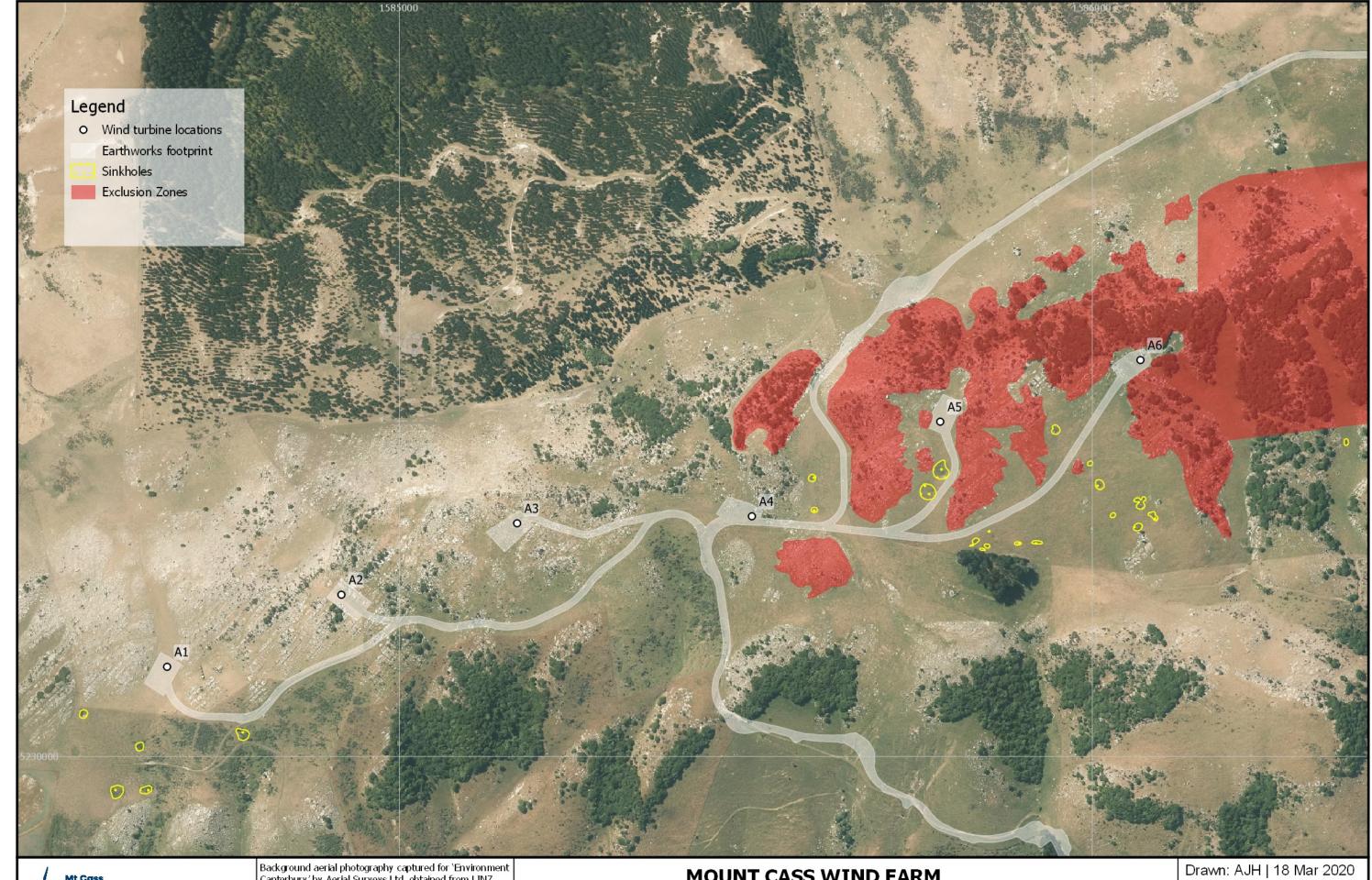
| 58 | Any topsoil stockpile that is intended to remain in situ for more than 4 consecutive weeks shall be subject to erosion and sediment control in accordance with condition [37] and be hydroseeded if intended to remain for more than 4 months. | Refer section 4.3.2 on topsoil hydroseeding. |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 59 | All topsoil stockpiles shall be bunded on the uphill side to divert clean water runoff away | Refer section 4.3.2 on protection of topsoil stockpiles, and ESC drawing 320 (Appendix A) that illustrates clean water bund design. |

APPENDIX C – Catchment areas and flow rates

| Catchment Name | Area Upstream Catchment (ha) | 10% AEP Peak Flow (L/s) |
|----------------|------------------------------|-------------------------|
| 0A | 5.3561 | 453.0 |
| ОВ | 1.211 | 102.4 |
| 0C | 4.887 | 413.3 |
| 0D | 15.7928 | 1335.6 |
| OE | 4.4188 | 373.7 |
| OF | 5.7426 | 485.6 |
| 0G | 0.094 | 7.9 |
| 1A | 4.8263 | 408.1 |
| 1B | 5.7277 | 484.4 |
| 1C | 1.3789 | 116.6 |
| 1D | 0.7939 | 67.1 |
| 1E | 2.1402 | 181.0 |
| 1F | 0.9013 | 76.2 |
| 5A | 2.5881 | 218.9 |
| 6A | 1.5837 | 133.9 |
| 6B | 2.4098 | 203.8 |
| 22A | 7.1637 | 605.8 |
| 22B | 5.5282 | 467.5 |
| 22C | 1.7511 | 148.1 |
| 22D | 2.7725 | 234.5 |
| 22E | 11.1215 | 940.5 |
| 22F | 8.4014 | 710.5 |
| 22G | 7.5345 | 637.2 |
| 22H | 7.6968 | 650.9 |
| 221 | 8.8521 | 748.6 |
| 22J | 0.0827 | 7.0 |
| 8A | 1.386 | 117.2 |
| 8B | 1.3999 | 118.4 |
| 8C | 1.4961 | 126.5 |
| 8D | 1.5355 | 129.9 |

Note: To be updated following detailed design, refer to drawings for catchments based on name.

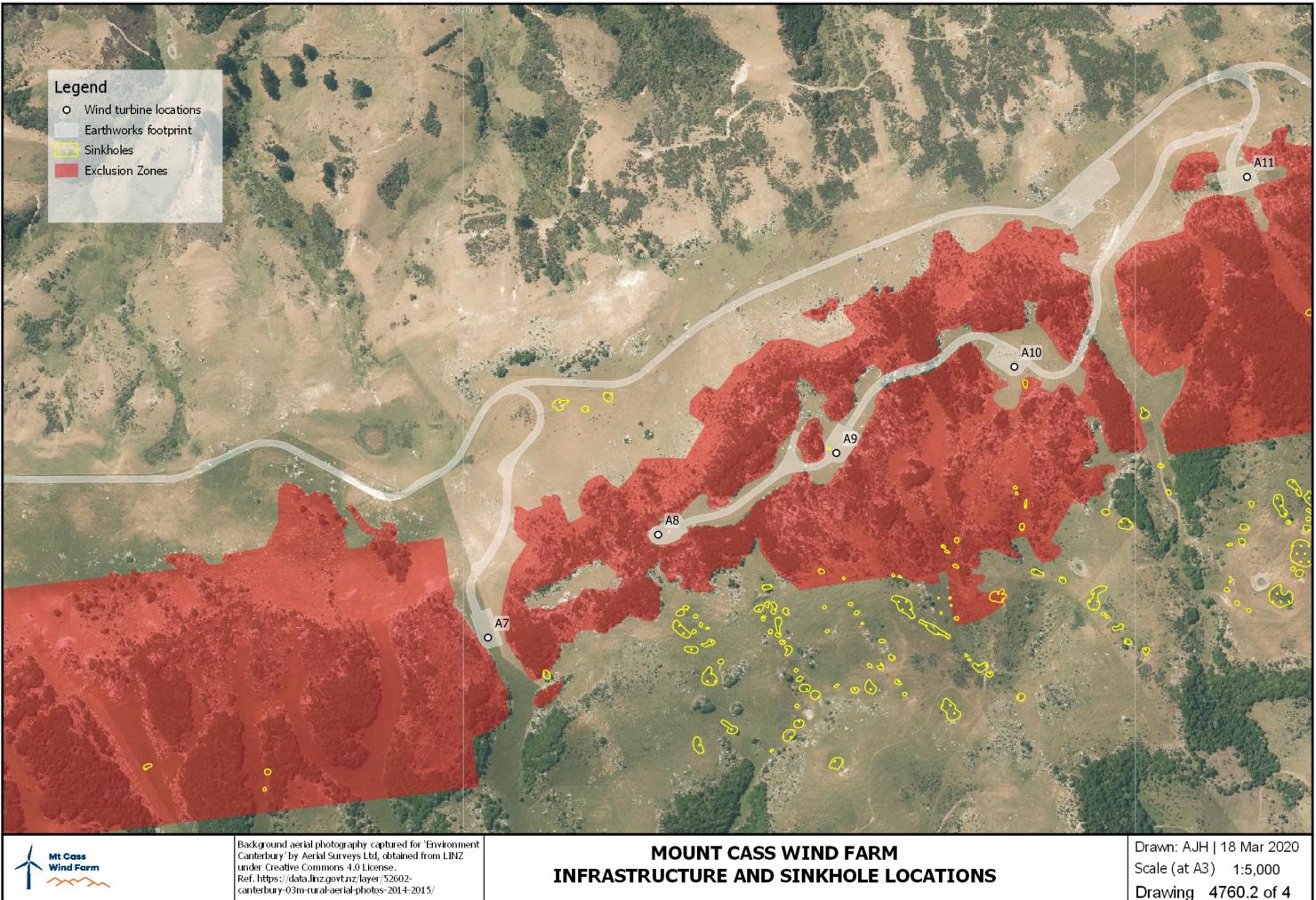
| 8E | 1.3274 | 112.3 |
|-----|--------|-------|
| 8F | 1.4111 | 119.3 |
| 22K | 3.5346 | 298.9 |
| 22L | 2.1343 | 180.5 |
| 22M | 3.35 | 283.3 |
| 22N | 2.5965 | 219.6 |
| 12A | 0.7535 | 63.7 |
| 12B | 0.9049 | 76.5 |
| 13A | 0.8763 | 74.1 |
| 220 | 0.7535 | 63.7 |
| 22P | 0.5607 | 47.4 |
| 22Q | 7.2522 | 613.3 |
| 22R | 1.0021 | 84.7 |
| 225 | 3.4299 | 290.1 |
| 14A | 1.792 | 151.5 |
| 22T | 0.0838 | 7.1 |
| 22U | 1.1811 | 99.9 |
| 22V | 4.164 | 352.1 |
| 22W | 7.9314 | 670.7 |
| 22X | 0.4063 | 34.4 |
| 22Y | 0.7328 | 62.0 |
| | | |



Mt Cass Wind Farm Background aerial photography captured for 'Environment Canterbury' by Aerial Surveys Ltd, obtained from LINZ under Creative Commons 4.0 License. Ref. https://data.linz.govt.nz/layer/52602canterbury-03m-rural-aerial-photos-2014-2015/

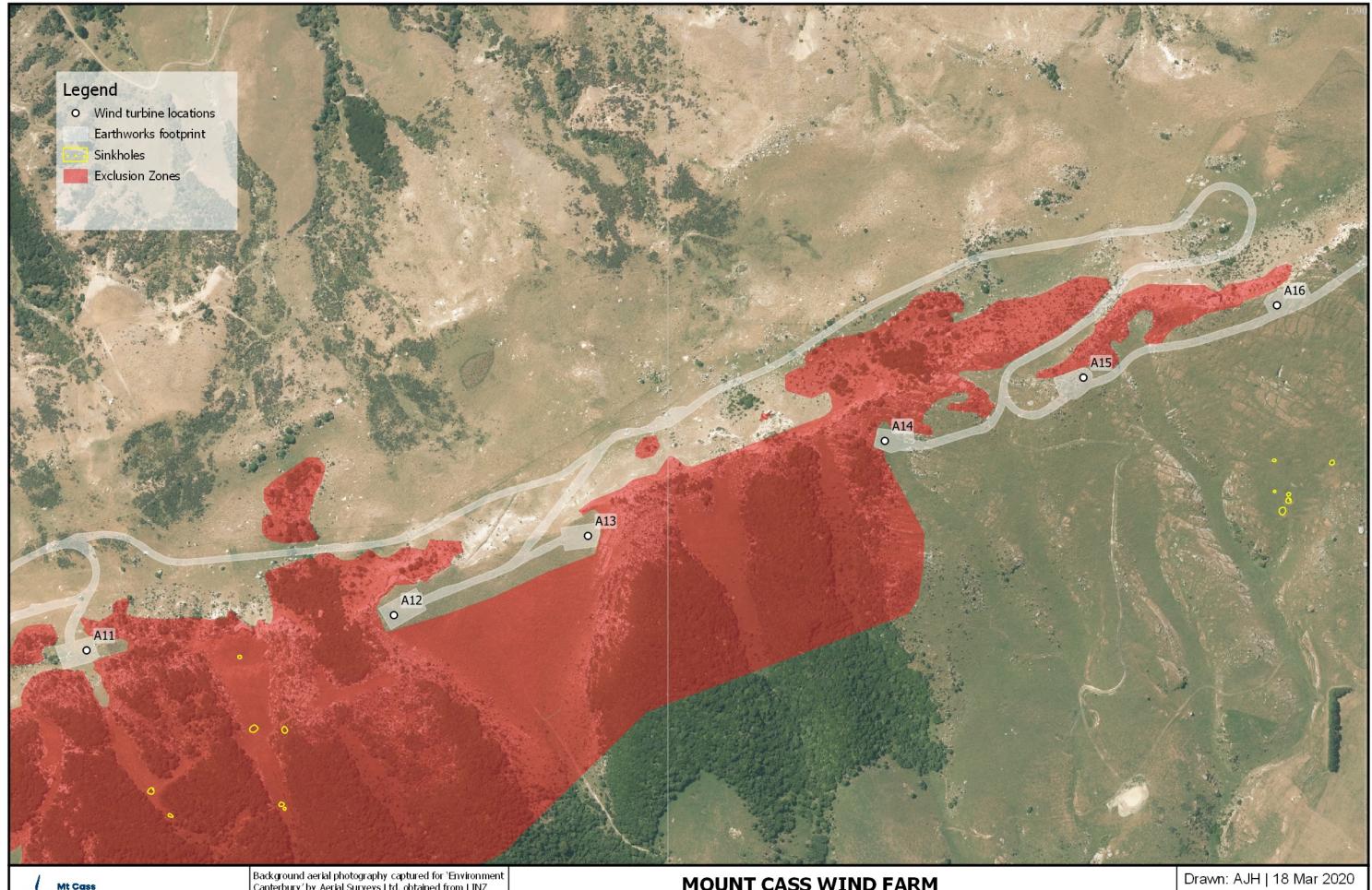
MOUNT CASS WIND FARM INFRASTRUCTURE AND SINKHOLE LOCATIONS

Drawn: AJH | 18 Mar 2020 Scale (at A3) 1:5,000 Drawing 4760.1 of 4



Background aerial photography captured for `Environment Canterbury' by Aerial Surveys Ltd, obtained from LINZ under Creative Commons 4.0 License. Ref. https://data.linz.govt.nz/layer/52602-canterbury-03m-rural-aerial-photos-2014-2015/

INFRASTRUCTURE AND SINKHOLE LOCATIONS

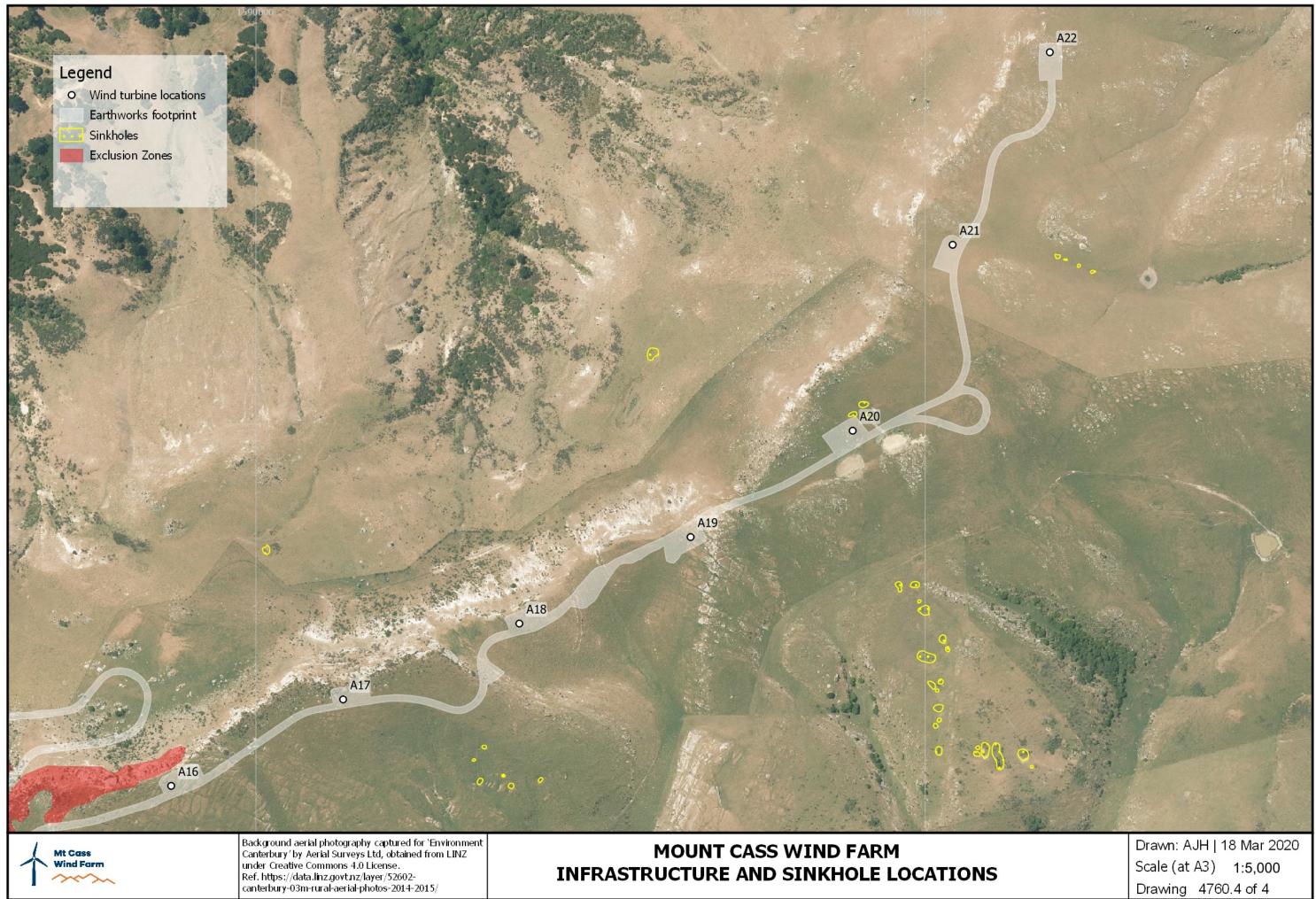




Background aerial photography captured for 'Environment Canterbury' by Aerial Surveys Ltd, obtained from LINZ under Creative Commons 4.0 License. Ref. https://data.linz.govt.nz/layer/52602canterbury-03m-rural-aerial-photos-2014-2015/

MOUNT CASS WIND FARM INFRASTRUCTURE AND SINKHOLE LOCATIONS

Scale (at A3) 1:5,000 Drawing 4760.3 of 4



2mm

INFRASTRUCTURE AND SINKHOLE LOCATIONS

Scale (at A3) 1:5,000 Drawing 4760.4 of 4



CHECKLIST 3: Check dam

| Contractor: | Date: | Consent number: | Site: |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------|-----------------------------------|
| | Time: | | |
| Construction checklist Check back to 'Check dams' section for full information. Also see the Figures over the page. Fabric used for sandbags is UV resistant | | Yes 🗸 | No 🗙 (Add comments to explain) |
| Dams are spaced so the toe of an upstream dam is at about the same elevation as the centre height (spillway level) of the downstream dam | | | |
| Centre of the check dam is 150–200 mm lower than the outside edges, to create a spillway | | | |
| Toes of the fabric dams extend >1 m upslope and are buried in a 300 mm deep trench | | | |
| On erodible soils, the channel is lined with spray-on copolymer | | | |
| Inspection and maintenance checks are done, recorded and dated, along with any comments | | | |

Note: this is an on-site, self-check list for contractors to use. Keep your completed checklists to show Compliance Officers your set up, monitoring and maintenance, if requested.

| Slope of site (%) | Spacing (m) between dams with a 450 mm centre height | Spacing (m) between dams with a 600 mm centre height |
|-------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|
| Less than 2% | 24 | 30 |
| 2-4% | 12 | 15 |
| 4-7% | 8 | 11 |
| 7–10% | 5 | 6 |
| >10% | Unsuitable – use stabilised channel or specific engineered design | Unsuitable – use stabilised channel or specific engineered design |

| Signature: | |
|------------|--|
|------------|--|

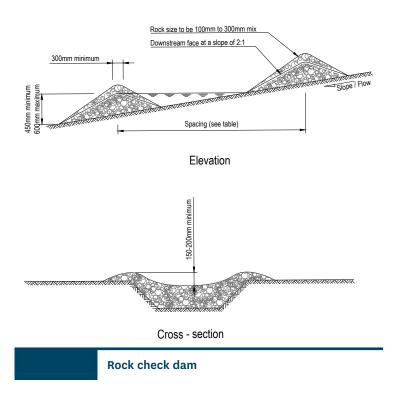
EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY



CHECKLIST 3 FIGURES: Check dam



Check dam (Source: Auckland Council)





CHECKLIST 2: Contour drain (cut-off)

| Contractor: | Date: | Consent number: | Site: |
|--------------------------------------------------------------------------------------------|-------------|-----------------|---------------------------|
| | Time: | | |
| | | | |
| Construction checklist | | Yes 🗸 | No 🗶 |
| Check back to 'Check Contour | | | (Add comments to explain) |
| information. Also see the Figu | | | |
| Minimum compacted height is | 3 250 mm | | |
| Minimum total depth is 500 m | im | | |
| Longitudinal grade is <2% (un | less lined) | | |
| Catchment area is <0.5 ha | | | |
| Flow area is parabolic and not V-shaped | | | |
| Drains are as short as possible | 9 | | |
| Earth windrows and banks are compacted | | | |
| Temporary contour drains are constructed across | | | |
| unprotected slopes at the end of the day's work and/or | | | |
| before forecast rain | | | |
| Inspection and maintenance checks are done, recorded and dated, along with any comments | | | |

Note: this is an on-site, self-check list for contractors to use. Keep your completed checklists to show Compliance Officers your set up, monitoring and maintenance, if requested.

Signature:

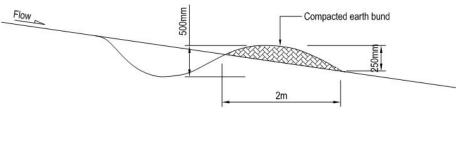
EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY



CHECKLIST 2 FIGURES: Contour drain (cut-off)



Contour drain (Source: SouthernSkies)



Cross - section





CHECKLIST 16: Decanting earth bund (DEB)

| Contractor: | Date: | Consent number: | Site: |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------|-----------------------------------|
| | Time: | | |
| | | | |
| Construction checklist Check back to 'Decanting eart information. Also see the Figu | . , | Yes 🗸 | No 🗙 (Add comments to explain) |
| DEB is built along the contour volumes | to achieve the required | | |
| All vegetation is removed befo | re construction | | |
| DEB is keyed into the ground a | t least 0.3 m deep | | |
| DEB is built with a clay-silt mix content to achieve a reasonab (90%). Track roll at 150–200 | le compaction standard | | |
| There is good compaction arou passes through the bund, to a failure | • • | | |
| A 150 mm diameter, non-perfo through the bund and discharg proofed area or stormwater sy | ges to a stable erosion- | | |
| A T-Bar decant is attached by screwed) | a standard joint (glued and | | |
| The decant is 100 or 150 mm diameter PVC pipe, 0.5 m long with equally spaced holes of 10 mm diameter | | | |
| It is fixed firmly to a waratah standard to achieve 0.3 litres/ second/1,000 m2 of contributing catchment | | | |
| A sealed PVC pipe (with endcaps) is placed on top of the decant to add buoyancy | | | |
| A flexible, thick rubber coupling connects the decant arm and the discharge pipe. The coupling is fastened by strap clamps, glue and screws | | | |



| The decant is fastened to two waratahs by nylon cord, to the correct height to maintain dead water storage | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| An emergency spillway goes to a stabilised outfall 100 mm freeboard height above the primary spillway. This can be a trapezoidal spillway with a minimum invert length of 2 m It must be smooth, have no voids and be lined with a soft | |
| needle punched geotextile to the stabilised outfall. Pins secure the geotextile, spaced no further than 0.5 m apart | |
| The emergency spillway has at least freeboard of 250 mm, ie between the invert of the spillway to the lowest point of the top of the bund | |
| At the end of construction, an as-built assessment is done and any discrepancies with the design rectified | |
| DEB is checked before and after each storm. Inspections are recorded and dated, along with comments, to be available for compliance monitoring officers | |
| There are baffles across the width of the bund, level with the dead water level and made of porous open-mesh cloth | |
| Dirty water inflows are treated with coagulant/flocculants in accordance with a chemical treatment plan and after appropriate testing | |
| Performance of the bund is monitored by water quality testing inflows and outflows. These records are stored in a retrievable location and can be produced for inspection | |

Note: this is an on-site, self-check list for contractors to use. Keep your completed checklists to show Compliance Officers your set up, monitoring and maintenance, if requested.

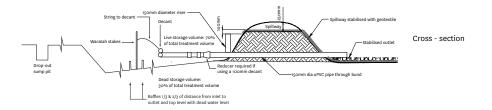
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EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY



CHECKLIST 16 FIGURES:

Decanting earth bund (DEB)









CHECKLIST 1: 'Clean water' or 'dirty water' diversion channel and bund

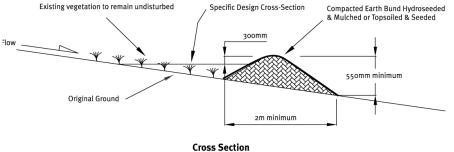
| Contractor: | Date: | Consent number: | Site: |
|-------------------------------------------------------------------------------------|--------------------------------|-----------------|---------------------------|
| | Time: | | |
| | | | |
| Construction checklist | | Yes 🗸 | No 🗙 |
| Check back to Managing 'clear water' sections for full informa over the page. | 00 | | (Add comments to explain) |
| Route avoids trees, services, f built features | ence lines or other natural or | | |
| Channels are trapezoidal or pa | arabolic in shape | | |
| Internal side slopes are no ste | eper than 3:1 | | |
| External side slopes are no ste | eper than 2:1 | | |
| Drains are constructed with a | 0 | | |
| invert (as sudden decreases m | - | | |
| accumulate causing the bank | to overtop) | | |
| Bunds are well compacted | | | |
| Outlets are stable and protect | ed as needed | | |
| Diversions are stabilised to prevent erosion | | | |
| Perimeter diversions are regularly maintained | | | |
| If necessary, specific geotechr | nical design is followed to | | |
| ensure the stability and integr | ity of the structure | | |
| Inspection and maintenance c | | | |
| recorded, along with any com | ments | | |

Note: this is an on-site, self-check list for contractors to use. Keep your completed checklists to show Compliance Officers your set up, monitoring and maintenance, if requested.

Signature:

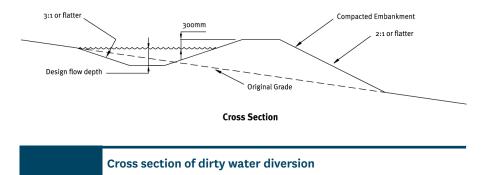


CHECKLIST1'Clean water' or 'dirty water'FIGURES:diversion channel and bund





Cross section of a clean water diversion





CHECKLIST 15: Sediment retention pond

| Contractor: | : Date: Consent nun | | Site: |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---|-----------------------------------|
| | Time: | - | |
| | Check back to 'Sediment retention pond' section for full | | No X (Add comments to explain) |
| information. Also see the Figu Sediment control is implemen proposed sediment retention | ted downslope of the | | |
| Areas are cleared of proposed suitable material down to con | - | | |
| Only approved fill material is u | used | | |
| Fill is placed and compacted in layers to the engineering recommendations, and appropriate testing has confirmed compliance | | | |
| Fill embankment is constructed 10% higher than the design height to allow for settlement | | | |
| | Pipework and anti-seep collars or filter collars were installed during the embankment build, with good compaction around pipes | | |
| The emergency spillway is cor Construction and operation in Construction and operation in | structions in 5.1 [link to | | |
| A level spreader is installed a | nd stabilised | | |
| The decant and pulley system is securely attached to the horizontal pipework, with all connections watertight. Manhole risers have been placed on a firm foundation of concrete or compacted soil | | | |
| Inlets and outlets are protected | Inlets and outlets are protected with fabric | | |
| Baffles are installed across the water level. Baffles are made | • | | |
| There is an all-weather access | track for maintenance | | |
| All elevations are checked and | All elevations are checked and any inaccuracies fixed | | |

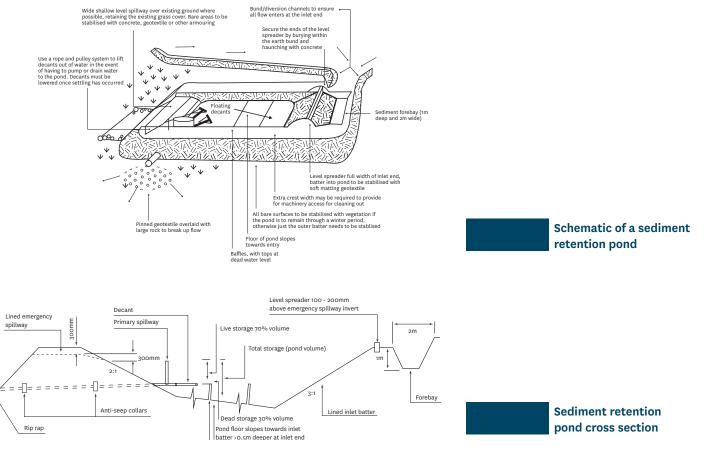


| Internal and external batters and the emergency spillway are stabilised as per the approved ESC plan | |
|---------------------------------------------------------------------------------------------------------------|--|
| At the end of construction, an as-built assessment is done and any discrepancies with the design rectified | |
| Inspection and maintenance checks are done, recorded and dated, along with any comments | |

Note: this is an on-site, self-check list for contractors to use. Keep your completed checklists to show Compliance Officers your set up, monitoring and maintenance, if requested.

| Si | gn | at | ur | e: |
|----|----------|----|----|----|
| ۰. | <u>.</u> | | ~ | ٠. |

CHECKLIST 15 FIGURES: Sediment retention pond





CHECKLIST 17: Silt fence

| Contractor: | Date: | Consent number: | Site: |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------|-----------------------------------|
| | Time: | - | |
| Construction checklist Check back to sections 5.3 [lin see the Figures over the page. | - | Yes 🗸 | No 🗙 (Add comments to explain) |
| The silt fence material suits th to the manufacturer's specific | | | |
| Silt fences are installed along | the contour | | |
| There is a trench at least 100 along the proposed line of the | • | | |
| Support posts/steel waratahs long and 2–4 m apart | are installed at least 1.5 m | | |
| Support posts/waratahs are installed on the downslope edge of the trench, with silt fence fabric on the upslope side of the support posts to the full depth of the trench. The trench is backfilled with compacted soil | | | |
| The top of the silt fence fabric is reinforced with a support made of high tensile 2.5 mm diameter galvanised wire. The wire is tensioned using permanent wire strainers attached to angled waratahs at the end of the silt fence | | | |
| The silt fence fabric is doubled over and fastened to the wire with silt fence clips at 500 mm spacings | | | |
| Where ends of the silt fence fabric come together, they are overlapped, folded and stapled/screwed to prevent sediment bypass | | | |
| Inspection and maintenance checks are done, recorded and dated, along with any comments | | | |

Note: this is an on-site, self-check list for contractors to use. Keep your completed checklists to show Compliance Officers your set up, monitoring and maintenance, if requested.

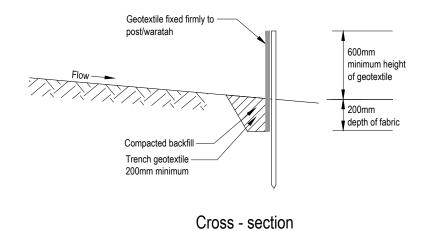
Signature:



CHECKLIST 17 FIGURES: Silt fence

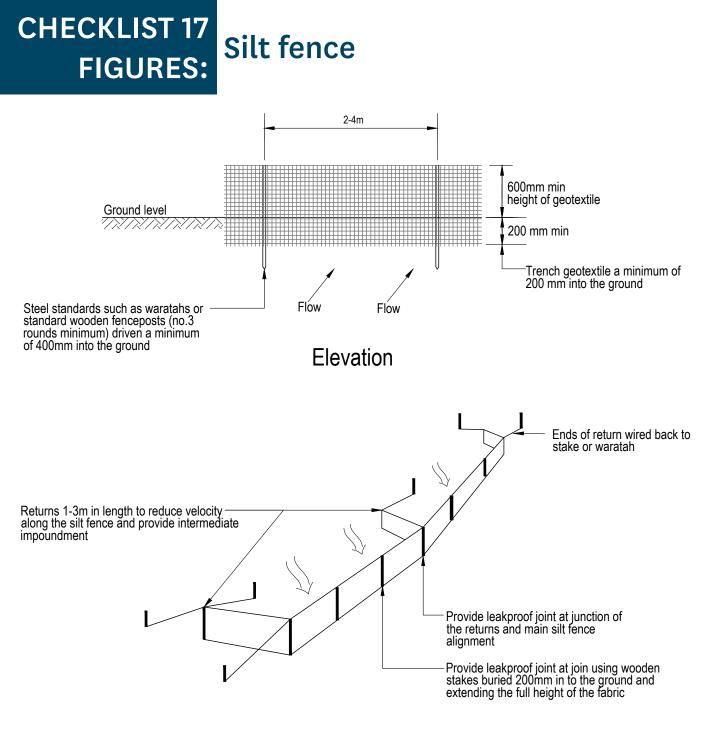
| Slope steepness % | Slope length (m) (maximum) | Spacing of returns (m) | Silt fence length (m) (maximum) |
|-------------------|-------------------------------|---------------------------|------------------------------------|
| Flatter than 2% | Unlimited | N/A | Unlimited |
| 2 - 10% | 40 | 60 | 300 |
| 10 - 20% | 30 | 50 | 230 |
| 20 - 33% | 20 | 40 | 150 |
| 33 - 50% | 15 | 30 | 75 |
| > 50% | 6 | 20 | 40 |

Silt fence design criteria



Silt fence cross section





Silt fence with returns and support wire

Schematic of a silt fence



CHECKLIST 5: Stabilised entranceway

| Contractor: | Date: | Consent number: | Site: | | | |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------------------------------|--|--|--|
| | Time: | | | | | |
| Construction checklist Check back to 'Stabilised entr information. Also see the Figu Area has been cleared of unsu graded | res over the page. | Yes 🗸 | No 🗙 (Add comments to explain) | | | |
| Woven geotextile has been pla properly pinned and overlapp | | | | | | |
| At least 10 m of aggregate has from site boundary), 4 m wide using 50–150 mm washed agg | and minimum 150mm deep, | | | | | |
| Vehicles cannot bypass the er | tranceway | | | | | |
| Street sweep/suction is done a | and date recorded | | | | | |
| Inspection and maintenance of and dated, along with any cor | | | | | | |

Note: this is an on-site, self-check list for contractors to use. Keep your completed checklists to show Compliance Officers your set up, monitoring and maintenance, if requested.

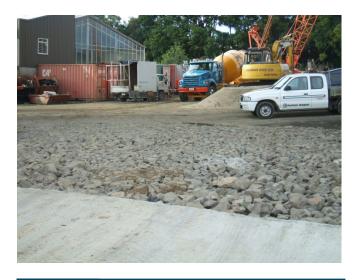
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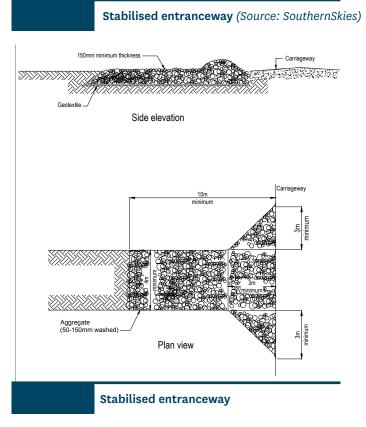
EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY



CHECKLIST 5 FIGURES: Stab

Stabilised entranceway







CHECKLIST 18: Super silt fence

| Contractor: | Date: | Consent number: | Site: |
|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------|-----------------------------------|
| | Time: | | |
| Construction checklist Check back to 'Super silt fence Also see the Figures over the p | | Yes 🗸 | No 🗙 (Add comments to explain) |
| Super silt fence material suits used to the manufacturer's sp | | | |
| Super silt fences are installed | along the contour | | |
| There is a trench at least 100 along the proposed line of the | • | | |
| Support posts/steel waratahs and 2–4m apart | used are at least 1.8 m long | | |
| Support posts/waratahs are in edge of the trench, with silt fe side of the support posts to th The trench is backfilled with c | nce fabric on the upslope ne full depth of the trench. | | |
| Tensioned galvanised wire (2.) mm and again at 800 mm abo been tensioned using perman to angled waratahs at the end | ove ground. The wire has ent wire strainers attached | | |
| Chain link fence is secured to or staples, ensuring the chain of the trench | the fence posts with wire ties | | |
| Two layers of geotextile fabric of the trench (at least 200 mm compacted backfill installed t | n into the ground), with | | |

| Signature: |
|------------|
|------------|



CHECKLIST 18 FIGURES: Super silt fence

| Construction checklist Check back to sections 5.4 [link] for full information. Also see the Figures over the page. | Yes 🗸 | No 🗙 (Add comments to explain) |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------------------|
| Where ends of the super silt fence fabric come together, they are overlapped, folded and stapled/screwed to prevent sediment bypass | | |
| Inspection and maintenance checks are done, recorded and dated, along with any comments | | |

Note: this is an on-site, self-check list for contractors to use. Keep your completed checklists to show Compliance Officers your set up, monitoring and maintenance, if requested.

| Slope steepness % | Slope length (m) (maximum) | Spacing of returns (m) | Silt fence length (m) (maximum) |
|-------------------|-------------------------------|---------------------------|------------------------------------|
| 0-10% | Unlimited | 60 | Unlimited |
| 10-20% | 60 | 50 | 450 |
| 20-33% | 30 | 40 | 300 |
| 33-50% | 30 | 30 | 150 |
| > 50% | 15 | 20 | 75 |

Super silt fence design criteria



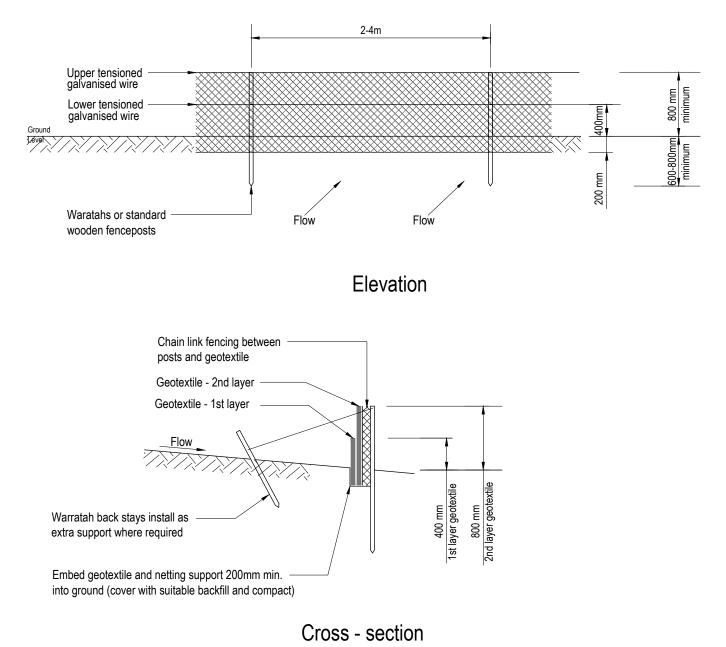


Page 2 of 3

EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY







Schematic of a super silt fence

Page 3 of 3



CHECKLIST 6: Surface roughening

| Contractor: | Date: | Consent number: | Site: |
|-------------------------------------------------------------------------------------------|-------------------------------|-----------------|-----------------------------------|
| | Time: | | |
| Construction checklist Check back to 'Surface roughe information. Also see the Figu | - | Yes 🗸 | No 🗙 (Add comments to explain) |
| Water is diverted away from tl slope roughening | ne slope face before the | | |
| Existing rills are filled before r | oughening | | |
| Roughening is done perpendic | cular to surface water flows | | |
| When track-walking topsoil m compact the slope | aterial, care is taken not to | | |
| For track-walking, well-define in the soil, parallel to the cont slope | • | | |
| After roughening, the slope is compost/topsoil/mulch/hydro | 0 | | |
| Inspection and maintenance c and dated, along with any con | | | |

Note: this is an on-site, self-check list for contractors to use. Keep your completed checklists to show Compliance Officers your set up, monitoring and maintenance, if requested.

Signature:

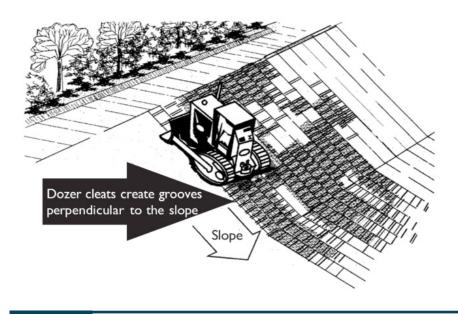
EROSION AND SEDIMENT CONTROL TOOLBOX FOR CANTERBURY



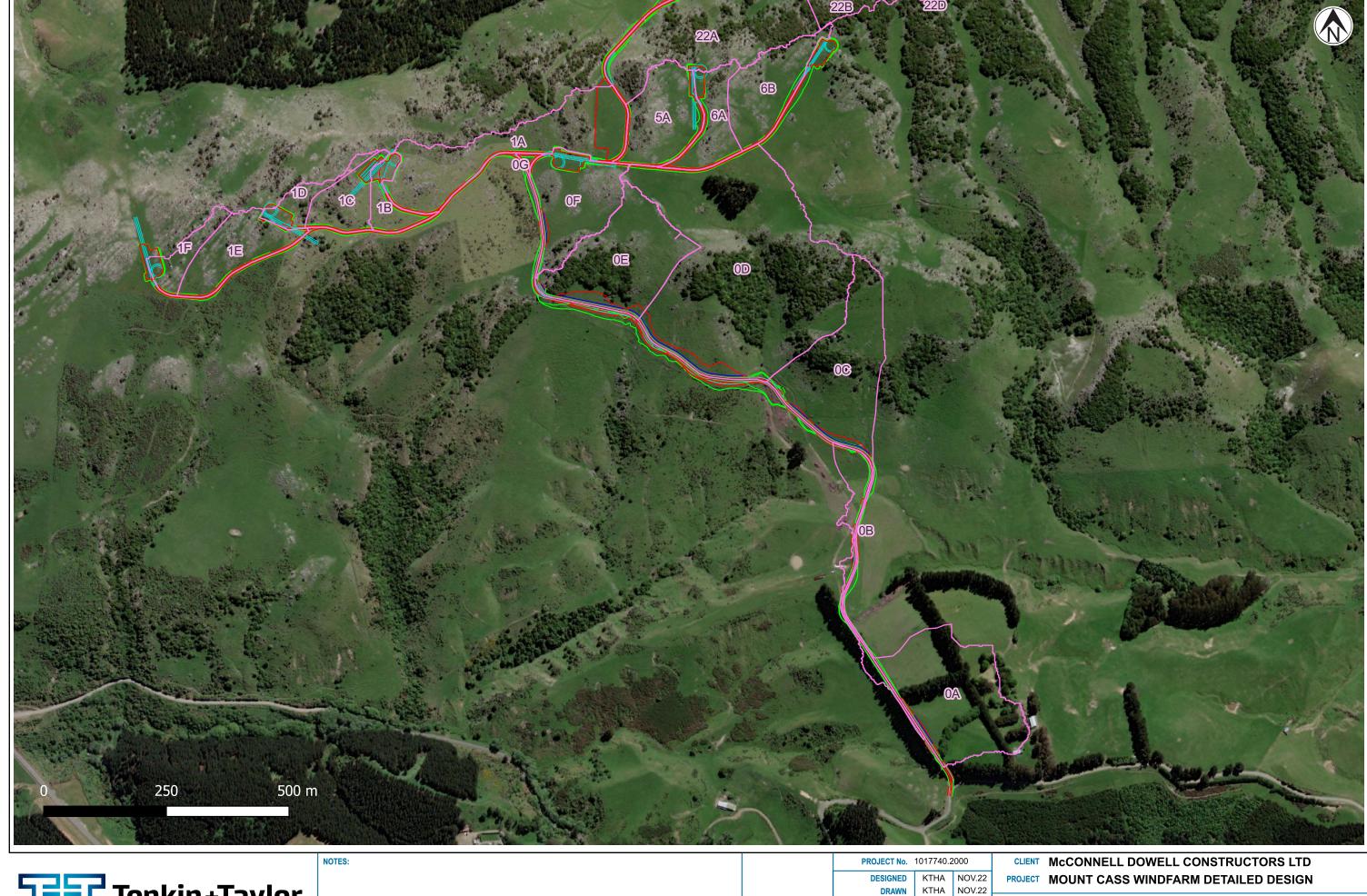
CHECKLIST 6 FIGURES: Surface roughening



Surface roughening of a slope. Note that the hollows act as 'micro' sediment traps



Surface roughening



| Tonkin+Taylor |
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REV DESCRIPTION

Exceptional thinking together www.tonkintaylor.co.nz

| GIS | СНК | DATE | LOCATION PLAN | APPROVED |
|-----|-----|------|---------------|----------|

XXXX YYYY 10/09/20

DATE

CHECKED

Drawn by KTHA

TITLE EROSION AND SEDIMENT CONTROL CATCHMENT LABELLING

SCALE (A3) 1:7,000 FIG No. FIGURE 1.





REV DESCRIPTION

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| GIS | СНК | DATE | LOCATION PLAN | APPROVED | | ATE | (10) | · |
|------|-------|----------|---------------|----------|------|--------|------------|---|
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| | | | | DRAWN | КТНА | NOV.22 | | |

PROJECT No. 1017740.2000

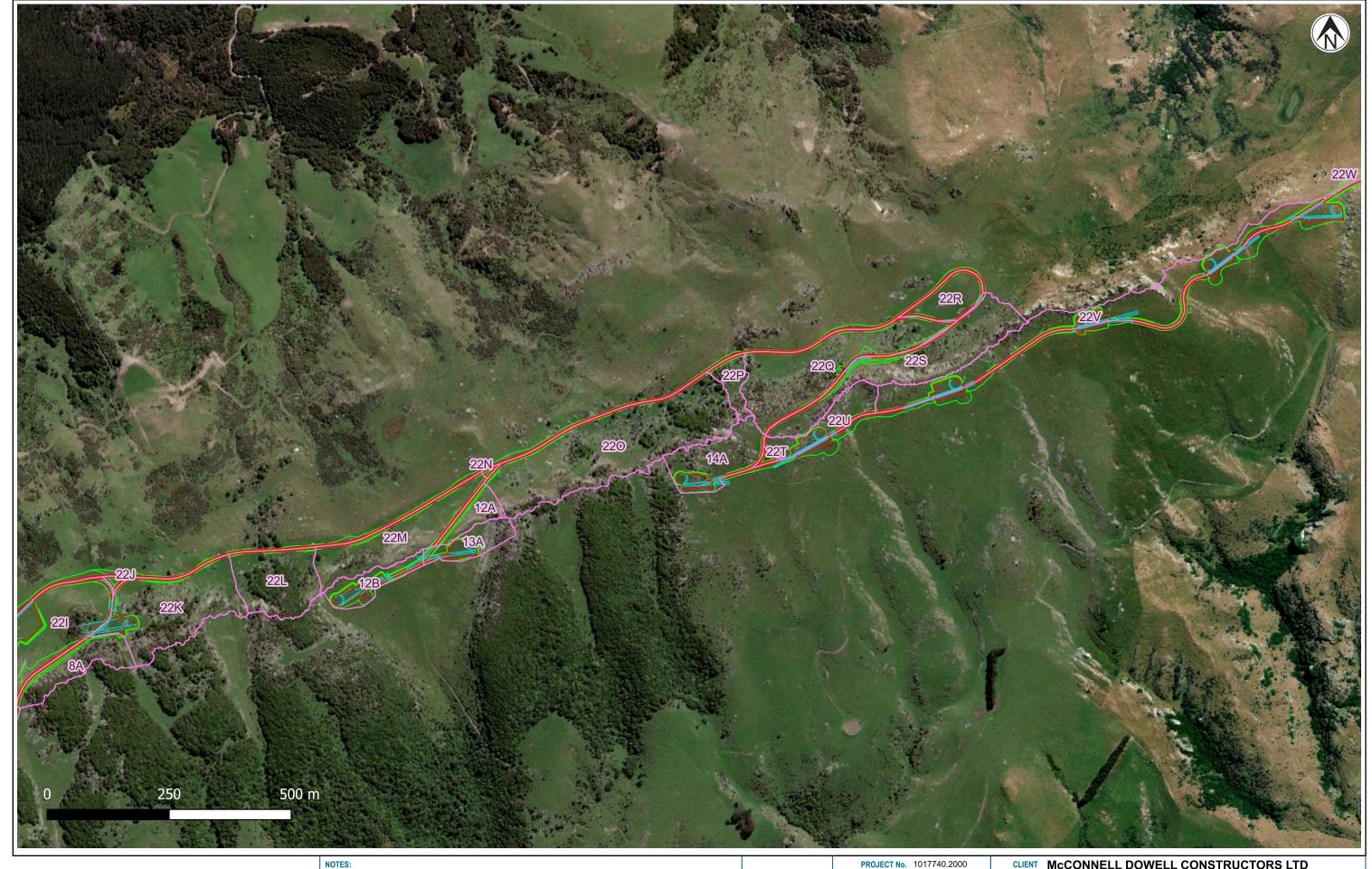
DESIGNED KTHA NOV.22

CLIENT

McCONNELL DOWELL CONSTRUCTORS LTD PROJECT MOUNT CASS WINDFARM DETAILED DESIGN

EROSION AND SEDIMENT CONTROL CATCHMENT LABELLING

:7,000 FIG No. FIGURE 2.





REV DESCRIPTION

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| Μ | PROJECT | NOV.22 | KTHA | DESIGNED | | | | | |
|----|------------|--------|------|-----------|---------------|----------|----------|------|--|
| | | NOV.22 | KTHA | DRAWN | | | | | |
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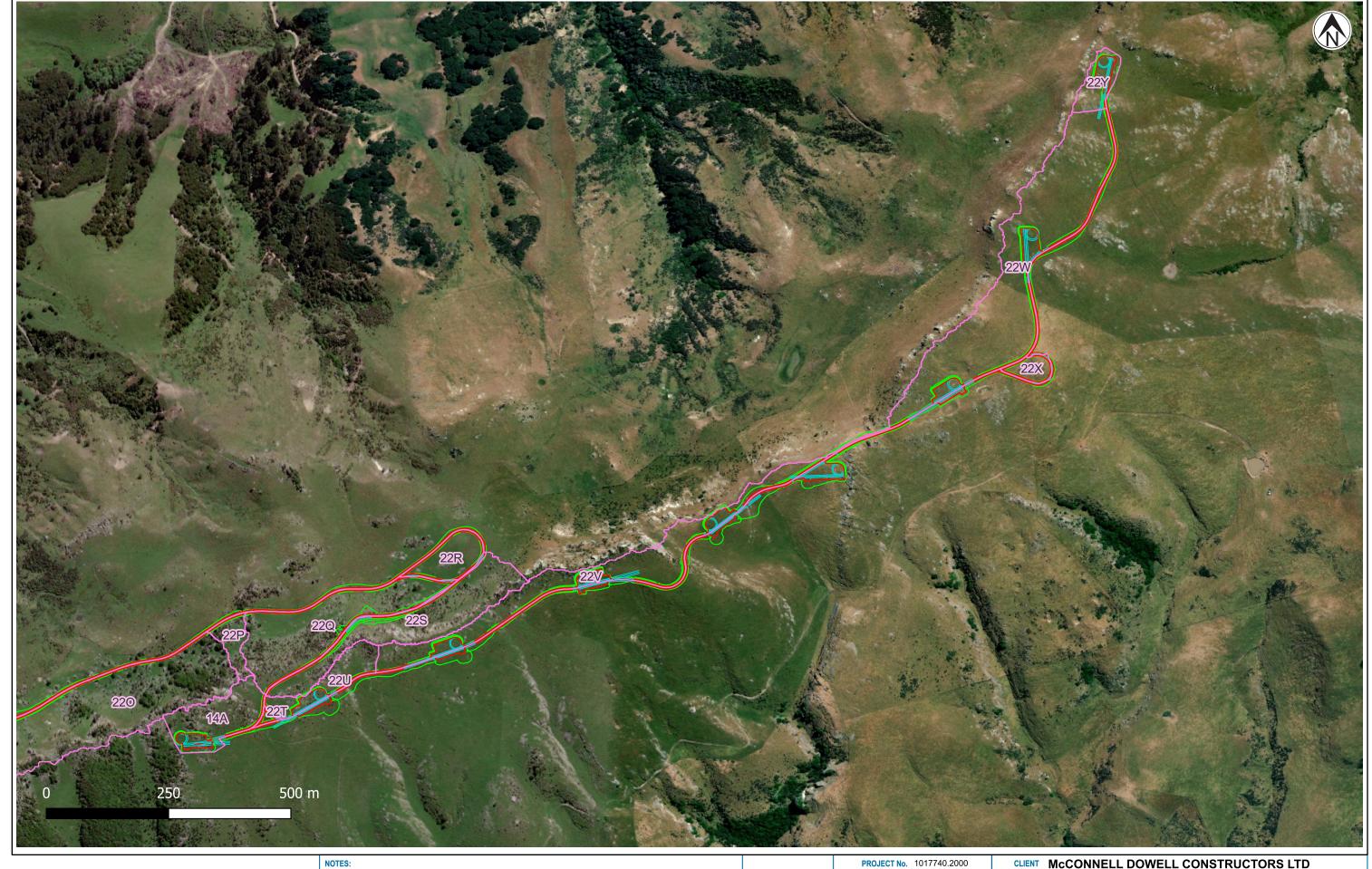
CLIENT

Drawn by KTHA

McCONNELL DOWELL CONSTRUCTORS LTD PROJECT MOUNT CASS WINDFARM DETAILED DESIGN

> ROSION AND SEDIMENT CONTROL ATCHMENT LABELLING

:7,000 FIG No. FIGURE 3.





REV DESCRIPTION

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| GIS | СНК | DATE | LOCATION PLAN | APPROVED | D | ATE | SCALE (A3) | 1:7, |
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PROJECT No. 1017740.2000

DESIGNED KTHA NOV.22

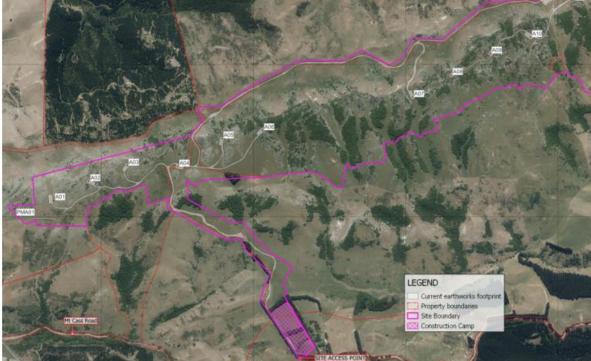
CLIENT

McCONNELL DOWELL CONSTRUCTORS LTD PROJECT MOUNT CASS WINDFARM DETAILED DESIGN

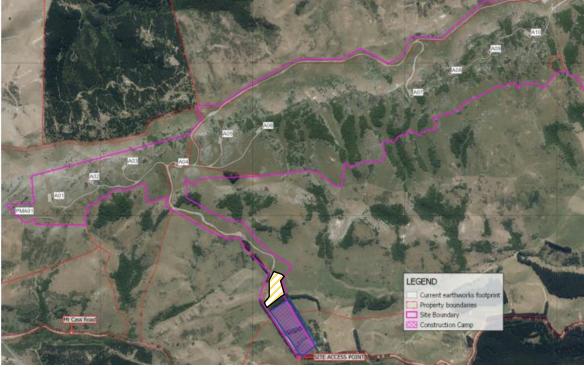
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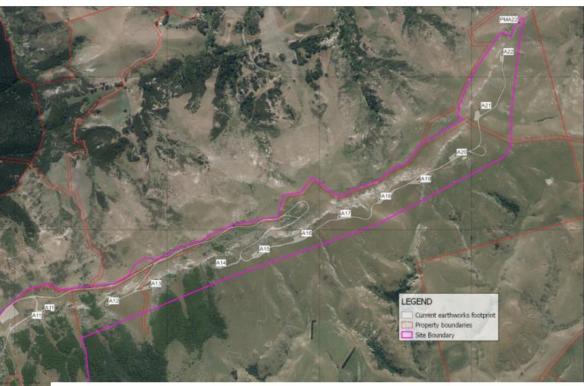
,000 FIG No. FIGURE 4.











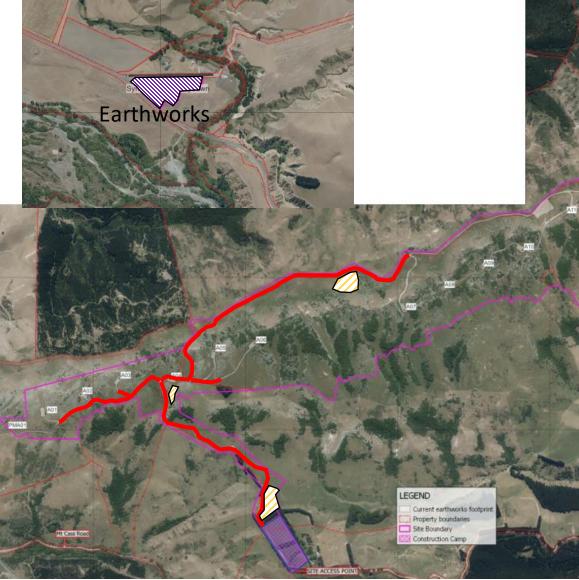
- Access Complete
- Track Earthworks
- Pavement
- Trenching / Temp Running Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant
- O&M Building

Site Office & Laydown Disposal Site Complete

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- Disposal Site in use
- WTG Construction
- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete





- Access Complete
 Track Earthworks
- Pavement
- Trenching / Temp Running Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant

O&M Building

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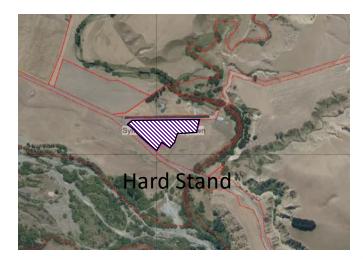
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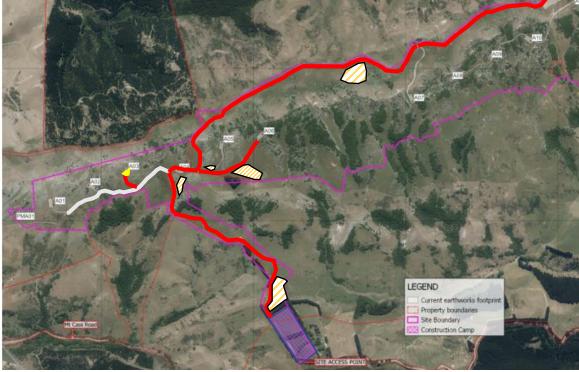
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- Disposal Site in use
- WTG Construction

Disposal Site Complete

- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete







- Access Complete
- Track Earthworks
- Pavement
- Trenching / Temp Running Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant

O&M Building

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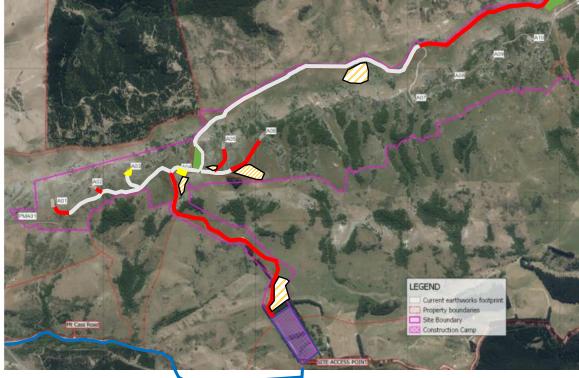
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 - WTG Construction

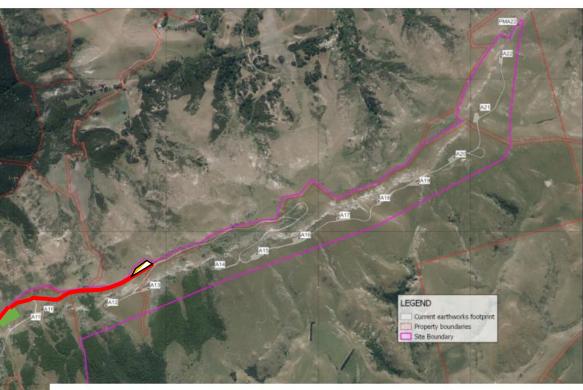
Site Office & Laydown

Disposal Site Complete

- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete







- Access Complete
- Track Earthworks
- Pavement

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- Trenching / Temp Running Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant

O&M Building

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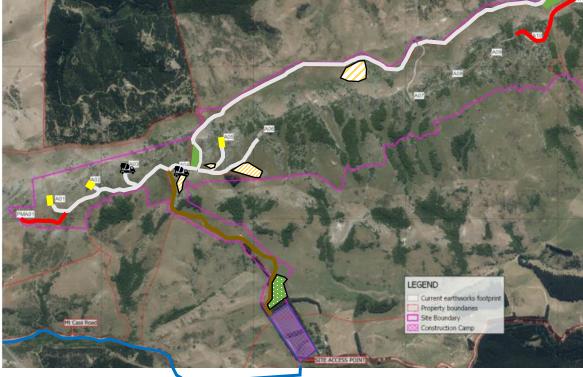
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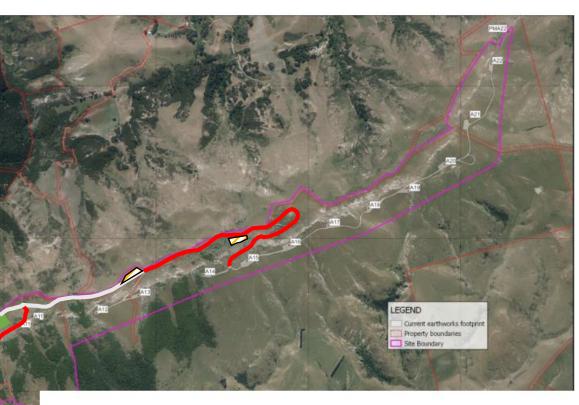
- Disposal Site Complete
- Disposal Site in use
- WTG Construction

Site Office & Laydown

- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete







- Access Complete
- Track Earthworks
- Pavement

⊞n

- Trenching / Temp Running Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant

O&M Building

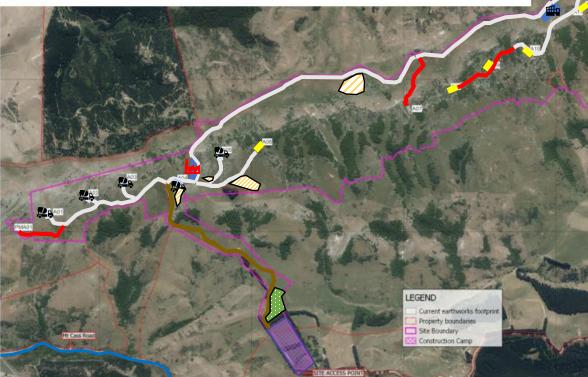
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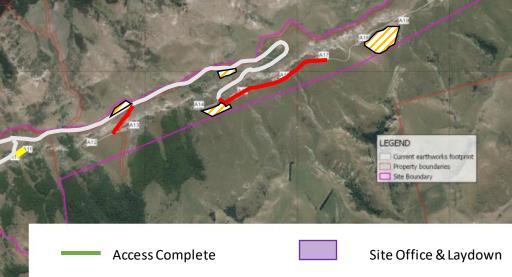
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Disposal Site Complete

Site Office & Laydown

- Disposal Site in use
- WTG Construction
- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete





Track Earthworks

Trenching / Temp Running

Tower Platform Complete

Concrete Batching Plant

Tower Platform EW

O&M Building

Pavement

Surface

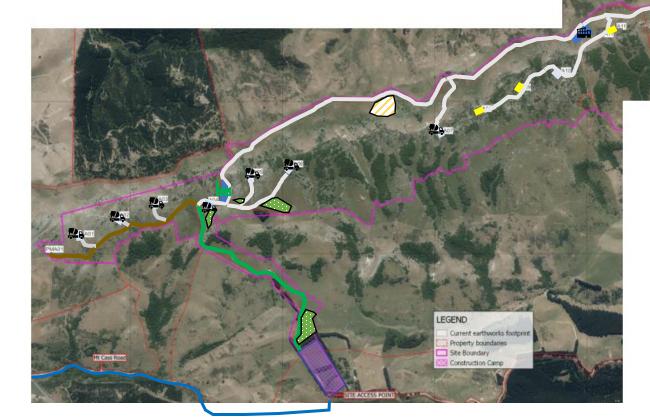
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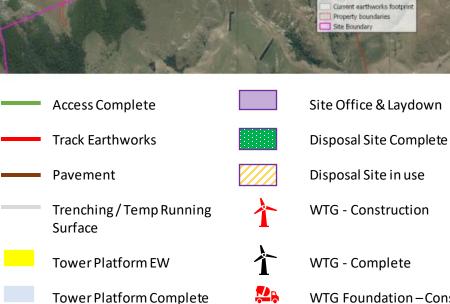
Disposal Site Complete

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- Disposal Site in use
- WTG Construction
- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete



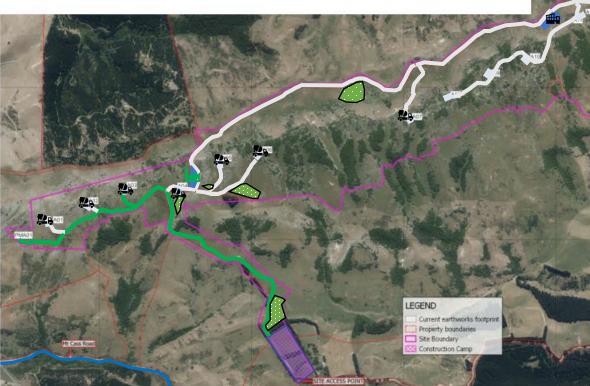


- Tower Platform Complete
- Concrete Batching Plant
- ⊞n **O&M** Building

WTG - Construction WTG - Complete WTG Foundation – Construction

LEGEND

WTG Foundation - Complete





- Access Complete
- Track Earthworks
- Pavement

⊞n

- Trenching / Temp Running Surface
- Tower Platform EW
- Tower Platform Complete
- Concrete Batching Plant

O&M Building

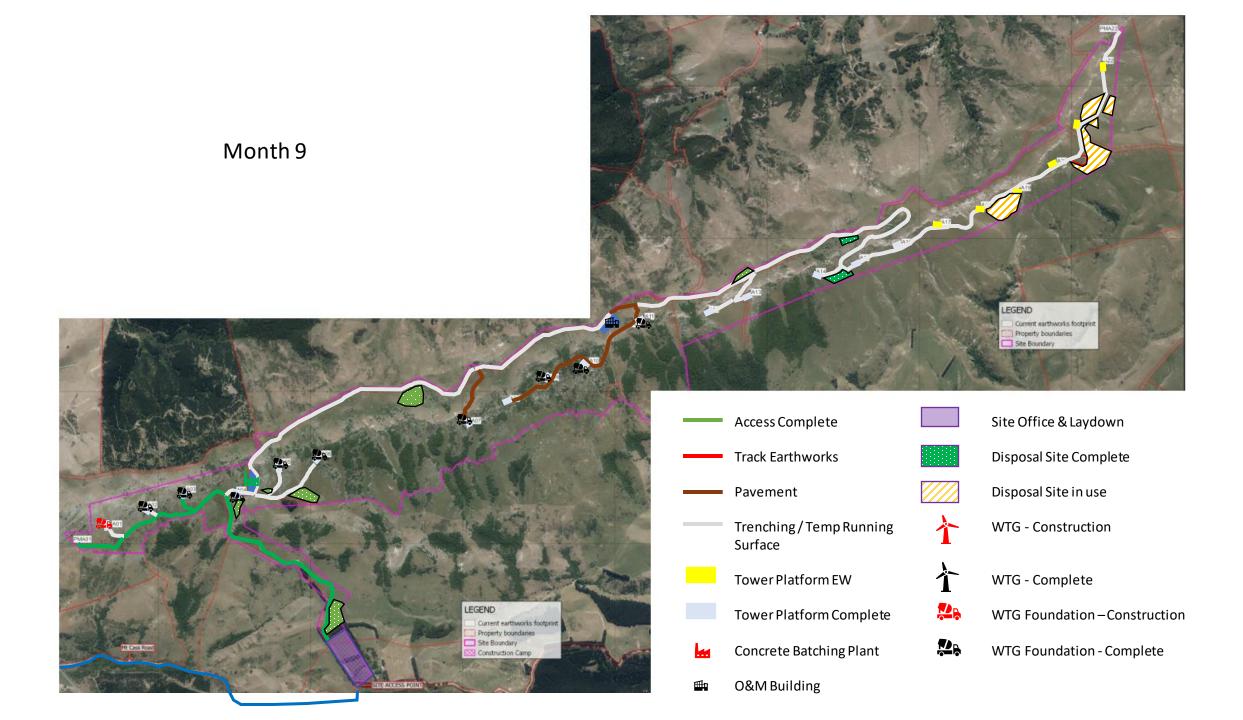
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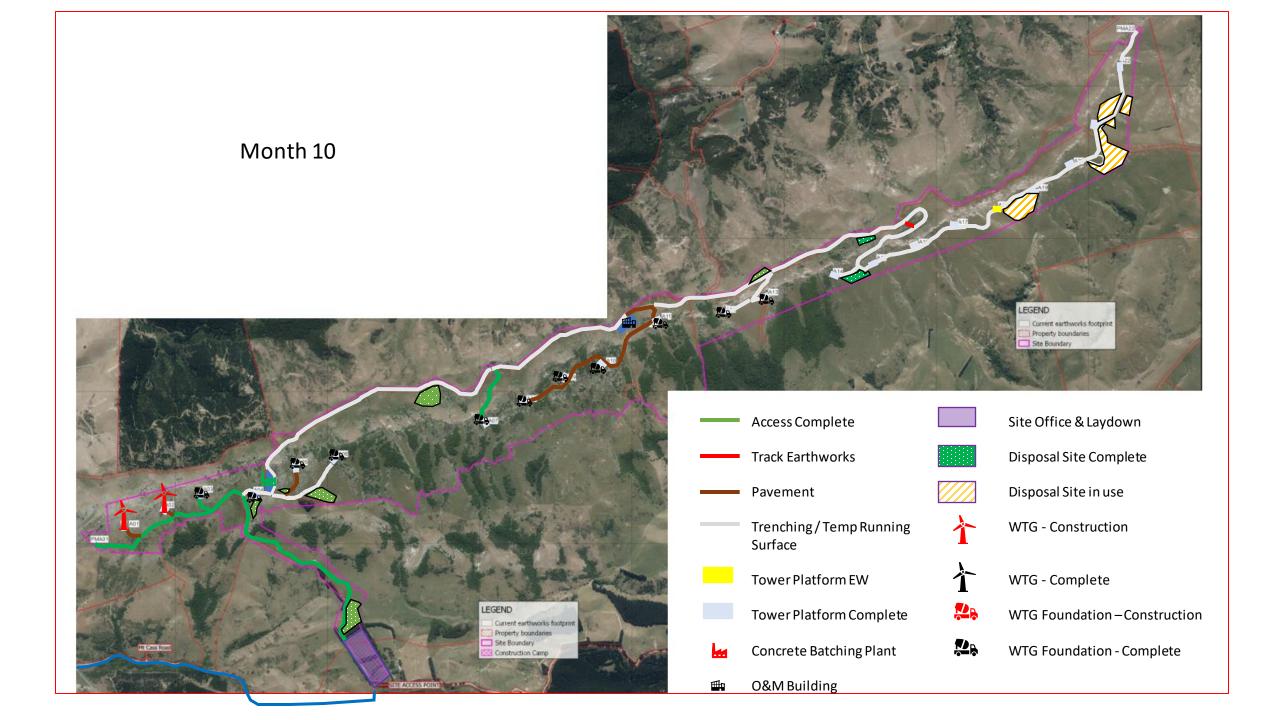
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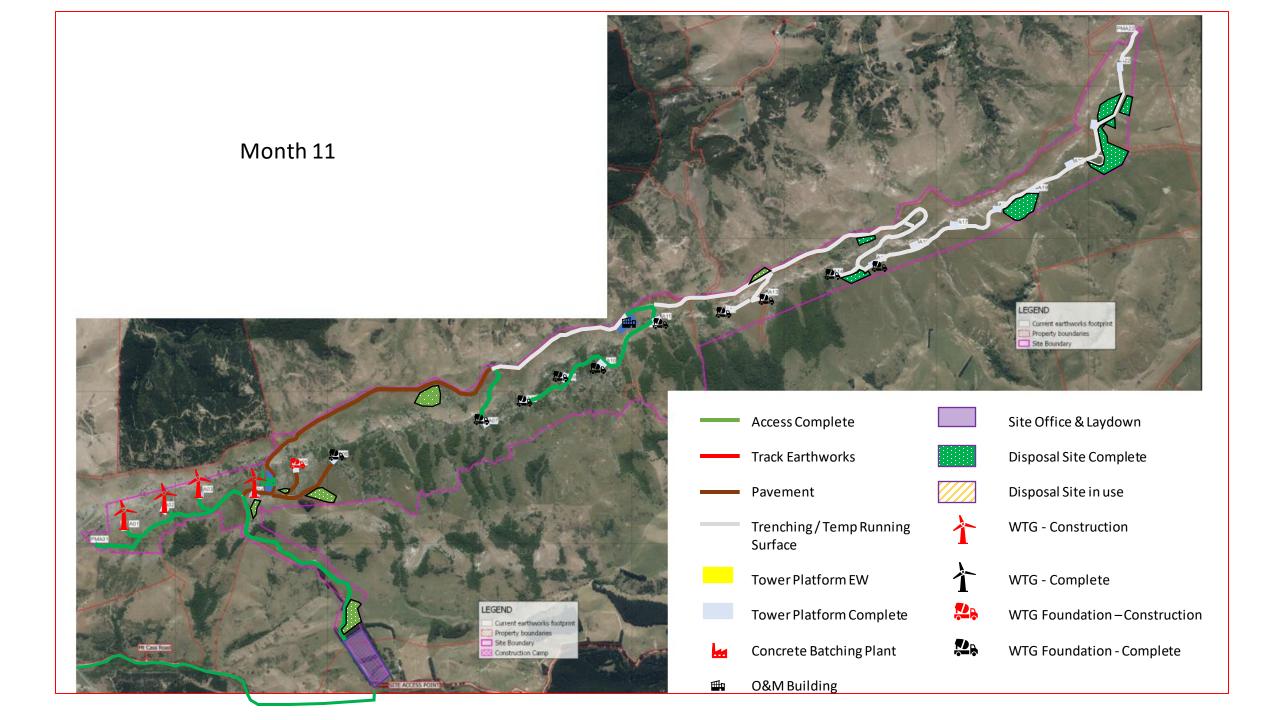
Disposal Site Complete

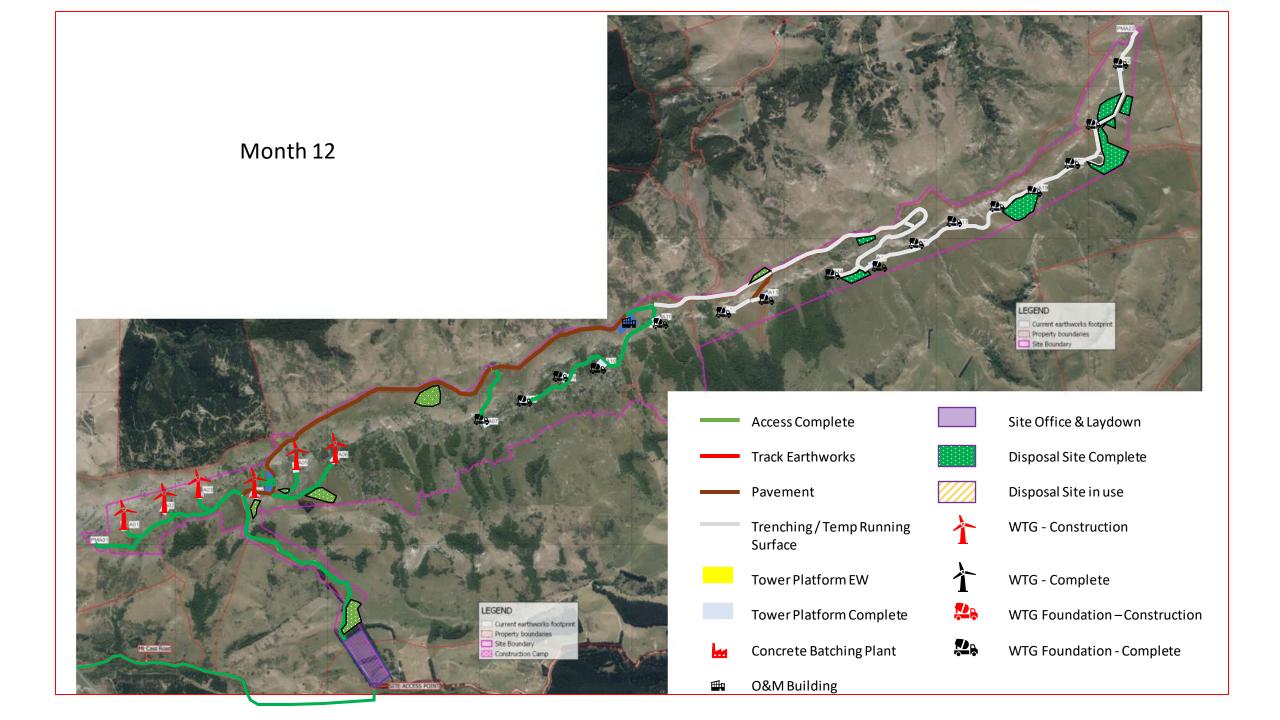
Site Office & Laydown

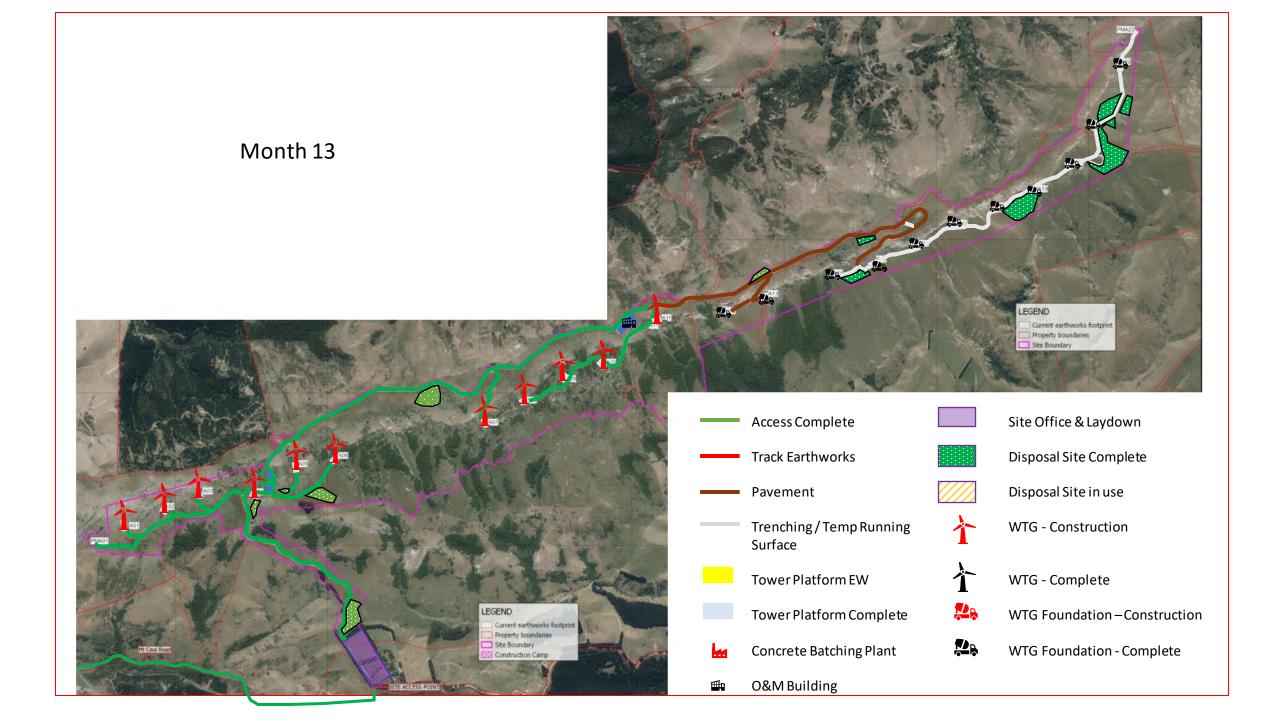
- Disposal Site in use
- WTG Construction
- WTG Complete
- WTG Foundation Construction
- WTG Foundation Complete

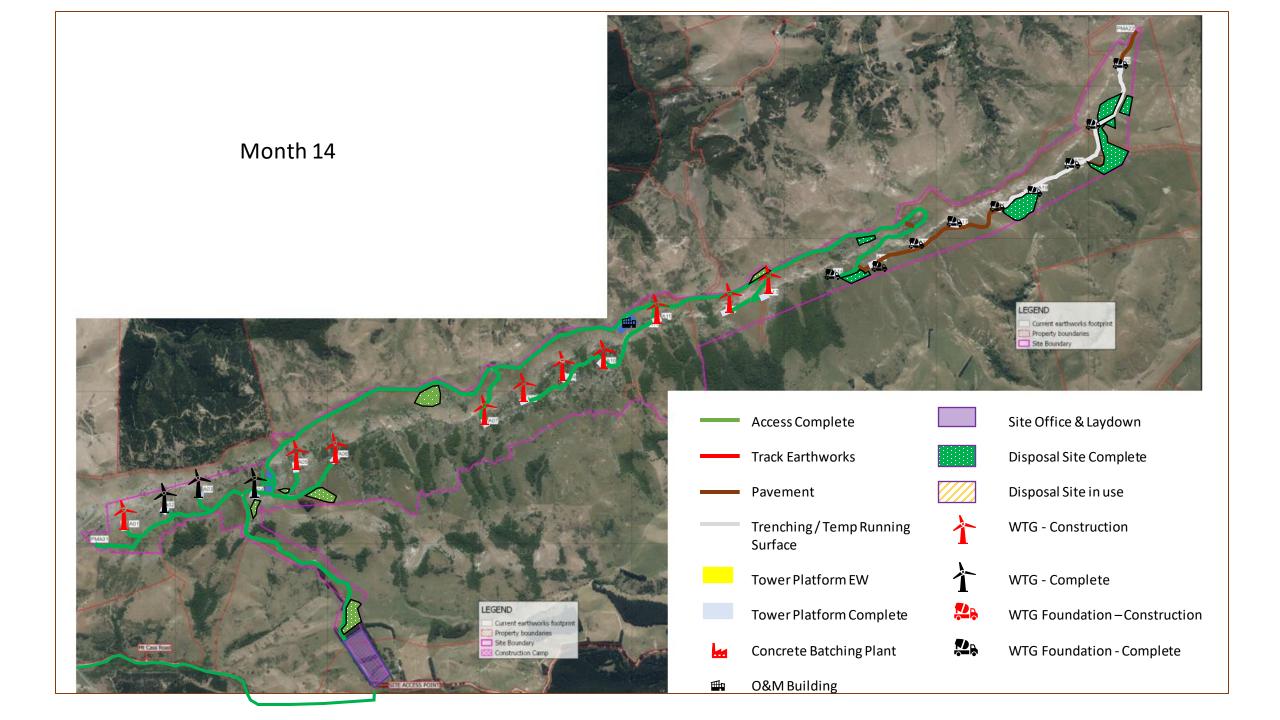


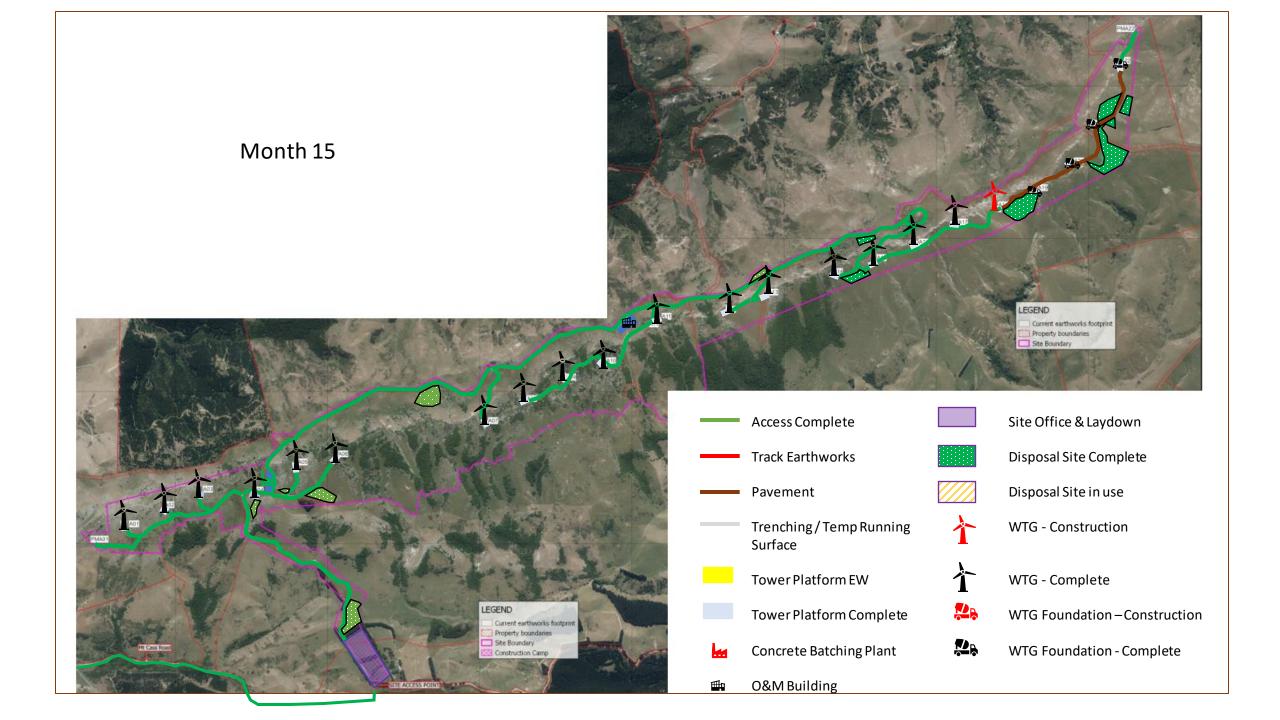


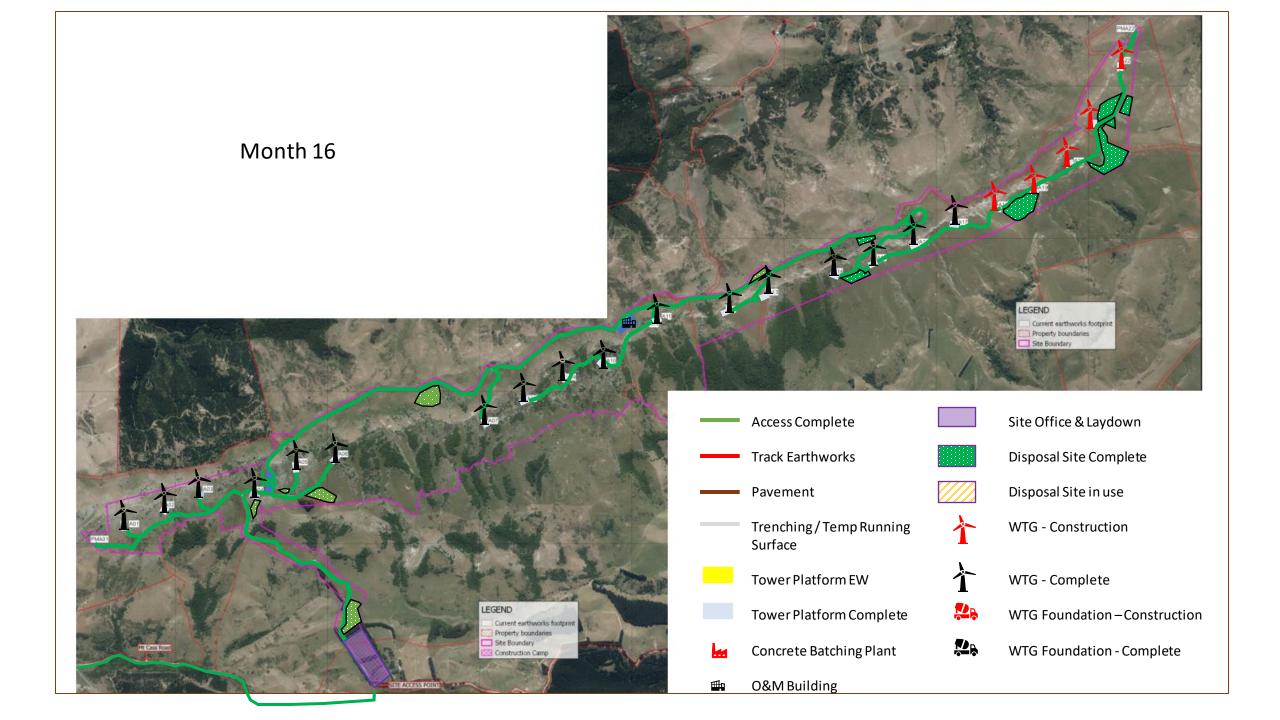


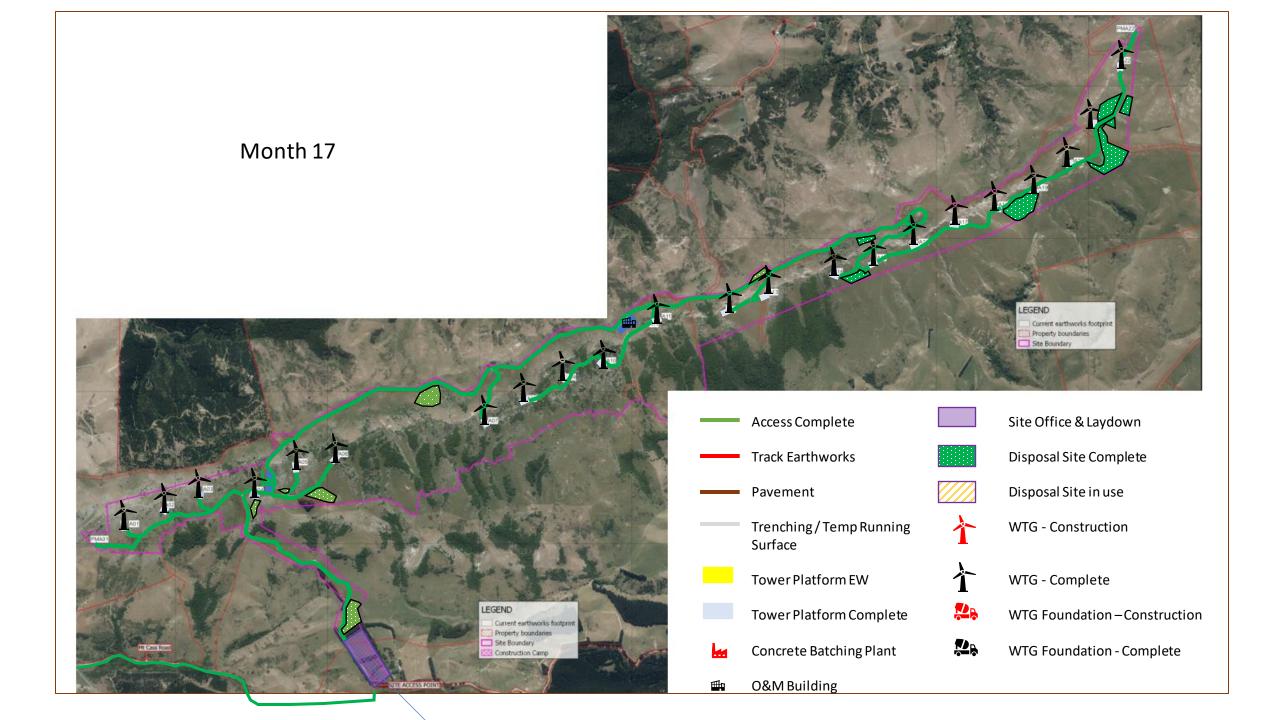


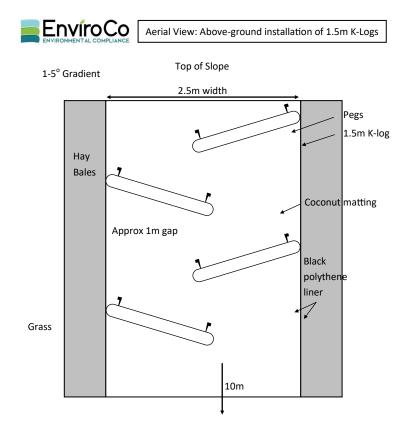


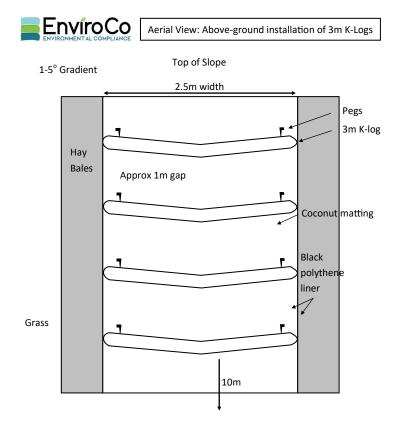


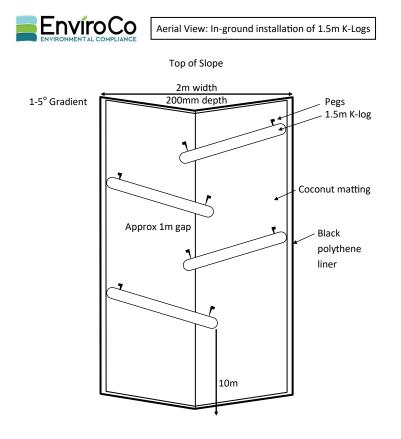


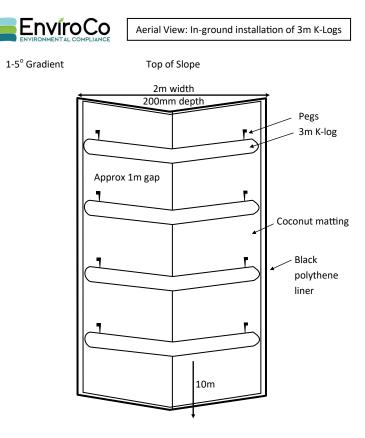


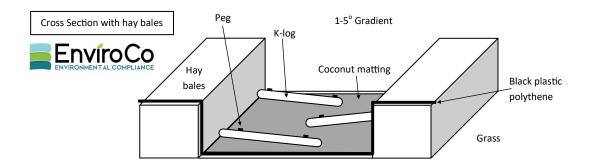


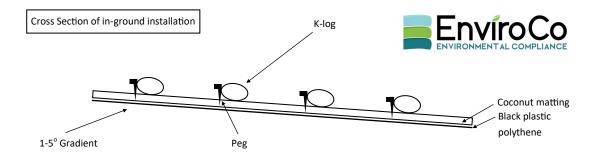












Appendix E

B2 Dust Management Plan



Mt Cass Wind Farm Dust Management Plan



Revision 5 – 22 March 2023

Mt Cass Wind Farm

This document has been prepared for the benefit of Mt Cass Wind Farm Ltd (MCWF). No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person. This disclaimer shall apply notwithstanding that the report may be made available to other persons of an application for permission or approval to fulfil a legal requirement.

Revision History

| Version | Description | Date | Prepared by | Approved By |
|---------|-------------------------------------------|------------|-------------|-------------|
| Rev 1 | Draft | 03 Mar 21 | HW | SB |
| Rev 2 | Draft – with AECOM inputs | 14/04/2021 | JW | SB |
| Rev 3 | Draft - with MCD inputs | 8/11/2022 | СВ | MC |
| Rev 4 | MCD Updates post-SQIP and MCWF Review. | 23/02/2023 | СВ | MC |
| Rev 5 | Post CLG comments for HDC submission | 22/03/2023 | MC | GG |

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1. Introduction

This Dust Management Plan (DMP) has been prepared to support the Construction Management Plan and the resource consents required for the construction of the Mt Cass Wind Farm (the Project) at Mt Cass, near Waipara in North Canterbury.

This DMP will also act as a guidance document for the site construction contractors to ensure the effective mitigation of dust generated by the Project.

1.1 Project Description

New Zealand is projected to need around 1,000 new wind turbines generating 3,390 megawatts (MW) of power to meet 2050 energy demands. The Project will make a positive contribution towards this goal, providing 22 wind turbines constructed along the 7.5-kilometre ridge on Mt Cass, producing 94 MW of power along with increasing supply resilience to the South Island's electricity supply while offsetting around 100,000 tonnes of CO2 emissions per year. The wind farm will have a net gain in biodiversity through the protection of 127 Hectares of predominantly native shrubland and forest and will include a proposed extension of the Mount Cass walkway.

The Site is located on Mt Cass, east of Waipara in North Canterbury, with the nearest city, Christchurch, approximately 50 km southwest of the site. The site lies within the territorial authority jurisdiction of Hurunui District Council (HDC) and Canterbury Regional Council (ECan). The Wind Farm will be constructed along the top of a topographic ridge which extends approximately 7 km in a northeasterly direction and comprises three dominant peaks; Mt Cass (524 m above sea level), Totara (557 m), and Oldham (496 m). Almost the entire ridge stands above the 500m contour. The Project will see 22 turbines constructed along the 7.5-kilometre ridge on Mt Cass. The project location is identified in Figure 1.

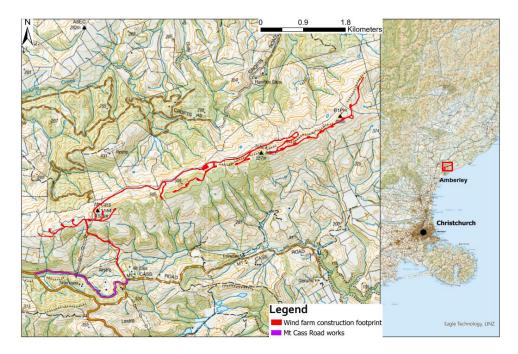


Figure 1 Mt Cass Wind Farm location

1.2 Purpose and Objectives

The purpose of this DMP is to:

- Provide a framework for managing dust management for the site during construction of the Project.
- Outline the consent conditions related to dust management at the site.
- Provide a source document for relevant procedures and reference documents to inform project personnel.
- Document the methods used to monitor and manage dust.
- Document the methods for managing complaints and keeping records related to compliance, and
- Document the responsibilities and reporting framework for dust management at the site.

The objective of this DMP is to:

- Detail the dust monitoring and mitigation measures which will be implemented on the site to reduce impacts on the receiving environment.
- Provide a safe workplace where visibility is not impaired by dust, and
- Ensure compliance with the Canterbury Air Regional Plan 2017 (CARP), specifically:
 - The discharge of odour, dust or smoke into air does not cause or is not likely to cause an adverse effect beyond the boundary of the property of origin, and
 - The discharge does not cause an offensive or objectionable effect beyond the boundary of the property of origin when dust/odour generating activities onsite are managed and mitigated in accordance with Schedule 2 outlined in CARP.

1.3 Resource Consent Conditions

The consent conditions relevant to the Dust Management are summarised in the tables below:

| Condition Number | Requirement | Control for Condition |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| 35. | Implementation of mitigation measures – Construction Phase: There shall be no objectionable or offensive dispersal or deposition of dust beyond the boundary of the site. | This Plan Section 2.4 & 3.6 |
| 63. | Construction traffic - e. ii) The provision for dust suppression, if necessary, on the routes used for the transport of goods to the site so that safe stopping sight distance is maintained at all times. | |
| 154 | The Consent Holder shall maintain and keep a Complaints Register for any complaints about the construction activities and operation of the wind farm received by the Consent Holder including complaints in relation to traffic, noise, dust, shadow flicker or blade glint. The Register shall record, where this information is available: The date, time and duration of the incident that has resulted in a complaint; The location of the complainant when the incident was detected; The possible cause of the incident; Any corrective action undertaken by the Consent Holder in response to the complaint, including timing of that corrective action; The date and details of the response given to each complainant. The Complaints Register shall be available to the Council and the Community Liaison Group at all reasonable times upon request. | Appendix A of CMP Section ComplaintsC of this plan |

| ECan Consent CRC214153 and CRC214154 | | | |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--|
| Condition Number | Requirement | Control for Condition | |
| 1 | Limit: The discharge shall be only fugitive dust from the handling and outdoor storage of bulk solid materials associated with a temporary concrete batching plant required for the construction of the Mt Cass Wind Farm located at Mt Cass, Waipara, within the area identified as 'construction footprint' as shown on Plan CRC214153A and CRC214154A, attached to and forming part of this resource consent. | Section 3.4 | |
| 2. | Limit: The discharge of particulate matter shall not give rise to effects that are noxious, dangerous, offensive or objectionable beyond the boundary of the construction footprint as shown on Plan CRC214153A and CRC214153A. | | |
| 3. | Prior to the commencement of construction works at the site, the consent holder must prepare and implement a Dust Management Plan. The Dust Management Plan must be retained onsite at all times. | | |
| 4. | The exercise of this consent must be undertaken in accordance with the Dust Management Plan. In the event of inconsistency between the conditions of this consent and the provisions of the Dust Management Plan, then the conditions of this consent must prevail. | | |
| 5. | The purpose of the Dust Management Plan is to identify and implement the best practicable option (BPO) for avoiding and minimising the release of particulate matter beyond the boundary of the site, and to provide detail on how the conditions of this resource consent will be complied with. | | |
| 6. | Prior to submitting the Dust Management Plan to the Canterbury Regional Council Attention -Regional Leader Monitoring and Compliance, the Consent Holder must have the DMP reviewed by a Suitably Qualified and Experienced Practitioner (SQEP) in air quality to confirm that the measures proposed in the Dust Management Plan are appropriate to achieve compliance with condition (2) of this resource consent. | | |
| 7. | The Dust Management Plan shall include but not be limited to: | This Plan | |
| | A description of the activities that will result in the discharge of contaminants into air; | Section 2.1 & 3.4 | |
| | A description of how often the contaminants will be discharged; | Section 2.2 | |
| | A description of the location of the discharge, including a description of the activities that occur on neighbouring properties | Section 2.4 & 3.4 | |

| Condition | Requirement | Control for |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Number | Nequirement | Condition |
| 1 | Limit: The discharge shall be only fugitive dust from the handling and outdoor storage of bulk solid materials associated with a temporary concrete batching plant required for the construction of the Mt Cass Wind Farm located at Mt Cass, Waipara, within the area identified as 'construction footprint' as shown on Plan CRC214153A and CRC214154A, attached to and forming part of this resource consent. | Section 3.4 |
| | An explanation as to how any adverse effects on sites that are sensitive to Ngai Tahu, such as statutory acknowledgement areas, silent file areas or wāhi tapu or wāhi taonga are to be managed; | Section 2.4 |
| | A description of the management practices being implemented to minimise the discharge or the effects of the discharge of contaminants to ensure compliance with this consent; | Section 3.4 & 3.6 |
| | Identification and contact details of the persons responsible for carrying out all actions in relation to meeting the requirements of this consent; | Section 3.1& 3.2 |
| | A system of training for employees and contractors to make them aware of the requirements of the DMP; | Section 3.3 |
| | A method for recording and responding to complaints from the public; | Section 0 |
| | Procedures for managing dust when staff are not on site. | Section 0, 4.1, 4.3, 4.4 |
| 8. | The Dust Management Plan shall be provided to Canterbury Regional Council on request. The Dust Management Plan may be amended at any time. Any amendments shall be: Only for the purpose of improving the efficacy of the dust control measures and shall not result in reduced discharge quality; and | Section 4.40 |
| | Consistent with the conditions of this resource consent. | |
| 9. | The Consent Holder shall use the best practicable options at all times to ensure compliance with condition (2). These measures shall include but not be limited to: | Section 3.4 |

| Condition | Requirement | Control for |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Number | Requirement | Condition |
| 1 | Limit: The discharge shall be only fugitive dust from the handling and outdoor storage of bulk solid materials associated with a temporary concrete batching plant required for the construction of the Mt Cass Wind Farm located at Mt Cass, Waipara, within the area identified as 'construction footprint' as shown on Plan CRC214153A and CRC214154A, attached to and forming part of this resource consent. | Section 3.4 |
| | A water truck which shall be available and used as necessary to wet down haul roads and other areas of operation as required; Sealing of access road shown as 'sealed access' on Plan CRC214153A as soon as practicable. The sealed portion of access road shall be regularly maintained such that it does not result in the production of dust; Constructing and maintaining any unsealed access roads so they are comprised of an aggregate base with surfaces that are graded and free of potholes; A speed limit of 40 kilometres per hour, which shall be maintained for all vehicles on the Southern Access Road from the Mt Cass Road access to the Ridgeline; Locate stockpiles in locations to maximise wind sheltering as much as possible; Minimising drop heights during earthworks and movement of materials; Stabilisation of exposed areas not required for construction, access or parking along with completed fill and spoil areas as soon as practicable; Assessing weather and ground conditions (wind and dryness) at the start of each day and ensure that applicable dust mitigation measures and methods are ready for use prior to commencing construction activities; Limiting exposed surfaces as far as practicable; Placing a rumble strip and/or wheel wash on the site access road to assist in removing muddy material from vehicle wheels before they exit the site during construction; Keeping exposed surfaces damp during dry windy weather conditions; Heavy vehicles with fine material shall cover their loads; Undertaking routine site inspections of visible dust emissions each day; Completing regular inspections of stockpiles to check temporary bunds and | This is Mt Cass Rd |
| 10. | confirm that dust controls are functioning and effective. The consent holder shall maintain a record of the site inspections required by condition (9)(m) and (n). Copies of this record shall be provided to the | Section 3.5.2 |

| ECan Consent CRC214153 and CRC214154 | | | |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--|
| Condition Number | Requirement | Control for Condition | |
| 1 | Limit: The discharge shall be only fugitive dust from the handling and outdoor storage of bulk solid materials associated with a temporary concrete batching plant required for the construction of the Mt Cass Wind Farm located at Mt Cass, Waipara, within the area identified as 'construction footprint' as shown on Plan CRC214153A and CRC214154A, attached to and forming part of this resource consent. | Section 3.4 | |
| 11. | A record of any complaints relating to dust shall be maintained and provided to Canterbury Regional Council on request. The record of complaints shall include: a. The location where the particulate matter was detected by the complainant; b. The date and time when the particulate matter was detected; c. A description of the wind speed and wind direction when the particulate matter was detected by the complainant; d. The most likely cause of the particulate matter detected; and e. Any corrective action undertaken by the consent holder to avoid, remedy or mitigate the particulate matter identified by the complainant. | Section 3.5.1 | |

2. Air Quality Impact on Surrounding Environment

2.1 Potential Dust Sources

The construction of the Project will involve the following key activities:

- Construction of access road and hard stands
- Construction and operation of a concrete batching plant
- Construction of turbine foundations
- Erection of wind turbines
- Earthworks
- Aggregate stockpiling for access track pavement and concrete production.
- Crushing and screening of rock
- Cement stabilisation of steep sections of the access track
- Mt Cass Road Upgrade
- Erosion and sediment controls
- Stormwater
- Electrical ducting

Dust emissions are anticipated to occur through the production and use of shingle roads as well as from the rock crushing activities which are anticipated to occur onsite and storage of crushed rock product. Dust will also occur from storage and movement of concreting aggregates. A summary of the Project construction operations which could result in dust emissions are as follows:

- Earthworks activities
- Transportation of project materials such as:
 - o On-site cut materials.
 - o Clean gravels or filter materials from local quarries; and,
 - o General fill from cut locations
 - Spoil to disposal sites
- Loading on-site cut materials to trucks
- Unloading of the above materials
- Stockpiling of the above materials
- The land disturbance associated with the construction of site amenities and buildings including:
 - o Site offices, storage areas and workshops
 - o Concrete batching plant and aggregate storage areas
 - Energy substation buildings and switchyard
- Construction for active turbine sites including:
 - o Construction of working platforms/foundations at each turbine site
 - Laying of underground cables between the turbine sites and the substation.
- Upgrade of Mt Cass Road
- Preparation of disposal sites and laydown areas
- Movement of materials into and out of laydown areas.

- Movement of spoil to and within disposal sites
- Rehabilitation of laydown areas and disposal sites
- Wheel generated dust on unsealed roads/ surfaces
- Trenching activities.

2.2 Hours of Construction

The construction of the project is expected to take between approximately 12 and 18 months to complete. Works would primarily be undertaken between the standard working hours of 7 am to 7 pm during weekdays and Saturdays 7am – 5pm. However, there is the potential for some night works to occur, on an as needed basis.

2.3 Meteorology

Wind speed and direction was monitored at 11m above ground level at a location on the Mt Cass summit ridgeline between May 2005 and September 2006. A wind rose for the data collected during this period is presented in Figure 2. Winds are primarily from the north and north-west, with slightly less frequent north-east, south-west and southeast winds also occurring. Due to the location at the top of the ridgeline, average winds speeds are high (8.0 m/s or 29 km/hr) with winds above 9.0 m/s (32 km/hr) occurring about 37 % of the time. The highest wind speeds measured were about 30 m/s (108 km/hr). These high winds are likely to generate more dust emissions for construction works located along the ridgeline compared with activities lower down the mountain (e.g., traffic movement on the access road).

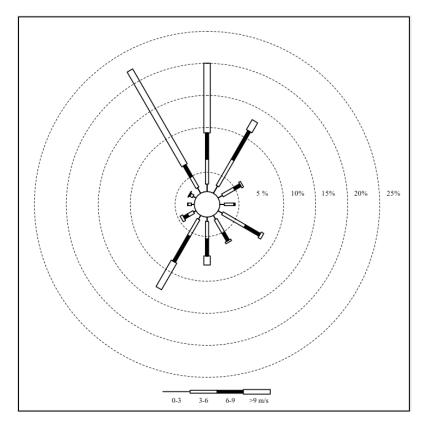


Figure 2 Wind rose for Mt Cass summit wind measurements 2005-2006 (Source: MainPower)

Wind speed and direction are monitored at the nearby NIWA-operated Waipara West station, located about 13 kilometres to the west of the project. Wind speed and direction data for the period 2015 to 2019 is presented in Figure 3 (all hours) Figure 4 (by season). The wind speeds measured at Waipara West are likely to be more representative of conditions at lower elevations – i.e., where sensitive receptors are located – and are therefore included for comparison.

The Waipara West station is situated in a valley running east west and as such displays a high frequency of westerly winds, especially during autumn and winter. The strongest winds (up to a maximum of about 19 m/s or 68 km/hr) are from the northwest and can occur during any season.

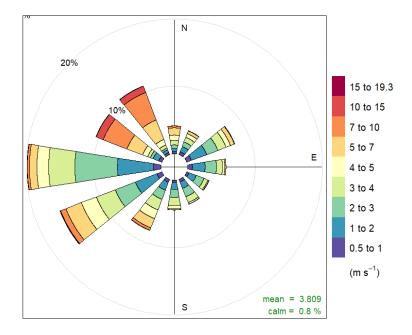


Figure 3 Annual Wind rose for Waipara West – 2015 to 2019

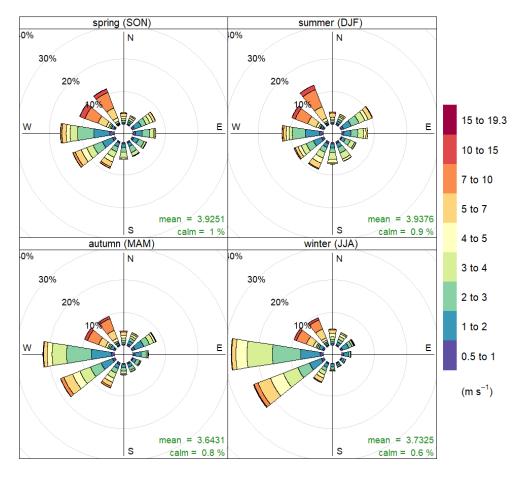


Figure 4 Seasonal Wind Roses for Waipara West – 2015 to 2019

2.4 Receiving Environment

2.4.1 Sensitive Receptors

It has been identified that there are no previously recorded Wāhi Taonga, Wāhi Tapu/Urupā or Ngāi Tahu Silent Files within the Project site nor is the proposal in a Statutory Acknowledgement Area.

From an amenity perspective, dust emissions from Project construction activities would typically impact locations within about 500 m of where the construction activities are undertaken. This is due to the larger size fraction of particles (TSP and PM10) that result from mechanical disturbance of materials, which fall out of suspension in the air relatively quickly. Smaller particles (PM2.5) may travel considerably further, however emissions of PM2.5, which are typically formed by combustion processes or from sea salt are not expected in large quantities for the Project and would disperse to very low concentrations beyond 500m of the site.

As a conservative measure, receptors within about three kilometres have been identified for inclusion in the assessment. The risk of dust impacts at any of the receptors beyond 500 m, however, is very low.

The nearest potentially affected sensitive receptors relative to the Project construction footprint and 500 m buffer are shown in Table 1 and presented graphically in **Error! Reference source not found.** The WTG construction laydown yard receptor details including name, relative elevation and distance to the Project's construction footprint are summarised in Table 2 and shown graphically in Figure 6.

| Receptor ID | Name | Elevation Difference from Nearest Construction Footprint (m) | Distance from Construction Footprint (m) |
|----------------|----------------|-----------------------------------------------------------------|---------------------------------------------|
| 1 | Hamilton Glens | 300 | 1,400 |
| 2 | Dovedale | 370 | 1,800 |
| 3 | The Wattles | 370 | 2,000 |
| 4 | Tiromoana | 20 | 120 |
| 5 | Simmonds | 320 | 1,800 |
| 6 | Glenafric | 440 | 2,900 |

Table 1 Identified sensitive receptors in relation to construction footprint and 500m buffer, laydown areas and disposal sites

Table notes: 1. Elevation difference compared with the southern end of the access road.

2. Information sourced from AQIA (pg. 9, section 5.3), which was submitted with the original resource consent application.

| Receptor ID | Address | Building type/ comments | Distance from Construction Footprint (m) |
|----------------|----------------|-------------------------|---------------------------------------------|
| 7& | 23 Symonds Rd | Dwelling | 65m |
| 8 | 47 Symonds Rd | Dwelling | 145m |
| 9 | n/a | Waipara River | 300m |
| 10 | 133 Mt Cass Rd | Dwelling | 630m |

Table 2 Identified Sensitive Receptors within 1km of the WTG Laydown Area

Information within table sourced from Google Earth

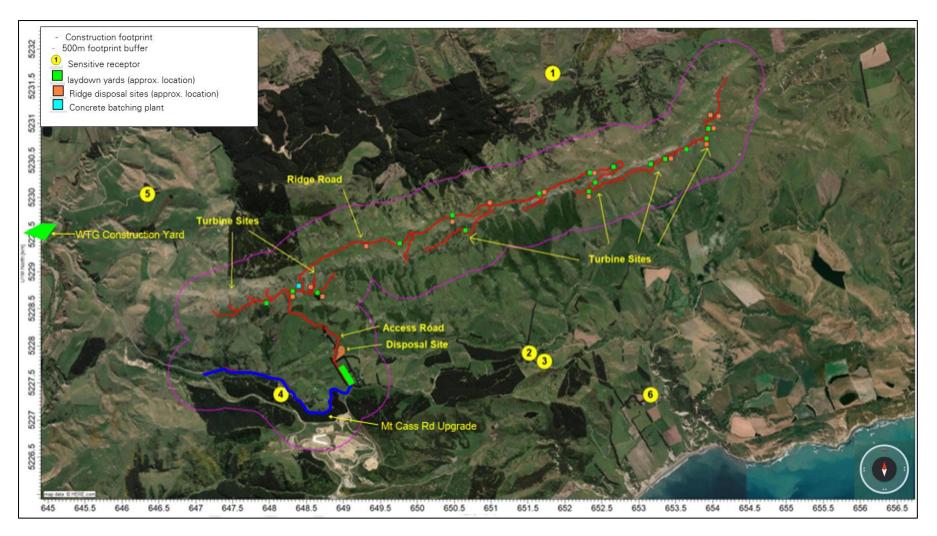


Figure 5 Sensitive receptor locations in relation to construction footprint and 500m buffer, laydown areas and disposal s



Figure 6 Sensitive Receptor Locations Within 1km of the WTG Laydown Yard

3. Implementation and Operation

3.1 Key Project Personnel

Key personnel for the Project are presented in Table 3.

Note: All Roles marked 'TBC' in Name section are still to be recruited. This will be achieved prior to construction.

| Consent Holder | – Mt Cass Wir | ndfarm Ltd | | |
|----------------------------------------------|--------------------------------|---------------------|---------------|----------------------------------|
| Role | Company | Name | Phone | Email |
| Project Director | MCWFL | Greg Gummer | 021 738 995 | greg.gummer@mainpower.co.nz |
| Construction Manager - Primary Contact | MCWFL | ТВС | | |
| Secondary Contact (Civils) | MCWFL | Michael Carstens | 027 247 1713 | michael.carstens@mainpower.co.nz |
| Secondary Contact (Electrical) | MCWFL | Neil Wiggins | 021 027 33133 | neil.wiggins@mainpower.co.nz |
| Senior Project Coordinator | MCWFL | Lisa Yuyi | 021 779 380 | lisa.yuyi@mainpower.co.nz |
| Council Represe | entatives | | | |
| Compliance Officer | Hurunui District Council | ТВС | | |
| Compliance Officer | Environment Canterbury | ТВС | | |
| cBoP – McConn | el Dowel Cons | tructors | | |
| Role | Company | Name | Phone | Email |
| Project Manager | MCD | Phil Owen | 021 638 726 | Phil.owen@mcdgroup.com |
| Construction Manager | MCD | David Kidd | 027 703 9803 | David.kidd@mcdgroup.com |
| Site Manager | MCD | ТВС | | |
| HSEQ Manager | MCD | Clint Hill | 027 702 8309 | Clint.hill@mcdgroup.com |
| Project Environmental Advisor | MCD | Caitlin Burns | 021 759 938 | caitlin.burns@mcdgroup.co.nz |

| Foreman (Environmental) | MCD | ТВС | | |
|----------------------------|-----------------------|----------------------|--------------|----------------------------|
| Earthworks Manager | Taylor Contracting | Shannon Proctor | 021 501 894 | shannon@taycon.co.nz |
| Batching Plant Manager | Firth | Mark Cresswell | 027 477 6958 | mark.cresswell@firth.co.nz |
| eBoP – ElectroN | et | | | |
| Role | Company | Name | Phone | Email |
| Project Manager | ElectroNet | Matt Daffin | 027 586 9102 | MDaffin@electronet.co.nz |
| Environmental Advisor | Electronet | Sandy Keown Scott | 027 235 4021 | sandyk@electronet.co.nz |
| S&I Contractor - | SGRE | | | |
| Role | Company | Name | Phone | Email |
| Project Manager | | ТВС | | |
| Environmental | | ТВС | | |

Table 3 Key Contacts List

3.2 Structure and Responsibility

Mt Cass Wind Farm (MCWF) is the holder of the consent for the site and has the ultimate responsibility to ensure that all statutory requirements and conditions of consent are complied with, and site activities are carried out in accordance with the DMP. Table 4 contains the roles and responsibilities applicable to this DMP.

| Role | Role Responsibilities |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCWFL Project Director | To ensure overall compliance with resource consent conditions; |
| MCWFL Project Contract Manager | To ensure complaints made to or by HDC or ECan are communicated to the Site Manager for investigation and rectification; To ensure any Total Suspended Particle (TSP) monitoring is completed by a Suitably Qualified and Experienced Practitioner (SQEP); and To ensure the DMP is current and reviewed. Is the primary point of contact as required under the resource consent. |
| All Contractor Project Managers | To ensure that all their staff are properly trained and understand the requirements of the DMP. |

| | To ensure that the dust control and mitigation measures and procedures outlined in the DMP are implemented effectively. |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | To ensure that the conditions of the resource consent for discharges to air are always complied with. |
| | To ensure that the dust monitoring programme is carried out as required. |
| | To ensure that complaints are investigated as outlined in the DMP. |
| | To ensure that dust emissions are avoided and mitigated as far as is practicable; |
| | To ensure there are adequate personnel and equipment on site at all times to enable the dust control and mitigation measures outlined in the DMP to be implemented effectively, including in extreme weather events |
| STMS | Ensure that dust does not affect visibility on Mt Cass Rd |

Table 4 Roles and Responsibilities

All personnel on site are responsible to ensure that their activities comply with the requirements of the DMP.

3.3 Training

It is the responsibility of the Individual Contractors to implement an on-going training and induction programme for all contractors and staff. The purpose of this programme is to make all personnel working on site aware of and understand the purpose and requirements of the DMP and the resource consent conditions and the ramifications of a failure to comply with these requirements. With respect to dust management, the training programme for all personnel on site will include at least the following aspects:

- The responsibilities of all personnel for carrying out the work on site in a manner which does not result in adverse effects on the environment, local residents and in accordance with DMP;
- The potential legal ramifications of adverse environmental effects occurring as a result of the project and non-compliance with resource consent conditions;
- The minimum requirements for dust and odour control for all activities on site;
- The requirements for staff to monitor weather and visually inspect the site for dust discharges, assess the adequacy of dust control methods and implement additional dust control methods when required;
- The actions to be taken in an extreme dust and weather event; and
- The actions to be taken if a complaint is received from the public or consent authority.

3.4 Dust Controls and Sources

The dust prevention controls summarised in Table 5 shall be employed for the Project during construction.

| Source of Dust | Controls |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Access road (construction and vehicle use) | Compact all unconsolidated surfaces where practicable; Limit exposed surfaces as much as possible; Keep exposed surfaces damp in dry, windy weather conditions. Stabilise cleared areas not required for construction, access or for parking if liable to cause excessive dust during windy conditions. Methods may include grassing or the establishment of vegetative cover. Water Cart will be used to mitigate dust caused by construction and vehicle movements |
| Mt Cass Rd Upgrade | Dust will be controlled initially via implementing a TSL of 30 kph. A water cart will be used if dust becomes a visibility issue for road users. The road involves the widening and upgrade of Mt Cass Road sections of the road will be chip sealed as soon as practical. |
| Temporary Stockpiles | All material deposited in temporary stockpiles will be in areas specified by the contractor. Limit the height of uncovered stockpiles to reduce wind entrainment Stockpiles exceeding 3 m in height have a higher risk of discharging dust; Align stockpiles to maximise wind sheltering as much as possible; Maximise shelter from winds as far as practicable. Water Cart will be used on an as required basis |
| Cut to waste Stockpiles (located in disposal sites) | Cut to waste/spoil permeant stockpiles will be limited to 3m in height and stabilised by grassing or the establishment of vegetative cover as soon as practicable. Before grass seeding stockpiles will be capped by track rolling Any stockpile to remain in place for more than 4 consecutive weeks shall be seeded if intended to remain for more than 4 months. Water Cart will be used on an as required basis |
| Vehicles | Limit vehicle speeds to 40 km/hr through the works areas and along the southern access road. If dust is an issue, then this can be revised. Cover loads of fine materials; 2.5 micrometres in diameter (PM2.5 known as 'fine particles') or any materials where concern of dust is noted as a mitigation when required Minimise mud and dust tracked-out onto the surrounding road network by using wheel cleaning facilities at site exits to sealed roads; Switch engines off when not in use. |
| Earthworks (including Mt Cass Road realignment works) | Complete earthworks as per guidelines laid out in the Erosion and Sediment Control plan and any other relevant documentation. Stabilise exposed areas not required for construction, access or parking, along with completed fill and spoil areas as soon as practicable. Minimise the extent of surface disturbance. Limit drop heights. |

| Source of Dust | Controls |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Concrete Batching Plant | Cement will be handled in silos Cement delivery from tanker to silo to weighing truck is a sealed system. Aggregates will be washed prior to coming to the site as part of the concrete production process Sprinklers on sand stocks if required. Water carts on hard stand areas. Loading bays partially enclosed with dust extraction system at load point on main plant. |
| Miscellaneous | Take account of daily forecast wind speed, wind direction and soil conditions before commencing an operation that has a high dust potential. If dust cannot be controlled, works must stop until it is controlled. |

Table 5 Project specific dust mitigation controls

3.5 Complaints

3.5.1 Complaints Process

The Consent Holder shall establish and publicise contact details for a liaison officer, so that members of the local community have a specified and known point of contact should they wish to raise any issues that may arise during construction and operation of the wind farm. A logbook detailing all calls and any action taken shall be kept and made available to Hurunui District Council on request.

Detail MCWFL Complaints process:

- 1. Complaint issued via
 - a. Website https://www.mtcasswindfarm.co.nz/contact-us,
 - b. Phone 0800 309080 Greg Gummer Project Director / liaison officer
 - c. Direct engagement from site staff via contact details provided at the project notice board at the site entrance.
 - d. Hurunui District Council 03 314 8816
- 2. MCWFL direct complaint to the relevant contractor or address inhouse if operational
- 3. Record complaint on complaints register at noted in 3.5.2 below
- 4. Rectify issue
- 5. Provide feedback and closes out on register

3.5.2 Complaints Register

Complaints may be referred by one or more of the regulatory authorities, a member of the public or a member of the project team. It is the responsibility of the MCWF Construction Manager or suitably qualified personnel to respond to and follow up all complaints regarding dust. Actions to be taken when a complaint is received:

- Fill out a complaint form;
- Note the time, date, identity and contact details of complainant (if provided). Note if complaint has been referred from a consent authority;
- Record wind direction and strength and weather conditions;
- Record description of the dust emission from the complainant;
- Undertake a site inspection. Note all dust producing activities that have taken place, person responsible for the site and the dust mitigation methods used. Order any remedial action necessary;
- If complaint was related to an event in the recent past, (if possible) note any dust producing activities that were underway at that time;
- (Preferably within two hours) visit the area from where the complaint originated to ascertain if dust is still a problem;
- Immediately after the initial investigations have been completed, contact the complainant to explain any problems found and remedial actions taken;
- If necessary, update any relevant procedures to prevent any recurrence of problems; and
- Complete complaint form and file on complaint register.

The complaints register shall be available to the Council and the Community Liaison Group at all reasonable times upon request.

Within 5 days of receipt of any complaint in accordance with condition [155], the Consent Holder shall advise the Hurunui District Council of the details of any complaint received and, where appropriate, of any remedial or corrective action taken, including the response provided to the complainant.

A template of this register is available in Appendix A in the Construction Management Plan

3.6 Monitoring and Review

Due to the distance between the largest dust sources (earthworks on the Mt Cass ridgeline) and nearby sensitive receptors, dust impacts are unlikely. Based on this, specific instrumental dust monitoring is not required for the entirety of the project. However, for the first 6-months of the project, during which the predominant amount of earthworks will occur, instrumental dust monitoring will be carried out using Site Hive Units. An assessment will occur at the end of 6-months to decide if they are required for a longer period.

Visual dust monitoring shall be conducted across the main site and laydown areas daily throughout the entirety of the project. Visual monitoring activities will primarily be the responsibility of the Site Manager and are presented in Table 6. These will be recorded and available to the Canterbury Regional Council on request.

| Activity | Frequency |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Check weather forecast for high winds that may blow dust towards the nearest receptors. Plan appropriate dust management responses to be discussed in the morning toolbox meeting. | Daily |
| Inspect land adjacent to the site for signs of dust deposition. | Weekly |
| Inspect stockpiles daily to check temporary bunds, height and alignment. | Daily |
| Inspect site entrance to ensure minimal dust track out onto public roads | Daily |
| Maintain a visual monitoring log in the site environmental diary. | Daily |
| Weekly environmental site check of controls for dust, sediment and erosion noise and any other relevant environmental controls used on site. | Weekly |

Table 6 Project Specific Visual Dust Monitoring Activities

4. Reporting

4.1 MCWF Construction Manager to Relevant Contractors Project Manager:

MCWFL shall report the following to personnel involved in site operations:

• Advice of any complaints regarding dust and/or odour received during previous works,.

4.2 Contractor to MCWF Construction Manager

• Report any complaints back to MCFW Construction Manager.

4.3 Construction Manager to ECan Compliance Officer

MCWF shall report the following to ECan:

- Advice of any complaints received regarding dust and/or odour as soon as practicable after a complaint is received.
- A copy of the DMP 30 working days prior to commencement on site and if any significant revisions of the DMP are made during the year.

4.4 ECan Compliance Officer to MCWF Construction Manager

ECan to advise MCWF of any complaints they receive regarding dust and/or odour from the site as soon as practicable after a complaint has been lodged.

4.5 Amendments

The DMP will be reviewed and updated, with the necessary approval, throughout the course of the Project to reflect changes in construction techniques, staging or the natural environment. Approval from ECan will be required for any relevant revisions of a material nature for the DMP. The review will take into consideration:

- Any significant changes to construction activities or methods;
- Key changes to roles and responsibilities within the Project;
- Changes in industry best practice standards or recommended dust controls;
- Changes in legal or other requirements (social and environmental legal requirements, consent conditions, Transport Agency objectives and relevant policies, plans, standards, specifications and guidelines);
- Results of inspection and maintenance programmes, logs of incidents, corrective actions, internal or external assessments; and
- The outcome of investigations into discharges of dust and/or odour.

Reasons for making changes to the DMP will be documented. A copy of the original DMP document and subsequent versions will be kept for the Project records and marked as obsolete. Each new/updated version of the DMP documentation will be issued with a version number and date to eliminate obsolete DMP documentation being used. Appendix F

B3 Hazardous Substance Management Plan



Mt Cass Wind Farm Hazardous Substance Management Plan



Revision 5 – 22 March 2023

This document has been prepared for the benefit of Mt Cass Wind Farm Ltd (MCWF). No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person. This disclaimer shall apply notwithstanding that the report may be made available to other persons of an application for permission or approval to fulfil a legal requirement.

Revision History

| Version | Description | Date | Prepared by | Approved By |
|---------|------------------------------------------|-------------|-------------|-------------|
| Rev 1 | Draft | 03 Mar 21 | HW | SB |
| Rev 2 | Draft | 19 Apr 21 | NT, HL | SB |
| Rev 3 | MCD Inputs | 1 Dec 22 | СВ | MC |
| Rev 4 | MCD Updates post-SQIP and MCWF Review | 23 Dec 23 | СВ | MC |
| Rev 5 | Post CLG review and Submission to HDC | 22 Mar 2023 | MC | GG |

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1. Introduction

1.1 Purpose

This plan has been prepared to support the Construction Management Plan (CMP), inform people involved in the Mt Cass Wind Farm project how to control and manage Hazardous Substances and to comply to the requirements of the resource consent and any other regulatory requirements during the construction phase of the wind farm. For an overview of the project refer to the CMP.

1.2 Overview

The Hazardous Substance Management Plan is the primary responsibility of the MCWF Construction Manager who is responsible for ensuring that this plan is in place and communicated to the individual contractors delivering the project. For a Mt Cass Wind Farm project overview refer to the CMP.

The plan sets out Hazardous Substance risks and associated management processes to mitigate the identified Project risks.

During construction, each Contractor will be responsible for ensuring that this plan is correctly implemented and will review all documentation relating to this plan before it is finalised and issued.

Site induction for all personnel must include a briefing on this plan including the main content of this plan and any SOP's relevant to the task being performed.

2. Consent Conditions

Appendix C of the Construction Management Plan includes a matrix of all consent conditions that are included in the Construction Management Plan and Subplans. The following are the specific conditions that pertain this plan:

| HDC Consent Conditions | Control for Consent Conditions |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Construction Management Plan | |
| 32) The Construction Management Plan shall include, but not be limited to: | |
| r. Spill contingency measures and procedures for the management of hazardous substances. | Section 4 and Appendix C of this plan. |
| Hazardous Substances Management | |
| 112) The Consent Holder shall ensure that all contaminant storage shall be bunded or contained in such a manner so as to prevent the discharge of contaminants. All contaminant storage areas with the exception of turbines and transformers are to be located in accordance with MWH plan 21357201- C103. | Section 4 and Appendix C of this plan. |
| 113) Site refuelling shall be controlled by the development of operating procedures to minimise the risk of spills.Those procedures shall be incorporated in a Site Oil Spill Contingency Plan for mobile refuelling which shall be submitted to the Hurunui District Council for certification.This plan shall address: | Appendix C |
| a. Purpose and Policy b. Safety c. Description of the wind farm site d. Characteristics of oils and hydrocarbons used at the site e. Potential spill sources and risks f. Preventative measures g. Training h. Spill response organisation i. Equipment and operators j. Equipment available off site k. Immediate response l. Media releases m. Debriefing n. Points to consider o. Document review p. Appendix 1 : Telephone numbers q. Appendix 2 : Pollution Report and Incident Forms r. Appendix 3 : Safety Data Sheets | |

| - | machinery and plant shall be regularly maintained | Appendix D – Plant Management |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| in such | a manner so as to minimise the potential for | |
| leakage | of contaminants. | |
| | | |
| 115) Sp | ill kits shall be available on site to deal with any | Section 3.6 |
| acciden | tal spillage beyond the bunded area. | |
| | | |
| 116) All | contaminants (e.g. fuel, hydraulic oils, lubricants | Section 3.1 |
| etc) sha | Il be removed at the end of the construction | |
| period | except for those required for ongoing maintenance | |
| of the v | vind farm and operational activities. | |
| | | |
| 117) All | storage and use of hazardous substances shall be in | Section 3 |
| accorda | nce with the provisions of the Hazardous | |
| Substar | ces and New Organisms Act 1996 (HSNO), including | |
| complia | nce with any required emergency management | |
| - | e test location certificate, and stationary container | |
| test cer | | |
| | | |
| 118) An | y transformer erected on site shall be accompanied | Section 3.1 |
| | , tainment measures sufficient to ensure that no | |
| | mer oil will be released into the environment in the | |
| | f spillage. | |
| evento | i spindge. | |
| ECan (| Consent Conditions for CRC214150, | Control for Consent Conditions |
| | | |
| CRC21 | 4151, CRC214152 | |
| | | |
| 31 38 8 | 38 respectively) During works the Consent Holder | Appendix B & C |
| | 38 respectively) During works the Consent Holder | Appendix B & C |
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| 32, 39 & 39 respectively) The Consent Holder shall immediately inform the Incident Response at the Canterbury Regional Council of a leak or spill on land that is greater than 10 litres or a spill of any size that enters surface water. Within 24 hours of the spill the Consent Holder shall provide the Regional Leader – Monitoring and Compliance with the following information: a. The date, time, location and estimated volume of the spill; b. The cause of the spill; c. The type of contaminant(s) spilled; d. Observations and photos of any spilt material once it enters the aquatic environment; e. Clean up procedures undertaken; f. Details of the steps taken to control and remediate the effects of the spill on the receiving environment; g. An assessment of the potential ecological effects of the spill; and h. Measures to be undertaken to prevent a recurrence. | r | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------|----------------|
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3. General Hazardous Substance Control Measures

3.1 Key Principles and Approaches

Hazardous Substance control measures will be set up to minimise the extent of spills yielded from the Project site during construction.

All Hazardous Substance control measures will be fully established within each construction area before physical works commence in that area. Removal of the Hazardous Substance control devices and reinstatement of the area on completion of the works will also form part of the civil works component of the project.

All contaminants (e.g., fuel, hydraulic oils, lubricants etc) will be removed at the end of the construction period except for those required for ongoing maintenance of the wind farm and operational activities.

3.2 Safety Data Sheets (SDS)

A file of SDS's pertaining to common chemicals used on the construction site is held in hard copy in a file by the contractor on site at an easy to find location at the construction camp and is identified by a sign stating SDS as well as the maximum quantity stored onsite, the location and any specific storage or segregation conditions that may be required. An electronic file will also be held to allow printing of SDS so that they can be incorporated into work packs and issued to staff.

3.3 Hazardous Substance Register

Any new chemicals brought on to the site shall be identified to the site safety officer and a copy of the corresponding SDS shall be provided and filed. All Chemicals on site must be recorded on the Hazardous Substance Register. This will be store both online and in hard copy in the main site office. MCWFL will be responsible for ensuring that all contractors maintain this register.

3.4 Use of Hazardous Substances

A risk assessment conducted to ensure the safety of personnel who may use the substance and employees using hazardous substances shall be given information, instruction, supervision, or training in the:

- Identification, properties and potential hazards of dangerous substances including access to Specification Data Sheets (SDS)
- Correct use, fitting and storage of personal protective equipment
- Correct procedures for safe storage and handling of hazardous substances including any prescribed exposure standard.
- Emergency procedures in case of a spill, leak, fire or explosion

3.5 Storage

All contaminant storage shall be bunded or contained in such a manner so as to prevent the discharge of contaminants, this will mitigate the risk of discharges of hazardous substances or fuels/lubricants into watercourses or stormwater. All contaminant storage areas with the exception of turbines and transformers, are to be located in accordance with Appendix A for this plan. These areas have been chosen as they are flat hardstand areas, which have been nominated for construction laydown. Fuel spillage kits will be on-site in case of a fuel spillage emergency.

Storage of fuels and chemicals on site will be kept to a minimum, however any fuels and or chemicals stored on site shall be stored in a manner to prevent and contain spills. All containers used shall be clearly marked and approved for the specific use.

Should a diesel fuel tank be required on site it would be located within a plastic lined bunded area which will be able to contain 1.2 times the capacity of the stored fuel. A mobile spill kit shall be located near the fuel area to deal with any spills outside of the bunded area. Where practical, temporary refuelling locations for mobile equipment will be located at hard stand areas (i.e. Compacted roads or laydown area) or batching plant to minimise the number of locations where potential spills could take place.

Petrol shall be stored in jerry cans and placed in a bunded area or inside a suitably sized container if being transported across the site. When not in use, petrol is to be stored in a appropriate container. Funnels or extended nozzles shall be used to minimise fuel spillage when fuelling equipment.

3.6 Spill Kits

240L Oil Spill kits will be stored in the below areas:

- At site laydown areas with Hazardous Storage.
- At each designated refuelling site.
- Accessible within 20 m of any stationary equipment that stores fuel.
- Work areas where a spill risk is present.

Where chemicals are brought to site, suitable 100L chemical spill kits will be placed next to storage locations.

4. Specific Hazardous Substance Control Measures

4.1 Maintenance of machinery and equipment

All machinery and equipment brought to the site is to be inspected prior to use to identify any maintenance issues which may result in spills of hazardous substances. Regular maintenance and inspections of machinery and equipment are to be undertaken to ensure any issues are identified and rectified quickly.

4.2 Site Refuelling procedure and Oil Spill Contingency Plan

A site refuelling procedure has been prepared for the site, which sets out the refuelling process, safety and environmental controls and what to do in the event of a spill. This is included in Appendix B.

An Oil Spill Contingency Plan has been prepared for the site, which sets out the measures to mitigate the risk of oil spills and the protocols to be followed in the event of a spill. This is included in Appendix C.

4.3 Oil for transformers

4.3.1 Oil for transformer at Substation

The amount of oil contained the transformer will be approximately 32,000 litres.

The transformer will sit within a concrete bund that is sized to contain 120% of the transformer oil volume. The bunded area will discharge to an oil-water interceptor sump which will be constructed below the bunded area to collect any spills and separate it from surface water run-off.

The oil-water separator will intercept small oil leaks from the transformer area and will discharge clean water to ground.

In the event of a major oil leak from the transformer the oil-water system has an automatic shut off which prevents further flow into the oil interceptor and will contain the oil within the bunded area. In this instance an alarm will be sent to Mt Cass Wind Farm maintenance staff.

4.3.2 Oil for transformer internal to each wind turbine

A transformer is required for each turbine. The transformers are oil filled and will be housed within the WTG towers that have a sealed base and can hold 110% of the transformer oil volume.

4.4 Explosives

No explosives are required for the Project construction.

4.5 Concrete Batching Plant

There is only one concrete batching location for this site. There are sinkholes at this site. These will be protected by silt fences and the concrete plant and earthworks will be sited to avoid the sinkholes.

4.5.1 Specific Management for Discharges

Wash Down water

To minimize the amount of wash down water, only the concrete truck chutes will be washed down between concrete loads. The required wash down water for this activity is small. Water will be added to the agitator bowl prior to the truck leaving site however the water is to be discharged back at the depot NOT on site.

The wash down water from the concrete truck chutes will be discharged into an interceptor system to control the discharge of contaminants to ground. The interceptor will take the form of a concrete lined pit fitted with a weir. The wash down water will flow over the weir into a second pit where the remaining cement particles will settle out naturally. The remaining water will be recycled for use in agitator bowl washing, chute washing and concrete production. Sludge and debris from the pit will be regularly removed.

Surplus Concrete

Surplus concrete will be controlled by discharging into 1m3 blocks at the concrete batching plant. These will be removed from site upon completion.

4.5.2 Storage of Materials

Cement

Cement will be stored in a horizontal cement silo.

Aggregates

Concrete floors will be poured to protect the natural ground from contamination of the aggregates. 3 stockpiles will be created on top of the concrete floor. The stockpiles will be contained using a temporary wall around three sides of the stockpile using 1m3 concrete blocks stacked to 3 high. The aggregates are moved from stockpile to the batching plant using front end loaders.

Concrete Additives

Concrete additives will be stored in a bunded area at the concrete batching site.

4.6 General

Covered waste bins will be provided at the main site office at the entrance to the site and at the various satellite smoko/Portacom offices throughout the site for collection of waste drums, oily rags, absorbent material, oil filters, grease cartridges etc.

Oily rags and used absorbents are to be bagged before being put into waste bins

All waste oil shall be removed from site.

5. Training – On-site Personnel

Site personnel will undertake a site induction which will educate them in

- Refuelling procedures
- Spill Response plan
- Storage requirements of chemicals on site
- Locations of SDS, spill kits and fire extinguishers

Personal carrying out refuelling using fuel trucks will have task specific training.

6. Roles and Responsibilities

Table 1 contains the roles and responsibilities applicable to this Hazardous Substance Plan. For contact details for below, contractors and landowners refer to Oil Spill Contingency Plan Appendix A

| Role | Role Responsibilities | | |
|------------------------------|--------------------------------------------------------------------------------------------------------|--|--|
| MCWFL Project Director | Reporting any spill event over 10l to HDC and ECan | | |
| MCWFL Construction Manager | For ensuring that this plan is communicated to the individual contractors and is implemented on-site. | | |
| | Is the primary point of contact as required under the resource consent. | | |
| Environmental Advisor | Reviewing and reporting on environmental performance. | | |
| | Inspection of works to assess environmental compliance with the plans. | | |
| Contractors Project Managers | Inspections, auditing and checking of environmental management practices and procedures. | | |
| | On-site compliance with consent conditions and other requirements and tracking compliance information. | | |
| | Report to the client changes to construction techniques or natural | | |
| | environmental changes which require alterations to existing consents or new resource consents. | | |
| | Prepare, review and update the Plan | | |
| | Update and maintain the environmental portion of the Project Risk Register. | | |
| | Training of all staff, including subcontractors. | | |
| Machine Operators | Are responsible for ensuring that the refueling protocols in this plan are followed. | | |
| | Reporting any incidents or accidents. | | |

Table 1 Key Roles

7. Emergency Response

The development of emergency response plans is discussed in section 8 of the CMP.

Appendix C of this plan contains an Oil Spill Contingency Plan

Up to date physical copies of SDS will be available in site offices and at any specific storage locations.

8. Monitoring and Maintenance During Construction

On-going site monitoring by the contractor and wider project team will be undertaken as part of the control measures. This will ensure that all the control measures detailed in this plan have been properly implemented and are functioning effectively.

Monitoring shall occur for the full duration of the work. Any control measures requiring maintenance or adaptation to allow construction tasks to occur shall be identified and implemented by the Environmental Manager to ensure continual compliance. Key role responsibilities are identified in the following:

Procedure: Monitoring will be undertaken based on the elements and frequencies Table 2 will involve recording notes relating to each inspection and associated corrective actions.

| Element Inspected | Frequency | Inspection details |
|------------------------------------------|------------------------------------------|----------------------------------|
| Plant Condition | Daily | Daily Prestart Inspection |
| Fire Extinguishers | 6 Monthly | Pressure Test |
| Spill Kit | Weekly | Spill Kits Inventory |
| HASNO Register | Monthly | Quantities and correct chemicals |
| SDS | Monthly | Relevant SDS on site |
| Compliance with the refuelling procedure | Weekly | Weekly Site Inspection |
| Compliance with this plan | Monthly | Site Audit |
| Spill Response | 6 Monthly | Spill response Drill |
| Emergency Response | At start of project and then Annually | Emergency Evacuation Drill |

Table 2 Compliance Monitoring Requirements

9. Complaints

9.1 Complaints Process

The Consent Holder shall establish and publicise contact details for a liaison officer, so that members of the local community have a specified and known point of contact should they wish to raise any issues that may arise during construction and operation of the wind farm. A logbook detailing all calls and any action taken shall be kept and made available to Hurunui District Council on request.

Detail MCWFL Complaints process

- 1. Complaint issued via
 - a. Website https://www.mtcasswindfarm.co.nz/contact-us,
 - b. Phone 0800 309080 Greg Gummer Project Director / liaison officer
 - c. Direct engagement from site staff via contact details provided at the project notice board at the site entrance.
 - d. Hurunui District Council 03 314 8816
- 2. MCWFL direct complaint to the relevant contractor or address inhouse if operational
- 3. Record complaint on complaints register at noted in 9.2 below
- 4. Rectify issue
- 5. Provide feedback and closes out on register

9.2 Complaint Register

A register for any complaints about the construction activities and operation of the wind farm received by the Consent Holder. The register shall record, where this information is available:

- The date, time and duration of the incident that has resulted in a complaint.
- The location of the complainant when the incident was detected.
- The possible cause of the incident.
- Any corrective action undertaken by the Consent Holder in response to the complaint, including timing of that corrective action.
- The date and details of the response given to each complainant.

The complaints register shall be available to the Council and the Community Liaison Group at all reasonable times upon request.

Within 5 days of receipt of any complaint in accordance with condition [0155], the Consent Holder shall advise the Hurunui District Council of the details of any complaint received and, where appropriate, of any remedial or corrective action taken, including the response provided to the complainant.

A template of this register is available in the Construction Management Plan in Appendix A.

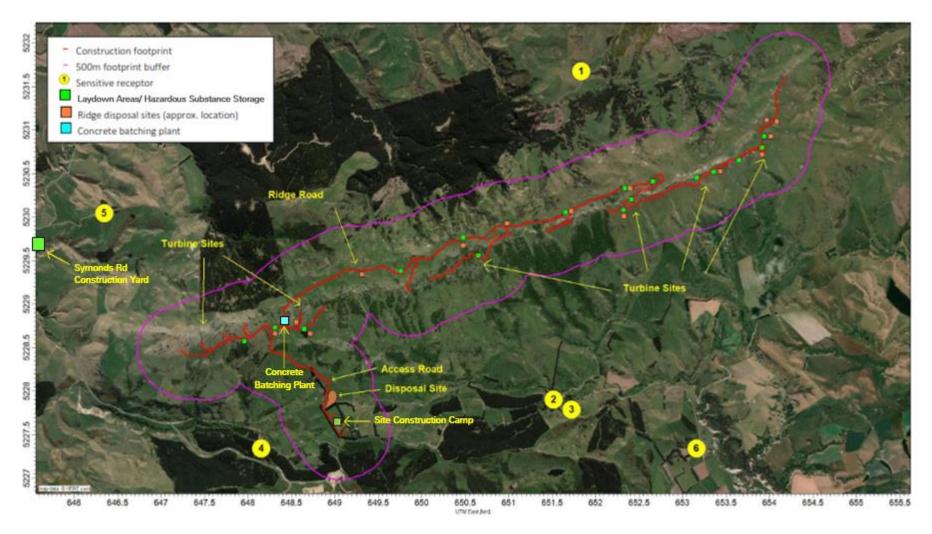
10. Appendices

| Appendix | Description |
|----------|----------------------------------------|
| А | Hazardous Substances Storage Locations |
| В | Site refuelling operating procedures |
| С | Site Oil Spill Contingency Plan |
| D | Incoming – Outgoing Plant Inspection |
| E | Contaminated Land Discovery Protocol |

APPENDIX A – Hazardous substances storage locations

Appendix A - Hazardous substances Storage Areas

There will be 3 main Hazaedous Substance Storage areas: The Site Construction Camp, Concrete Batching Plant and the Symmonds Road Construction Yard. The other storage areas will have temporary Hazardous Substance Storage which will used while construction of nearby turbines occur.



Mt Cass Wind Farm Refuelling Procedure

Context

All fuelling will be done using a 5000-litre fuel truck (owned and operated by the contractor) or minitankers to minimise the fuel volumes carried on-site at any anyone time. The tankers will travel through the site to fuel each piece of equipment which requires it. Where ever possible re-fuelling will be carried out in site laydown areas or other flat hardstands.

Where access is not possible with the fuel truck, plant will be filled by using trailer tankers or utes that have special fuel tanks on the deck.

Proper storage, maintenance and refuelling is important as;

- Improper storage or refuelling can lead to ground and water contamination and have negative environmental impacts.
- Spills and failure to follow maintenance procedures can delay the project and impact the environment.

Safety Controls

- Fuel Tank Operator (FTO) must be trained and competent for the refuelling role, must be inducted to site, and be able to enact the emergency response plan
- Flashing beacons and headlights must be on when on site. They must also wear the correct PPE for refuelling, safety glasses, impervious gloves and long sleeves and trousers to avoid skin contact, a hard hat, hi vest, and safety boots.
- The FTO must carry radio telephone and be tuned to the correct channel for that area. Positive radio contact must be made with the plant operator within the sight safety zones. The plant operator must engage all ground engaging tools or brakes and exit the plant while refuelling.
- All refuelling must be undertaken working on level ground and in well-lit areas. While fuelling, the hose to be placed in such a position that it doesn't become a trip hazard

Environmental Controls

- No maintenance of vehicles, refuelling, decanting or temporary fuel storage shall take place in or within 20 metres of open excavations, sinkholes, exposed groundwater, any waterway or drainage lines.
- All fuels or chemicals on site must be suitably stored, labelled and secured within secondary bunding controls.
- A 140L spill kit is to be available site offices and smoko rooms. These spill kits must be a marine spill kit (i.e., an "oil only" spill kit which includes oil booms). All machinery must have an in-cab spill kit as well, if working within 20m of waterways.

In the event of a spill, the contractor shall follow procedure as per the Responding to Spills EPI.

- Report all spills to the Supervisor immediately after implementing the following 7 steps described further in the Responding to Spills EPI:
 - 1. Stop Assess the Situation
 - 2. Control stop the source
 - 3. Contain prevent spill spread
 - 4. Clean absorb the spill
 - 5. Communicate report and notify
 - 6. Collection and Disposal
 - 7. Decontaminate, Report and Restock
- Provide an incident report to the Environmental team within 24 hours, or immediately inform after responding if the spill is greater than 10 litres or a spill of any size enters surface water.
- No water may be discharged from the refuelling and maintenance area without Environmental team approval.
- Weekly visual inspections are to take place for all tank connections and piping for leaks and must be repaired as necessary.
- No vehicle or plant storage in sensitive areas, on flood plains or within 20m of a watercourse for more than 8 hours. If storage is required for more than 8 hours, a method statement must be developed outlining appropriate spill containment measures.
- A funnel or spout is to be used when refuelling from a jerry can to minimise spills.
- All staff to be trained in spill response procedures.

Refuelling Process

- Prior to entering site, engage your flashing beacon and headlights on
- The FTO will ensure a clear, safe access and exit to the machinery prior to refuelling starting. FTO will park no closer than 5m to the piece of machinery or have a physical barrier between the Fuel Tanker and the piece of machinery
- FTO not to disembark vehicle until it is safe to do so i.e. machinery have parked and shut down. Use open spaces for ventilation to avoid inhalation of fumes or fine mists.
- Never leave the fuel truck unattended while it's fuelling
- Operator to switch off machine and exit during the fuelling process, maintaining three points of contact, and if waiting, staying in a safe zone 30m from refuelling process.
- Machine Operator can only move the machine when FTO has driven off a distance of 30m



Mt Cass Wind Farm Oil Spill Contingency Plan



Revision 2 – 1 December 2022

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Revision History

| Version | Description | Date | Prepared by | Approved By |
|---------|----------------------------------------------------|-----------|------------------------|-------------|
| Rev 1 | AECOM draft incorporated to address MCWF review | 25 Mar 21 | Shona Hobbs (AECOM) | |
| Rev 2 | MCD Input | 1 Dec 22 | СВ | |
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1. Introduction

1.1 Purpose of Document

This Oil Spill Contingency Plan provides an outline of practices and procedures to be adopted by all parties during the design and construction of the Mt Cass Wind Farm. It is intended to set out minimum standards for mitigation and management of hazardous material handling during mobile refuelling for the construction works, and contingency actions to be undertaken in the event of a spill.

2. Safety

A site-specific health and safety plan (SSHSP) will be prepared for the site works, and all staff entering the site shall be inducted into this plan. Task-specific Safe Work Method Statements for chemical handling, refuelling and maintaining vehicles on site shall be prepared by the relevant contractors and shall be incorporated into the wider SSHSP.

3. Description of the Wind Farm Site

The Mt Cass Ridge is a prominent ridge defining the seaward side of the Waipara Basin. Mt Cass is approximately 5 km southeast of the Waipara Township and the ridge runs parallel to State Highway 1 ending near Omihi. The main ridge consists of a limestone escarpment with a steep northerly face and a gentler southerly slope that is intersected by a number of ephemeral streams and gullies that drain to the south where they meet either Wash Creek or Dovedale Stream.

The land-use on the ridge is predominantly pastoral farming and is grazed by sheep and cattle. Some sections, located on steeper slopes and rock pavements where grazing is limited, are dominated by native bush. A number of threatened and at risk plant species are present at the Mt Cass site

There are no permanent water bodies on the ridge, but there are several ephemeral streams and gullies which will be crossed by the planned access road and will have culverts built to accommodate seasonal overland flow. In addition to this, there are several ephemeral tarns on the northern side of the ridge and natural sink holes are present. There are no existing stormwater systems in place at the site, however stormwater management structures will be constructed during the site development.

4. Characteristics of Oils and Fuels Used at the Site

The following compounds are considered to be those likely to be most widely used during the planned site works, however other fuels or oils may also be used in small volumes. Safety Data Sheets (SDS) that are compliance compliant with the Hazardous Substances (Safety Data Sheets) Notice Amendment 2017 be kept in an on-site chemicals register that will be held at the site office and available electronically to all project staff for all chemicals stored or brought to site.

Diesel is a multi-component hydrocarbon liquid mixture of C9-C20 hydrocarbons, with an average of C15. It is generally a clear pale yellow liquid with a characteristic oil odour that

floats on water and produces vapours that are heavier than air. Diesel is combustible, may be fatal if swallowed and enters airways, causes mild skin irritation, and is suspected of causing cancer. Diesel is toxic to aquatic life with long-lasting effects.

Petrol is a multi-component hydrocarbon liquid mixture of C4-C12 hydrocarbons. It is generally clear or pale yellow with a characteristic odour, floats on water and produces vapours that are heavier than air. The greatest risks to human health are posed by the presence of benzene, which is 1% by volume in modern fuels. Petrol is extremely flammable, may be fatal if swallowed and enters airways, causes mild skin irritation, and is suspected of causing cancer. Petrol is also toxic to aquatic life with long-lasting effects.

Transformer oil is a multi-component hydrocarbon liquid mixture of C15-C30 hydrocarbons. It is generally a clear brown liquid that will float on water, has a mild petroleum odour, and produces vapours that are heavier than air. It will burn but may not ignite readily and causes mild skin and eye irritation. No ecological data are available for this material however oil spills can smother and suffocate aquatic life by preventing passage of oxygen into water. Oil contamination can also foul and smother birds and marine animals.

Hydraulic oil is a highly refined mineral oil liquid mixture of C15-C30 hydrocarbons. It is generally a clear liquid with a petroleum odour that will float on water and produces vapours that are heavier than air. It will burn but is not easily ignited and causes mild skin and eye irritation. No ecological data are available for this material however oil spills can smother and suffocate aquatic life by preventing passage of oxygen into water.

5. Potential Spill Sources and Risks

Approximately 6.8 km of internal ridge road are required to access the turbine sites. The ridge road and turbine platform areas are near the top of the ridge, and the access road will be formed on a succession of cuts and fills. In addition to the road and the turbines, the wind farm will require the construction of a substation comprising two buildings and a switchyard, sited near the ridge. Internal transmission lines to the substation will be buried in trenches along the ridge road, while transmission lines from the substation to Waipara will be on overhead poles. During construction, a temporary concrete batching plant will also be created at the wind farm site.

Equipment will require refuelling during each stage of construction. Where practical, temporary refuelling locations for mobile equipment will be located at laydown and hard stand areas, to minimise the number of locations where potential spills could take place. As construction progresses, the location of these areas will change to keep pace with the location of the works.

Stationary equipment is anticipated to include large scale equipment that cannot readily be relocated for the purposes of refuelling (e.g. cranes), storage of fuel and oil for formwork, concrete curing, and plant lubrication, and permanent or semi-permanent installations such as transformers and generators.

Activities which have the potential to cause a spill of oil or fuel to the environment are summarised as follows:

- Mobile refuelling of plant and site vehicles
- Refuelling of stationary equipment such as cranes and generators
- Storage of oil and fuel for on-site equipment (transformers, cranes, generators)
- Damage to hydraulic hoses etc on construction equipment

A general plan showing the layout of proposed laydown areas and hazardous chemical storage is presented in the Hazardous Substance Plan Appendix A . This plan will be updated once the layout is confirmed with the contractor.

6. Preventative Measures

6.1.1 Refuelling of Mobile Plant

- No maintenance of vehicles, refuelling, decanting or temporary fuel storage shall take place in or within 20 metres of open excavations, sinkholes, exposed groundwater, any waterway or drainage lines.
- No refuelling activities shall take place within 100m of a wetland.
- Figure D2 (Appendix D) identifies the known locations of ephemeral streams and wetlands in relation to the planned road alignment and construction footprint. Figure D3 (Appendix D), provides known locations of sink holes in relation to the planned road alignment and construction footprint.
- Any time that refuelling takes place a spill kit must be immediately available to access from the location of the refuelling event. This spill kit must be sufficient to absorb the quantity of oil and petroleum products that may be spilt in that work area.
- Refuelling shall be by mini-tankers to minimise the volumes of fuel carried on site at any one time.
- As far as possible, refuelling shall be limited to designated locations at laydown areas.
- Designated refuelling areas shall have an impermeable liner (e.g. concrete or clay) and temporary bunds in place.
- Temporary bunded containment areas shall be designed to contain 110% of the maximum volume of fuel that can potentially be lost during a single event.
- Water should not be allowed to accumulate in bunded containment areas construction of these temporary bunded locations shall allow for either installation of a pipe with a shut-off value, or site operators shall plan for pumping out of accumulated water if required.
- Spill kits shall be kept at each designated refuelling site.
- All mobile plant and equipment and all refuelling trucks shall be inspected prior to the start of works. Equipment with hydraulic hoses that are damaged or in poor repair shall be refused entry to the site.
- At the completion of site works, refuelling containment areas will be removed as part of the overall rehabilitation of the construction areas.

6.1.2 Stationary Equipment – Temporary

• All stationary equipment that cannot be relocated for refuelling purposes shall be located at least 20 m from open excavations, exposed groundwater, natural sink holes or a surface water body. Exceptions to this must be assessed on a case by case basis and should be discussed with the environmental consultant and the

regional council prior to proceeding. An example of where an exception may be required would be if a generator is required to be less than 20 m from an open excavation due to the configuration of the equipment that it is powering.

• Spill kits shall be kept on site at each works area. Any stationary equipment that stores fuel shall have a spill kit accessible within 20 m.

6.1.3 Storage of Fuel and Oil

An inventory of the volumes and types of chemicals stored on site shall be prepared and kept up to date by the site manager. All contaminant storage areas with the exception of transformers are to be located in accordance with MWH plan Z1357201-C103. This plan will be updated with more detail once the layout is confirmed with the contractor.

- All storage and use of hazardous substances shall be in accordance with the provisions of the Hazardous Substances and New Organisms Act 1996 (HSNO) and Health and Safety at Work (Hazardous Substances) Regulations 2017 (HSW Hazardous Substances Regulations), including compliance with any required emergency response plan, site location compliance certificate, and stationary container compliance certificate.
- Movable All stationary tanks and containers must be located within a suitable containment compound. The capacity of the compound shall be at least 110% of the capacity of the largest stationary container within it, whilst also meeting any overall capacity requirements deemed necessary by HSW Hazardous Substance Regulations. Where earth is placed to form a compound wall, the wall shall have a minimum top width of 300 mm and shall have a slope no greater than 1 to 1. The compounds shall be periodically drained to minimise the accumulation of water, for example by means of an oil stop valve, pumping, installation of a pipe through the compound wall.
- Storage of flammable materials must comply with the HSW Hazardous Substances Regulations, including availability of appropriate numbers of fire extinguishers detailed in Schedule 4 of the regulations.

6.1.4 Maintenance of Equipment

All machinery and plant brought to site shall be regularly maintained and inspected prior to use. Equipment that is damaged or in poor repair shall be refused entry to the site.

6.2 Training

As part of an overall site induction all staff must be briefed on the spill response procedures set out in this document. A copy of this plan shall be available at the site office and in electronic format to all staff working on the project.

Any contractor entering the site shall be briefed during the site induction regarding the location of spill kits, the primary contact people in the event of a spill, and the reporting limits (anything over 10 L must be notified to council).

7. Spill Response

7.1 Spill Response Organisation

Roles and Responsibilities:

Mt Cass Wind Farm Construction Manager

- Has overall responsibility for the Oil Spill Contingency Plan
- Ensures that the Oil Spill Contingency Plan is up to date, reviewed and approved, and available to all personnel on site.
- Issues any revisions to the plan to the relevant Regulatory bodies (Hurunui District Council and Environment Canterbury)
- Updates the Construction Management Plan with the latest Oil Spill Contingency Plan revision.
- Ensures all contractor and subcontractor staff are adequately inducted and trained in spill response procedures including emergency procedures.
- Ensures reviews and audits of contractors task specific spill management procedures are undertaken
- Ensures chemical storage complies with relevant HSNO and HSW regulations including obtaining any appropriate location certificates if required.
- Ensures inventory of chemicals held on site is current and up to date, and that spill kits are available and in good condition at all refuelling locations.
- Reports incidents to the regulatory authorities.

Wind Farm, Separate Contractors, Sub Contractor and Contractors Project Manager

- Develops task specific SWMS in relation to fuel handling and refuelling activities and submits for review and approval.
- Ensures they follow all requirements of the Oil Spill Contingency Plan and their SWMS.

Mt Cass Wind Farm Contaminated Land Specialist

• If contamination occurs due to a spill event, the MCWF shall engage a contaminated land specialist to undertake appropriate investigations and provide recommendations for remediation / mitigation measures.

7.2 Equipment and Operators

Mobile refuelling equipment shall be operated by trained staff with appropriate licenses for fuel handling and dangerous goods transport.

Spill kits and fire extinguishers should be readily available at all locations where refuelling events take place. An inventory of the location and condition of these items shall be kept in the site office and shall be available electronically to all staff working on the project. The Mt Cass Wind Farm Project Manager shall be responsible for arranging for the maintenance and regular inspection of this equipment.

7.3 Spill Response Equipment Available Off-site

In the event of a major spill, temporary containment should be sufficient to capture lost fuel or oil and prevent it migrating to ground or into nearby water bodies. Following containment, the captured fuel shall be removed from site by sucker truck and disposed of to a suitably licensed facility. Companies such as Hydrovac Ltd operate 24 hour emergency spill response service out of Christchurch, approximately a 1 hour drive from the site.

7.4 Immediate Response

In the event of a spill of fuel during refuelling or due to damage to a piece of equipment the following actions will be undertaken:

Implement the four C's

- 1. Control
- 2. Contain
- 3. Clean Up
- 4. Communicate

Step 1: stop – assess the situation

Ensure the situation is safe. In all circumstances the safety of personnel shall be the priority, don't compromise your health or safety. Establish an exclusion zone to protect others.

Step 2: control – stop the source

- Stop the leak or spill if safe to do so
- · Close valves on pipes, seal hoses that may have ruptured, pick up containers, seal/plug holes

Step 3: contain – prevent spill spread

- Form a barrier around the spill (use booms)
- · If it is a large spill in a drain, a temporary rock/sand or even earthen bund may be required

Step 4: clean – absorb the spill

- · Use absorbent material and pads to absorb the spill
- Work from the perimeter of the spill to the centre/source, use as much of the spill kit material as necessary to absorb the spill

Step 5: communicate - report and notify

- Inform Site Supervisor or the HSE Manager/Environmental Representative of ALL SPILLS, no matter how small
- Take photographs of the spill if possible

Step 6: collection and disposal

- Sweep/collect the absorbent material
- · Place into a separate waste bag

- Dispose of material into prescribed waste bins only (i.e. contaminated soils and oily rags and absorbents)
- · Take photographs of the area following clean up

Step 7: decontaminate report and restock

- · Dispose of any soiled PPE
- If you have made contact with any hazardous substance, wash the affected part of the body. This may require a shower
- Advise HSE Manager/Environmental Representative that incident has been closed
 out
- · Restock the Spill Response Kit

For larger scale spills within a lined containment system, ensure drainage valve is closed and arrange for removal of contained liquid by sucker truck to an appropriately licensed disposal facility. Copies of the waste disposal documents should be obtained and be able to be provided on request to the relevant Regional Authority.

Inspect any nearby stormwater system or surface water body to ascertain whether the spill has had any impact on these systems. This includes inspection of ephemeral streams that may be dry at the time of the incident.

Report the incident through the incident reporting procedure and notify the Mt Cass Wind Farm CM, who will then advise the Regional Authority and, if applicable, the contaminated land specialist.

7.4.1 Personal Protective Equipment (PPE)

All workers directly handling fuels and oils shall wear appropriate PPE. Specific needs will need to be determined on a case-by-case basis but, as a minimum, the following should be used:

- Overalls or long trousers and a long-sleeved shirt
- Impermeable Gloves (e.g. nitrile)
- Waterproof safety boots or gumboots
- Safety glasses or other appropriate eye protection

7.4.2 Notification

The Canterbury Regional Council Regional Leader - Compliance Monitoring must be informed within 24 hours of any spill greater than 10 L in size.

The notification shall include the following information:

- The date, time, location and estimated volume of the spill
- The cause of the spill;
- The type of hazardous substance(s) spilled;
- Clean up procedures undertaken;
- Details of the steps taken to control and remediate the effects of the spill on the receiving environment;
- An assessment of any potential effects of the spill; and
- Measures to be undertaken to prevent a recurrence.

8. Media Releases

Refer to construction management plan for details - INFORMATION REQUIRED FROM MAINPOWER / PROJECT TEAM RE PROCEDURE FOR THIS

9. Debriefing

Following the initial incident response, an incident investigation shall be undertaken by the project safety team. The findings of this investigation and any applicable lessons learned shall be shared with the wider project team and any corrective actions identified implemented.

10. Points to Consider

As the project site is physically large and may have more than one construction activity taking place simultaneously in different parts of the site, clear lines of reporting and communication are essential to ensure that spill events are responded to rapidly and are appropriately recorded and notified.

In order to minimise the risk of spill reporting being overlooked, it is important that even short-term contractors entering the site are briefed during their site induction as to the appropriate spill response actions and reporting limits.

A printed, laminated, one-page summary of this the spill procedure response plan shall be included in site spill kits and/or hung in site offices and lunchrooms. This is to be developed by the contractor at a later date and is not outlined in this document.

Consistent with the requirement of the Regulation 5.12 of the HSW Hazardous Substance Regulations the plan should be tested at least every 12 months to demonstrate whether the plan is workable and effective. If a person, procedure, or action specified in an emergency response plan is changed, the plan must be tested within 3 months of the change to demonstrate whether

- the new person can perform his or her functions under the plan; and
- the new procedure or action is workable and effective.

So far as is reasonably practicable, the plan must be amended in response to the findings of a test to ensure that the plan is workable and effective. A record of tests carried out and of the results of those tests must be kept.

11. Document Review

This Oil Spill Contingency Plan provides a framework for managing the potential risks associated with spillage of oil or fuel during the planned site works at Mt Cass Wind Farm. It is an operational document, and its relevance and the procedures given herein need to be reviewed in light of any new circumstances that occur or information that may be presented.

12. Appendices

| Appendix | Description |
|----------|-------------------------------------|
| А | Telephone Numbers |
| В | Pollution Report and Incident Forms |
| С | Safety Data Sheets |
| D | Layout and Setback Plans |

APPENDIX A - Telephone Numbers

| Consent Holder – Mt Cass Wind Farm Ltd | | | | | | | | |
|----------------------------------------------------------|-------------|---------------------------|--------------|--------------------------------------|--|--|--|--|
| Role | Company | Name | Phone | Email | | | | |
| Project Director (Primary Contact) | MCWFL | Greg Gummer | 021 738 995 | Greg.gummer@mainpower.co.nz | | | | |
| Construction Manager | MCWFL | ТВС | | | | | | |
| Project Engineer (Civils) Secondary Contact | MCWFL | Michael Carstens | 027 2471713 | michael.carstens@mainpower.co .nz | | | | |
| Senior Project Coordinator | MCWFL | Lisa Yuyi | 021 779380 | lisa.yuyi@mainpower.co.nz | | | | |
| Project Engineer (Electrical) Secondary Contact | MCWFL | Neil Wiggins | 027 33133 | neil.wiggins@mainpower.co.nz | | | | |
| CBoP – McConnell Dowell | | | | | | | | |
| Project Manager | MCD | Phil Owen | 021638726 | Phil.owen@mcdgroup.com | | | | |
| Construction Manager | MCD | David Kidd | 0277039803 | David.kidd@mcdgroup.com | | | | |
| Site Manager | MCD | ТВС | | | | | | |
| Project Environmental Advisor | MCD | Caitlin Burns | 021759938 | Caitlin.burns@mcdgroup.com | | | | |
| EBoP - Electronet | | | | | | | | |
| Project Manager | ElectroNet | Matt Daffin | 0275869102 | MDaffin@electronet.co.nz | | | | |
| Environmental Advisor | ElectroNet | Sandy Keown | 0272354021 | sandyk@electronet.co.nz | | | | |
| S&I Contractor – S | iemens Game | sa Renewable En | ərgy | | | | | |
| Project Director | SGRE | Sumblli Rohit | ТВС | rohit.sumbli@siemensgamesa.co m | | | | |
| Project Manager | SGRE | Akshar Sheth | ТВС | | | | | |
| Regulators | | | | | | | | |
| Hurunui District Council | | | | | | | | |
| Environment Canterbury | ECan | 24hr Pollution Hotline | 0800 765 588 | N/A | | | | |
| Landowners | | | I | | | | | |

| Mt Cass Station Ltd | Andrew Heard Sarah Heard | 03 314 6022 021 272 7522 (Andrew) | |
|-----------------------------------------|------------------------------|-----------------------------------------|--|
| Dovedale Farm | Emma Gardiner | 03 314 6744 027 268 2737 (Emma) | |
| Hamilton Glens | Leighton Croft Jane Croft | 03 314 5889 027 208 4187 | |
| Transwaste - Kate Valley Landfill | Rangi Lord | 03 359 1800 021 288 4348 | |

APPENDIX B - Incident Forms

| Project Name: | | Project No: | | | | Incident No: | | |
|------------------------------------------------------------------------------------|--------------------|---------------------|-----------------------|--------------|------------------------|---------------|------|--|
| Incident Reported | | | | | | | | |
| Actual Incident Date: | | | Actual Incident Time: | | | | | |
| Incident Reported Date: | | | Inciden | nt Reporte | ed Time: | | | |
| Company Performing Work: | | Direct | | | Ind | irect | | |
| Reported by: Name: | | | | Compa | ny: | | | |
| Incident Details | | | | | | | | |
| Shift Details: | | Day Shift – F | Permanen | t / Office ' | Work | Afternoon S | hift | |
| Other Roster Arrangeme | ents | Day Shift - R | ostered | | | Night Shift | | |
| Shift Start Date: | | | Shift Sta | rt Time: | | | | |
| Shift End Date: | | | Shift Enc | l Time: | | | | |
| % of shift worked: | Day | vs of rostered work | : | | Total da | ys in roster: | | |
| Incident Location | | | | | | | | |
| Specific Location: | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Description of Incident – ste | os leading up | to the Incident / A | ctivity bei | ng comple | eted / wh | at happened: | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Immediate Actions Taken: | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Attachments | | | | | | | | |
| Images / Documents: | Insert bel | ow or attach at en | d of repor | t | | | | |
| Witness Statements: | dent Witness State | ement (HS | EQ-HS-FR | M007-GE | N-ALL) and attach to e | nd of | | |
| | report | | | | | | | |
| Categorise Incident | | | | | | | | |
| Environmental Impact Le | evel 1 to 3 (co | ntinue using this f | orm) | | | | | |
| Environmental Impact Near Miss Level 1 to 3 (use form REF-HSEQ-ENV-FRM003-GEN-ALL) | | | | | | | | |

| Non Conformance Leve | I to 3 (use Environmental Non- | Conformance form REF-HSEQ-E | NV-FRM005-GEN-ALL) | | | |
|-------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------|--|--|--|
| Review | | | | | | |
| | e initial incident and decide if the grant of the second second second second second second second second second | | | | | |
| Reviewer's Name: | | Accept Incident | Discard Incident | | | |
| Reviewer's Comments: | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Is this report a duplicate or | non-HSEC incident? | Yes | □ No | | | |
| Is this a notifiable Incident | ? | Yes | □ No | | | |
| Incident Notifiable to Gove | rnment Agency or Regulators | | | | | |
| Agency Notified: | | | | | | |
| Person Notified: | | | | | | |
| Notification Method: | Email | In person | Phone | | | |
| Notification Date: | | Notification Time: | | | | |
| Notification Comments: | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Environmental Impacts | | | | | | |
| Note: For the impacts selec | ted below, refer to the sections a | after to add in more specific det | ails. | | | |
| Air | | Fauna Fauna | | | | |
| Flora | | Complaint (no sub-section) | | | | |
| Land | | Cultural Heritage | | | | |
| Noise & Vibration | | Groundwater | | | | |
| Surface Water | | U Waste | | | | |

| Air | | | | | | | |
|------------------------------------------|-------------------|------------------|---------------------------|-------------------|-----------------|---------------------|--|
| Dust | | Emissions | | | 🗌 Black | < Smoke | |
| Flora | | | | | | | |
| Loss of habitat | | | Damage to protected flora | | | | |
| Introduction of weed sp | pecies | | Introduction of disease | | | | |
| Species Affected: | | | | | | | |
| Land | | | | | | | |
| Soil Erosion | | | | Spill to land (ch | noose belo | w) ¹ | |
| Disturbance of existing | contamination | | | Acid sulphate s | oils | | |
| Area (M ²) of land affected? | (leave blank if n | /a) | | | | | |
| ¹ Type of spill to land: | Hydrocarb | on | | Chemical | | Effluent | |
| Noise & Vibration | | | | | | | |
| Noise | | | | Vibration | | | |
| Surface Water | | | <u> </u> | | | | |
| Spill to Water ² | Release to Sur | face Water | | Unauthoris | ed abstrac | tion of Groundwater | |
| Type of Spill to Water ² : | Hydroca | rbon | | Chemical | | Effluent | |
| Estimated Quantity / Volum | ne of Discharge: | | | | | | |
| Fauna | | | | | | | |
| Injury to Animal | | | Death to Animal | | | | |
| Introduction of Pest Spe | ecies | | | Introduction of | Disease | | |
| Species Detail: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Cultural Heritage | | | | | | | |
| Disturbance or damage | ! | | | New discovery | | | |
| Groundwater | | | | | | | |
| Spill to Water ³ | Release to Ma | rine Water | | Unauthoris | ed abstrac | tion of Groundwater | |
| Type of Spill to Water ³ : | Hydroca | rbon | | Chemical | | Effluent | |
| Estimated Quantity / Volum | ne of Discharge: | | | | | | |
| Waste | | | | | | | |
| General Waste | General Waste | | | | Hazardous Waste | | |
| Impact Report | | | | | | | |
| Provide a description of the | e impact report a | nd include any d | lata t | hat helps quant | ify the imp | pact: | |

| Estimated C | Cost (\$) | | | | |
|------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------|--------------|--|
| □ <\$5k | | 🔲 \$5k - \$50k | □ >\$50k | | |
| Environmer | ntal Impact Incident Severity R | ating | | | |
| Actual Rating | Description of Environmenta Please rate the actual severity ba | dent | Consequence Descriptor | | |
| A 🗌 | Spills of hydrocarbons and ch environmental impact | Low | | | |
| в | Low level environmental impacts to the localised area. Easily rectified with minimal Moderate effort and cost | | | | |
| с | Environmental impacts that a protected habitat Impact to c | Serious | | | |
| D 🗌 | Major | | | | |
| E 🗌 | | ts to the local or regional environmen the widespread loss of protected hal | | Catastrophic | |

| Potentia Rating | Description of Potential Environmental Please rate the potential severity based on relevant to maximum reasonable conseque | Consequence Descriptor | | | | | | |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------|--|--|--|--|--|
| A 🗌 | Spills of hydrocarbons and chemicals th environmental impact | Spills of hydrocarbons and chemicals that are contained and do not result in environmental impact | | | | | | |
| в | Low level environmental impacts to the effort and cost | Moderate | | | | | | |
| с | Environmental impacts that affect indi- protected habitat Impact to cultural he | Serious | | | | | | |
| D | Significant environmental impact at the of habitat without permission. | Major | | | | | | |
| E | E Severe environmental impacts to the local or regional environment. The death of multiple protected species or the widespread loss of protected habitat without permission. | | | | | | | |
| Ranking | of Likelihood - Please rate the likelihood of | the incident occurring on the project again | | | | | | |
| Rank | Probability (Frequency) | Probability (Frequency) Description Lik | | | | | | |
| 1 | < 5% chance of occurrence during the project | The event may occur only in exceptional circumstances | Rare | | | | | |

| 2 🗌 | ≥ 5% & < 15% chance of occurrence during the project | | | | vent could occur a | e time | | Unlikely | |
|------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------|-------------------------------|----------|------------------|----------|-------------------|
| 3 🗌 | ≥15% & < 35% chance of occurrence during the project | | | The event should occur at some time | | | ne time | Possible | |
| 4 | | % & <65% chance of the second se | f occurrence | | event will probal nstances | bly oc | cur in most | | Likely |
| 5 🗌 | ≥65 proj | % chance of occurr ject | ence during the | | event is expected nstances | l to oc | ccur in most | Aln | nost certain |
| | | evel of Risk) - Select | | - | | ose the | highest of eith | er the A | Actual Rating |
| or the Pot | tentia | al Rating against the | e likelihood to get tl | he cori | | | | | |
| Likelihoo | bd | | | | Severity | | | 1 | |
| | | A- Low | B- Moderate | | C- Serious | | D-Major | E-C | Catastrophic |
| 5 Almost certain | - | Moderate | High B-5 | C | Very High C-5 | | Extreme D-5 | | Extreme E-5 |
| 4 Likely | | Low A-4 | Moderate | |] High C-4 | | Very High D-4 | | Extreme E-4 |
| 3 Possible | e | Low A-3 | Moderate | High C- | | | High D- 3 | | Very High E- 3 |
| 2 Unlikely | у | Low A-2 | Low B- | C | Moderate] C-2 | | High D-2 | | High E-2 |
| 1 Rare | | Low A-1 | Low B- | | Low C- 1 | | Moderate D-1 | | Moderate - E-1 |
| Golden R | ule B | reaches – Select ru | les | | | | | | |
| Start | Safe | | | | Cranes & Lift | ing | | | |
| U Work | king a | t Height | | | Working Nea | r Mobi | le Plant | | |
| Opera | ating | Mobile Plant | | Driving Vehicles | | | | | |
| Energ | gised | Equipment | | Electrical Equipment | | | | | |
| Trenc | ching | & Excavation | | Confined Space | | | | | |
| Environm | nenta | l Green Rule Breac | hes – Select rules | | | | | | |
| Spills | | | | | Noise & Vibra | ation | | | |
| Soil & Erosion | | | | | Hazardous M | laterial | S | | |
| Plant & Equipment | | | | | Dust & Emiss | ions | | | |
| Water & Wastewater | | | | | Fauna & Flora | а | | | |
| Archa | aeolo | gy & Heritage | | | Recycling | | | | |
| | | Selection – All actua , discuss which forn | | | | | | | |

| Basic Root Cause (continue below) |
|-----------------------------------------------------------------------------------------------------------------------------------|
| ICAM - Incident Cause Analysis Method (Use Critical Incident Investigation Form MMS # 020-F103-100) |
| Select all Contributing Factors that apply to this incident / near miss |
| Absent or Failed Defences (DF) |
| DF1: The hazardous condition was not recognised by any persons involved. |
| DF2: Inspection systems were missing that should have detected the hazardous condition. |
| DF3: Inspection systems existed but failed to detect the hazardous condition. |
| DF4: The correct isolation was not used. |
| DF5: Safety devices were inoperative at the time of the incident. |
| DF6: The hazardous substances were not clearly identified. |
| DF7: Standard Work Practices existed but were not in use. |
| DF8: Standard Work Practices were missing for the task. |
| Organisational Factors (OF) |
| OF1: The design / quality of the equipment / tools / work area contributed to the incident / near miss. |
| OF2: The written / known SWP / JSEA did not anticipate the factors / hazards which led to the incident / near miss. |
| OF3: Changes had been made to equipment, the environment, procedures or personnel. |
| OF4: There was insufficient communication and discussion of hazards and Stand Work Practices (i.e. Toolbox Talks). |
| OF5: The person(s) involved were not aware that protective equipment was required. |
| Task / Environment Conditions – Human Factors (HF) |
| HF1: The person(s) involved were not physically capable of performing the job (good health, no impairment, vision, hearing, etc.) |
| HF2: The person(s) involved were affected by drugs / alcohol. |
| HF3: The person(s) involved were affected by fatigue. |
| HF4: The person(s) involved had known personal issues that could have affected the person(s) actions. |
| HF5: The person(s) involved had a slip up / lapse in concentration (lapse of attention, inadvertent omissions). |
| Task / Environmental Conditions – Workplace (TE) |
| TE1: Fault(s) in the equipment / tools / work area contributed to the incident / near miss. |
| TE2: Unacceptable standards of housekeeping contributed to the incident / near miss. |

| | TE2. In: | dequate means of access contributed to the incident / near miss. | | | | | | | |
|-------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------------|--------------|--|--|--|--|--|
| | 163.1116 | dequate means of access contributed to the incident / near miss. | | | | | | | |
| | TE4: Ur | safe equipment contributed to the incident / near miss. | | | | | | | |
| | TE5: Poor visibility contributed to the incident / near miss. | | | | | | | | |
| | TE6: Noise contributed to the incident / near miss. | | | | | | | | |
| | TE7: Th | e poor condition of roads contributed to the incident / near miss. | | | | | | | |
| | TE8: Sli | opery or uneven footing contributed to the incident / near miss. | | | | | | | |
| | TE9: Ind | lement weather (rain, wind, heat, fog, snow, etc.) contributed to the inc | ident / near miss. | | | | | | |
| | TE10 : A | dverse atmospheric conditions (toxic or hazardous fumes, gas, dust) con | tributed to the incide | nt / near | | | | | |
| | miss. | | | | | | | | |
| Indiv | idual / T | eam Actions (IT) | | | | | | | |
| | 174 . Dave | | | | | | | | |
| | II1:Per | son(s) involved had not been instructed / trained in the SWP / JSEA / Per | mit. | | | | | | |
| | IT2: Per | son(s) involved had not been deemed competent in the SWP / HSEA / Pe | ermit. | | | | | | |
| | IT3: Per | son(s) involved deviated from written / known SWP / JSEA / Permit. | | | | | | | |
| | | re is a history of similar incidents / near misses occurring when the same | e task has been perfo | rmed in this | | | | | |
| | workpla | ce. | | | | | | | |
| | | son(s) involved had not been made aware of historical incidents / near n | nisses that had occurr | ed when the | | | | | |
| | task wa | s previously performed. | | | | | | | |
| | | son(s) involved did not receive frequent contact from Supervisors / perso P / JSEAs (Toolbox meetings, etc.) | onnel to discuss / rev | ew hazards | | | | | |
| | | •••• | | | | | | | |
| | II7 : Ine | actions of other persons were contributory. | | | | | | | |
| | IT8: Per | son(s) involved made mistakes (lack of knowledge to select the appropri | ate plan of action). | | | | | | |
| | | son(s) involved performed violations (deviation from understood and ac | cepted normal praction | ce for | | | | | |
| | whatev | er reason). | | | | | | | |
| Close | e Out Act | ions – insert the reference number (e.g. IT8) followed by the required ac | tions: | | | | | | |
| Refe | rence | Action(s) | Responsibility | Due Date | | | | | |
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| Root Cause | | |
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| Contributing | Factors | |
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| Incident R | Incident Review & Investigation Approval | | | | | |
|---------------------|------------------------------------------|------------|--|--|--|--|
| Report Author Name: | | | | | | |
| Date: | | Signature: | | | | |

| Superintendent Name: | | | |
|----------------------|--|------------|--|
| Date: | | Signature: | |

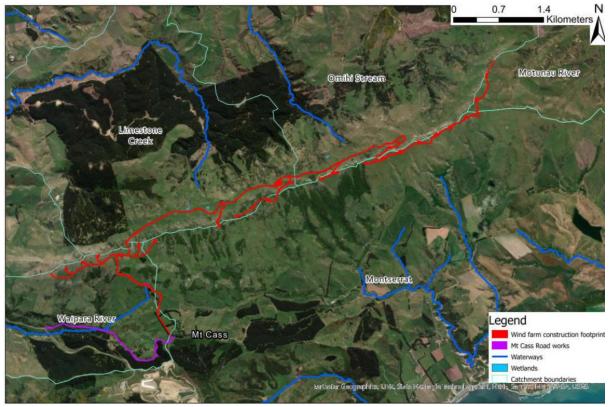
| Environmental Advisor Name: | | | |
|-----------------------------|--|------------|--|
| Date: | | Signature: | |

| Project Manager Name: | | | |
|-----------------------|--|------------|--|
| Date: | | Signature: | |

APPENDIX C – Safety Data Sheets Up to date physical copies available in site offices and at any specific storage locations.

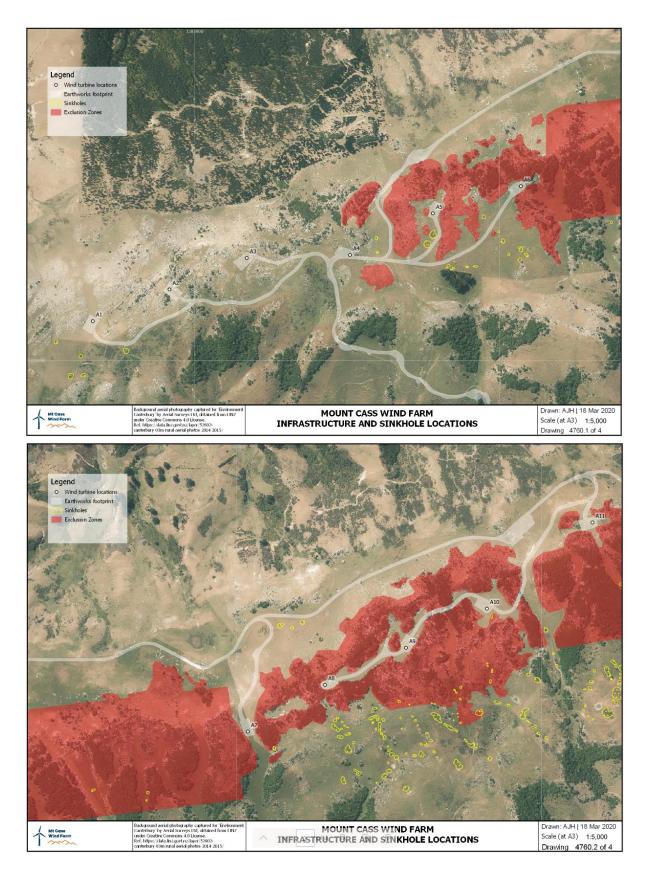
APPENDIX D – Layout and Setback Plans

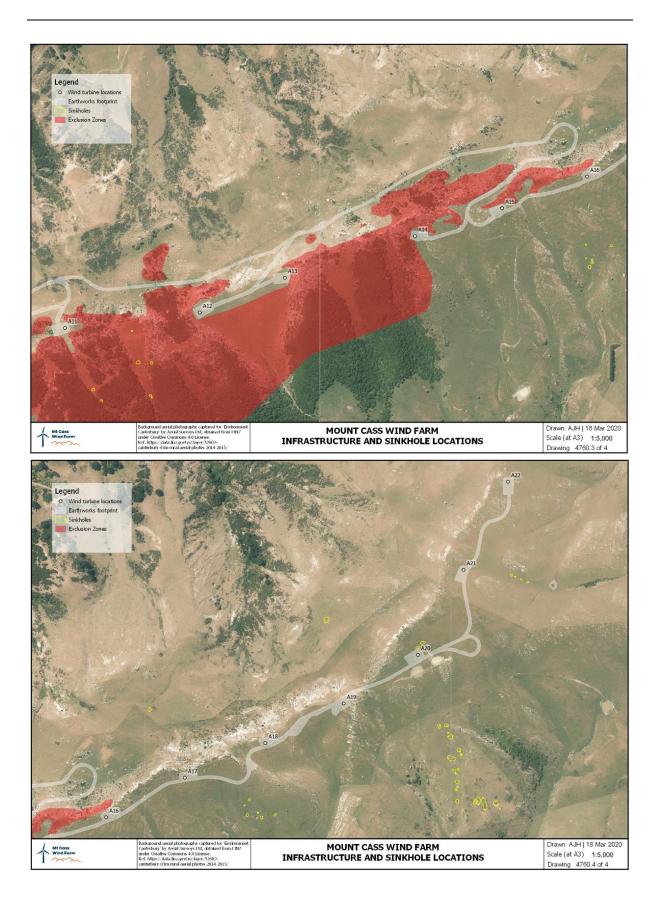
D1 - WATERWAYS, WETLANDS, CATCHMENT BOUNDARIES, MT CASS WIND FARM



Sourced from AEE (Figure 11)

D2 – SINKHOLE LOCATIONS





APPENDIX D – Incoming / Outgoing Plant Inspection



CREATIVE CONSTRUCTION"

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INCOMING / OUTGOING PLANT INSPECTION

| Contractor / Supplier: | | | |
|------------------------------|-----------------------------|--------------------------------|---|
| Description: | | Make: | |
| Rego Number: | | Model: | |
| Serial Number: | | Date of Manufacture: | |
| KM / HRS at Inspection: | | KMs / HRS at last Service: | |
| Serviced By: | | Date Serviced: | |
| Estimated Hire Duration: | | Next Service Due: | |
| MCD Allocated Site No.: | | Proposed / On Site Date: | |
| Record Result of Check: Good | d Condition: INITIALS Bad C | ondition: X Not Applicable: N/ | A |

Record Result of Check: Good Condition: INITIALS Bad Condition: X

| Description*Refer to Operators Manual#Refer to Plant Service History | S/C Confirm | MCD/BE Verify | Description | S/C Confirm | MCD/BE Verify |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|---------------------------------------------------------------------------------------------------------------------------|----------------|------------------|
| General Safety Equipment (All Plant) | | | Cranes | | |
| All safety signs / stickers are in place * | * | * | CraneSafe sticker. Date: / / | | |
| Emergency Stops are fitted / working | | | Regulatory authority plant registration certificates available in unit Date: / / | | |
| Beacon is fitted and working, if mobile plant / vehicle / UHF Fitted | | | Handrails, if required. | | |
| Any lifting / rigging gear is tagged | | | Load charts available/SWL clearly marked $*$ | * | * |
| Any lift point is engineered / stamped * | * | * | Load indicators fitted and working (electronic) * | * | * |
| Has a Noise Level Test been taken (where applicable) | | | Wire rope certs, hook certs 10yr inspection # | # | # |
| Fire extinguisher is fitted and in date – within 6 months. Date: / / | | | Concrete boom pump/ line pump | | |
| Bunding is supplied to ALL stationary plant | | | Regulatory authority plant registration certificates available in unit | | |
| Reverse alarm fitted & working, if mobile plant/vehicles | | | Line thickness testing reports completed and available? (Concrete volume records for twin wall lines – under OEM maximum) | | |
| Is first aid kit required YES / NO If yes, has it been supplied. Date: / / | | | All pipeline joints are fitted with safety clip and locks. | | |
| Access / egress adequate (steps, ladders, handrails) | | | Gensets / Light towers / Electrical / Welders | | |
| Operator controls in good condition and labelled where applicable for function (pedals, hand brakes, emergency stop controls etc.). | | | Electrics are tested and tagged | | |
| Walk Around Check (All Plant) | | | RCD is fitted and tested (monthly) | | |
| Panel damage | | | Any damage on leads | | |
| Oil / fluid leaks | | | Light operation and mast * | * | * |
| Broken lights / glass / mirrors | | | Excavators / Earthmoving Equipment | | |
| Lights operate correctly | | | Anti-burst valve * | * | * |
| Battery isolator fitted and working * | * | * | Quick Hitch in good condition * | * | * |
| All tyres are in safe condition | | | ROPS (Roll Over Protection Structure) and FOPS (Falling Object Protection Structure) fitted * | * | * |
| Seats / seat belts operational and in good condition | | | Condition of buckets / blades | | |
| Wipers / washers | | | Tracks and running gear in good condition | | |
| Check brakes are operational | | | Safety pin fitted to attachments e.g. hydraulic quick hitch | | |



CREATIVE CONSTRUCTION"

INCOMING / OUTGOING PLANT INSPECTION

| Description * Refer to Operators Manual # Refer to Plant Service History | S/C Confirm | MCD/BE Verify | Description | S/C Confirm | MCD/BE Verify |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|--------------------------------------------------------------------|----------------|------------------|
| Clean, free of soil, mud and foreign materials (including weeds and seeds) | | | Compressors and Pumps | | |
| Forklifts / Access Equipment | | | Last receiver/boiler inspection date (max 2yrs) * | * | * |
| Harness latch on bars present * | * | * | Safety valve test date (max 4yrs) * | * | * |
| All attachments are tested and tagged | | | B/A Test Date://* | * | * |
| ROPS (Roll Over Protection Structure) and FOPS (Falling Object Protection Structure) fitted * | * | * | Hydraulic Power Pack / Units | | |
| Safe Working Limits (SWL) clearly marked | | | Oil / fluid leaks | | |
| Electrical test and tag is current on power outlets | | | All hoses for wear and damage | | |
| (Boom lifts) Fall arrest harnesses are available on plant, inspected, tagged, and in good condition | | | Hydraulic oil is biodegradable, if working near or over water * | * | * |
| OEM Secondary Protective System (SPS) installed on all Boom Type Elevated Work Platforms (eg Pressure- sensitive operator contact device, Protective structure, Proximity systems, Contact switches) | | | All hoses are sheaved that work near or over water | | |
| Marine Vessels & Equipment | | | | | |
| Certificate of Operation (COO) is current & onboard | | | | | |
| Certificate of Class survey is current & onboard | | | | | |
| Vessel Safety Management System (VSMS) is current & onboard | | | | | |
| Flag State Certificate (FSC) is current & onboard | | | | | |
| All other maritime certificates & insurances are current (refer current Periodic Inspection – Marine Vessels & Equipment or equivalent) | | | | | |
| Vessel name and number displayed clearly | | | | | |
| Vessel's / ship's log onboard | | | | | |
| Navigation, radios & safety equipment supplied, working & in date (as per survey requirements) | | | | | |
| Visual hull, propellers, cargo damage evident | | | | | |
| Refer to current Periodic Inspection for specific condition | | | | | |
| TAKE PHOTOS OF THE | TEM – E | ENSURE | E YOU INCLUDE ANY DAMAGE | | |

| Supply of MANDATORY documentation: | | | | | |
|--------------------------------------------------------------------------------------------------------|----------------|-------------------|-----------------------------------------------------------------------------|----------------|-------------------|
| Description | S/C Confirm | MCD/BE Confirm | Description | S/C Confirm | MCD/BE Confirm |
| Plant Risk Assessment is supplied | | | Suppliers incoming inspection provided | | |
| Log book supplied | | | Operators manual specific to item of plant - sighted and kept with plant | | |
| Last inspection & service report/history are in the plant & service sticker applied/noted in log book. | | | Weed and seed hygiene declaration / certificate attached (if required) | | |
| Add site specific requirements | | | | | |

Notes / Comments

X : **BAD CONDITION** - where the plant is found to not conform to the above, then it will be Tagged out and prevented from commencing work on the site until the non-compliance is rectified.

| Actions / Repairs to be Undertaken: | Action Closed By (date & initial): |
|-------------------------------------|------------------------------------|
| | |
| | |

SUBCONTRACTOR CONFIRMS THAT THE ITEM OF PLANT COMPLIES WITH ALL SAFETY REQUIREMENTS AND (IF REQUIRED) ANY REPAIRS HAVE BEEN COMPLETED.

POSITION:



INCOMING / OUTGOING PLANT INSPECTION

SIGNED:

DATE: /

1

1

McConnell Dowell/Built Environs will not reimburse the Contractor / Supplier for any down / lost time so caused from any nonconformance. This form does not remove any liability for the plant supplier to conform to the relevant WHS Legislation.

OFFICE USE ONLY

| I consider that the equipment is in suitable condition for use. | | | | | |
|-----------------------------------------------------------------|-----------|---|--|--|--|
| NAME: | POSITION: | | | | |
| SIGNED: | DATE: | 1 | | | |

IF SUITABLE, ATTACH SITE INSPECTION STICKER TO PLANT / VEHICLE

This is to certify that the plant being supplied conforms to the relevant WHS legislation and the requirements as detailed above. McConnell Dowell/Built Environs will check this Incoming Outgoing Plant Inspection to ensure the supplier has verified compliance to legislative requirements and to register the plant on the site. The operator will be required to participate in ongoing training and perform work in accordance with the relevant Work Method Statement. APPENDIX E – Contaminated Land Discovery Protocol

Contaminated Land Discovery Protocol

Table 1 Site Identification

| Site Name: | Mt Cass Wind Farm |
|---------------------|--------------------------------------------------------------------------------------------|
| Site Location: | 791 Mt Cass Road, Waipara, North Canterbury |
| Legal Description/s | Lot 16 & 17 DP 424383, Section 108 SO 469452, Part Lot 1 DP 5900, RS39401, Lot 2 DP 401564 |
| Site Area (ha): | Approximately 580ha |
| Site Zoning: | Rural |
| Current Site Use: | Agricultural - Stock grazing |

Context:

The site stretches 7.5km through farmland along a ridge in the foothills bordering the Waipara Valley. In consideration of this site, access and laydown areas have also been included within this investigation. Although no Hazardous Activities and Industries List (HAIL) activities were identified along the ridgeline itself, a fertilizer bulk storage bunker (HAIL Activity A6) is present beside the Main Access Road, to the south of the ridge. A conceptual site model indicates that construction workers building the main access road may be at risk of coming in contact or inhaling heavy metals in soil, associated with this fertilizer storage bunker. Sampling of natural soils from four locations along the ridge returned results that were not health significant.

As the site present a large area of land, there is the potential for further contaminated land to be discovered during works.

Process:

In the event that any unexpected contaminated soil or material is uncovered by the works, an Contaminated Land Discovery Protocol shall be implemented by following the steps below:

- 1. Earthworks within ten metres of the encountered contaminants shall cease immediately;
- 2. All practicable steps shall be taken to prevent the contaminated material becoming entrained in stormwater. Immediate steps shall include, where practicable:
 - Diverting any stormwater runoff from surrounding areas away from the contaminated material; and
 - Minimising the exposure of the contaminated material, including covering the contaminants with an impervious cover;
- 3. Notification of the Canterbury Regional Council, Attention: Contaminated Sites Manager and Regional Leader Monitoring and Compliance, within 24 hours of the discovery;

- 4. Earthworks within ten metres of encountered contaminants shall not recommence until a suitably qualified and experienced contaminated land practitioner (SQEP) confirms to Canterbury Regional Council, Attention: Regional Leader Monitoring and Compliance;
- 5. All records and documentation associated with the discovery shall be kept and copies shall be provided to the Canterbury Regional Council upon request.

Any material removed from the site during the works that is potentially or confirmed as contaminated, shall be disposed of at a facility authorised to receive such material.

Appendix G

B4 Archaeology Management Plan



Mt Cass Wind Farm Accidental Discovery Protocol Plan



Revision 6 – 15/05/23

This document has been prepared for the benefit of Mt Cass Wind Farm Ltd (MCWF). No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person. This disclaimer shall apply notwithstanding that the report may be made available to other persons of an application for permission or approval to fulfil a legal requirement.

Revision History

| Version | Description | Date | Prepared by | Approved By |
|---------|------------------------------------------------------------|-----------|-------------|-------------|
| Rev 1 | Draft | 03 Mar 21 | HW | SB |
| Rev 2 | Draft – for Waitaha ki Waitaha and Ngāi Tūāhuriri input | 20 Apr 21 | HL | SB |
| Rev 3 | MCD Input | 1-Dec 22 | DK | MC |
| Rev 4 | MCD – Issue post review feed Back | 23/02/23 | DK | MC |
| Rev 5 | Post CLG review, HDC Submission | 23/03/23 | MC | GG |
| Rev 6 | ADP and Site Sensitivity cultural Protocol Approved | 15/05/23 | МС | GG |

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| | 1.3 | Existing site conditions | . 3 |
| 2. | | Consent Conditions | .5 |
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1. Introduction

1.1 Purpose

This plan has been prepared to support the Construction Management Plan, inform people involved in the Mt Cass Wind Farm (the Project) the procedures for Accidental Discovery of cultural material or sites and to comply to the requirements of the resource consent and any other regulatory requirements during the construction phase works.

1.2 Overview

The Accidental Discovery Protocol is the primary responsibility of the Project Manager and begins with hazard awareness and risk minimisation. The plan sets out Accidental Discovery risks and associated Management Processes to mitigate the identified Project Risks.

During construction, the Civil Contractor will be responsible for ensuring that this plan is correctly implemented and will review all documentation relating to this plan before it is finalised and issued. Site induction for all personnel must include a briefing on this plan including the main content of this plan and any SOP's relevant to the task being performed.

1.3 Existing site conditions

Ngāi Tahu iwi has established mana whenua in the South Island and Ngāi Tūāhuriri is one of the five primary hapū of Ngāi Tahu whānui, whose takiwā (territory) includes the Mount Cass. Te Rūnanga o Ngāi Tahu is the governing body that oversees Ngāi Tahu activities and is made up of elected representatives of the 18 Papatipu Rūnanga. Te Ngāi Tūāhuriri Rūnanga is an incorporated society representing one of the 18 Papatipu Rūnanga and their traditional rohe extends from Hakatere (Ashburton) and Waikirikiri (Selwyn) Rivers to the Hurunui.

Waitaha ki Waitaha also have a historical and cultural connection to the site separate from Ngāi Tahu, with reference to specific matters such as Matariki and the monitoring of braids of the Waimakariri river as it traversed the plains between Te Waihora and near to Amberley.

There are no previously recorded Wāhi Taonga, Wāhi Tapu/Urupā or Ngāi Tahu Silent Files within the Project site. However there are identified archaeological sites within the wider vicinity as identified in Figure 1. The archaeological sites identified include human burials and occupational rock shelters.

There is a possibility that unrecorded archaeological sites may be discovered as a result of construction activities and this Plan is proposed to ensure archaeological site or site of cultural significance uncovered during the construction process is appropriately managed and any effects mitigated.



Figure 1 New Zealand Archaeological sites within the wider area of the Project Site

2. Consent Conditions

Appendix C of the Construction Management Plan includes a matrix of all consent conditions that are included in the Construction Management Plan and Subplans. The following specific conditions relevant to this plan are set out below:

| Consent Conditions | Control Consent Conditions | for |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------|
| Accidental Discovery Protocol | | |
| 122) In the event of the accidental discovery of any archaeological remains the following shall occur: a. All activity affecting the immediate area will cease and the New Zealand Historic Places Trust be notified. b. The site shall be secured to ensure the archaeological remains are not further disturbed. c. Works affecting the archaeological remains shall not recommence until the necessary authorities under the Historic Places Act 1993 are obtained. d. If human remains/koiwi tangata are located, in addition to the steps above the NZ Police shall be contacted. e. Wāhi Tapu, Wāhi Taonga and Urupā Protocol shall be implemented if relevant. | Refer Section 4 this Plan. | .1 of |
| 123) The Consent Holder shall offer to enter into a Discovery Protocol for Wāhi Tapu, Wāhi Taonga and Urupā jointly with Te Runanga o Ngai Tahu and Te Ngai Tūāhuriri Runanga. The purpose of a "Discovery Protocol for Wāhi Tapu, Wāhi Taonga and Urupā shall be to: a. Manage and protect the integrity of known and unknown archaeological sites from damage and loss; b. Maximise the opportunity to retrieve physical and archaeological evidence from disturbed sites; c. Obtain quality information on the lives of people, their activities, food, resource use, trails and habitation areas of Ngai Tahu ancestors from archaeological sites; and d. Ensure Te Ngai Tūāhuriri Runanga is satisfied with the management of any koiwi tangata. e. The Protocol shall include the following requirements: i). An offer to engage a representative of Te Ngai Tūāhuriri Runanga trained in the discovery and recognition of archaeological sites to advise, oversee and where necessary be present during site preparation, excavation and construction, to act as advisor to the Consent Holder on identification of Wāhi Tapu, Wāhi Taonga, Urupa or historic cultural sites. ii). The Consent Holder shall consult with Te Runanga o Ngāi Tahu and Te Ngai Tūāhuriri Runanga to determine in accordance with tikanga Maori if there are any matters of protocol which tangata whenua wish to undertake in relation to the commencement of any development works, significant events or the commissioning of the completed works. | Refer Section and Appendix this Plan. | |
| iii). The Consent Holder shall ensure that contractors involved with earthmoving activities have received appropriate training and are aware of the requirement to undertake and monitor earthmoving activities in a way that enables the identification of Wāhi Tapu, Wāhi Taonga, Urupā or historic cultural sites. Te Runanga o Ngai Tahu and Te Ngai Tūāhuriri Runanga shall be offered a contract to provide appropriate training to contractors. | | |

| iv) Immediately it becomes apparent that a Wāhi Tapu, Wāhi Taonga, Urupā or historic cultural site has been discovered, earthmoving activities shall stop in the location of the discovery. The contractor shall shut down all machinery or activity immediately, leave the location and advise the Consent Holder of | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| the occurrence. | |
| v) in cases other than where suspected Koiwi Tangata (human remains) are suspected: | |
| 1. The representative of Te Ngai Tūāhuriri Runanga shall be consulted by the Consent Holder of the site to determine what further actions are required to safeguard the site or its contents, and to avoid, remedy or mitigate any damage to the site. | |
| 2. Work in the area of the discovery may only continue once all the necessary authorities under the Historic Places Act 1993 are obtained. | |
| vi) Where Koiwi Tangata (human remains) are suspected: | |
| 1. The Consent Holder shall take steps immediately to secure the site of the Koiwi Tangata in a way that ensures the koiwi tangata are untouched. | |
| 2. The Consent Holder shall be responsible for notifying the Te Ngāi Tūāhuriri Runanga, the Police and the Historic Places Trust that suspected Koiwi Tangata have been uncovered. | |
| 3. The Consent Holder of the site shall make its staff available to meet and guide Kaumatua, the Police and Historic Places Trust staff to the site, assisting with, any requests that they may make. | |
| 4. Earthmoving operations in the vicinity of the Koiwi Tangata shall remain halted until the Kaumatua; Police and Historic Places Trust staff have marked | |
| off the area around the affected area and given approval for earthmoving operations to begin. | |
| vii). Work in the affected area may only continue once: | |
| 1. if the Koiwi Tangata are not of Maori origins, all the necessary legal authorisations are obtained. | |
| 2. if the Koiwi Tangata are of Maori origins, all the necessary legal authorisations are obtained and with the express agreement of the Kaumatua. | |
| 124) The Consent Holder shall comply with any Discovery Protocol for Wāhi Tapu, Wāhi Taonga and Urupā jointly entered into with Te Runanga o Ngai | Refer Section 4.2 |
| Tahu and Te Ngai Tūāhuriri Runanga, to the extent necessary to give effect to the mandatory requirements in the above condition | and Appendix A of this Plan. |
| 125) The Consent Holder shall provide Te Runanga o Ngai Tahu, Te Ngai Tūāhuriri Runanga and the Historic Places Trust with the following information no | Refer Section 4.4 of |
| less than 10 working days prior to any earthmoving activities: | this Plan. |
| a. A schedule of the dates of all significant earthmoving events, their sequence and duration. | |
| b. The Consent Holder shall invite Te Runanga o Ngai Tahu and Te Ngai Tūāhuriri Runanga to attend any episode of significant earthmoving activity. | |
| 126) Prior to commencing construction, the Consent Holder shall consult with the three Hapu of Waitaha to ensure that up to six Kaumatua | Refer Section 4.3 of |
| representatives are provided with sufficient opportunity to visit the site at a mutually agreed time to Inspect: | this Plan. |
| a. All areas of the site that have been identified for excavation; and | |
| b. Any other locations of interest to Waitaha ki Waitaha within the wider outline area. | |
| 127) Following the visit to the site by the Kaumatua representatives under condition [126] the Consent Holder shall prepare a Site Cultural Sensitivity | Refer Section 4.3 |
| Protocol (SCSP) to be included in the Construction Management Plan. The SCSP shall: | and Appendix B of |
| a. Be prepared in consultation with Waitaha ki Waitaha; | this Plan. |
| b. Include protocols and process for dealing in a culturally safe manner with all sites identified under condition [126] as being of potential cultural concern | |
| or significance to Waitaha ki Waitaha; | |

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| Refer Section 4.1 of |
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3. General Control Measures

Under the Heritage New Zealand Pouhere Taonga Act 2014 an archaeological site is defined as any place associated with pre-1900 human activity, where there is material evidence relating to the history of New Zealand. For sites solely of Māori origin, this evidence may be in the form of accumulations of shell, bone, charcoal, burnt stones, etc. In later sites, artefacts such as bottles or broken glass, ceramics, metals, etc, may be found or evidence of old foundations, wells, drains, tailings, races or other structures. Human remains/kōiwi may date to any historic period.

It is unlawful for any person to destroy, damage, or modify the whole or any part of an archaeological site without the prior authority of Heritage New Zealand Pouhere Taonga. This is the case regardless of the legal status of the land on which the site is located, whether the activity is permitted under the District or Regional Plan or whether a resource or building consent has been granted. The Heritage New Zealand Pouhere Taonga Act 2014 provides for substantial penalties for unauthorised damage or destruction.

Should any unrecorded archaeological sites be found during the construction process the provisions of the Heritage New Zealand Pouhere Taonga Act 2014 will apply.

4. Specific Control Measures

4.1 Accidental Discovery Protocol - General

In the event of the accidental discovery of any archaeological remains the following shall occur:

- All activity affecting the immediate area will cease and the following organisations notified:
 - o Heritage New Zealand Pouhere Taonga
 - o Hurunui District Council (HDC)
 - Canterbury Regional Council (Environment Canterbury)
 - Ngāi Tūāhuriri Rūnanga and Waitaha ki Waitaha if the site or material is determined to be Kōiwi Tangata (human bones) or taonga (treasured artefacts)
 - New Zealand Police if the archaeological material is determined to be Kōiwi Tangata (human bones)
- The site shall be secured to ensure the archaeological remains are not further disturbed.
- Works affecting the archaeological remains shall not recommence until the necessary confirmation or authority from Heritage New Zealand Pouhere Taonga is obtained.
- Wāhi Tapu, Wāhi Taonga and Urupā Protocol shall be implemented if relevant.

In accordance with condition an ADP is also to be prepared in consultation with Waitaha ki Waitaha and Heritage New Zealand Pouhere Taonga. The final protocol will be included in this section.

4.2 Accidental Discovery Protocol for Wāhi Tapu, Wāhi Taonga and Urupā - Ngāi Tūāhuriri

The joint development of a Project site specific ADP for Wāhi Tapu, Wāhi Taonga and Urupā is to be offered to Te Runanga o Ngāi Tahu and Te Ngāi Tūāhuriri Runanga. Where this is agreed to by Ngāi Tahu and Ngāi Tūāhuriri Runanga the details of the protocol will be included in this section and the full protocol included in Appendix A.

The Consent Holder shall consult with Te Runanga o Ngāi Tahu and Te Ngai Tūāhuriri Runanga to comply with consent conditions 123, 124, and 125.

4.3 Site Cultural Sensitivity Protocol (SCSP)

A SCSP is required to be prepared prior to commencing construction and implemented during construction. Prior to developing the SCSP a site visit by up to six Kaumatua representatives of Waitaha ki Waitaha is to occur to inspect all areas of the site identified for excavation and any other locations of interest.

4.4 Consultation and Communication

Consultation with Ngāi Tūāhuriri Rūnanga and Waitaha ki Waitaha is required through the development of the ADP for Wāhi Tapu, Wāhi Taonga and Urupā and the SCSP with Waitaha.

Communication required during construction includes:

- No less than 10 working days prior to any earthmoving activities a schedule of dates of all significant earthmoving events and their scheduled duration is to be provided to Ngāi Tahu and Ngāi Tūāhuriri Runanga.
- Ngāi Tahu and Ngāi Tūāhuriri Runanga are to be invited to attend any episode of significant earthmoving activity.
- Notify the relevant organisations if archaeological material or sites are identified during construction.

5. Training – On-site Personnel

Site personnel will undertake a site induction so they are aware of the project consent conditions and requirements in relation to both the ADP and SCSP.

The Construction Manager shall ensure that contractors involved with earthmoving activities have received appropriate training and are aware of the requirement to undertake and monitor earthmoving activities in a way that enables the identification of Wāhi Tapu, Wāhi Taonga, Urupā or historic cultural sites. Te Runanga o Ngai Tahu and Te Ngai Tūāhuriri Runanga are to be offered a contract to provide appropriate training to contractors.

6. Monitoring and maintenance During Construction

As part of the control measures, on-going site monitoring by the contractor and wider project team will be undertaken. This will ensure that all the protocols detailed in this plan have been properly implemented and are functioning effectively.

The following shall be recorded throughout the Project construction to document compliance with this Plan:

- Records of training of on-site personnel in the identification of archaeological or culturally significant sites.
- Records of any visits to the site of representatives of Waitaha Ki Waitaha, Te Runanga o Ngāi Tahu and Te Ngāi Tūāhuriri Runanga or Heritage New Zealand Pouhere Taonga, including any observations made.
- Records of any discovery of material or sites and the implementation of the relevant ADP.

7. Appendices

| Appendix | Description | | |
|----------|------------------------------------|--|--|
| A | Accidental Discovery Protocol | | |
| В | Site Cultural Sensitivity Protocol | | |

Appendix A: Accidental Discovery Protocol - Rev 2 Dated 15/05/23

PRIOR TO COMMENCEMENT OF ANY WORKS, A COPY OF THIS ADP SHOULD BE MADE AVAILABLE TO ALL CONTRACTORS WORKING ONSITE.

Purpose

This Accidental Discovery Protocol (ADP) sets out the procedures that must be followed in the event that taonga(Māori artefacts), burial sites/kōiwi (human remains), or Māori archaeological sites are accidentally discovered.

The Protocol is provided by the Nation of Waitaha in recognition of the significance of Mt Cass known traditionally as Te Whariu O Te Huringa.

Background

Land use activities involving earthworks have the potential to disturb material of cultural significance to tangata whenua. In all cases such material will be a taonga, and in some cases such material will also be tapu. Accidental discoveries may be indicators of additional sites in the area. They require appropriate care and protection, including being retrieved and handled with the correct Māoritikanga(protocol).

Under the *Heritage New Zealand Pouhere Taonga Act* 2014, an archaeological site is defined as any place associated with pre-1900 human activity, where there is material evidence relating to the history of New Zealand. It is unlawful for any person to destroy, damage or modify the whole or any part of an archaeological site (known or unknown) without the prior authority of the NZ Historic Places Trust (NZHPT). This is the case regardless of the legal status of the land on which the site is located, whether the activity is permitted under the District or Regional Plan or whether a resource or building consent has been granted. The NZHPT is the statutory authority for archaeology in New Zealand.

Note that this ADP does not fulfill legal obligations under the Heritage New Zealand Pouhere Taonga Act 2014 regarding non-Māori archaeology. Please contact the Historic Places Trust for further advice.

Immediately following the discovery of material suspected to be a taonga, kõiwi or Māori archaeological site, the following steps shall be taken:



- 1. All work on the site will cease immediately.
- Immediate steps will be taken to secure the site to ensure the archaeological material is not further disturbed.
- The contractor/ works supervisor/ owner will notify Waitaha together with Ngai Tuahuriri Runanga and the Area Archaeologist of Heritage NZ. In the case of koiwi (human remains), the New Zealand Police must be notified.
- 4. Waitaha, Ngai Tuahuriri and Heritage New Zealand will jointly appoint/ advise a qualified archaeologist who will confirm the nature of the accidentally discovered material.
- 5. If the material is confirmed as being archaeological, the contractor/works supervisor/owner will ensure that an archaeological assessment is carried out by a qualified archaeologist, and if appropriate, an archaeological authority is obtained from NZHPT before work resumes (as per the Heritage New Zealand Pouhere Taonga Act 2014).
- The contractor/works supervisor/owner will also consult Waitaha on any matters of tikanga(protocol) that are required in relation to the discovery and prior to the commencement of any investigation.
- If koiwi (human remains) are uncovered, in addition to the steps above, the area must be treated with utmost discretion and respect, and the koiwi dealt with according to both law and tikanga, as guided by Ngai Tuahuriri Runanga and Waitaha.
- 8. Works in the site area shall not recommence until authorised by the Nga Tuahuririi Rūnanga, Waitaha, Heritage New Zealand (and the NZ Police in the case of kōiwi) and any other authority with statutory responsibility, to ensure that all statutory and cultural requirements have been met.
- 9. All parties will work towards work recommencing in the shortest possible time frame while ensuring that any archaeological sites discovered are protected until as much information as practicable is gained and a decision regarding their appropriate management is made, including obtaining an archaeological authority under the Heritage New Zealand Pouhere Taonga Act 2014 if necessary. Appropriate management may include recording or removal of archaeological material.
- 10. Although bound to uphold the requirements of the Protected Objects Act 1975, the contractor/ works supervisor/ owner recognises the relationship between Waitaha and Ngai Tahu and any taonga (Maori artefacts) that may be discovered

IF IN DOUBT, STOP AND ASK; TAKE A PHOTO AND SEND IT TO THE HNZ ARCHAEOLOGIST

| Contact Details | | |
|-----------------------------------------|-------------|---------------------------------|
| Waitaha ki Waitaha Cultural Consultancy | 027 5780145 | pakauwaka@gmail.com |
| NZHPT Archaeologist | 03 357 9615 | archaeologistcw@historic.org.nz |
| NZHPT Southern Regional Office | 03 357 9629 | infosouthern@historic.org.nz |
| NZHPT Māori Heritage Advisor | 03 357 9620 | mhadvisorcw@historic.org.nz |
| NZ Police | 111 | |
| | | |



Site Cultural Sensitivity Protocol for inclusion in Construction Management Plan-Rev 3 Dated 15/05/23

Background

- Condition 126 of Resource Consent RC070250 requires preparation of a Site Cultural Sensitivity Protocol to be included in the Construction Management Plan for the Mt Cass Wind Farm. A copy of conditions 126-128 is attached to this document as Appendix 1.
- 2. Following a tangi on 12 March 2020 a letter was prepared setting out the expectations of Waitaha. These expectations have been incorporated into this protocol.
- 3. Prior to the inspection of sites, and the laying down of protocols of our tikanga and ritenga, for all the Tower sites chosen, by the Mt Cass Wind Farm Ltd, a ceremony was held in the Atea of Te Whariu, whereby our Grandmother Councilors Kathleen Tuhiwai-Wharemate, and Meretaka Taylor Rakete, ceremonially conducted a Tangi Powhiri, on the 12th March 2020 site visit, Danny Te Rakai Watson and Te Porohau Ruka Te Korako did the blessings and whaikorero to pay tribute to our ancient ancestors who are entombed in the limestone caves, by way of our ancient funerary practices.
- 4. This tangi powhiri ceremonial was to open the overall site for the commencement of the first stages of site preparation and for the laying down of the preparation and initial buildup of gear and cover for the machines and men who will be working on the site.
- 5. This stage of ceremony has now cleared the way for all preparatory work to begin during this late summer early autumn of 2020.

The Accidental Discovery Of Archaeological Materials, Or Skeletal Remnant

- 6. The Waitaha Nation, registered its Interests and ownership of the funerary remnants, the archeological fragments and instruments of our ancestors, before the Hurunui District Council and the Environment Court, our vested, Cultural, Traditional and Environmental ties and interests, to our ancient and present day Te Whariu o Te Huringa o Waitaha (Mt Cass).
- 7. That during any preparatory construction work and or maintenance of the Wind Farm, any accidental discoveries of archeological artefacts, must be dealt with under the attached Accidental Discovery Protocol including immediate notification to the office of:

WAITAHA CULTURAL CONSULTANTS,

Te Porohau Ruka Te Korakora, Kaikohe, +64 27 578 0145, akauwaka@gmail.com Kenneth McAnergney, Christchurch. Ken.mcanergney@outlook.com

- 8. Waitaha ki Waitaha Cultural Consultancy, will notify those Government Agencies, deemed necessary under the Traditional and Cultural knowledge and tikanga held in The Waitaha Wananga of Kohatutakanga, For avoidance of doubt this is additional to any obligations Mt Cass Wind Farm Limited has to notify either Heritage New Zealand or the New Zealand Police under any resource consent or accidental discovery protocol. The information contained in the Wananga Schools of Learning of Waitaha, every village and bone deposit is known and catalogued, for our Waitaha Nation Families who lived in these ancient and recent past histories of our villages in all our Islands of New Zealand.
- 9. In accordance with the Accidental Discovery Protocol a qualified archaeologist will be engaged and the archaeologist will engage with the Waitaha representatives on any matters of protocol prior to undertaking any investigation:
 - TE POROHAU RUKA TE KORAKORA,
 - ROBERT KENNETH MCANERGNEY,
 - TUWHARERANGI RUKA TE KORAKORA,
 - DANNY TE RAKAI WATSON, AND OUR LEGACY HOLDER
 - MICHAEL GIBBS
- 10. If practicable, taking into account health and safety requirements, TE POROHAU RUKA TE KORAKORA, ROBERT KENNETH MCANERGNEY, TUWHARERANGI RUKA TE KORAKORA, DANNY TE RAKAI WATSON, AND OUR LEGACY HOLDER MICHAEL GIBBS will be able to visit the site of the accidental discovery of archeological material, as soon as is practically possible after any investigation to enact ceremonial matters to be conducted in the ritual tikanga and ritenga of Waitaha.
- 11. The artefacts will be photographed in situ, carefully with reverence, bound and protected and placed in appropriate plaited kete, or containers, where they will be carefully removed into known Tomo, already housing many of our ancient ancestors.
- 12. There may be a need for a Huihuinga to reinter, but for ease of working and timing, a case by case format can and will be considered by the Tohunga,, either, to place in tomo, or even to be catalogued and photographed for the future records of our Waitaha Museum. That will bear its mana, tapu, ihi, wana, wairua and wheirua, in its own magic and difference from the many other streams of Polynesia, and importantly so for those new arrivals into our landscape treasury.
- 13. An appropriate budget for Financial and Practical support, transport, food and accommodation costs, will be set aside and paid on Invoice, by the Mt Cass Wind Farm Ltd, to the Waitaha ki Waitaha Consultancy to enable Elders to participate in Site Visits in accordance with condition 126 of Resource Consent RC070250, and, those chosen Waitaha Elders, will help in the production of reports for the Hapu and Whanau, and for the implementation of required protocols of behavior and support activities for the future.

- 14. These written reports are to be registered, with The Mt Cass Wind Farm Ltd, and Waitaha ki Waitaha Cultural Consultancy (1986).
- 15. It is the understanding of Waitaha ki Waitaha Cultural Consultancy, that the Project Director of the Mt Cass Wind Farm and the Waitaha Executive Council comprising of Te Porohau Ruka Te Korakora, Kenneth McAnergney, Junko Nakatani, Tuwharerangi Ruka Te Korakora, Kathleen Tuhiwai-Wharemate, Meretaka Taylor-Rakete, and Geoffrey Rakete, will answer any of the questions and queries arising from the day to day running of this accord. Also present in this understanding will be Michelle Kingi and Solomon Tohu who are the representatives of our Waitaha Legacy of Leadership.
- 16. SITE INSPECTIONS, SITE PREPARATION AND ANY LAND FORMING AND MOVING ACTIVITIES, EITHER FOR THE CONSTRUCTION OF THE CONCRETE TOWER BASES, OR REFORMING OF ANY SITE WORKS WILL BE REPORTED TO EACH PARTY, AND THAT DUE CARE AND ATTENTION WILL BE AT ALL TIMES EXERCISED.

Inspections and future engagement

- 17. The inspections in the future, if ever needed, must be well resourced and will be carried out under the tikanga and ritenga of The Wananga of Kohatutakanga. Whereby all matters of ceremonial will be applied in the Ancient forms, relevant to the Te Whariu o Te Huringa o Waitaha, and our Ancestors who are interred therein in situ.
- 18. The Agreement in Principle, signed by and on behalf of The Nation of Waitaha, by Te Porohau Ruka Te Korako, in the immediate future, will be the accord that will enable The Mt Cass Wind Farm Ltd, to construct and maintain, unimpeded the Wind Farm to be located, in and around our Waitaha Sacred sites of Te Whariu o Te Huringa o Waitaha.
- 19. Mt Cass Wind Farm Limited and Waitaha ki Waitaha Cultural Consultancy (1986), using its access to prior knowledge of the entire site, will write scoping reports, to be presented to the three major hapu of Waitaha and interested parties attached to this and other sites in the future developments in the overall project of the Mount Cass Wind Farm Ltd.
- 20. Notwithstanding these matters, the continued building and site preparations will be ongoing after ceremonial karakia and ritenga for the individual sites are completed under the due care and diligence of Te Wananga o Te Kohatutakanga are completed under guidance of the Tohunga.

Background

21. Condition 126 of Resource Consent RC070250 requires preparation of a Site Cultural Sensitivity Protocol to be included in the Construction Management Plan for the Mt

Cass Wind Farm. A copy of conditions 126-128 is attached to this document as Appendix 1.

- 22. Following a tangi on 12 March 2020 a letter was prepared setting out the expectations of Waitaha. These expectations have been incorporated into this protocol.
- 23. Prior to the inspection of sites, and the laying down of protocols of our tikanga and ritenga, for all the Tower sites chosen, by the Mt Cass Wind Farm Ltd, a ceremony was held in the **Atea of Te Whariu**, whereby our Grandmother Councilors Kathleen Tuhiwai-Wharemate, and Meretaka Taylor Rakete, ceremonially conducted a Tangi Powhiri, on the 12th March 2020 site visit, Danny Te Rakai Watson and Te Porohau Ruka Te Korako did the blessings and whaikorero to pay tribute to our ancient ancestors who are entombed in the limestone caves, by way of our ancient funerary practices.
- 24. This tangi powhiri ceremonial was to open the overall site for the commencement of the first stages of site preparation and for the laying down of the preparation and initial buildup of gear and cover for the machines and men who will be working on the site.
- 25. This stage of ceremony has now cleared the way for all preparatory work to begin during this late summer early autumn of 2020.

- 126. Prior to commencing construction, the Consent Holder shall consult with the three Hapu of Waitaha to ensure that up to six Kaumatua representatives are provided with sufficient opportunity to visit the site at a mutually agreed time to Inspect:
 - a. All areas of the site that have been identified for excavation; and
 - b. Any other locations of interest to Waitaha ki Waitaha within the wider outline area.
- 127. Following the visit to the site by the Kaumatua representatives under condition [126] the Consent Holder shall prepare a Site Cultural Sensitivity Protocol (SCSP) to be included in the Construction Management Plan. The SCSP shall:
 - a. Be prepared in consultation with Waitaha ki Waitaha;

- Include protocols and process for dealing in a culturally safe manner with all sites identified under condition [126] as being of potential cultural concern or significance to Waitaha ki <u>Waitaha</u>;
- Provide for a procedure whereby a nominated representative of Waitaha ki Waitaha is able to receive regular updates of the construction programme and the implementation of the <u>SCSP</u>;
- d. Require the Consent Holder, in consultation with Waitaha ki Waitaha, to place Interpretative Panels (signs) on all sites or features of cultural significance to ensure that the cultural and historical significance of each site can be recognised and understood; and
- e. Include an appropriate procedure whereby:
 - The representative described in condition [127.c] and up to six Kaumatua are able to visit the site during the construction period to inspect all of the sites described in condition [126] as required by Waitaha Ki Waitaha; and
 - All.of Waitaha Ki Waitaha and Its associates are, after construction, able to access the site to observe and celebrate significant cultural events and occurrences on an ongoing basis.
- 128. The Consent Holder shall prepare an Accidental Discovery Protocol (ADP) as part of the Construction Management Plan prior to construction of the wind farm. The ADP shall be prepared in consultation with Waitaha ki Waitaha and the New Zealand Historic Places Trust, the ADP shall be put in place for any earthmoving or ground modification that occurs during the construction and operation of the wind farm:
- a. The ADP shall set out the steps to take should any prehistoric (Māori) or historic archaeological site be found <u>as a result of</u> any earthmoving or ground modification that occurs during the construction and operation of the wind farm at any time.
- In the event that koiwl tangata (human skeletal remains), taonga or artefact material are discovered during site construction, the Consent Holder shall, without delay:
 - i. Cease all work within the immediate vicinity of the discovery;
 - Notify their nominated Archaeologist, the Consent Authority, Waitaha ki Waitaha and the New Zealand Historic Places <u>Trust;</u>

- iii. Enable a site inspection by, Waitaha ki Waitaha and their advisors, and the New Zealand Historic Places Trust who shall determine the nature of the discovery and the further action required, including whether an Archaeological Authority is required under the Historic Places Act 1993.
- iv. In the case of accidental discovery of an archaeological site a programme of archaeological site investigation shah be carried out by the Consent Holder Any such site shall be properly excavated, recorded, <u>analysed</u> and reported upon under the supervision of an appropriately qualified archaeologist. All archaeological work shall be carried out to the best professional standards.
- Any koiwi tangata or taonga shall be handled and removed by Waitaha ki Waitaha responsible for the tikanga (custom) appropriate to its removal and preservation.
- c. Upon completion of tasks [128.b.i] to [128.b.v] above, and provided all statutory permissions have been obtained, the Consent Holder may recommence site construction following consultation with the Consent Authority, Waitaha ki Waitaha, and the New Zealand Historic Places Trust.

Appendix H

B5 Noise Management Plan



Mt Cass Wind Farm Construction Noise Management Plan



Revision 5 – 23 March 2023

This document has been prepared for the benefit of Mt Cass Wind Farm Ltd (MCWF). No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person. This disclaimer shall apply notwithstanding that the report may be made available to other persons of an application for permission or approval to fulfil a legal requirement.

Revision History

| Version | Description | Date | Prepared by | Approved By |
|---------|------------------------------------------|-----------|-------------|-------------|
| Rev 1 | Draft | 03/03/21 | HW | SB |
| Rev 2 | Updated Draft | 21/04/21 | NT | SB |
| Rev 3 | Draft MCD Input | 1 Dec 22 | СВ | MC |
| Rev 4 | MCD Updates post SQIP and MCWF Review | 01 Mar 23 | СВ | MC |
| Rev 5 | Post CLG Meeting and HDC submission | 23/03/23 | MC | GG |

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1. Introduction

1.1 Purpose

This plan has been prepared to support the Construction Management Plan, to inform people involved in the Mt Cass Wind Farm (MCWF) project how to control noise and comply with the requirements of the resource consent and any other regulatory requirements during the construction phase works.

1.2 Overview

The Noise Management Plan (NMP) is primarily the responsibility of the MCWF Construction Manager and begins with hazard awareness and risk minimisation.

The plan sets out noise risks and associated management processes to mitigate the identified project risks.

During construction, the individual contractors will ensure that this plan is correctly implemented for their scope of work and will review all documentation relating to this plan before it is finalised and issued. There may also be a requirement for this plan to be updated, and hence it will effectively remain a live document throughout the duration of the works.

In general, the project is "Low risk" from a construction noise perspective, given the setback from works to houses, however the Mt Cass Road Upgrade and Symonds Rd the Construction Yard portion of works is in close proximity and will require enhanced management. In addition, night works (primarily concrete batching) have the potential to cause annoyance and will need to be managed.

Site induction for all personnel must include a briefing on this plan, including the main content of this plan and any Safe Operating Procedures (SOPs) relevant to the tasks being performed.

1.3 Consent Conditions

Appendix C of the Construction Management Plan (CMP) includes a matrix of all consent conditions that are included in the Construction Management Plan and Sub plans. The following are the specific conditions that pertain to this plan:

| Consent Conditions | Control for Consent |
|----------------------------------------------------------------------------|------------------------------------|
| | Conditions |
| | Conditions |
| Construction | |
| Construction Management Plan | |
| 32) The Construction Management Plan shall include, but not be limited | |
| to: | |
| | |
| g. A description of the sources of noise and the methods to be used to | Refer to section 3Sources of |
| meet condition [131]. | Noise |
| | |
| Noise | |
| Definitions | |
| 129) The following definitions shall apply for the purposes of these | |
| conditions: | |
| a. Where noise measurement or assessment is required, these shall be | Section 2 & 4 2 for noise criteria |
| undertaken in accordance with | & |
| | Section 5 for noise monitoring |
| NZS6801:2008 "Acoustics- Measurement of Sound", and | requirements |
| NZS 6802:2008 "Acoustics— Environmental Noise". | |
| Wind turbine sounds shall be measured and assessed in accordance with | |
| NZS 6808:2010 "Acoustics - Wind farm Noise". | |
| b. Reference to "dwelling" shall mean any dwelling existing at the time of | |
| granting of this consent. | |
| c. Notional boundary shall have the meaning set out in NZS 6802:2008. | |
| d. "Noise Sensitive Activities" shall have the meaning set out as | |
| "Residential Activity" in paragraph 2.2 of NZS 6802:2008. | |
| Construction Activities | |
| 130) All construction, earthworks, site remediation and | |
| decommissioning, shall be designed and carried out in accordance with | |
| the New Zealand Standard NZS 6803:1999 "Acoustics - Construction | |
| Noise" and shall comply with Table 2 of that standard for "long term | |
| duration". | |

1.4 Key Project Personnel

Key personnel for the project are presented in Table 1.

| Consent Holder – Mt Cass Windfarm Ltd | | | | |
|----------------------------------------------|--------------------------------|---------------------|------------------|-------------------------------------|
| Role | Company | Name | Phone | Email |
| Project Director | MCWFL | Greg Gummer | 021 738 995 | Greg.gummer@mainpower.co.nz |
| Construction Manager - Primary Contact | MCWFL | ТВС | | |
| Secondary Contact (Civils) | MCWFL | Michael Carstens | 027 247 1713 | michael.carstens@mainpower.co.nz |
| Secondary Contact (Electrical) | MCWFL | Neil Wiggins | 021 027 33133 | neil.wiggins@mainpower.co.nz |
| Senior Project Coordinator | MCWFL | Lisa Yuyi | 021 779 380 | lisa.yuyi@mainpower.co.nz |
| Council Represent | tatives | | | |
| Compliance Officer | Hurunui District Council | ТВС | | |
| Compliance Officer | Environment Canterbury | ТВС | | |
| cBoP – McConnel | Dowel Construc | tors | | |
| Role | Company | Name | Phone | Email |
| Project Manager | MCD | Phil Owen | 021638726 | Phil.owen@mcdgroup.com |
| Construction Manager | MCD | David Kidd | 0277039803 | David.kidd@mcdgroup.com |
| Site Manager | MCD | ТВС | | |
| HSEQ Manager | MCD | Clint Hill | 0277028309 | Clint.hill@mcdgroup.com |
| Project Environmental Advisor | MCD | Caitlin Burns | 021 759938 | <u>caitlin.burns@mcdgroup.co.nz</u> |

| Foreman (Environmental) | MCD | ТВС | | |
|----------------------------|------------------------|-------------------------|--------------|--------------------------------|
| Earthworks Manager | Taylor Contracting | Shannon Proctor | 021501894 | shannon@taycon.co.nz |
| Batching Plant Manager | Firth | Mark Cresswell | 0274776958 | mark.cresswell@firth.co.nz |
| eBoP – ElectroNet | : | | | |
| Role | Company | Name | Phone | Email |
| Project Manager | ElectroNet Services | Matt Daffin | 027 586 9102 | MDaffin@electronet.co.nz |
| Environmental Advisor | ElectroNet Services | Sandy Keown Scott | 027 235 4021 | sandyk@electronet.co.nz |
| S&I Contractor – S | GRE | | | |
| Role | Company | Name | Phone | Email |
| Project Manager | SGRE | Akshar Sheth | ТВС | aksar.sheth@siemensgamesa.com |
| Project Director | SGRE | Rohit Sumbli | ТВС | rohit.sumbli@siemensgamesa.com |

Table 1 Project Key Contacts List

1.5 Roles and Responsibility

Table 2 below details the responsibilities of the key project personnel involved in administering this plan during the project.

| Role | Role Responsibilities |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCWFL Project Director | To ensure overall compliance with resource consent conditions. |
| MCWFL Project Contract Manager | To ensure complaints made to or by HDC are communicated to the Site Manager for investigation and rectification. |
| | To ensure the NMP is current and reviewed. |
| | Is the primary point of contact as required under the resource consent. |
| All Contractor Project Managers | To ensure that all their staff are properly trained and understand the requirements of the NMP. |
| | To ensure that the noise control and mitigation measures and procedures outlined in the NMP are implemented effectively. |
| | To ensure that the conditions of the resource consent for noise level are always complied with. |
| | To ensure that the noise monitoring programme is carried out as required. |
| | To ensure that complaints are investigated as outlined in the NMP. |
| | To ensure all construction, earthworks, site remediation and decommissioning, are designed and carried out in accordance with the New Zealand Standard NZS 6803:1999 "Acoustics - Construction Noise. |
| | To ensure all noise generating equipment is maintained to a high standard at all times, including regular inspection of all specific noise control devices outlined in the NMP to ensure the noise control and mitigation measures can be carried out effectively. |
| Environmental Advisor | Inspections, auditing and checking of environmental management practices and procedures. |
| | On-site compliance with consent conditions and other requirements and tracking compliance information. |
| | Report to the client changes to construction techniques or natural environmental changes which require alterations to existing consents new resource consents. |
| | Prepare, review and update the Plan |
| | Update and maintain the environmental portion of the Project Risk Register. |
| | Training of all staff including subcontractors. |

Table 2 Project Roles and Responsibilities

2. General Control Measures

2.1 Key Principles and Approaches

Noise control measures will be set up to ensure all construction, earthworks, site remediation and decommissioning, are designed and carried out in accordance with the New Zealand Standard NZS 6803:1999 "Acoustics - Construction Noise" and shall comply with Table 2 of that standard for "long term duration" or more than 20 weeks, as set out in Table 3.

| Day | Time | L _{Aeq(1h)} | L _{AFmax} |
|--------------------------------|---------------|----------------------|--------------------|
| Weekdays | 0630h - 0730h | 55 dB | 75 dB |
| | 0730h - 1800h | 70 dB | 85 dB |
| | 1800h - 2000h | 65 dB | 80 dB |
| | 2000h - 0630h | 45 dB | 75 dB |
| Saturday | 0630h - 0730h | 45 dB | 75 dB |
| | 0730h - 1800h | 70 dB | 85 dB |
| | 1800h - 2000h | 45 dB | 75 dB |
| | 2000h - 0630h | 45 dB | 75 dB |
| Sundays and public holidays | 0630h - 0730h | 45 dB | 75 dB |
| | 0730h - 1800h | 55 dB | 85 dB |
| | 1800h - 2000h | 45 dB | 75 dB |
| | 2000h - 0630h | 45 dB | 75 dB |

 Table 3 Construction Noise Limits Outlined in Resource Condition 130

2.2 Pre-construction Noise Assessment Method

A noise assessment was carried out prior to construction to assess the proposed construction plant and equipment. The noise estimates gained will be validated using noise monitoring equipment at the beginning of works and monitored for the first 2 months of construction to ensure continued compliance.

The noise estimates were assessed by the below method:

- 1. Each building/sensitive receiver was distance mapped from the specified building site to the closest point of construction works using Google Earth. This assessment identified the following locations for assessment.
 - a. The construction yard on Symonds Rd & Mt Cass Rd intersection
 - b. The Mt Cass Rd Upgrade
 - c. The main site offices and start of the windfarm access track.

This information is contained in Table 5.

- 2. The estimated noise level at 10m for each piece of plant/equipment was gained from NZS 6803:1999 or the NZTA construction noise calculator.
- 3. The appropriate estimated noise level was then assessed using the 'Sound decay with distance' calculation method. This calculation method describes each item of equipment as a 'point' source and the sound levels decrease 6dB each time the distance from the source doubles (20×log10(distance)). It is also noted that at large distances (e.g. >200m), ground and air absorption can significantly reduce the actual noise levels at receivers, therefore predicted noise levels are generally quite conservative.
- 4. The estimated noise level was assessed from the potentially affected building/sensitive receiver to the closest point of construction works, using the distance previously gained from Google Earth. Following this method, the estimated noise levels will reduce as construction progresses up the hill and therefore is currently estimated at the highest noise potential.
- 5. Estimated noise levels were then assessed against the noise allowances listed in Table 3.

Important considerations for Tables 6-8:

- The closest building/sensitive receiver for the Mt Cass Public Rd upgrade in Table 5 is 120m. Given the rules of the sound decay with distance calculation method, this has been calculated using an 80m distance.
- The closest building/sensitive receiver to the Mt Cass Wind Farm construction is 860m and this has been assessed using a 640m distance.
- The closest building/sensitive receiver to the Concrete Batching Plant is 1433m and has been assessed at using a 640m distance.
- Noise Assessment will be checked and verified at actual distances with noise monitoring equipment once construction begins.

As these distances are further away in reality, the noise assessment that has been provided is very conservative for the majority of potentially affected buildings/sensitive receivers.

2.3 Planned Hours of Work

The working hours and planned activities are outlined in Table 4 below:

| Day | Working hours: | Planned activities: |
|-----------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Monday - Friday | 0700h – 1900h | Main construction works |
| Saturday | 0700h – 1700h | |
| Monday - Friday | 0730h – 1800h | Mt Cass Road Upgrade |
| Saturday | 0730h – 1800h | Mt Cass Road Construction Yard |
| Monday - Sunday | 1800h-0700h Night works | Concrete batching and concrete pours for the 22 tower foundations. Delivery and installation of Wind turbine components. |

2.4 Affected Persons

The site is located and accessed via Mt Cass Rd approximately 7.5 km from State Highway 1 at Waipara. Table 5 below presents the distance of residential houses to the closest parts of the construction site and visually shown in Figure 1.

| Reference | Address | Building type/comments | Distance to works | | | | |
|-----------|------------------------------------------|------------------------------------------------------|---------------------------------------------------------|--|--|--|--|
| | Mt Cass Road and Wind Farm | | | | | | |
| 1 | 2 Loffhangen Drive | Waipara Primary School | 4700m | | | | |
| 2 | 6 Mt Cass Road | Allied Petroleum SH1 Service Station | 4200m | | | | |
| 3 | Mt Cass Road RD3 | Dovedale Farm | 1800m | | | | |
| 4 | Crofts Road, RD3 | Hamilton Glens Farm | 1400m | | | | |
| 5 | 554 Mt Cass Road, Teviotdale | Tiromoana Station/Transwaste | 120m Mt Cass Rd upgrade 860m Mt Cass Wind Farm | | | | |
| 6 | Mt Cass Station, Symonds Road, RD3 | Organic Farm Holdings Ltd | 2840m | | | | |
| 7 | 1076 Mt Cass Road, Waipara | The Wattles | 2000m | | | | |
| 8 | 1306 Mt Cass Road, Waipara | Glenafric | 2900m | | | | |
| 9 | 192, 224 Reeces Rd and 21 Crofts Road | Omihi Hills Vineyard Netherwood 21 Crofts Road | 2960m | | | | |
| | Construction yard - Inter | section of Mt Cass & Symonds Rd | | | | | |
| 1 | 2 Loffhangen Drive | Waipara Primary School | 2400m | | | | |
| 2 | 6 Mt Cass Road | Allied Petroleum SH1 Service Station | 1680m | | | | |
| 6 | Mt Cass Station, Symonds Road, RD3 | Organic Farm Holdings Ltd | 1500m | | | | |
| 10 | 23 & 47 Symonds Rd | Dwellings | 80m and 145m respectively | | | | |
| 11 | 133 Mt Cass Rd | Dwelling | 630m | | | | |
| 12 | 782 Kathryns Ln | Dwelling | 1600m | | | | |
| 13 | 51 Mt Cass Road | Dwelling | 1300m | | | | |
| | Concrete Batching Pl | ant (see figure 5 for location) | | | | | |
| 5 | 554 Mt Cass Road, Teviotdale | Dwelling | 1433 | | | | |

Table 5 Potentially Affected Receivers

Information within table sourced from Google Earth

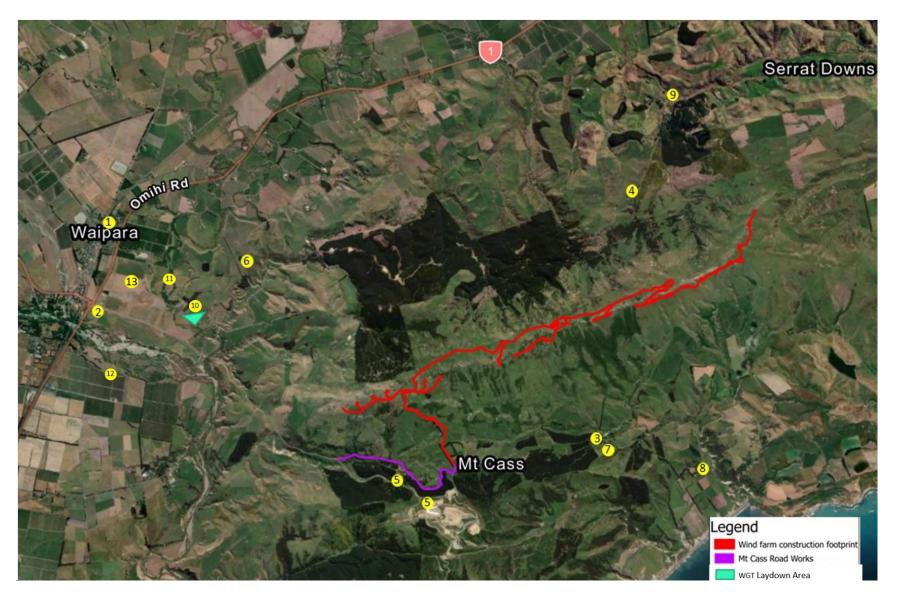
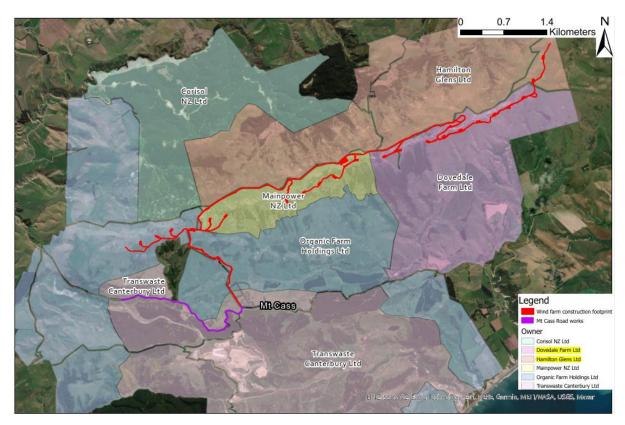


Figure 1 Potential Noise Affected Receivers (Google Earth)



The land ownership of the Project site is shown in Figure 2 below:

Figure 2 Land Ownership (LINZ Stats NZ)

3. Sources of Noise

Table 6 lists all significant plant proposed to be used on the site. The sound level for each item of plant has been estimated from library data in New Zealand Standard 6803; 1999 Annex C or NZTA Construction Noise Calculator. During initial site noise monitoring the validity of this data will be confirmed and adjusted where necessary for the major items of equipment.

| Quantity | Equipment | Model | Estimated L _{Aeq} at 10 m | Estimated L _{Aeq} at 640m | Data reference |
|----------|------------------------------|---------------------|---------------------------------------|---------------------------------------|--------------------------|
| x5 | Dozers | John Deere & CAT | 81dB | 45dB | NZS 6803_1999 Annex C |
| x2 | Dump Truck | Volvo | 82dB | 46dB | NZS 6803_1999 Annex C |
| x2 | Loader | Hitachi & CAT | 84dB | 48dB | NZS 6803_1999 Annex C |
| x1 | Roller | CAT | 86dB | 50dB | NZS 6803_1999 Annex C |
| x6 | Excavator | Hitachi | 88dB | 52dB | NZS 6803_1999 Annex C |
| x1 | Crusher | Terex Finlay | 93dB | 57dB | NZS 6803_1999 Annex C |
| x1 | Tracked Crane (moving) | Kabelco | 86dB | 50dB | NZS 6803_1999 Annex C |
| x1 | Screen | Terex Finlay | 48dB | 12dB | NZS 6803_1999 Annex C |
| x2 | Grader | John Deere & CAT | 84dB | 48dB | NZS 6803_1999 Annex C |
| 1x | Concrete saw | | 90dB | 54dB | NZTA |
| | Batching Plant | | 80dB | 44dB | NZS 6803_1999 Annex C |

Table 6 lists the planned plant for the construction of Mt Cass wind Farm

 Table 6 Sound Levels for Construction Equipment for Mt Cass Wind Farm

Table 7 lists the plant planned for the Mt Cass public road upgrade

| Quantity | Equipment | Model | Estimated L _{Aeq} at 10 m | Estimated L _{Aeq} at 80m | Data reference |
|----------|-----------|-------|---------------------------------------|--------------------------------------|--------------------------|
| X2 | Dozers | ТВС | 81dB | 63dB | NZS 6803_1999 Annex C |
| x2 | Loader | ТВС | 84dB | 48dB | NZS 6803_1999 Annex C |
| x1 | Roller | TBC | 86dB | 50dB | NZS 6803_1999 Annex C |
| X2 | Excavator | TBC | 88dB | 52dB | NZS 6803_1999 Annex C |

Table 7 Sound Levels for Construction Equipment for Mt Cass Public Road Upgrade

Table 8 lists the plant planned for construction of the Construction yard at the Mt Cass Road and Symonds Rd corner

| Quantity | Equipment | Model | Estimated | Estimated | Data reference |
|----------|---------------------------------------------|----------------------|--------------------------|-------------------------|--------------------------|
| | | | L _{Aeq} at 10 m | L _{Aeq} at 80m | |
| 1x | Excavator | ТВС | 88dB | 70dB | NZS 6803_1999 Annex C |
| 1x | Dozer | John Deere or CAT | 81dB | 63dB | NZS 6803_1999 Annex C |
| 1x | Grader | | 84dB | 66dB | NZS 6803_1999 Annex C |
| 1x | Loader | Hitachi or CAT | 84dB | 48dB | NZS 6803_1999 Annex C |
| 2x | Truck | | 77 dB | 59dB | NZS 6803_1999 Annex C |
| 1x | Plate compactor (Compactor rammer) | | 80dB | 62dB | NZS 6803_1999 Annex C |
| 1x | Grinder (9 inch) | | 86dB | 68dB | NZTA |
| 1x | Roller | | 86dB | 68dB | NZS 6803_1999 Annex C |
| 1x | Dump Truck | | 82dB | 64dB | NZS 6803_1999 Annex C |

 Table 8 Sound levels for construction equipment for Symonds Rd Construction Yard

Table 9(a-f) show the key activities likely to generate significant noise and shows the approximate duration of the activity and the equipment that is likely to be used.

| Topsoil Stripping - Symonds Rd Construction Yard | | | | | | |
|--------------------------------------------------|-------|-------|------|---------------------|--|--|
| Equipment | Lp@10 | Qty | Duty | Equivalent Lp@10 | | |
| D8 Dozer | 81 | 1 | 40% | 77 dB | | |
| Excavator | 88 | 2 | 60% | 89 dB | | |
| Dump truck | 82 | 1 | 60% | 80 dB | | |
| Total | 90 dB | | | | | |
| Distance | 80 m | | | | | |
| Level at distance (with facade | | | | | | |
| correction) | | | | 74 dB | | |
| Level at distance (with facade | | | | | | |
| correction & sc | | | | | | |
| suppression) | | 69 dB | | | | |
| Table 9a | | | | | | |

| Topsoil Stripping - Mt Cass Rd upgrade | | | | | |
|----------------------------------------|-------|-------|------|---------------------|--|
| Equipment | Lp@10 | Qty | Duty | Equivalent Lp@10 | |
| D8 Dozer | 81 | 1 | 40% | 77 dB | |
| Excavator | 88 | 2 | 60% | 89 dB | |
| Dump truck | 82 | 1 | 60% | 80 dB | |
| Total | | 90 dB | | | |
| Distance | 120 m | | | | |
| Level at dista | | | | | |
| correction) | 71 dB | | | | |

Table 9b

Table 9a

| General Earthworks - Symonds Rd Construction Yard | | | | | | | |
|------------------------------------------------------|--------------------------------|-----|------|------------|--|--|--|
| | | | | Equivalent | | | |
| Equipment | Lp@10 | Qty | Duty | Lp@10 | | | |
| D8 Dozer | 81 | 1 | 80% | 80 | | | |
| Excavator | 88 | 1 | 80% | 87 | | | |
| Dump Truck | 82 | 1 | 80% | 81 | | | |
| Roller | 86 | 1 | 80% | 85 | | | |
| Compactor | 80 | 1 | 80% | 79 | | | |
| Total | 91 dB | | | | | | |
| Distance | 80 m | | | | | | |
| Level at distanc | Level at distance (with facade | | | | | | |
| correction) | 75 dB | | | | | | |
| Level at distance (with facade | | | | | | | |
| correction & sc | | | | | | | |
| suppression) | | | | 70 dB | | | |

| General Earthworks Mt Cass Rd Upgrade | | | | | |
|---------------------------------------|-------|-----|------|---------------------|--|
| Equipment | Lp@10 | Qty | Duty | Equivalent Lp@10 | |
| D8 Dozer | 81 | 1 | 80% | 80 | |
| Excavator | 88 | 2 | 80% | 87 | |
| Dump Truck | 82 | 1 | 80% | 81 | |
| Roller | 86 | 1 | 80% | 85 | |
| Compactor | 80 | 1 | 80% | 79 | |
| Total | 91 dB | | | | |
| Distance | 120 m | | | | |
| Level at dista | | | | | |
| correction) | 74 dB | | | | |

Table 9d

Table 9c

| Crushing and Screening - Mt Cass Wind Farm | | | | | | |
|--------------------------------------------|-------|-----|------|---------------------|--|--|
| Equipment | Lp@10 | Qty | Duty | Equivalent Lp@10 | | |
| Crusher | 93 | 1 | 80% | 92 | | |
| Screen | 48 | 1 | 100% | 48 | | |
| Loader | 84 | 1 | 80% | 83 | | |
| | | | | | | |
| | | | | | | |
| Total | 93 dB | | | | | |
| Distance | 860 m | | | | | |
| Level at distance | | | | | | |
| correction) | • | | | | | |

Pavements - Mt Cass Wind Farm Equivalent Equipment Lp@10 Lp@10 Qty Duty Rollers 86 2 40% 85 Trucks 77 2 60% 78 Grader 1 82 84 60% Roller 86 1 70% 84 Compactor 80 1 70% 78 Total 87 dB Distance 860 m Level at distance (with facade correction) 51 dB

Table 9e

Table 9f

Table 9(a-f) Significant Construction Noise Generating Activities based on percentage used

The construction of the Symonds Rd Construction Yard has a natural noise barrier with a significant vegetation shelter belt which according to NZTA Highway Noise Barrier Design Guide will reduce noise by 5dB. This will bring the noise volumes within the consent requirements. Another mitigation that can be put in place to ensure the noise does not exceed the limits is an earth bund using topsoil from the construction of the Yard.

The Mt Cass Rd upgrade exceeds the noise allowances in Table 3 by 4dB. This is a pre-construction assessment, and these noise levels will be checked and verified once construction begins. Given the plant used for this upgrade is not confirmed as it has yet been assigned to a contractor it will be particularly important to confirm these assumptions with noise monitoring equipment once works begins and update this management plan with the results. It is also important to recognise that this potential noise exceedance will only exist while all equipment list is being used at the 80m mark to the closest sensitive receiver, as works move away the noise will only lessen and the next closest sensitive receiver being over 1km distance away is not close enough for noise to be a concern.

Noise Assessment will be checked and verified at actual distances with noise monitoring equipment once construction begins and the updated results will be added to this management plan. If there are any concerns the MCWF Construction Manager must provide details to the Hurunui District Council. If noise is found to exceed the allowances, the following details are to be provided:

- the justification for breaching the criteria,
- the mitigation/management procedures that will be followed including notification of affected parties.

4. Control Measures and Mitigation

Initial calculations have been conducted for the main items of equipment based on the outlined construction methodology and minimum distances to the nearest neighbours. On this basis the general noise control measures in Table 10 have been identified as likely to be required to maintain compliance with the construction noise criteria and conform to good practice.

| Equipment/process | General noise control measures | |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Truck and trailers, pavers, ADTs bulldozers, water pumps, graders, compactors | Modern plant will be used, and equipment fitted with exhaust mufflers and sound proofing | |
| Dewatering pumps for drainage and excavations Generators for various works | Fixed items of equipment such as pumps and generators shall, where practicable, be located in positions where noise effects to residents in the vicinity are minimised. Due to the site topography the use of dewatering pumps is unlikely. | |
| Pavement Aggregate importation and compaction | For work involving stationary equipment close to residential areas, the equipme will either have silences fitted or external noise screen can be employed | |
| Mt Cass Road Heavy Vehicle Movements on Public Roads | Speed limits of 30km have been set as a mitigation measure. This is also noted in Section 6.4.4 of the Traffic Management Plan. | |
| Mt Cass Rd Upgrade | Specific controls/mitigation to be added once works in assigned to a contractor. | |
| All works | All noise generating equipment shall be maintained to a high standard at all times, including regular inspection of all specific noise control devices | |
| All works | Secondary exhaust mufflers may be fitted on noisy machines | |
| All works | Keep equipment well maintained and specify quieter models where possible; use straps rather than chains; | |
| All works | Toolbox training sessions to inform contractors of noise sensitivities | |

Table 10 Noise Control Measures

5. Monitoring and Maintenance During Construction

As part of the control measures, monitoring by the relevant contractor will take place as detailed below.

- Verify the sound levels assumed for each of the major items of equipment, and assess the effectiveness of noise control measures relative to the controls listed in this plan.
- During the first 2 months, every two weeks, to check ongoing compliance with the construction noise criteria.
- If required, in response to construction noise-related complaints.

Following each noise survey, the results will be reported on the Contractors' survey report template, and any issues discovered will be investigated. Results will be recorded and provided to the client, including any non-conformances.

Any control measures requiring maintenance or adaptation to allow construction tasks to occur shall be identified and implemented by the Environmental Advisor to ensure continual compliance.

5.1 Noise Instrument Monitoring Method

Noise monitoring shall be conducted by the contractors' staff in accordance with NZS 6801:2008 and NZS 6803:1999.

Noise monitoring will be conducted using the dedicated sound level meter kit detailed in Table 11 below which will be stored in the <u>Contractors main site office</u> for the duration of the project. The calibration will be verified by an accredited laboratory annually and the sound level meter and microphone biannually.

| Equipment | Make | Model | Serial | Last verification |
|-------------------|------|-------|--------|-------------------|
| Sound level meter | | | | |
| Software | | | | |
| Microphone | | | | |
| Calibrator | | | | |
| Wind shield | | | | |
| Tripod | | | | |
| Other | | | | |

An example of a record sheet is provided below:

| Element Inspected | Frequency | Inspection details |
|-------------------|-----------|--------------------|
| | | |
| | | |

If noise monitoring indicates that project noise criteria are being exceeded, and that was not anticipated in the schedule of equipment (Section 5) for the activity/location, then the management schedule will be immediately reviewed. A separate noise plan for this location will then be prepared if one doesn't already exist.

6. Stakeholder Engagement

A key aspect of this construction noise management plan is stakeholder engagement. The site contact for the public for the duration of the works will be the MCWF Project Director. There will be the following communication with the community regarding construction noise issues:

- There will be a contact number available on site, and this number will be prominently displayed at the entrance to the site so that they are clearly visible to the public.
- Prior to the works starting a letter drop will be distributed to all neighbours noted in Table 5
- The Community Liaison Group will be engaged to review this plan.
- Further information will be regularly provided to the affected neighbours with an update on the progress of the works, and the specific activities (including locations) due to be undertaken next. This may be provided by email updates and website updates.
- Prior to any particularly noisy processes identified in a construction noise management schedule, the affected neighbours will be contacted individually. Neighbours will be informed why the night works are required as well as the proposed timing of the specific works and where practicable any times which are particularly sensitive for neighbours will be avoided.

7. Training – On-site Personnel

Site personnel will undertake a site induction, so they are aware of the project consent conditions. Separate to the site induction and for personnel that are operating any plant within the vicinity of the nearby affected parties, further specific training will be undertaken outlining the Resource Consent conditions and this noise management plan.

Any site personnel who will be responsible for monitoring noise levels will be specifically trained in the use of the monitoring equipment.

8. Complaints

8.1 Complaints Process

The Consent Holder shall establish and publicise contact details for a liaison officer, so that members of the local community have a specified and known point of contact should they wish to raise any issues that may arise during construction and operation of the wind farm. A logbook detailing all calls and any action taken shall be kept and made available to Hurunui District Council on request.

Detail MCWFL Complaints process

- 1. Complaint issued via
 - a. Website https://www.mtcasswindfarm.co.nz/contact-us,
 - b. Phone 0800 309080 Greg Gummer Project Director / liaison officer
 - c. Direct engagement from site staff via contact details provided at the project notice board at the site entrance.
 - d. Hurunui District Council 03 314 8816
- 2. MCWFL direct complaint to the relevant contractor or address inhouse if operational
- 3. Record complaint on complaints register at noted in 8.2 below
- 4. Rectify issue
- 5. Provide feedback and closes out on register

Depending on the nature of the complaint the initial response could be to immediately cease the activity pending investigation. However, in most it might not be practicable to provide immediate relief. The complainant, council and the client will be informed of actions taken. Contact details for council are recorded in the overall construction management plan.

Where the initial response does not address the complaint, further investigation, corrective action and follow-up monitoring shall be undertaken as appropriate. The complainant, council and the client will be informed of actions taken.

8.2 Complaints Register

A register for any complaints about the construction activities and operation of the wind farm received by the Consent Holder including complaints in relation to traffic, noise, dust, shadow flicker or blade glint. The register shall record, where this information is available:

- The date, time and duration of the incident that has resulted in a complaint.
- The location of the complainant when the incident was detected.
- The possible cause of the incident.
- Any corrective action undertaken by the Consent Holder in response to the complaint, including timing of that corrective action.
- The date and details of the response given to each complainant.

The complaints register shall be available to the Council and the Community Liaison Group at all reasonable times upon request.

Within 5 days of receipt of any complaint in accordance with condition [0155], the Consent Holder shall advise the Hurunui District Council of the details of any complaint received and, where appropriate, of any remedial or corrective action taken, including the response provided to the complainant.

A template of this register is available in the Construction Management Plan Appendix A

Appendix I

B6 Traffic Management Plan



Mt Cass Wind Farm Traffic Management Plan



Revision 6 – 22 March 2023

This document has been prepared for the benefit of Mt Cass Wind Farm Ltd (MCWFL). No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person. This disclaimer shall apply notwithstanding that the report may be made available to other persons of an application for permission or approval to fulfil a legal requirement.

Revision History

| Version | Description | Date | Prepared by | Approved By |
|---------|--------------------------------------------------------------------------------|-----------|-------------|-------------|
| Rev 1 | Draft | 03 /03/21 | HW | SB |
| Rev 2 | Updated Draft | 16/04/21 | NT | SB |
| Rev 3 | MCD Input | 1/12/22 | DK | MC |
| Rev 4 | MCD update post review comments | 22/12/22 | DK | MC |
| Rev 5 | MCD update post review comments | 01/03/23 | DK | MC |
| Rev 6 | Post CLG Review, and recent Transwaste discissions and final submission. | | МС | GG |

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1. Introduction

1.1 Purpose

The purpose of this plan is to inform people involved in the Mt Cass Wind Farm how to control traffic and to comply with the requirements of the HDC resource consent HR070250 and any other regulatory requirements during the construction works. The plan covers the construction of the wind farm.

1.2 Construction Traffic Management Plan Overview

The Traffic Management Plan is primarily the responsibility of the Project Director and begins with hazard awareness and risk minimisation.

The plan sets out Traffic Management risks and associated management processes to mitigate the identified Project Risks associated with construction traffic and how the relevant resource consent conditions identified in section 2 will be met.

During construction, the relevant Contractor engaged by MCWFL will be responsible for ensuring that this plan is correctly implemented and will review all documentation relating to this plan and their respective scope of works before it is finalised and issued. This TMP, as part of the overall CMP, is envisaged to remain a working document throughout the Project and inform all associated traffic management activities.

As the detailed design progresses the site-specific plans will be developed in to accommodate the scope of works.

Site induction for all personnel must include a briefing on this plan, including the main content of this plan and any SOPs relevant to the task being performed.

This plan forms part of the Projects Construction Management Plan (CMP) and must be read in conjunction with the CMP.

1.3 Project Overview

The project consists of building 7.5 km of access tracks along the Mt Cass Ridge Line to access the 22 WTG locations shown in Figure 1 below.

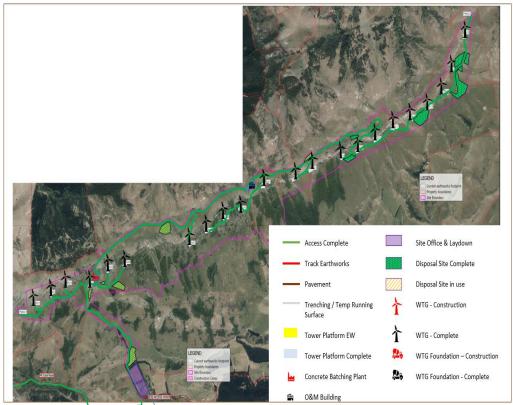


Figure 1 Mt Cass Wind Farm Schematic

The work on the Mt Cass site involves the earthworks and drainage to construct the access tracks from Mt Cass Rd to the WTG locations.

A concrete batching plant will be established at the consented location on the ridge line and will be used to pour the tower foundations.

The turbines will then be transported to a construction yard at the corner of Mt Cass Rd and Symonds Rd, then from here to their final locations on the ridge line.

Mt Cass road will be upgrade for this project from the Kate Valley Turn Off to the Site Entrance at Mt Cass Station. The scope of the work that affects traffic is detailed in section 4 of this plan.

1.4 Project Location

The Mt Cass Wind Farm (MCWF) project is located east of Waipara in North Canterbury and is 15km northeast of Amberley, New Zealand.

The location map in Figure 2 provides the sites location in relationship to Christchurch.

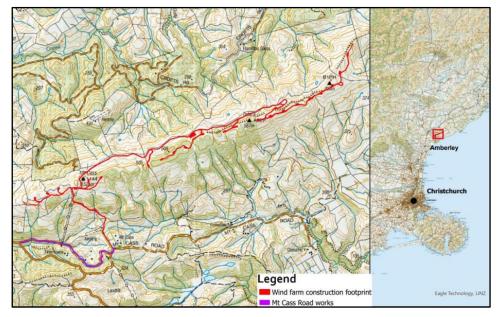


Figure 2 Mt Cass Wind Farm Location

The project is accessed from State Highway One via Mt Cass Rd. Mt Cass Road services the Kate Valley Land Fill and is a two-way sealed Road from the State Highway to the Kate Valley Turn off.

This section of the Mt Cass Rd has an estimated ADT is 240 and HVC is 50%.

From the Kate Valley turn off to the site entrance at Mt Cass Station the road becomes a narrow twoway road with unsealed sections, a single lane bridge and tight bends on a steep hill section.

This section of the Mt Cass Rd has an estimated ADT is 120 and HVC is 11%.

This section of road provides access to the local residents (Predominantly Farms), the Tiromoana Bush Walkway which will remain open during the project and beach access.

1.5 Construction Access Hours

Most of the construction work will take place between 07:00 to 19:00 Monday to Saturday.

Sundays, Public Holidays and agreed Christmas shut down periods will not be worked.

There will be the following requirements for night works

- 1. Concrete pours These should not influence traffic management as they are off the road network and concrete is batched on site.
- 2. Delivery of turbine components, these will be carried as per the permitted requirements detailed in section 4 of this plan.

Access to the site will be restricted by the use of locked gates during non-schedule working hours.

1.6 Roads Used with in the HDC Region

Roads in the Hurunui District to be used by heavy construction traffic are:

| Road Name | ADT | HCV (%) |
|-------------------------------------------|--------|---------|
| State Highway 1 (Glasnevin Rd) | 8,941 | 18.3% |
| State Highway 1 (Amberley) | 11,142 | 12.9% |
| State Highway 1 (Leithfield) | 10,319 | 15.1% |
| Mt Cass Road (SH1 to Kate Valley) * | 240 | 49.6% |
| Mt Cass Road (Kate Valley to Site Access) | 120 | 11.0% |
| Symonds Rd | 20 | 10.0% |
| Amberly Beach Rd | 900 | 8.1% |
| Webbs Rd | 220 | 10.0% |
| Double Corner Rd | 320 | 6.3% |
| Hursley Terrace Rd | 350 | 11.0% |

Table 1 HDC Roads to be used with ADT and % Heavy Vehicles (Source Mobileroad.org)

* Information supplied from Kate Valley shows that they estimate 355 truck movements per day.

1.7 Estimated Construction Traffic

Construction traffic will have peaks and troughs throughout the duration of the project depending on the tasks being carried out. The MCWFL has carried out initial estimates of construction traffic and estimate that the volume of heavy vehicles will increase by 26 vehicles a day or 128 per week on average and will peak at just over 300 movements a week. This is demonstrated in graph in Figure 3.

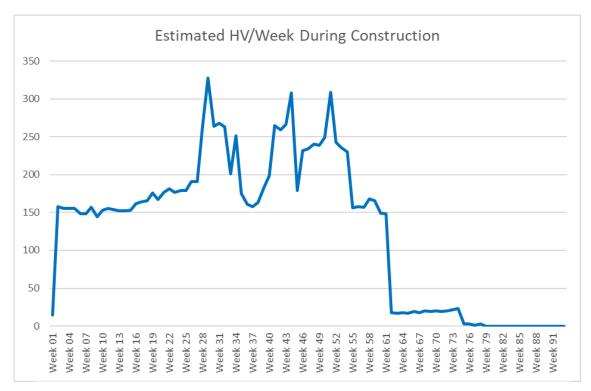


Figure 3 Estimated Heavy Vehicle Moments against Construction Duration

2. Consent Conditions

Appendix C of the Construction Management Plan includes a matrix of all consent conditions that are included in the Construction Management Plan and Subplans. Table 2 contains the specific conditions that pertain this plan.

| Consent Conditions | Control for Consent Conditions |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction | |
| Construction Management Plan | |
| 31) The objective of the Construction Management Plan shall be to set out the practices and procedures to be adopted to ensure compliance with consent conditions and to meet the following objectives: | |
| i To ensure matters relating to the extent and timing of construction traffic, and the traffic management provisions to be put in place during this time, achieve a safe and efficient road network; | This Plan |
| 32) The Construction Management Plan shall include, but not be limited to: | |
| h. Management of construction traffic as provided for in condition [63]. | Set out below |
| Traffic Management 63) The Construction Management Plan shall set out in detail matters relating to the extent and timing of construction traffic activity, and temporary traffic management provisions to be put in place during construction, and shall: | Any individual TMP's will be put in place and approved by the relevant authorities. All vehicle movements including over size deliveries will be communicated with local landowners and Transwaste. |
| a. Be prepared after consulting with Transwaste Ltd, The Hurunui District Council and the New Zealand Transport Agency and shall implement the outcome of that consultation; | MCWFL to confirm Regular consultation will continue with Transwaste to ensure our presence minimises their operations. This may involve completing night works to move over dimensional or oversized loads or working in off peak periods where volumes are lower Waka Kotahi will be consulted, and the necessary permits will be gained by SGRE. |

| Consent Conditions | Control for Consent Conditions |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | HDC will be consulted during the generation of TMP's for any public road interface. |
| b. Set out the nature and timing of local physical improvement works, if necessary, to be undertaken on Mt Cass Road at the Consent Holder's expense or as otherwise agreed with the Hurunui District Council; | Refer to sections 3.2 Mt Cass Rd Upgrade |
| | 8 Programme of Construction Works |
| | 6.3 Mt Cass Road |
| c. Set out in detail the sharing of maintenance costs for the section of Mt Cass Road between State Highway 1 and the entrance to the Kate Valley Landfill site during wind farm construction. This cost sharing arrangement will be negotiated by the Consent Holder and Transwaste Ltd and the outcome forwarded to Hurunui District Council. | MCWFL have commenced discussions with Transwaste to reach a fair agreement. The cost share agreement as listed in condition 63 c) will be in place prior to commencing onsite and the outcome will be sent to HDC. |
| d. Detail the intended traffic arrangements and provisions for the delivery of over-weight and over-dimensioned major components to the site, including any time restrictions for the movement of overweight and over-dimensioned vehicles; and | Refer Section 4 |
| e. Detail the management of construction traffic (other than component delivery by over— dimension and overweight vehicles) during the construction phase. This shall include, as a minimum: | |
| Identifying all roads within the Hurunui District that are to be used by heavy construction traffic. | Refer Section 1.6 |
| The provision for dust suppression, if necessary, on the routes used for the transport of goods to the site so that safe stopping sight distance is maintained at all times. | Refer to section 6.3.8 and Dust Management Plan |
| | |

| Consent Conditions | Control for Consent Conditions |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| Ensure that all heavy construction traffic within the Hurunui District shall utilise those roads which have been identified to be used by heavy construction traffic in the certified Construction Management Plan. | Refer to section 1.6 of this plan. |
| Identify the management practices to be adopted to avoid conflict with other users on the affected roads, including the safety of pedestrians and cyclists. | Refer to section 6 of this plan |

Table 2 Consent Conditions Relating to Traffic Management

3. Scope of Works

3.1 Scope Overview

The project is being delivered under a multi contractor model which is overseen by MCWFL. Under this model each contractor has individual responsibility for their traffic management requirements and permitting of over dimensional and overweight loads. The flow chart in Table 3 indicates the different scopes of work per contractor and the areas of traffic management required.

| Mt Cass Wind Farm Limited | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--|
| | | | | |
| cBoP Contractor | eBoP Contractor | Supply & Install Contractor | Unallocated | |
| Site Access at Construction Laydown Construction Access to Mt Cass Windfarm access track Earthworks and Concrete Batching plant OD Loads | OD Loads (Provisionally prefabricated switch room) Electrical cable installation across Symonds Rd to the construction yard. | OD Loads – WTG components from Timaru Port and crane (location TBC) | Mt Cass Rd Upgrade This scope is still to be designed and the package let to a contractor. | |

Table 3 Contractor Scopes of Work

The main construction of the wind farm is located in farmland on Mt Cass and will not directly affect the road network.

The construction works that will require traffic management are shown in Figure 4 below.





The main construction activities which will require traffic management are,

- 1. Construction yard at the junction of Mt Cass Rd and Symonds Rd. This will be predominantly built outside of the road reserve except for the site entrance.
- 2. Mt Cass Rd requires modifications to make it suitable for the large deliveries required for the project. At the time of writing, this section of the project was still being designed and the full scope is not known, 4.2 provides a preliminary indication of the scope of work. This plan takes this into account and will be updated to reflect the final traffic management requirements.
- 3. The main site access to the wind farm shown in purple will be built outside of the road reserve except at the site entrance. The site entrance is an existing entrance way that will be widened, and site fencing / gate installed.
- 4. Civil and electrical deliveries will require management on the section of Mt Cass Rd shown in red until the upgrade works are carried out to ensure that vehicles can safely pass each other.
- 5. Wind turbine deliveries will require traffic management from the construction laydown through to the site on both the yellow and red sections identified in Figure 4.
- 6. Wind turbine deliveries from the Port of Entry (Timaru) to the construction yard.

3.2 Mt Cass Rd Upgrade

The section of Mt Cass Road between the Kate Valley turnoff and the site entrance will be modified to allow negotiation off the tight bends for the over-sized vehicles needed for the project. At the time of writing of this plan MCWFL are still designing this work and are yet to let the construction scope to a contractor. Once the full scope is defined, a traffic management plan will be issued to HDC for approval. The traffic management will be agreed between the upgrade contractor and the civil contractor to ensure that both packages of work can take place concurrently under the respective TMPs.

Figure 5 to Figure 7 on the following pages provide a specimen design to indicate the likely scope of the works, in addition to the key outcome of a 5.2m road width being achieved.

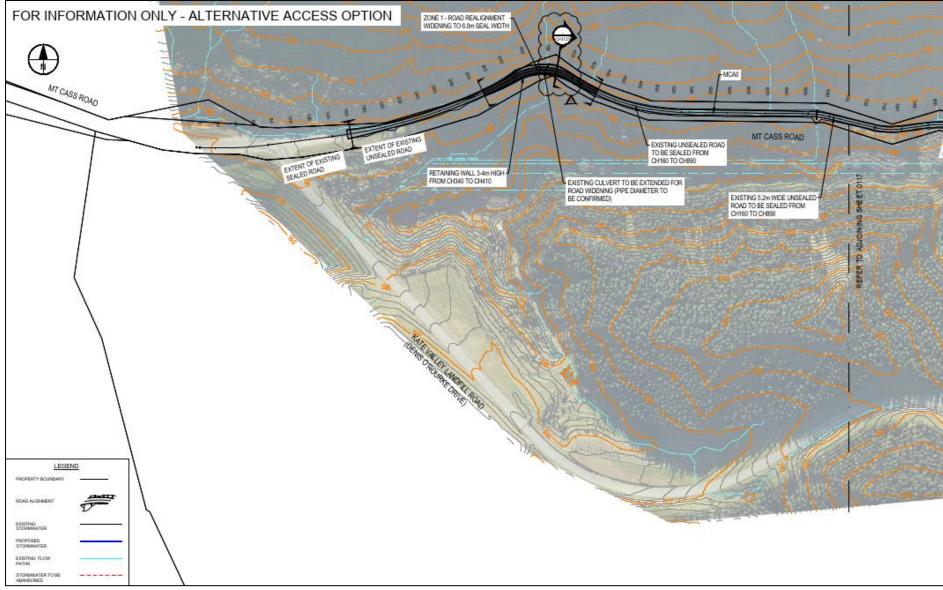


Figure 5 Mt Cass Rd Upgrade Section One.

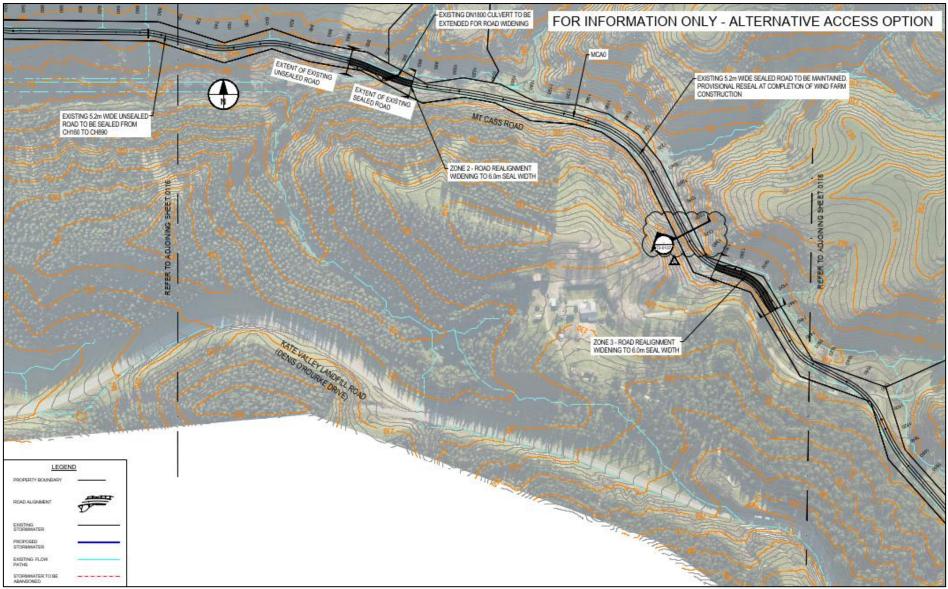


Figure 6 Mt Cass Rd Upgrade Section Two

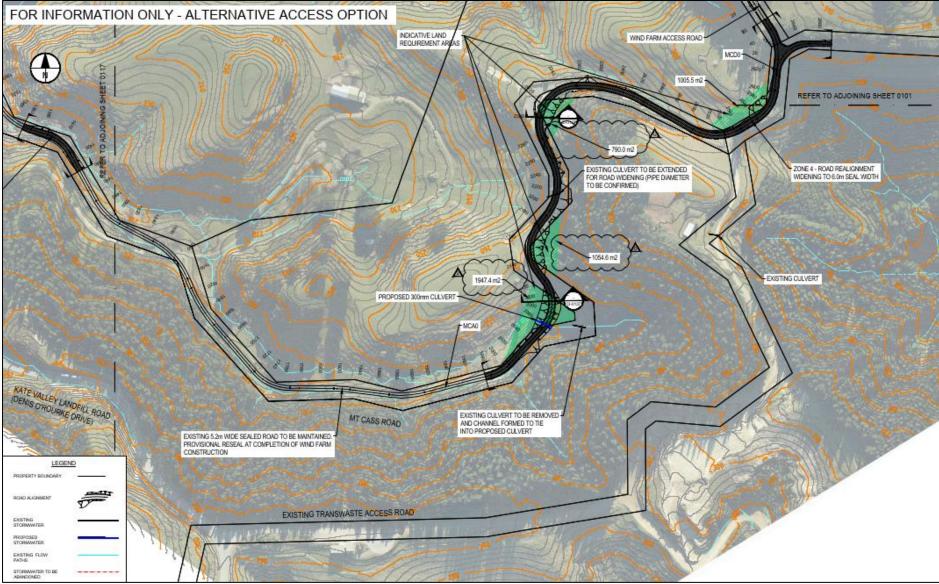


Figure 7 Mt Cass Rd Upgrade Section Three

3.3 Symonds Rd Construction Yard

At the intersection of Mt Cass Rd and Symonds Rd a construction yard is to be built to accommodate the wind turbine deliveries. The construction is expected to included earthworks, construction of a hard stand area and main site access onto Mt Cass Road. During construction it is proposed that the site will be accessed via Symonds Road to minimise disturbance on the busier Mt Cass Rd. The construction area and site access points are shown in Figure 8 and Figure 9 respectively.

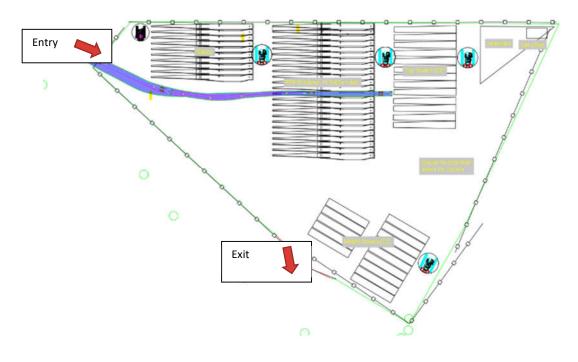


Figure 8 Symonds Road Construction Yard

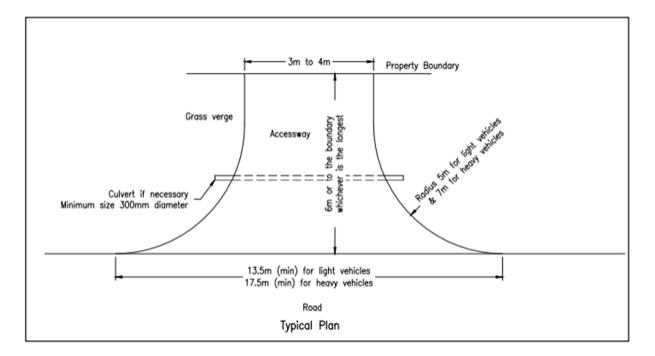


Figure 9 Indicative Symonds Construction Yard Site Entrance(HDC Development Engineering Standard R18)

3.4 General Deliveries

During the construction period, in addition to personnel travelling to and from work and excluding any oversize deliveries there are likely to be following traffic movements:

- Deliveries of containers and cabins (site compounds) Flat deck trucks
- Deliveries of mobile plant (including batching plant) Low Loaders
- Deliveries of water for construction Water Tankers
- Deliveries of fuel Fuel Tankers
- Deliveries of roading aggregates Truck Trailers
- Deliveries of construction materials Various
- Cranage Low Loaders
- Access equipment Flat Deck truck

4. Delivery of Over-Weight and Over-Dimensioned Components

4.1 Summary

All over-sized components will be brought to site and placed in a lay down area at the intersection of Mt Cass Road and Symonds Road, at which point the load will be transferred to a site trailer before being transported up the hill to its installation location.

The component delivery route from Timaru has been investigated in the concept phase of this project by Rex J Andrews Ltd. Based on a 59.5m blade the route has been assessed to be feasible.

Once the final design of the WTG components is completed the transport assessment will be finalised and the oversized deliveries planned in conjunction with the relevant authorities and the necessary permits/arrangements put in place prior to the loads being moved.

This process will take place at least 12 months before the deliveries are planned to ensure that there no conflicts with road construction on the proposed route and the traffic management required for it.

This TMP will be amended to reflect these agreements and the approved TMPs and Permits appended to this TMP.

The delivery timing of over-weight and over-dimensioned items will be programmed to meet Waka Kotahi NZ Transport Agency travel time restrictions.

The delivery of these items will not occur within the following times:

Category 2: No Travel Monday to Friday between 7.00am and 9.00am and 4.00pm to 6.00pm. Saturday and Sunday between 10.00am to 1.00pm and 4.00pm to 6.00am

Category 3: No Travel Monday to Friday between 7.00am and 9.00am and 4.00pm to 6.00pm. Saturday and Sunday between 12.00pm and 6.00am

Category 4b (Blades): Same restrictions as Category 3 but with additional pilots required subject to Waka Kotahi and local Authority approvals.

Note: Pilots to be provided as per above travel categories

4.2 Proposed Mt Cass Weekly Delivery Schedule Port of Entry to Construction Yard.

Table 4 below provides the current proposed delivery schedule per day for the WTG components from the Port of Entry (Timaru) to the Symonds Rd Construction Yard. This is to be confirmed but has been developed with discussion with Transwaste and the Turbine suppler.

| Day | Component | Depart Timaru | Target Site Laydown/Hardstand Noting Transwaste discussions | Restricted travel from Laydown to Hard stand (ie blades and tower sections only) |
|--------|-----------|---------------|----------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Mon | Tower | Monday - 0130 | Monday - 0630 | 7am- 9am |
| | Blade | Monday - 0200 | Monday - 0630 | 7am-9am |
| | Tower | Monday - 0130 | Monday - 0630 | 7am-9am |
| | Blade | Monday - 0200 | Monday - 0630 | 7am-9am |
| Tues | Nacelle | Tues - 0130 | Tues - 0630 | |
| | Blade | Tues - 0200 | Tues - 0630 | 7am-9am |
| | Tower | Tues - 0130 | Tues - 0630 | 7am-9am |
| | Blade | Tues - 0200 | Tues - 0630 | 7am-9am |
| | Generator | Tues - 0130 | Tues - 0630 | |
| Weds | Hub | Weds - 0130 | Weds - 0630 | |
| | Blade | Weds - 0200 | Weds - 0630 | 7am-9am |
| | Nacelle | Weds - 0130 | Weds - 0630 | |
| | Blade | Weds - 0200 | Weds - 0630 | 7am-9am |
| Thurs | Tower | Thurs- 0130 | Thurs - 0630 | 7am-9am |
| | Blade | Thurs - 0200 | Thurs - 0630 | 7am-9am |
| | Tower | Thurs- 0130 | Thurs - 0630 | 7am-9am |
| | Blade | Thurs - 0200 | Thurs - 0630 | 7am-9am |
| Friday | Hub | Friday - 0130 | Friday - 0630 | |
| | Blade | Friday - 0200 | Friday - 0630 | 7am-9am |
| | Tower | Friday - 0130 | Friday - 0630 | 7am-9am |
| | Blade | Friday - 0200 | Friday - 0630 | 7am-9am |
| | Generator | Friday - 0130 | Friday - 0630 | |

Table 4 Proposed Delivery Schedule

4.3 Symonds Rd Construction Yard to Site

The components of the wind turbines will be transported from the construction yard to the site outside of Kate Valley operating hours to avoid conflicts between the WTG movements and the Kate Valley deliveries.

See Appendix A for the proposed laydown area.

5. General Control Measures

5.1 Key Principles and Approaches

Traffic Management Controls (TMC) will be put in place to ensure matters relating to the extent and timing of construction traffic, and the traffic management provisions to be put in place during this time, achieve a safe and efficient road network based upon its use. This includes communication protocols.

Temporary Traffic Management (TTM) is governed by legislation, specifically the Land Transport Act 1998, which provides for the system of rules governing road user behaviour.

All TMC will be planned for and implemented in accordance with the following guidelines:

- Waka Kotahi Code of Practice for Temporary Traffic Management (CoPTTM)
- Traffic Control Devices Manual (TCD manual)
- Land Transport Rule: Vehicle Dimensions and Mass 2016
- Health and Safety at Work Act 2015

6. Site Specific Controls

6.1 Communication

In addition to the monitoring of the construction traffic prior to starting works on site, consultation will be undertaken with residents and businesses to understand traffic movements. This will be especially important for the Transwaste operations. During the development of this plan MCWF, Transwaste and Turbine Supplier have had proactive discussions and we understand where their peak traffic movements are likely to occur. In summary the current proposal is to restrict the delivery of blade and tower sections transport from the Symonds Road laydown area to Transwaste turn off. This restriction would exist between 7am to 9am Monday to Friday. All other componentry could be delivered during standard times as in general Transwaste concern is the slow moving over dimensional loads especially during their peak period.

During the delivery of the over dimensional loads a rolling road closure will be required for public safety and load protection. This will be developed into the traffic management plan.

Transwaste have advised that they would support having the ability to allow their trucks to follow the pilot vehicles, as well as allowing the transportation of multiple components in a convoy format from the Symonds Road lay down to Transwaste turnoff however this is subject to traffic management approval and transport logistics.

Residents on Mt Cass Rd directly affected by the traffic management will be consulted individually and specific arrangements put in place where needed. They will have site contact numbers to allow them to arrange operational requirements such as stock trucks for example.

Upon contract award the Community Liaison Group will be made aware of all likely construction movements to and from the work site through a review of the CMP and an overview presentation.

Any changes to the anticipated TMP will be communicated as and when they are known. If any formal TMP's are required that may affect neighbouring properties, then these will also be communicated on an as required basis.

All site personnel and deliveries will be made aware of the requirements of this plan and any formal TMP's that are applied on site. This will include all companies required to deliver materials or equipment to site being provided with a required delivery route instruction that includes a copy of this traffic management plan.

The following will be key stakeholders for consultation on any TMP's that are put in place:

- Emergency Services
- Local Residents (Community Liaison Group)
- Transwaste
- HDC

6.2 Symonds Rd Construction Yard

- SH1 Service Station
- DoC (walkers Mt Cass Walkway)
- Any other known user of Mt Cass Road
- The Mt Cass Wind Farm website will be updated for progress.

The traffic management diagrams (TMDs) referred to in this section can be found in Appendix B of this plan.

To minimise disturbance to Mt Cass Rd the construction yard will be constructed using access off Symonds Rd. A TSL of 50kph will be put in place during the construction of this temporary site access, this is shown in TMD 2 in Appendix B.

The yard can be constructed without encroaching onto Mt Cass Rd for the full scope apart from the tie in of the main site access into Mt Cass Rd. During this phase of the construction the site access layout in TMD 1 will be used.

During the tie into Mt Cass Rd, a TSL of 30Kph and stop / go or shoulder closures will be used for this section of work which is relatively short duration. Refer to TMD's 3 and 4.

Once the yard is constructed the Mt Cass Road access will be used for the duration of the project. This will be controlled using the layout in TMD 6 with site access signs. When over dimensional loads are being moved in or out of the yard this plan makes provision for a stop / go layout if additional controls are required by the S&I contractor. This is shown in TMD 5.

6.3 Mt Cass Road

The Mt Cass Road section from the Kate Valley turn off to the site access at Mt Cass Station consists of a narrow road with sharp bends, some unsealed sections, and a narrow one lane bridge. It is anticipated that some enabling works will be required to facilitate this scope. This could include tree removal, pruning and localised road widening.

The key risks are large construction vehicles meeting each other or other vehicles on the narrow sections of the road.

Additionally, the contractors constructing the wind farm and the contractor carrying out the Mt Cass Rd upgrade works will need to co-ordinate their traffic management during the road upgrade which is forecast to take place between November 2023 and October 2024.

The following are the key controls proposed for the duration of the project.

6.3.1 Restricted Access

During the project there will be varying levels of restriction for safety reasons, a 30 km/hr temporary speed restriction will be in place from after the Kate Valley turnoff to the construction site entrance.

Limited access in the form of a one-way closures, restricted day closures are likely to be needed during times of heavy vehicle use.

The public road upgrade is expected to take some time to build and will involve heavy earthworks machinery and staged restricted day closures are expected from time to time.

The upgrade will be carefully planned to minimise as much disruption as well as providing a safe passage for the general public when safe to do so. MCWFL will provide daily access to all affected residents and will work with the affected landowners to ensure their business are not adversely impacted. The proposed closure will be from 8am to 12pm and 1pm to 5pm.

Residents will be allowed access through the closure with instruction from the TMC who will be in radio communication with the site.

Residents will also be able to co-ordinate with the contractor to ensure that access is given to their contractors and employees to maintain business operations i.e., stock trucks.

A stop / go set up will be established at the intersection of Kate Valley where a TM operative will control who enters the site. Allowed site traffic will be allowed to move forward of this closure to avoid the access to Kate Valley being affected.

6.3.2 Stop / Go

The section of road marked as site access to approximately RP6.8 in Figure 10 below is a steep section of road with many bends and is too narrow for safe two-way construction traffic. Due to this, this section is also the focus of the Mt Cass Rd upgrade which will involve a stop/go or restricted closure. This will be confirmed when the detailed design has been completed and the full extent of works is known.



Figure 10 MT Cass Rd RP Approximate Locations

6.3.3 Priority Give Way

To control traffic on the narrow one lane, bridge a priority system will be put in place giving priority to vehicles approaching from the downhill direction.

6.3.4 Temporary Speed Limit

A TSL of 30kph will be put in place between Kate Valley and the Site. This is to help mitigate the risk of vehicle collisions on the wider section of the road between the Kate Valley turn off and the stop / go control at RP6.8.

6.3.5 Radio Communications

Communication between trucks and TMC will be via radio telephone. TMCs will be responsible for stopping and communicating with site light vehicles and residents who do not have radios. Trucks will also be able to communicate any hazards and pedestrians that they encounter between TMC to other heavy vehicles within the closure.

6.3.6 Pedestrians

The remote nature of the road means that use by pedestrians will be very limited. The traffic management outlined above is believed to be sufficient to manage pedestrians if they are encountered.

For the duration of the project the areas of the Mt Cass Walkway that enter onto the project site will be closed to exclude pedestrians from the construction site.

The Tiromoana walkway will remain open for the duration of the project as this does not enter the construction site.

6.3.7 Cyclists

The remote nature of the road means that use by cyclists will be very limited. The traffic management outlined above is believed to be sufficient to manage cyclists if they are encountered.

6.3.8 Dust

Dust will be controlled by implementing the 30kph TSL, use of a water cart if required and by surfacing of the Mt Cass Rd upon completion of the upgrade works. Refer to the MCWFL Dust Management Plan which is subplan B2 of the construction management plan.

6.3.9 Truck Waiting

The intention of the restricted assess closure is to allow the TMC to stack trucks along the straight section of road after the Kate Valley turn off where there is sufficient width to park trucks and have traffic pass them in the opposite direction.

6.3.10 Site Parking

There will be dedicated staff parking in both the Symonds Rd Construction Yard and the main construction camp.

7. Roles and Responsibilities

Table 5 below details the responsibilities of the key project personal involved in administering this plan during the project.

| Role | Role Responsibilities | | |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| MCWFL Project Director | Is responsible for negotiating the agreement between MCWFL and Transwaste (Kate Valley) | | |
| | Consult community liaison group. | | |
| MCWFL Construction Manager | Point of contact for complaints and any maintenance in line with the agreements with NZTA and HDC. Arrange dilapidation surveys with HDC / Kate Valley Facilitate community consultation / notification of TMP | | |
| Civil Works Project Manager | Monitor and implement required traffic management procedures. | | |
| | to facilitate site access to the construction laydown and main site access. Engage a traffic management company to design and install traffic management for the civil scope of the project. Co-ordinate and co-operate with other contractors to help facilitate their required TM. | | |
| | Apply for and maintain the Corridor access request (CAR) – For their scope of work. | | |
| Electrical Project Manager | Engage a traffic management company to design and install traffic management for the civil scope of the project. – Symonds Rd cable crossing Co-ordinate and co-operate with other contractors to help facilitate their required TM. Apply for and maintain the Corridor access request (CAR) – For their scope of work. | | |
| Mt Cass Road Upgrade Manager | Monitor and implement required traffic management procedures. to facilitate the upgrade of Mt Cass Rd. Co-ordinate with other MCWFL contractors to ensure that site access is maintained and there are no delays to the construction programme. Engage a traffic management company to design and install traffic management for the civil scope of the project. Add their TMP to the Civil contractors CAR. | | |
| S&I Project Manager | Is responsible for all Wind Turbine Movements from port to the construction laydown and then to site. Design and implement TMP for site exit when moving WTG from construction laydown to site. Add TMP to Civil Contractors CAR | | |
| STMS | Has overall responsibility for the physical traffic management layout, compliance, safety and maintenance of the TTM under their control. Is responsible for ensuring that the personnel engaged to carry out traffic management duties are suitably qualified. | | |
| HDC | Overall control of the operational side of the road i.e., dealing with crashes, blocked culverts and general maintenance beyond the road surfacing. | | |

8. Programme of Construction Works

The construction start date is to be confirmed, but the likely start date will be in the last quarter of 2023. The overall construction duration is anticipated to last approximately 18 months.

Table 6 below shows the main sections of work that require traffic management and their indicative start and finish dates.

In the construction period the initial site mobilisation will see some moderate oversized loads being delivered in the form of earthmoving plant and deliveries of imported fill.

The end of the programme will see the greatest oversized deliveries when the turbines are delivered to the site.

| Scope | Start | Finish |
|------------------------------|----------------|--------------|
| Construction Yard Symonds Rd | January 2024 | April 2024 |
| Civil Construction | November 2023 | October 2024 |
| Mt Cass Rd Upgrade | November 2023 | October 2024 |
| WTG Installation | September 2024 | April 2025 |

 Table 6 Indictive Construction Programme

9. Co-ordination of Traffic Management

Due to the multi-contractor model co-ordination and co-operation will be required between the contractors to achieve the outcomes of the project and to ensure that traffic management is suitably designed and well maintained.

The intention is that the cBoP contractor who will mobilise to site first and will have the longest presence on the site will apply the CAR and then the other contractors will communicate with the cBoP contractor to add their required TMPs on to the CAR.

Where possible the same traffic management contractor will be used to allow simplicity in planning.

Traffic management requirements will be discussed and agreed at a weekly project planning meeting.

MCWFL will act as the final decision maker when there are conflicts with traffic management requirements that cannot be resolved by the contractors. An example of this may be when there are competing programme issues that MCWFL may need to assess on a best for project outcome.

10. Dilapidation Survey

Before any construction work being undertaken, a dilapidation survey will be undertaken with the relevant entity responsible for the maintenance of the road, MCWFL and the relevant contractor.

A report of any defects, along with the photographic records, will be submitted to all relevant parties as a record before construction starts. Upon completion of construction or between changes in a contractor, a similar inspection will be undertaken, and any defects as a direct result of construction use noted with clear remedial actions and responsibilities agreed.

10.1 HDC Maintained Assets

A dilapidation survey will be arranged with HDC to inspect the following areas

- 1. HDC Maintained roading assets between SH1 and the Wind farm site entrance.
- 2. Symonds Road intersection with Mt Cass Rd.

MCWF is to complete a preconstruction walkover with the Council, reviewing the current road condition. Close attention will be paid to the condition of their existing assets, i.e., fencing, road surface, signage, safety features, culverts etc. Any pre-existing damage, in terms of cost share will be discussed with HDC at this time.

Until the road is upgraded (and while a CAR is in place), MCWF will be responsible to hold / maintain the road to the base line preconstruction level.

10.2 Transwaste Maintained Assets

A dilapidation survey will be arranged with Transwaste to inspect the following areas

1. Mt Cass Rd from the intersection with SH1 to the Kate Valley turn off.

11. Monitoring and Maintenance During Construction

As part of the control measures, on-going site monitoring by the contractor and wider project team will be undertaken. This will ensure that all the control measures detailed in this plan have been properly implemented and are functioning effectively and meet CoPTTM requirements. If controls are deemed to no longer be required due to changes in site conditions, then they will be changed to provide suitable risk mitigation and reduce disruption to stake holders.

Monitoring shall occur for the full duration of the works with daily inspections undertaken. This includes not only during the Mt Cass Road upgrade works, but for the entire duration that the road is used for the purposes of construction access. Any control measures requiring maintenance or adaptation to allow construction tasks to occur shall be identified and implemented by the STMS to ensure continual compliance.

As part of the site induction, all personnel will be encouraged to report any damage noticed to the roads, excessive dust hindering visibility and incidents or near misses to the Project Manager.

The individual contractors will be responsible for operations and maintenance of their respective scopes of work under this plan.

12. Audits

In addition to the site inspections required to be undertaken by the STMS. Monthly site audits will be carried out by the Traffic management contractor.

The Contractor who has engaged the Traffic management contractor will also carry out monthly site safety audits which are part of their internal systems. These monthly audits will include inspections of traffic management.

13. Consultation

13.1 Stakeholder Consultation

MCWFL have commenced discussions with Transwaste to reach a fair agreement. The cost share agreement will be in place prior to commencing onsite and the outcome will be sent to HDC. This document will be confidential between both parties.

HDC have been consulted on the planned upgrade works and will be involved in the generation of the TMP for the public road upgrades. The wind turbine subcontractor will also be involved in consulting with the relevant council team in regard to the over dimensional overweight vehicles.

Waka Kotahi will be consulted regarding the relevant permits that are required for the wind turbine generator (WTG) components.

The landowners and key shareholder will be informed of the planned WTG component and delivery to minimise the impact to the road users.

The Community liaison group will review this plan as part of the CMP review required under the consent.

14. Complaints

14.1 Complaints Process

The Consent Holder shall establish and publicise contact details for a liaison officer, so that members of the local community have a specified and known point of contact should they wish to raise any issues that may arise during construction and operation of the wind farm. A logbook detailing all calls and any action taken shall be kept and made available to Hurunui District Council on request.

Detail MCWFL Complaints process:

- 1. Complaint issued via
 - a. Website https://www.mtcasswindfarm.co.nz/contact-us,
 - b. Phone 0800 309080 Greg Gummer Project Director / liaison officer
 - c. Direct engagement from site staff via contact details provided at the project notice board at the site entrance.
 - d. Hurunui District Council 03 314 8816
- 2. MCWFL direct complaint to the relevant contractor or address inhouse if operational
 - a. As soon as the complaint is received it will be recorded on the project complaints register with the client also notified, if made via site staff.
 - b. An initial response will be made and recorded. Depending on the nature of the complaint the initial response could be to immediately cease the activity pending investigation. However, in most cases it might not be practicable to provide

immediate relief. The complainant, council and the client will be informed of actions taken. Contact details for council are recorded in the overall construction management plan.

- c. Where the initial response does not address the complaint, further investigation, corrective action and follow-up monitoring shall be undertaken as appropriate. The complainant, council and the client will be informed of actions taken.
- 3. Record complaint on complaints register at noted in 14.2 below.
- 4. Rectify issue.
- 5. Provide feedback and closes out on register.

14.2 Complaints Register

A register for any complaints about the construction activities and operation of the wind farm received by the Consent Holder including complaints in relation to traffic. The register shall record, where this information is available:

- The date, time and duration of the incident that has resulted in a complaint.
- The location of the complainant when the incident was detected.
- The possible cause of the incident.
- Any corrective action undertaken by the Consent Holder in response to the complaint, including timing of that corrective action.
- The date and details of the response given to each complainant.

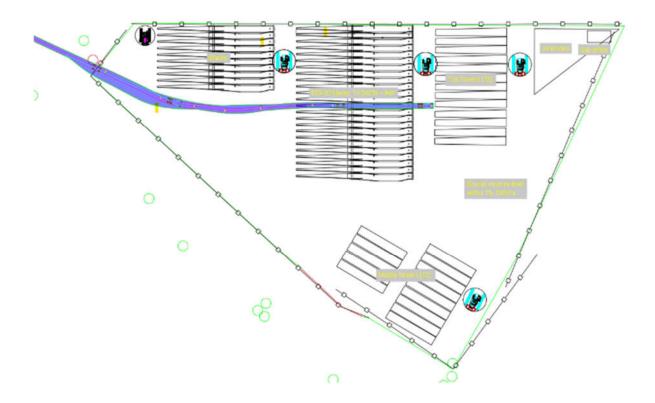
The complaints register shall be available to the Council and the Community Liaison Group at all reasonable times upon request.

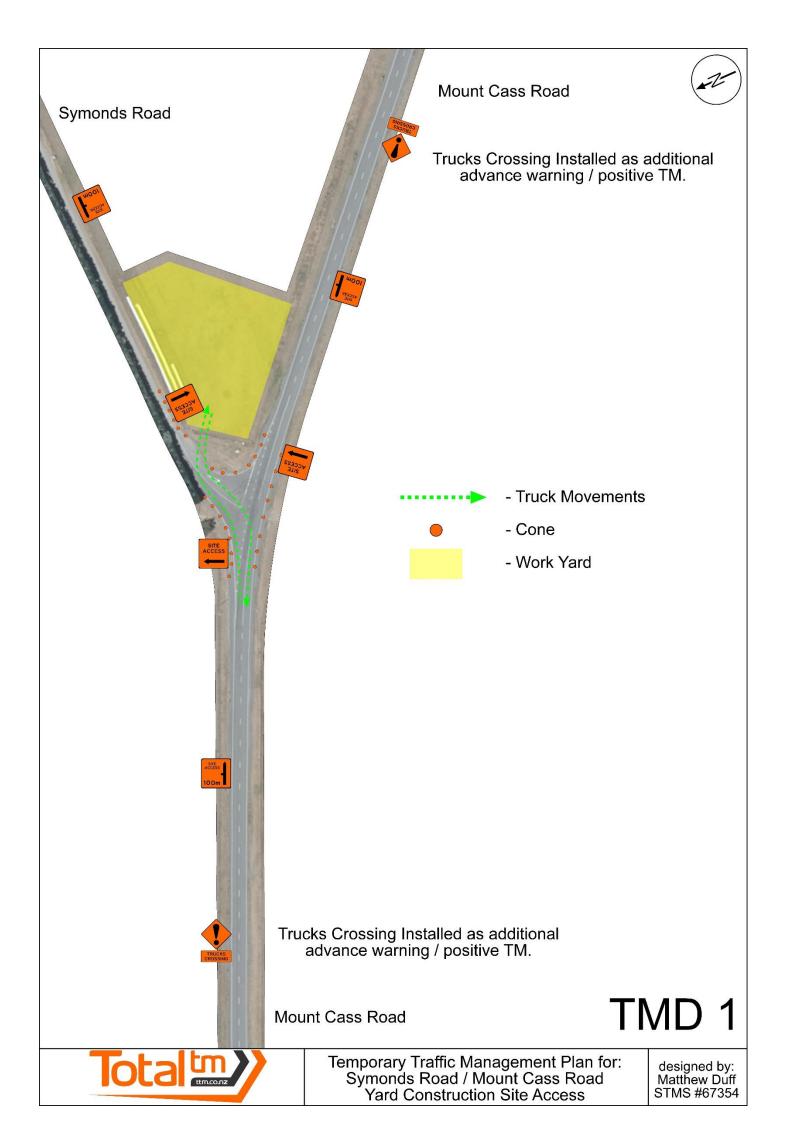
Within 5 days of receipt of any complaint in accordance with condition [155], the Consent Holder shall advise the Hurunui District Council of the details of any complaint received and, where appropriate, of any remedial or corrective action taken, including the response provided to the complainant.

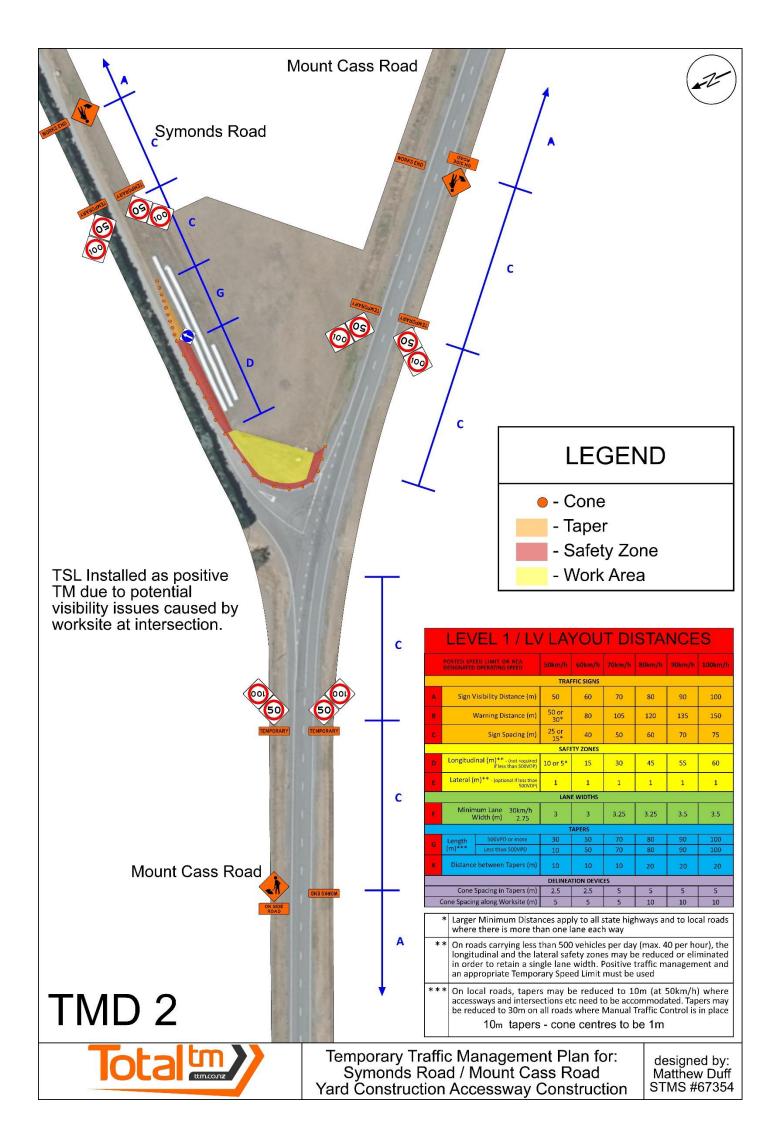
A template of this register is available in the Construction Management Plan Appendix A.

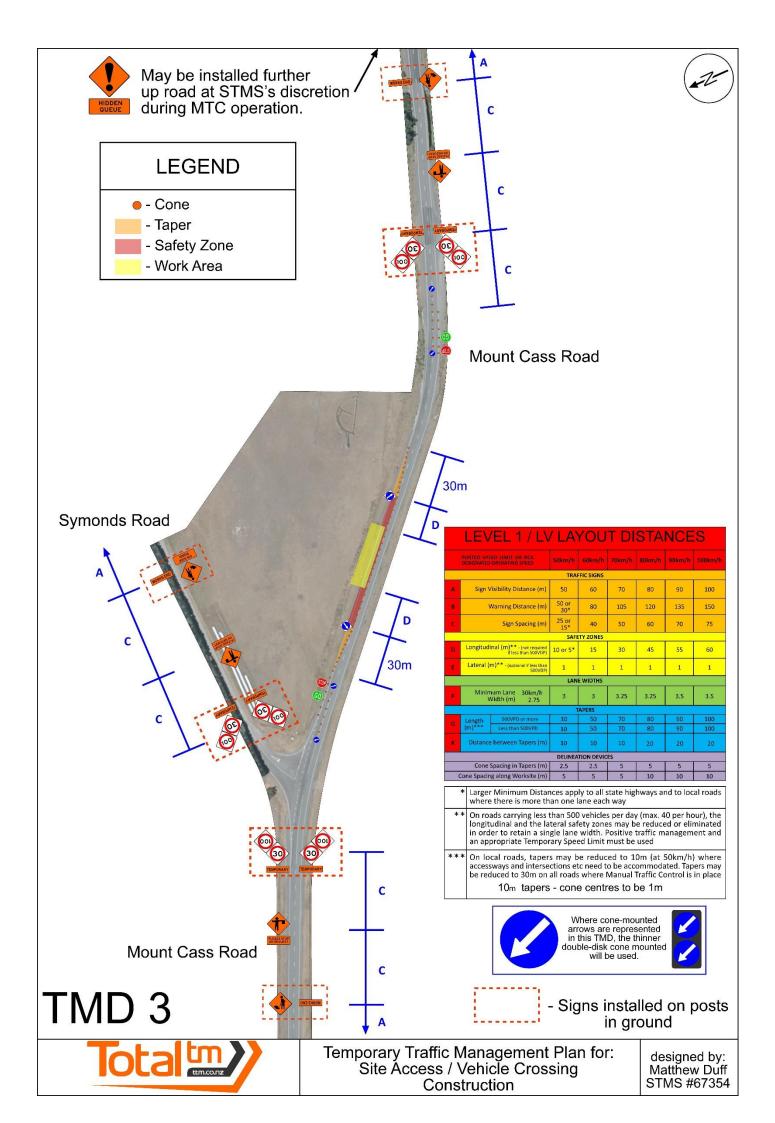
15. Appendices

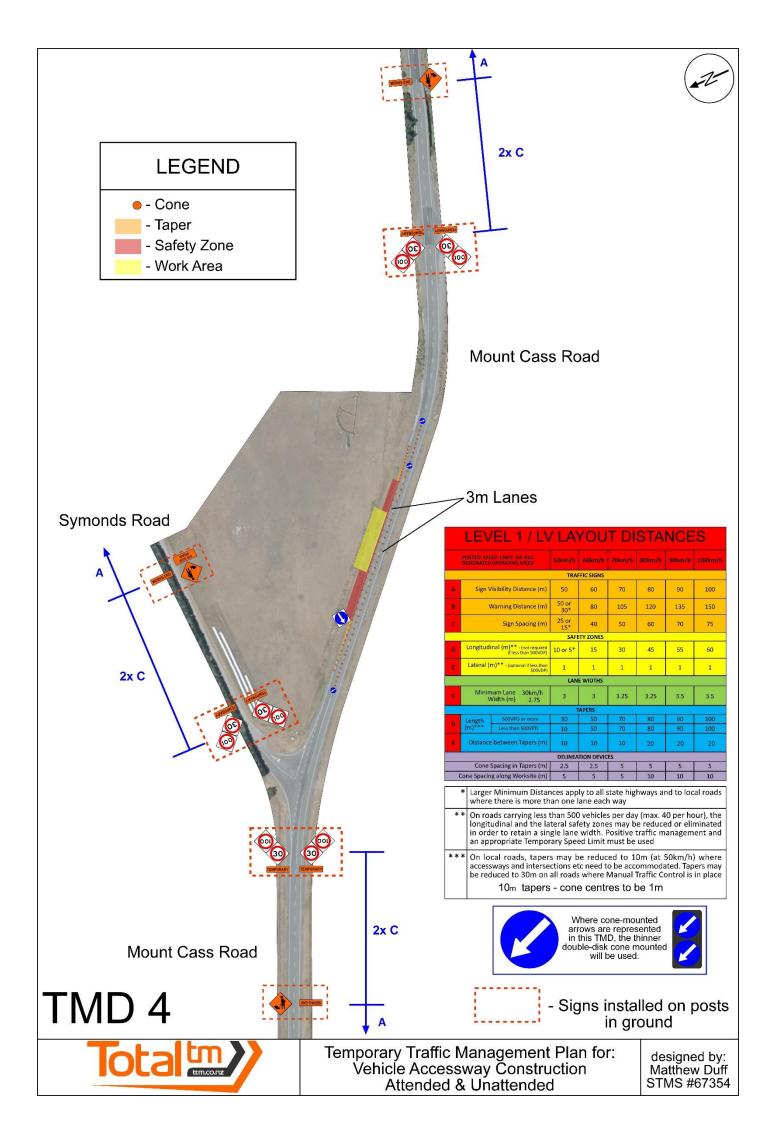
| Appendix | Description |
|----------|----------------------------------------|
| A | Proposed Laydown Area |
| В | Site Specific Traffic Management Plans |

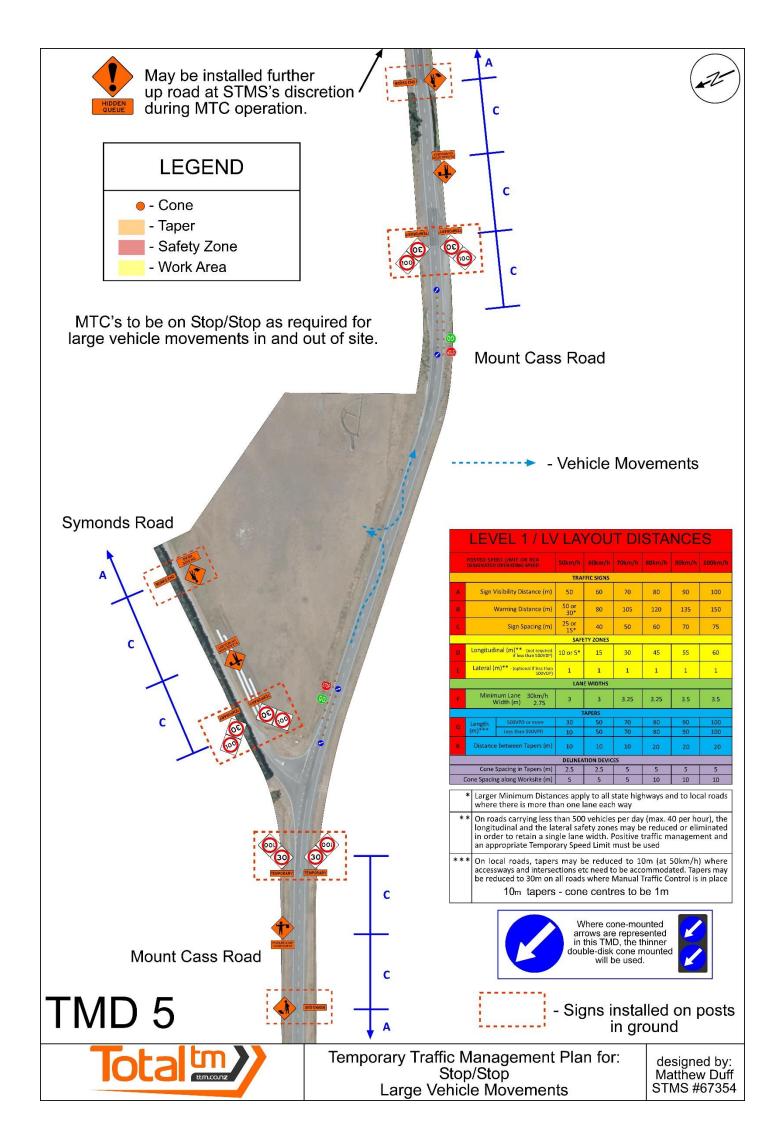


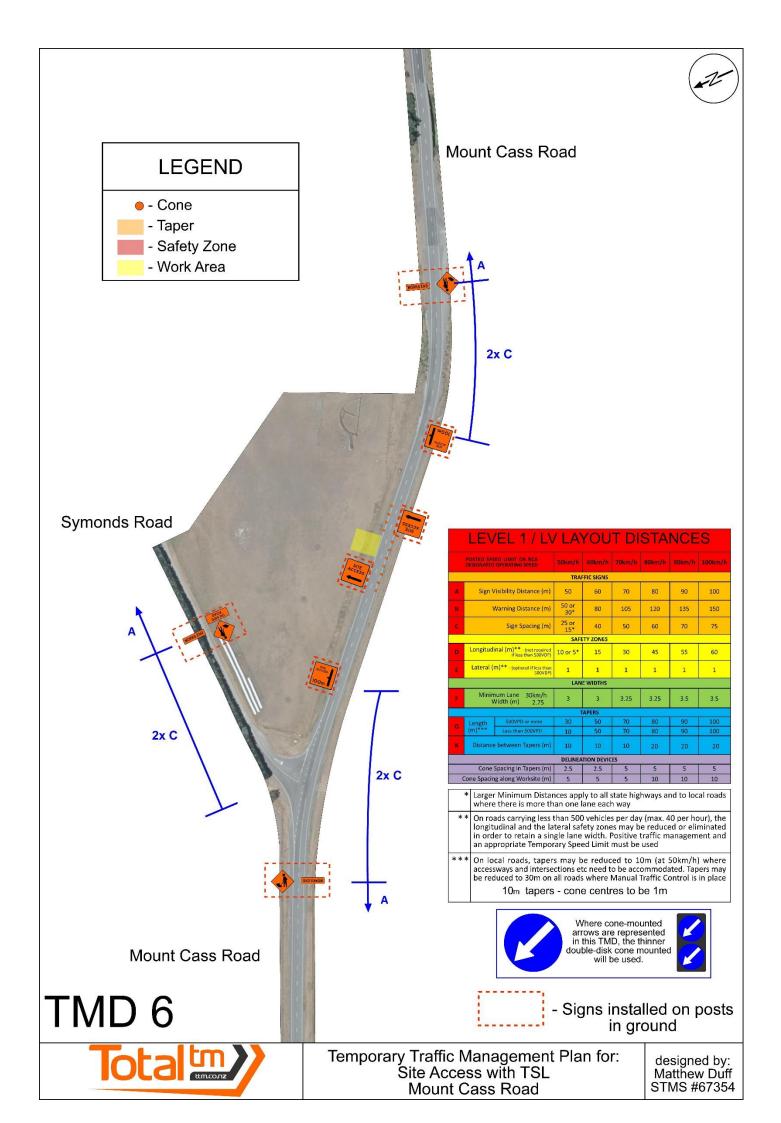












Appendix J

B7 Fire Management Plan



Mt Cass Wind Farm Fire Management Plan



Revision 11 – 22 March 2023

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Revision History

| Version | Description | Date | Prepared by | Approved By |
|---------|--------------------------------------------------------------------------------|-------------|---------------------|---------------|
| Rev 4 | For Inclusion in EMP | 28 Sep 2020 | Henry Willis | - |
| Rev 5 | Rev 5 Comments from MCWF | | Henry Willis | - |
| Rev 6 | Rev 6 Updated following Review | | Henry Willis | - |
| Rev 7 | Rev 7 Updated following FENZ Review | | Henry Willis | - |
| Rev 8 | Rev 8 Updated following CLG Review & HDC Independent Reviewer Review | | Henry Willis | Scott Bennett |
| Rev 9 | Rev 9 Updated following cBoP Contractor Review | | Henry Willis | Scott Bennett |
| Rev 10 | Incorporates Stantec Review | 11 Jan 2023 | Henry Willis | Scott Bennett |
| Rev 11 | Rev 11 Post CLG Review and HDC Submission amend Waipara Fire Brigade number | | Michael Carstens | Greg Gummer |

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1. Introduction

1.1 Purpose

The purpose of this Fire Management Plan (FMP) is to inform people involved in the Mt Cass Wind Farm how to control and reduce the possibility of fire on the site and to specify what equipment may be used in case of a fire.

The plan covers all phases of wind farm development including detailed design, construction and operation. Fire Management is an integral part of environmental management at the site and this plan is accordingly part of the Environmental Management Plan. However, given that aspects of construction and operations are potential fire sources it is also seen as integral to Construction Management and Operations Management.

Although the main aim of fire control is preservation of life, it is also the case that Mt Cass is a valuable site for native biodiversity which could be severely damaged by fire. Appropriate management of the fire risk is therefore crucial in maintaining the biodiversity.

The plan is also required to meet the requirements of the resource consent conditions, specifically Condition 121 which requires the plan to include:

- a) The names and contact details of the Ashley Rural Fire Authority (Now FENZ)¹
- b) Other relevant contact details (of the organisations set out in appendix G of the Ashley Rural Fire District Plan 2009-2011) (Now FENZ)
- c) A description of the sources of water to be used in fire fighting
- d) A requirement for the provision on site of a water point of at least 30,000 litres of water
- e) Requirement for at least one vehicle with a minimum capacity of 200 litres onsite during periods of extreme fire risk
- f) Ensuring adequate protection is in place prior to undertaking any activities authorised by the consent, including any preliminary geotechnical investigations.

1.2 Site Fire Management Overview

Fire Management is the primary responsibility of the MCWF Construction Manager and begins with hazard awareness and risk minimisation.

This plan is an over-arching Management Plan and will be expanded upon as required for specific activities on site.

The plan sets out Fire Risks and associated Management Processes to mitigate the identified Project Risks.

Resource Consent Condition 120 requires that the Department of Conservation be consulted in the development of the Fire Management Plan.

¹The New Zealand Fire Service, the National Rural Fire Authority, and the rural fire districts and territorial authorities including Ashley Rural Fire Authority amalgamated to form Fire and Emergency New Zealand (FENZ) in 2017.

In addition, Resource Consent Condition 120 requires the Ashley Rural Fire Authority and the Principal Rural Fire Officer of the Hurunui District Council, or such authority as may replace any one of these authorities, as parties responsible for the management of rural fires within and on land adjoining the footprint, shall be consulted during the development of the Fire Management Plan. These authorities have amalgamated to become Fire and Emergency NZ (FENZ) and FENZ will be the authority that is consulted on the development of this plan going forward.

In addition, FENZ will be provided with detailed information on site access and track locations. This information will be updated throughout the life of the project. The location of water storage ponds and water tanks that can supply water for firefighting purposes will be clearly identified.

During construction, the MCWF Construction Manager will be responsible for ensuring that this Fire Management Plan is correctly implemented by the relevant Contractor(s) and will review all documentation relating to fire risk before it is finalised and issued.

Site induction for all personnel must include a briefing on fire safety including the main content of this plan and any SOP's relevant to the task being performed.

In the event of a fire, details of the emergency response will be covered in the Emergency Response Plan.

1.3 The Site

The Mt Cass ridge is a prominent ridge defining the seaward side of the Waipara Basin. Mt Cass is approximately 5 km south east of Waipara town and the ridge trends east-north-east and runs parallel to State Highway 1 ending near Omihi. The wind farm (refer to Figure 1) consists of 22 wind turbines configured as a single row stretching the length of the Mt Cass ridge. The wind farm shares the ridge with four dry pastoral farming operations interspersed with areas of native bush. Formal access to the site is via Mt Cass Road with the wind farm entrance located 2.5 km beyond the turn off to the Kate Valley landfill. Prior to construction (and in emergency situations) there is also access to the ridge via Simmonds Road and farm tracks across Mt Cass Station.

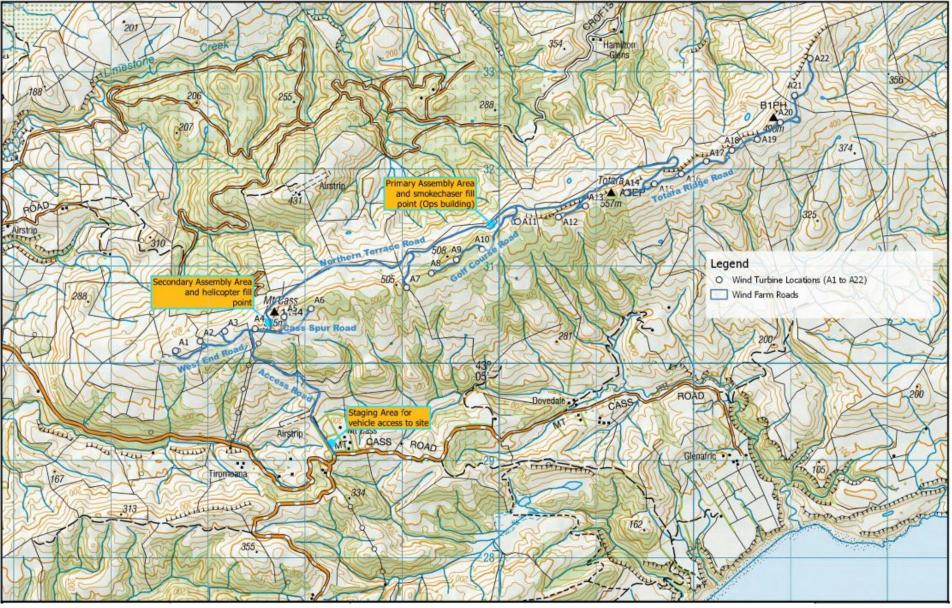


Figure 1 - Site Layout

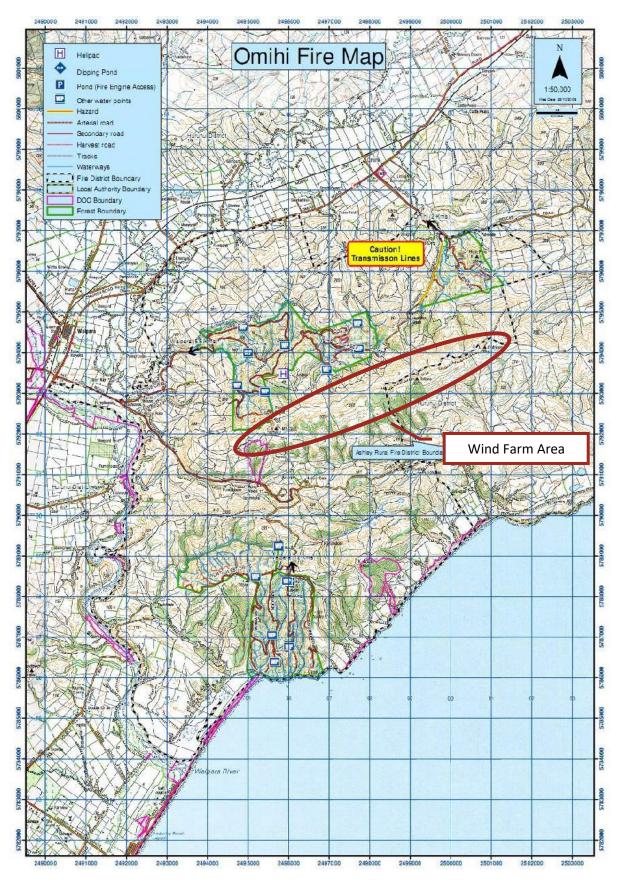
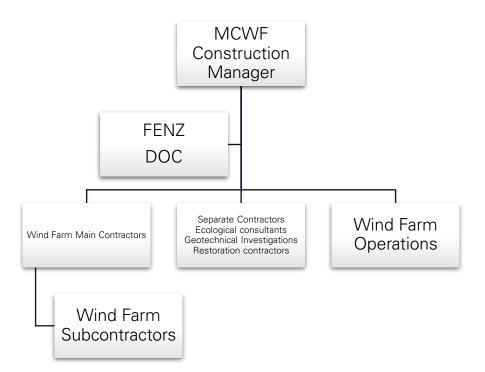


Figure 2 - Larger Site Map showing Fire Services and Water Sources.

2. Fire Management Roles and Responsibilities

The project Fire Management Organisation Chart is shown below



The following responsibilities are specific to Fire.

2.1 MCWF PM Responsibilities

- Has overall responsibility for the Fire Management Plan.
- Ensure that the Fire Management Plan is up to date, reviewed and approved, and available to all personnel on site.
- Issues any revisions of the plan to FENZ.
- Updates the Environmental Management Plan with the latest FMP revision.
- Ensure all consent conditions pertaining to the Fire Management Plan have been achieved.
- Ensures all contractor and subcontractor staff are adequately inducted and trained in site fire control procedures including emergency procedures.
- Undertakes Reviews and Audits of Contractor's related Standard Operating Procedures (SOP's).
- Reports non compliances and arranges appropriate corrective actions.

2.2 FENZ Responsibilities

- Lead agency in the event of a wild fire, will run a Fire outbreak event as an Incident under the Coordinated Management System once notified of a Fire via the 111 system.
- Can support MCWF in other emergency events such as: Structure Fire, Hazardous Spill or Motor Vehicle Accident.
- Coordinates with other agencies in the event of an emergency such as: NZ Police Fatality or Evacuation, Hurunui District Council Civil Defence response, DoC Historic or Biodiversity advice/actions, Land Owners Operations on site.
- Reviews MCWF Fire Management Plan and associated Emergency Response Plan
- Ensures that local fire response teams have been provided the access and water storage information from site.

- Ensure local response teams are familiar with Mt Cass site.
- Issue Fire Permits as requested.

2.3 Wind Farm Main Contractor Responsibilities

- Develops related SOP's for contract operations and submits for review and approval.
- Ensure they follow all requirements of their FMP and SOP's.

2.4 Wind Farm Sub Contractor Responsibilities

- Develops related SOP's for contract operations and submits for review and approval.
- Ensure they follow all requirements of their FMP and SOP's.

2.5 Separate Contractors Responsibilities

- Develops related SOP's for contract operations and submits for review and approval.
- Ensure they follow all requirements of their FMP and SOP's.

2.6 Operations Contractor Manager Responsibilities

• Ensure they follow all requirements of their FMP and SOP's.

3. Risk Identification

A fire on the wind farm is of significant risk due the potential for high levels of fuel from dry grass, high value vegetation in the area, and risk to personnel and property that a fire in the area would pose. Other fuel sources of significance on site include diesel storage for civil construction and oil storage for transformers.

Potential Ignition sources for a fire include the following:

- Faulty equipment, causing sparks, arcing or open flame
- Hot Works, (Gas Cutting, Angle Grinding, Welding)
- Combustion Engine Equipment (hot exhausts)
- Cigarettes and open cooking flames / BBQ's
- Members of the Public
- Lightning strike

4. Minimisation Procedures General

Due to the nature of works and site, it is impossible to remove all fuel sources, and all potential ignition sources. Key aspects which will minimise the risk of fire include removing as much fuel from the site as possible and separating the works from any remaining fuel as much as practical.

The following plan provides risk mitigation measures for fire, including work processes and emergency readiness.

The Emergency Response Plan will be developed and will be ready for implementation during the Construction Phase in case of fire.

Key site rules include:

- No fires are to be lit or stoves are to be used on site, smoking is not acceptable unless a specific area has been nominated for smoking under a fire safety plan. The construction site will be designated a no-smoking site however vape & e-cigarettes will be permitted in designated areas.
- All vehicles are to be equipped with a fire extinguisher. Spark arrestors will be required for any vehicle (apart from turbo-diesel) which is to go off a formed road.
- Hot works permits are required for all hot works on site.

5. Fire Danger Assessment

The Site Manager will review the Fire Danger information as provided by FENZ and/or Department of Conservation as well as any local information including site specific conditions and assessments by the wind farm landowners or Kate Valley Landfill operators.

Fire Danger assessment for the site can been viewed on the **fireweather.niwa.co.nz** website for the Salt Water Creek Weather Station of North Canterbury. The fire rating is shown for General, Forestry, Powerline, and Hotworks. Fire seasons can also be viewed on the FENZ website.

Current and forecasted windy weather will be monitored and assessed during all operations involving high likelihood ignition source to fire – works. Works, where practicable will be managed with regard to lowering these risks.

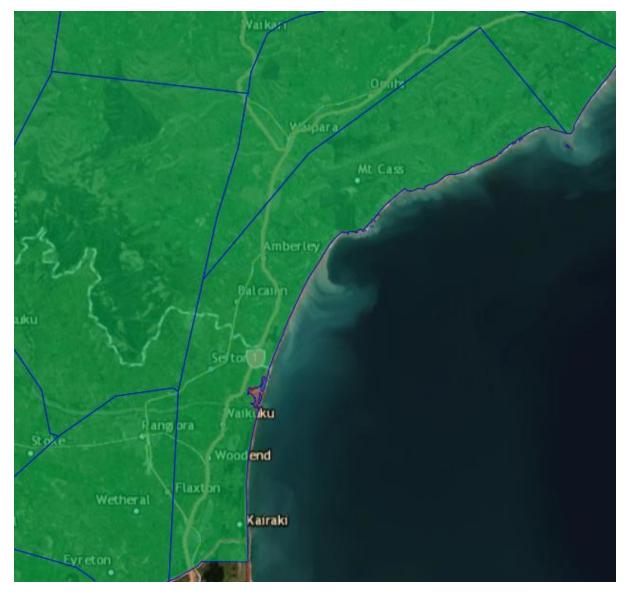


Figure 3 - NZ fire danger class for Salt Water Creek, North Canterbury (Example)

From the status level (as shown in the figure 3 example), and the fire season, the appropriate controls can be put in place as per the controls for each fire level defined in Appendix C.

6. Risk Minimisation Procedures - Detailed Design

6.1 Design Phase Risks

During detailed design of the wind farm there will be limited activity on site and therefore less risk of a fire occurring. However, there will also be less facilities in place, including access roads, so the consequences of a fire may be greater.

6.2 Mitigation

Any design phase activities involving machinery (e.g. geotechnical drilling) should be assessed on a case by case basis and fire safety operating procedures be submitted as part of the contractor's method statement. All contracts are to include provisions for adherence to the latest version of this Fire Management Plan and any relevant SOP's.

There is a requirement under the resource consent to ensure adequate protection is in place prior to undertaking any activities authorised by the consent, including any preliminary geotechnical investigations. Hence any preliminary works will require a SOP, which specifically addresses fire management, approved by the project manager.

The wind farm design, including Turbine selection included consideration of the ability to mitigate fire risk including, track record, transformer type and any active or passive fire detection or suppression systems. A design review for fire risk was undertaken by the design team.

7. Risk Minimisation Procedures - Construction

7.1 Construction Risks

The objective of the construction works will be to complete access routes, platforms, substation and foundations as soon as possible to allow the connecting infrastructure and turbines to be erected and the turbines progressively connected to the network. The likely construction sequence for the site is as follows:

- Site mobilisation, including establishment of temporary site offices, workshops, stores and other facilities;
- Installation of erosion and sedimentation control measures;
- Preparation of initial haulage routes to provide access for construction plant. Haulage routes will follow as close as possible to the proposed alignment of the proposed access roads or may use the existing farm tracks;
- Access road excavation and formation, with cut material transported, placed, and compacted as fill or at disposal sites. Installation of culverts, where appropriate;
- Preparation of laydown areas and the substation platform;
- Installation of internal electrical reticulation along the road;
- Construction of the concrete batching plant site platform and establishment of the batching plant including aggregate stockpile areas, water storage, etc;
- Delivery of concrete aggregates progressive as concrete demand dictates;
- Construction of substation;
- Construction of overhead transmission line;
- Construction of the turbine access roads and working platforms for turbine foundations and crane set up;
- Excavation for and construction of reinforced concrete turbine foundations (as working platforms are created);
- Cut slope and disposal site rehabilitation progressively behind earthworks;
- Installation of remainder of internal transmission network;
- Delivery and erection of towers, nacelles and rotors;
- Progressive commissioning of turbines; and
- Removal of temporary services and site offices, laydown area rehabilitation and general site reinstatement.

7.2 Mitigation

The following mitigation will take place to minimise the possibility of a fire:

Hot Works

- Hot Works Permit required for all hot works refer Appendix C for controls to be implemented for hot works.
- Where, and only if possible Hot Works involving direct spark or flame tasks will be done early morning/late in date, or during foggy days/high humidity. Do not undertake hot work outdoors during prohibited fire seasons unless you have a special permit.
- Hot Works Permits for all high fire risk work with fire permits obtained from FENZ as necessary.
- Wet down the area you are working in and have firefighting equipment handy if the conditions are dry.
- Carry appropriate fire extinguishers, shovels, or knapsack sprayers.
- 30 minutes after you have finished the hot work, do a final check for any hot spots that might cause a fire.

<u>General</u>

- Stop using welders, chainsaws, slashers, and some tractor operations, on extreme fire danger days.
- No Smoking except in locations authorised by the Project Manager.
- No gas cookers on site except in locations authorised by the Project Manager.
- Fire extinguishers in all vehicles and site buildings.
- Vehicle use restricted to formed roads when fire risk exceeds 'High' unless vehicles are equipped to eliminate spark hazard.
- Vehicles that are determined to be suitable for off-road use (i.e. have appropriate spark suppression) are to be recorded in a register and marked with a windscreen sticker.
- Review FENZ information at least daily with records kept for verification if necessary.
- Store petrol, diesel fuels and chemicals in clearly labelled approved containers and in singlepurpose locations away from other buildings.

7.3 Maintaining Machinery

- Fire extinguishers in all vehicles
- Check all machinery is free of mechanical defects that could start a fire and has approved exhaust systems and spark arresters.
- Pay special attention to checking your machinery's bearings and moving parts.
- Clean all machinery regularly to ensure belly pans and spaces around motors are free of oil, dust, grease, birds' nests, grass and straw.

7.4 Equipment and Preparation Prior to Works

The following fire equipment is to be onsite for the duration of the construction operation:

• A primary water filling point located just west of Mt Cass peak. This will have 30,000 litres of storage, in addition to that necessary for farm or construction operations. This area will be equipped as a fill point for helicopters.

- A second water point comprising a water tank of at least 10,000 litres will be located at the substation site. This fill point will be suitable for refilling of the 'smoke chaser' units but may not be suitable for helicopters.
- "Smoke chaser" unit (typically a 4WD flatbed truck/ute) equipped with up to 400 litres of water storage a pump and micro-droplet delivery system. The smoke chaser unit will be the primary tool for grass and debris fire suppression should such events occur.
- High Volume filling pump complete with hoses.
- Hand tools including shovels, mattocks and knapsack sprayers.
- Vehicle/machinery fire extinguishers (Mandatory on all site equipment).
- Personal Protective Equipment (PPE)
- Weather recording equipment

For tanker filling requirements the nearest hard-drafting location is in Omihi Stream or the Waipara River (accessed from Mt Cass Road adjacent to the Omihi Stream Bridge). For extended helicopter operations several water points exist in the Omihi Forest block to the north of the ridge.

7.5 Training – On-site Personnel

The following training of on-site personnel will be undertaken prior to the start of fire season:

- Review of all fire prevention / control measures.
- Fire equipment familiarization and operation.
- Emergency Response Plan review and training refer the emergency response plan.

Fire extinguisher training will be undertaken by plant operators. Other training requirements will be included in emergency response plan.

8. Risk Minimisation Procedures - Operation

Once fully commissioned the wind farm site will change from Construction to its Operational phase. At this point the Site Manager will be the head of Operations and Maintenance. This will include the responsibilities for Fire Management and Incident Control when necessary.

8.1 Fire Suppression Practices and Tools

Grass fires are the most likely fire type to be encountered on the site. Grass fires can move at great speed and are even faster when fanned by the high winds typical across the wind farm. Primary control of grass fires is by ensuring 'fuel loads' are kept to a minimum during Fire Danger periods of "High" or above. This is commonly achieved by maintaining appropriate levels of grazing across the site. Special consideration will need to be given to areas where grazing has been reduced to encourage establishment of woody vegetation, however, these areas are mostly away from the wind farm infrastructure.

Turbine nacelle fires are very rare but may result from brake or electrical failure and could occur during high winds. For fires of this nature, the principal aim is to prevent the fire from spreading (because of burning debris) until it has burnt itself out.

The turbines will be installed with a specific fire detection system where the primary function is to detect and send a response signal to the SCADA system operators & employer in case of fire in the

turbines nacelle and down tower assembly (detected using smoke sensors). This system does not provide fire suppression.

Remote monitoring of the turbines should detect a nacelle fire very early and the Emergency Services shall be notified on 111 if fire is detected.

Regular maintenance of the turbines including lubrication and cleaning of accumulated debris will assist in mitigating the risk of nacelle fire.

8.2 Training – On-site Personnel

Site personnel will be trained in the Fire Management Plan. The Operations Emergency Response Plan will also outline any other training requirements.

9. Emergency Response

The Emergency Response plan will outline the process for all responses in the case of emergencies. The below is the outline of the fire emergency response.

9.1 Standard Immediate Actions

When an emergency occurs, standard immediate actions are used to:

- Raise the alarm
- Ensure the safety of all workers and public nearby as the first priority,
- Assess the situation and decide on a response to the situation

The following is the Standard Immediate Actions in the order that they should be carried out:

- Check your own safety
- Raise the alarm
- Make the area of the emergency safe if possible put out the fire if possible, never put yourself in harm's way
- Senior person at the scene takes control until someone more qualified turns up on site and takes control.
 - Senior worker accounts for all workers using sign in book and records that this has been done
 - Assesses the situation and decides on course of action, based on Emergency Response Plan including contacting emergency services as required
 - o Inform Project Manager
 - Secures the site to ensure that public/media are unable to enter the site area using a physical barrier that is controlled – Site access controller to monitor the cordon and record access/egress
 - o Designate a guide for emergency services

9.2 Evacuation Procedures - Immediate site evacuation to muster point

When an alarm is raised, people on the Mt Cass Wind Farm are to assemble in the Primary Assembly Area. If it is unsafe to do so they are to assemble at the Secondary Assembly Area which is shown on the emergency response layout drawing. Once there, a roll call will be carried out by the senior site worker and all workers accounted for.

All resources and expertise available on site are to be made available to FENZ. Personnel on site will comply with directions given by FENZ.

No one will leave site until they have been given direction by FENZ or the Project Manager

No one will re-enter site until FENZ or the Project Manager has approved that it is safe to do so.

10. Plan, Review and Distribution

This plan is an integral part of the Environmental Management Plan (EMP) for the site and the Construction Management Plan for the wind farm. As part of the EMP it is to be publicly available via the MCWF web site and at the Amberley and Christchurch City libraries. All personnel working on the Mt Cass wind farm site will attend a site-specific induction prior to work commencement. At the induction, the fire plan and emergency response plan will be discussed with copies of the evacuation plan distributed.

As detailed in Resource Consent Condition 120, the Fire Management Plan is to be available for viewing by the Consent Authority on request in writing.

Drivers on short term delivery assignments and site visitors will receive a short form induction. During this induction they will be made aware of the fire hazards on site and will be issued with a copy of the evacuation plan. All subcontractor employees and visitors will receive the contractor's briefing on the fire risks at the site. This briefing is to be recorded in an induction checklist.

Members of the public using the walkway to access the site will be made aware of the potential fire danger via noticeboards. When the fire risk is high the walkway will be closed, and the public notified of this via the wind farm web site.

Any reviews to the management plan shall be approved by the Project Manager and distributed to all parties as required.

11. Appendices

| Appendix | Description |
|----------|-------------------------------------------------------------------------|
| А | Agencies Available for Assistance |
| В | Training Matrix |
| С | NZ Fire Danger Classes & Codes and Recommended Risk Mitigation Measures |
| D | Hot Works Permit (Sample Only) |
| E | Fire Suppression Water Storage and Access Road Plan |

Appendix A: Agencies Available for Assistance

| Fire and Emergency New Zealand | |
|--------------------------------|---------------------------------|
| Direct Contact | Bruce Janes |
| Role | FENZ PRFO |
| Email | bruce.janes@fireandemergency.nz |
| Contact Details | 027 278 5052 |

| Department of Conservation | |
|----------------------------|-------------------------|
| Direct Contact | Abby Lawrence |
| Role | Senior Ranger Community |
| Email | alawrence@doc.govt.nz |
| Contact Details | 027 280 5359 |

| Emergency Contact Details | |
|---------------------------------|-----------------------------------------------------------------------------------|
| Police | 111 |
| Fire | 111 |
| Ambulance | 111 |
| Amberley Volunteer Fire Brigade | http://maps.google.com./?q=21 Markham Street, Amberley, New Zealand03 314 8600 |
| | 21 Markham Street, Amberley |
| Waipara Volunteer Fire Brigade | 03 314 6704 |
| | 94 Glenmark Drive |

Appendix B: Training Matrix

| | MCWF Construction Manager | Site Manager | Hot Works Spotter | General site staff |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------|----------------------|-----------------------|
| All personnel and visitors onto the site will be required to attend an induction when they first arrive on site. Part of this induction will include aspects of the Fire Management Plan. Inductions will also address the smoking policy on site, Hot Work Permits, emergency phone numbers, and aspects of the Emergency Response Plan and the muster area. | ✓ | ~ | ~ | ✓ |
| Hot works Permit Process and Authorisation | \checkmark | \checkmark | \checkmark | |
| Safe Operation Training for Water Cart | | | ~ | |

Appendix C: NZ Fire Danger Classes, Codes & Recommended Risk Mitigation Measures

| Code | Green | Blue | Yellow | Orange |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (Fire Danger Class) | (Low) | (Medium) | (High) | (Very High) |
| | You can still carry out the work, but you need to be ready with a fire extinguisher, water, a shovel and a radio or working phone to call it in if there is a fire. | You can still carry out the work, but you need to be ready with a fire extinguisher, water, a shovel and a radio or working phone to call it in if there is a fire. | You can still carry out the work, but you need to be ready with a fire extinguisher, water, a shovel and a radio or working phone to call it in if there is a fire. | Schedule your jobs before 10:00am or 6:00pm |
| Activity | Mitigation Measures | Mitigation Measures | Mitigation Measures | Mitigation Measures |
| Welding/gas cutting/abrasive wheel cutting | Work only on bare earth Have a fire extinguisher/minimum of 20 litres of water, along with an appropriate method of applying that water, within 5 metres of the work area Patrol for 30 minutes after completion | Work only on bare earth Have a fire extinguisher/minimum of 20 litres of water, along with an appropriate method of applying that water, within 5 metres of the work area Patrol for 30 minutes after completion | No Hot Work unless on a 20 metre radius of bare ground Have a fire extinguisher/minimum of 20 litres of water, along with an appropriate method of applying that water, within 5 metres of the work area Patrol for 30 minutes after completion | No Hot Work unless on a 20 metre rad bare ground Have a fire extinguisher/minimum of 2 litres of water, along with an approprimethod of applying that water, within metres of the work area Patrol for 30 minutes after completion |
| Inspections & maintenance requirements | | Check machinery for debris build up near hot working parts such as belly pans and radiators Check engine bay hydraulic hoses for leaks | Check machinery for debris build up near hot working parts such as belly pans and radiators Check engine bay hydraulic hoses for leaks | Daily - Assess daily weather at 1300 h by forest to determine need for eleva readiness level Weekly - Inspection of all fire equipme (including extinguishers) - Regular clear for all machinery |
| Fire starts | | Notify 111 of any fire start regardless of size | Notify 111 of any fire start regardless of size | Notify 111 of any fire start regardless of siz |
| Emergency planning | | Notify FENZ of any road closures or weekend work Inform the workforce about Code Blue requirements and preparation for future elevation to Code Yellow at, for example, tailgate meetings | Notify FENZ of any road closures or weekend work Inform the workforce at tailgate meetings about Code Yellow requirements. Escape plans: Consider covering in tailgate meetings | Inform the workforce about Code Oran requirements and preparation for future elevation to Code Red at tailgate meetings: Consider covering in tailgate meetings: Escape plans, initial response actions Identify suitable water points (for grou and helicopter) around work areas |
| Machines | | | | Vehicle use restricted to formed roads fire risk exceeds 'High' unless vehicles a equipped to eliminate spark hazard |

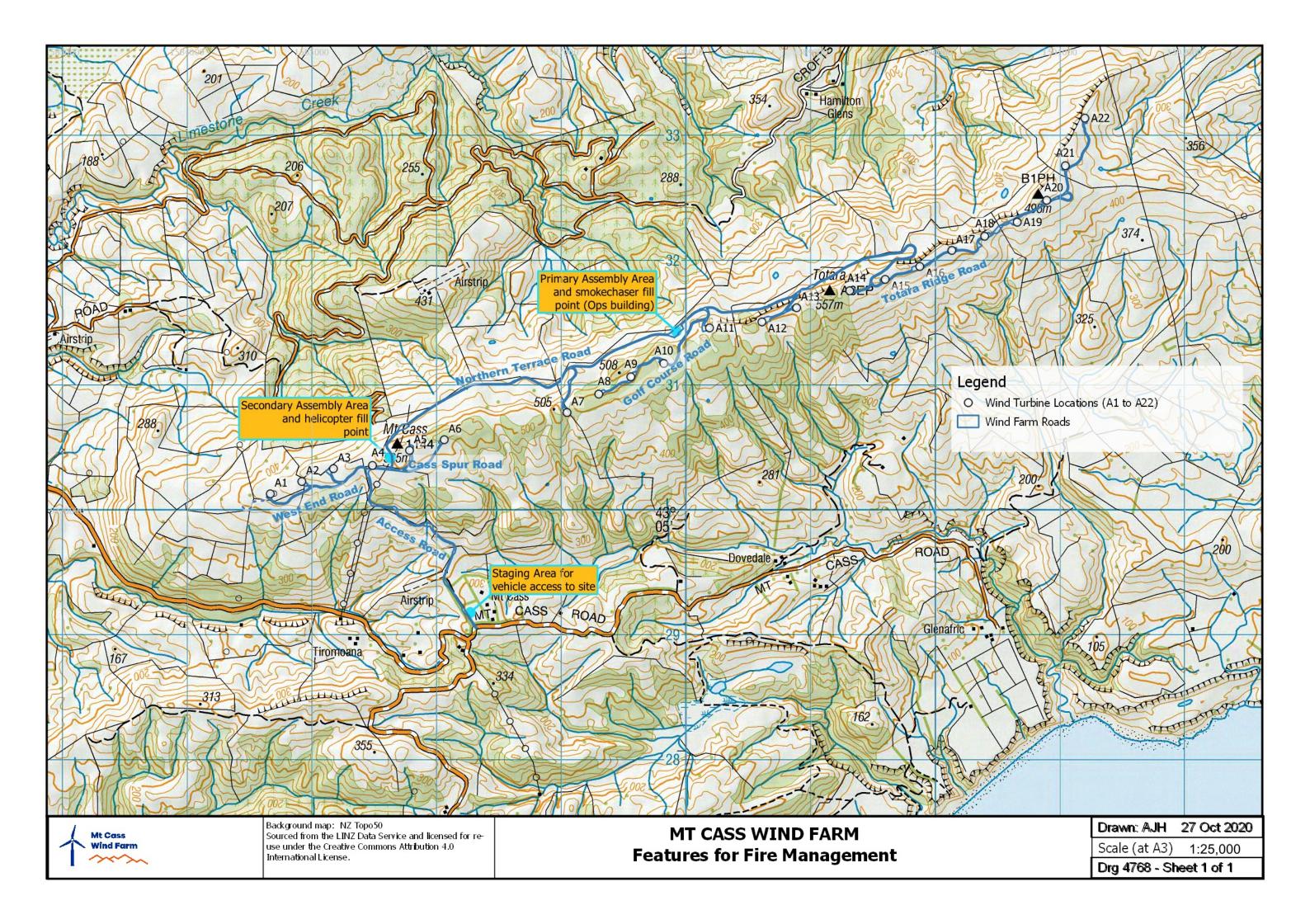
| | Red |
|----------------|-----------------------------------------------------------------------------------------------------|
| | (Extreme) |
| or after | Only essential work should be carried out |
| | and only before 10:00am or after 6:00pm |
| | |
| | Mitigation Measures |
| radius of | Consider stopping all Hot Works for a |
| of 20 | defined period unless a smoke chaser plus crew can be located nearby, OR |
| priate | Work before 1000 hours and after 1600 |
| nin 5 | hours; OR wet the area before and after the |
| ion | Hot Works; maintain 1000 litres of water plus pump on site for two hours following |
| on | the final wet-down |
| | Maintain observation presence for two house afterwards |
| hours | hours afterwards Daily - Assess daily weather at 1300 hours |
| vation of | by forest to determine need for elevation of |
| | readiness level |
| ment | Weekly |
| leaning | Inspection of all fire equipment (including extinguishers) |
| | Regular cleaning for all machinery |
| size | Notify 111 of any fire start regardless of size |
| | |
| ange | Inform the workforce about Code Red |
| ture etings | requirements at tailgate meetingsConsider covering in tailgate meetings: |
| gs: | Escape plans, initial response actions |
| | Identify suitable water points (for ground |
| ound | and helicopter) around work areas and |
| | maintain as appropriate Patrol sites for at least one hour after |
| | machine shutdown |
| | Consider having a 3-person quick response |
| | crew with smoke chaser based at a central |
| | location. • Liaise with FENZ to determine FENZ initial |
| | response plans in case of fire |
| ds when | • Vehicle use restricted to formed roads when |
| s are | fire risk exceeds 'High' unless vehicles are equipped to eliminate spark hazard |
| | equipped to entititiate spark fid2afu |
| | |
| | |

Appendix D: Hot Works Permit (SAMPLE ONLY)

| 1 | Project Name: | | | | Date: | | | |
|------|----------------------------------------------------------------------------------------------------------|----------------------|-----------------------|----------------------|------------------------|-------------------|--|--|
| | Fire Hazard Level | Green | Blue | Yellow | Orange | Red | | |
| 2 | | (Low) | (Medium) | (High) | (Very High) | (Extreme) | | |
| | | | | | | (| | |
| 3 | SCOPE OF HOT WORK: (define as cl | early as possible) | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | NO HOT V | VORK OUTSIDE TH | IS SCOPE MAY BE PEF | RFORMED UNDER TI | HIS PERMIT | | | |
| 4 | POTENTIAL IGNITION SOURCES: (Ti | ck as required) | | | | | | |
| ₽ Tł | nermal Cutting 🛛 🛛 Grinding | Abrasive Blas | ting 🛛 🛛 Welding | Electric | Arc Of Any Type | | | |
| ? El | ectric Tools 🛛 🛛 Drilling | Radiography | Impact To | ools 🛛 ? Combust | ion Engine | | | |
| 2 N | on Intrinsically Safe Equipment | ? Other | | | | | | |
| 5 | POTENTIAL FUEL SOURCES: (Tick as | required) | | | | | | |
| ? Fu | iel Oil (liquid) 🛛 🛛 Lubricating Oil | (liquid) 🛛 🛛 Tir | nber 🛛 Vegetat | ion / Grass 🛛 Plas | tics | | | |
| ₽ Fu | iel Oil (vapour) 🛛 🛛 Lubricating Oil | (vapour) 🛛 Pa | aper 🛛 Chemio | cals 🔹 🗈 Elec | trical Cables | | | |
| ? G | as 🛛 Nil | 🛛 Other. | | | | | | |
| 6 | HOT WORK CHECKLIST: (Tick as req Mitigation Measures) | uired the precauti | ons taken, refer NZ F | ire Danger Classes & | Codes and Recomm | ended Risk | | |
| ? N | o Hot Work unless on a 20 metre rad | us of bare ground | | | | | | |
| P H; | ave a fire extinguisher/minimum of 2 |) litres of water. a | long with an appropri | iate method of appl | ving that water. withi | n 5 metres of the | | |
| | k area | , | 0 11 1 | | , | | | |
| ? W | ork area swept and wetted down | | Water hose rolled | out and left running | 5 | | | |
| ? Aj | opropriate fire extinguisher ready for | use | | | | | | |
| 2 M | eans of escape identified and availab | le | Isolations on Asso | ciated Permit adequ | Jate | | | |
| ₽ Pa | Patrol for 30 minutes after completion | | | | | | | |
| 7 | 7 SPECIFIC PRECAUTIONS TO BE TAKEN DURING THIS HOT WORK: (Tick as required) | | | | | | | |
| ? Ve | I entilation 🛛 🤉 Fire Watch Required | Bar | ricades/Signage | Sparks | To Be Contained | | | |
| ? Ex | Extraction Respiratory Protection Inert Gas Purge To Be Maintained | | | | | | | |
| ОТН | | | | | | | | |
| | OTHER PRECAUTIONS: (include any special PPE) | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| 8 | 8 PERMIT ISSUE: All precautions in section 5 have been made to ensure the safety of those working under this permit. All the conditions on this permit have been discussed with the permit acceptor & I authorise work to proceed. All hot work permits are Valid for 1 Day. | | | | | |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|--|--|
| Auth | orised Issuer: | | Signature: | | | |
| 9 | 9 PERMIT ACCEPTANCE: All Work Crew members involved in the hot work confirms & accepts that conditions stated in this work permit & any associated procedures will be strictly adhered to & all persons are aware of all conditions relating to the scope of the hot work. | | | | | |
| Nam | ie: | Signature: | Name: | Signature: | | |
| Nam | ie: | Signature: | Name: | Signature: | | |
| Nam | ie: | Signature: | Name: | Signature: | | |
| 10 | 10 PERMIT CLOSURE: Accepts and confirms completion as above and verifies permit has been returned and signed off by Acceptor. Precautions recorded in section 5 have been removed and the area has been inspected and left in a safe condition. | | | | | |
| | Site has been Patrol for 30 minutes after completion | | | | | |
| Auth | Authorised Issuer: Signature: | | | | | |

Appendix E: Fire Suppression Water Storage & Access Road Plan



Appendix K

B8 Weed Management Plan



Mt Cass Wind Farm Weed Management Plan



Revision 5 – 23 March 2023

This document has been prepared for the benefit of Mt Cass Wind Farm Ltd (MCWF). No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person. This disclaimer shall apply notwithstanding that the report may be made available to other persons of an application for permission or approval to fulfil a legal requirement.

Revision History

| Version | Description | Date | Prepared by | Approved By |
|---------|-----------------------------------------------------------------|-----------|-------------|-------------|
| Rev 1 | Rev 1DraftRev 2DraftRev 3MCD InputRev 4MCD Updates after review | | HW | SB |
| Rev 2 | | | HL | SB |
| Rev 3 | | | DK | АН |
| Rev 4 | | | DK | MC |
| Rev 5 | Post CLG review and issue to HDC | 23 Mar 23 | MC | GG |

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1. Introduction

1.1 Purpose

This plan aims to inform people involved in the Mt Cass Wind Farm construction (the Project) how to control Weeds and comply with the resource consent requirements and any other regulatory requirements during the construction works. The plan covers the construction of the wind farm.

Construction of the Project represents a real risk for weed spread as seeds are readily dispersed on the vehicles entering the site or by wind and birds and can establish and grow quickly on disturbed sites associated with wind farm development (e.g. road cuts).

1.2 Overview

The Weed Management Plan is the primary responsibility of the Project Director and begins with hazard awareness and risk minimisation. This plan sets out Weed Management risks and associated Management Processes to mitigate the identified Project Risks.

During construction, each Contractor will be responsible for ensuring that this plan is correctly implemented and will review all documentation relating to this plan before it is finalised and issued.

Site induction for all personnel must include a briefing on this plan, including the main content of this plan and any SOPs relevant to the task being performed.

This plan will be read in conjunction with the MCWFL Construction Management Plan and their Environmental Management Plan.

2. Consent Conditions

Appendix C of the Construction Management Plan includes a matrix of all consent conditions included in the Construction Management Plan and Sub plans. The following are the specific conditions that pertain to this plan:

| Consent Conditions | Control for Consent Conditions |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Construction Management Plan | |
| 31) The objective of the Construction Management Plan shall be to set out the practices and procedures to be adopted to ensure compliance with consent conditions and to meet the following objectives: | |
| n. To minimise the introduction and spread of weeds. | Refer Section 3.2 of this plan |
| 32) The Construction Management Plan shall include, but not be limited to | |
| m. Procedures for the management of weeds. | Refer to Section 3.2 of this plan |
| Environmental Management Plan | |
| 84)The weed monitoring and control section of the Environmental Management Plan shall include, but not limited to: | |
| b. The details of measures to minimise the effects and introduction of weeds that shall include, but not be limited to: ii. Ensuring construction vehicles are cleaned of adhering soil before first entering the project site, and that weed-free sources of aggregate are used; | Addressed in Section 5.5 of the EMP and Section 3.2 of this plan. |

3. Existing Project Site Conditions

Several vegetation surveys have been completed during the pre-construction phases of the Project as part of the resource consent applications and the baseline inventory of weeds. The weed species identified during these surveys and the relative abundance based on the ACFOR index (Abundant, Common, Frequent, Occasional, Rare) and photographic examples of the weeds are provided in Appendix A.

Invasive weed species that are known to cause problems in similar environments and threaten biodiversity values at the site or in the general vicinity are listed in Table 1.

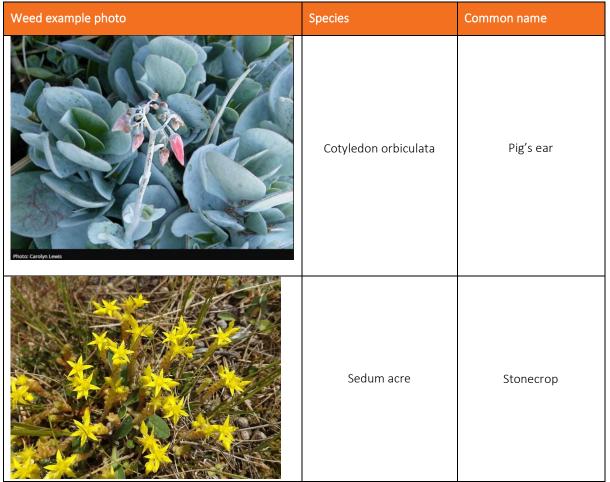
| Weed example photo | Species | Common name |
|--------------------|-------------------|----------------|
| | Pinus sp. | Wilding Pines |
| | Cytisus scoparius | European broom |
| | Ulex europaeus | Gorse |

Table 1 Invasive species that pose a threat to biodiversity at the Project site

| Weed example photo | Species | Common name |
|--------------------|----------------------|-------------|
| | Crataegus monogyna | Hawthorn |
| | Berberis glaucocarpa | Barberry |
| | Rosa Rubiginosa | Sweet Briar |
| | Sambucus nigra | Elderberry |

| Weed example photo | Species | Common name |
|--------------------|--------------------------|-----------------|
| | Prunus avium, Prunus SP. | Wild Cherry |
| | Nassella trichotoma | Nasella Tussock |
| | Clematis vitalba | Old Man's Beard |
| | Arctium Minus | Burdock |

| Weed example photo | Species | Common name |
|--------------------|-----------------------------------|-----------------|
| | Crataegus Monogyna | Hawthorn |
| | Dryopteris filix-mas | Male Fern |
| | Polypodium Vulgare | Common Polypody |
| | Centranthus ruber subsp. ruber | Spur valerian |



Photos source: https://www.weedbusters.org.nz/what-are-weeds/weed-lis

Control Measures

3.1 Key Principles and Approaches

The key principle for weed management during the Projects construction is to ensure that additional weed species are not introduced to the site and that any existing weed species are managed to avoid the spread of invasive species as a result of construction activities.

Documents relevant to weed management at the Project site include:

- Environment Canterbury Regional Pest Management Plan (2018-2038)
- Environment Canterbury Regional Pest Management Strategy
- Mt Cass Wind Farm Environmental Management Plan
- Mt Cass Wind Farm Pest Plant Guide (Rev 7- September 2021)
- Keep it clean Machinery hygiene guidelines and logbook to prevent the spread of pest weeds.

3.2 Specific Weed Control Measures

The following measures will be implemented to minimise the effects, and the introduction of weeds shall include, but not be limited to:

- Earth-engaging machinery will be appropriately cleaned off-site of any adhering soil before entering the site.
- A pre-use inspection will be carried out before the specific machine is operated on the site. This inspection requires that the machinery is clean and dirt and vegetation free. A draft template is in Appendix B
- All earth-engaging machinery movements to and from the site will be logged in a register to allow tracking of plant movements.
- Weed-free sources of aggregate and dust-suppression water will be used.
 - o Amberley Beach Rd Quarry
 - o Miners Road Quarry (Christchurch)
 - o Amberly potable water supply.
- All sites disturbed during wind farm construction will be rehabilitated with vegetation appropriate to the location of the site within 12 months of the sites being no longer required for construction (and preferably more rapidly if seasonal conditions permit) to establish a vigorous plant growth that will reduce opportunities for weed species to establish.
- MCWFL's ecologist will conduct regular site inspections, checking for pest weed outbreaks.

3.3 Weed Out Break Control Measures

The civil constructor will be responsible for controlling any high-level weed infestation that may

arise because of wind farm construction. This will benefit from having more significant resources to bring to the issue. Any weed control for high infestation levels will still be subject to the same ecological controls required for routine weed surveillance.

4. Training – On-site Personnel

Site personnel will undertake a site induction, so they are aware of the project consent conditions. They will also be trained in weed control as required to comply with the requirements of this plan. Construction personnel will be briefed on the biodiversity status of the site, the requirements of the WMP and the importance of weed hygiene in maintaining the site's quality.

5. Monitoring During Construction

Monthly site audits will be carried out by the project environmental advisor and MCWFL Project engineers to ensure compliance with this management plan.

Monitoring shall occur for the entire duration of the work. Any control measures requiring maintenance or adaptation to allow construction tasks to occur shall be identified and implemented by the Environmental Manager to ensure continual compliance. The following monitoring is required concerning weed management:

Annual monitoring of all areas disturbed by the wind farm will be undertaken to detect and remove any ecologically important weed species that might establish. This monitoring would be undertaken by the consent holders' ecologists and involve traversing the wind farm roads and turbine sites to search for any ecologically important weeds that might be present. Any weed locations will be recorded, and the plant(s) will be removed at the time if at all possible. If not, arrangements will be made with the relevant Contractor to plan removal.

6. Appendices

| Appendix | Description |
|----------|-------------------------|
| А | Identified weed species |
| В | Plant inspection sheet. |

2 Ecologically Important Invasive Weeds

2.1 Burdock (*Arctium minus*)

What does it look like? Upright, open- branched, shrubby perennial <1.5m tall. Rosette form in first year. Large, hollow leaves stalked, triangular, <40cm long, green sparsely haired on topside, white & densely haired underneath. Hairy stems. Pink, egg-shaped, thistle-like flowerhead (Jan-Apr) surrounded by hooks.

Are there any similar species? No similar species occur on site.

Why is it weedy? Well-dispersed seeds that hook onto clothes, wool & fur.

What damage does it do? Grows in similar environments to the Threatened limestone wheat grass (*Australopyrum calcis subsp. Optatum*), and threatens this species through competition. Causes animal welfare issues, with burs damaging sheep wool and injuring skin, mouth or eyes.

Which habitats is it likely to invade? Forest margins, scrub, roadsides waste areas. Prefers wet areas and tolerates shade.



[Plate 1] Image source Auckland Council.

2.2 Barberry (*Berberis glaucocarpa*)

What does it look like? Evergreen or semi-deciduous, spiny, yellow-wooded shrub (<4-5 m). Tough, woody stems have yellowish-grey bark and very sharp, hard, single or three pronged spines (<23 mm long) where the leaves meet the stem. Leathery leaves (25-75 x 10-25 mm) with usually serrated edges often turn reddish in autumn. Clusters (<6 cm long) of smelly yellow flowers (5-7 mm, Oct-Nov) are followed by oval, reddish-black berries (7-12 mm) with a dusty white look to them and dark red juice (Mar-May).

Are there any similar species? No similar species occur on site.

Why is it weedy? Long-lived and produces long-lived, well-dispersed seeds. Tolerates hot to cool temperatures, damp to dry conditions, high wind, salt, little shade, damage (not grazed) and many soil types.

Variable production of viable seed, from large amounts to none. Birds and possibly possums eat berries and spread the seeds, which are also spread by soil and water movement. Seed sources include farm hedges, roadsides, old homesteads, and plantation forest.

What damage does it do? Scattered plants (occasionally dense stands), replace native species.

Which habitats is it likely to invade? Disturbed forest and shrubland, short tussockland, and bare and stony land.



[Plate 2] Image source weedbusters.org.nz

2.3 Old Man's beard (*Clematis vitalba*)

What does it look like? Deciduous, climbing, layering vine (<20 m tall) with very long, woody stems with six prominent ribs (appear as furrows in older vines) and pale, easily rubbed-off bark. Leaves are arranged in opposite pairs on the stems and are made up of five (rarely three) widely spaced leaflets that fall in autumn. Thin, papery leaflets are sparsely hairy and have bluntly toothed or smooth edges. Creamy white, fragrant flowers (2-3 cm diameter, Dec-May) are followed by grey, hairy seeds (2-3 mm long) with distinctive white plumes (3-4 cm long) in dense, fluffy clusters persisting over winter (hence the 'old man's beard').

Are there any similar species? All native clematis species are evergreen, have 3 leaflets (except the leafless *C. afoliata*), unfurrowed stems, and flower from August to December. All exotic species that are found in the wild are deciduous (flowers Dec-May), except the occasionally weedy, pink-flowered *C. montana* (flowers Oct-Dec).

Why is it weedy? Grows rapidly, forming dense, heavy, masses that dominate canopy of any height. Stems layer profusely, and it produces many long-lived seeds if exposed to frost. Tolerant of cold, moderate shade, damp, wind, salt, most soil types, and damage.

How does it spread? Seed is spread by water or wind, and both seed and stem fragments are spread in dumped vegetation. Common sources are forests, roadsides, hedgerows, vacant land, and willow swamps.

What damage does it do? Smothers and kills all plants to the highest canopy and prevents the establishment of native plant seedlings. Moves readily into established forest over canopy and by layering.

Which habitats is it likely to invade? Disturbed and open forest and forest margins, shrublands, cliffs, bush tracks, fernland, and tussockland.



[Plate 3] Image source weedbusters.org.nz

2.4 Hawthorn (*Crataegus monogyna*)

What does it look like? Deciduous shrub or small tree (<10 m tall) with much-branched stems that are hairless, reddish-brown when young, but become grey when mature and have stiff spines to 12 mm long. Hairless triangular leaves (35-50 x 35-45 mm) with 3-7 deep lobes are solitary on long shoots, clustered on short shoots, and are often chewed by slugs. Dense flat clusters of 6-15 sweet-scented, white (rarely reddish-pink), 5-petalled flowers (10-15 mm diameter, Oct-Nov) are followed by round, shiny, crimson berries (7-11 mm diameter, Dec-Apr) with little flesh around a single stone.

Are there any similar species? Other cultivars, especially *Crataegus laevigata* (usually grown as pink, double flowered cultivars), barberry and boxthorn are similar.

Why is it weedy? Produces many long-lived, well dispersed seeds, is extremely tough and versatile, long-lived, tolerates hot to cold temperatures, damp to dry conditions, salt, wind, heavy damage, most soils, and semi-shade.

How does it spread? Birds, and occasionally soil and water movement. Hedges, poor pastures, roadsides, and waste places are all seed sources.

What damage does it do? Crowds out most other species, forms dense (occasionally pure) thickets, preventing the establishment of native plant seedlings.

Which habitats is it likely to invade? Disturbed forest, shrubland and margins, fernland, wetland margins, short tussockland, other low-growing habitats, and cliffs.



[Plate 4] Image source weedbusters.org.nz

2.5 Broom (*Cytisus scoparius*)

What does it look like? Erect, much branched, almost leafless, deciduous shrub (<2.5 m) with a woody rootstock. Silky-hairy young twigs mature into woody, flexible green stems that are 5-ribbed and hairless. Leaves are divided into three sections (each 5-20 mm) that readily fall off the stems. Single or paired, golden-yellow (occasionally reddish), pea-like flowers (15-25mm, Sep-Apr) are followed by oblong green pods (30-60 mm) that turn black as they mature and eventually disperse seeds explosively, leaving empty coils hanging from the plant.

Are there any similar species? Montpellier, Spanish and white broom. Tree lucerne, *Teline stenopetala*, and native *Carmichaelia* species are all similar.

Why is it weedy? Prolific seeder that spreads rapidly, matures quickly, and colonises large areas, forming pure stands that dominate habitats. As it is a legume and can fix nitrogen in the soil, it can change the types of plants which can survive where it has been growing, disturbing the ecology of an area. Particular problem on riverbanks and lakesides, roadsides, forest tracks and firebreak areas. Tolerates warm to very cold temperatures, most well drained soil types, grazing, fire, and high to low rainfall.

How does it spread? Explosive seed mechanism spreads seed 1-5 m from the parent plant, and they are also spread by machinery, soil and water movement, and possibly birds and feral pigs. Common seed sources include quarries, roadsides, forest tracks, metal dumps, fire breaks, exotic forests, skid sites, riverbeds, domestic gardens, and disturbed land.

What damage does it do? Forms pure stands in many habitat types. Dominates low canopy habitats, preventing the seedlings of native species from establishing. Increased nitrogen in gumlands and other impoverished soil types may result in changing habitats and plant species being present to the detriment of specialised plants e.g. orchids, ferns, herbs, kauri, or can lead to further weed invasion.

Which habitats is it likely to invade? Shrublands, forest margins, low canopy habitats, tussockland, fernland, wetland, regenerating and disturbed forest, and bare land.



[Plate 5] Image source weedbusters.org.nz

2.6 Male fern (*Dryopteris filix-mas*)

What does it look like? Stout rhizomatous fern. Laminae bipinnate up to 125 x 30 cm, dark green above, paler green below. Primary pinnae in 25-50 pairs, secondary pinnae in 15-30 pairs. Sori round, 1-5 pairs on each secondary pinnae.

Are there any similar species? Dryopteris is closely related to Polystichium and Lastreopsis, but distinguished from Polystichum by the kidney-shaped indusia, and from Lastreopsis by its abundance of stipe-scales and absence of hairs.

Why is it weedy? It outcompetes native ferns.

Which habitats is it likely to invade? Male fern is found in diverse habitats with a preference for sheltered sites with more southerly than northerly aspects. Male fern is mostly associated with stream sides, degraded sites and sites of past disturbance.



[Plate 6] Image source nzpcn.org.nz

2.7 Nassella tussock (Nassella trichotoma)

What does it look like? Perennial tussock grass with erect or drooping leaves, which grows up to 70 cm high and 80cm wide and forms dense clumps. Stem is swollen just above ground level – like a shallot. Light green or yellowish-green leaves are thin and tightly rolled; they do not break when pulled. When fingers are run down the leaf, they feel needle-like and very tough. Leaf sheaths are white to light brown. Ligule is short (1 - 2 mm), white, hairless and obvious when the blade is pulled from a younger leaf. Plants usually flower between October and early summer when they have a purplish tinge. Flowering stems can be up to 1 m tall. Flowerheads are open, with a branched seed head 25 - 95 cm long and produced between November and January. Ripe seeds are purplish with a 3cm long bristle. Roots are deep, matted and fibrous. They have been found growing 1.7 m below the soil surface.

Are there any similar species? Other similar looking tussocks have purplish colouration at their leaf bases. Similar looking tussocks have no ligule (a thin outgrowth at the junction of leaf and leafstalk) or a ligule with hairs.

Why is it weedy? Nassella tussock can be seriously invasive, completely dominating low-producing grassland. Prevalent in North Canterbury and Marlborough, where it can form dense stands which are difficult to manage.

How does it spread? Seeds are spread by the wind and can travel as far as 16 km. Seeds are also transferred to other properties by livestock, machinery, clothing and on milled plantation logs.

What damage does it do? Pasture carrying capacity can be significantly reduced because the leaves are unpalatable and indigestible.

Which habitats is it likely to invade? Grows well on steep, dry, rugged sunny slopes, ridges and knobs. Establishes well on overgrazed, dry bare land.



[Plate 7] Image source agpest.co.nz

2.8 Wilding pines (*Pinus sp.*)

What does it look like? Wilding pines are sourced from a number of species. Typically, resinous, evergreen trees <25m tall. Bark rough & often fissured. Bunches of green, needle-like leaves. Cones produced with many seeds.

Are there any similar species? No, a distinctive family with bunches of green, needle-like leaves.

Why is it weedy? Pines can dominate and exclude other vegetation. The older trees become canopy trees in forest.

How does it spread? Seeds are spread by the wind and can travel as far as 50 km.

What damage does it do? They change soil acidity, precluding some native species, and can dominate the landscape.

Which habitats is it likely to invade? Open places, coastal areas, slopes, shrubland. Common near plantations & shelterbelts.



[Plate 8] Image source Auckland Council

2.9 Common polypody (*Polypodium vulgare*)

What does it look like? The common polypody is a fern developing in isolation from along a horizontal rhizome. The fronds with triangular leaflets measure 10 to 50 centimetres (3.9 to 19.7 in). They are divided all the way back to the central stem in 10 to 18 pairs of segments or leaflets. The leaflets become much shorter at the end of the frond. The leaflets are generally whole or slightly denticulated and somewhat wider at their base, where they often touch each other. They have an alternating arrangement, those on one side being slightly offset from those on the other side. The petioles have no scales.

The sori are found on the lower side of the fronds and range in colour from bright yellow to orange. They became dark grey at maturity.

Are there any similar species? No other similar species on site.

Why is it weedy? It outcompetes native ferns.

Which habitats is it likely to invade? This fern is found in shaded and semi-shaded locations. It is a lithophyte (grows on rocks), and is found growing in the moss on cliffs, cracks in rocks, and in rocky undergrowth; also as an epiphyte on mossy trees.



[Plate 9] Image source nzpcn.org.nz

2.10 Wild cherry (*Prunus avium, Prunus sp.*)

What does it look like? Deciduous, spreading, suckering tree (<5-12m tall) with tall trunk. Thin, oval leaves (30-150 x 25-70 mm) with toothed edges are hairless above, and undersides are hairy when leaves are young, becoming hairless as they mature. White, occasionally double, flowers (11-19 x 8-17 mm) aren't fragrant, and are in clusters of 2-4 (Sept-Nov). Cherry fruit (8-17 mm diameter, 30 mm in cultivation) develops Nov-Feb, is dark red, usually sweet but can be bitter.

Are there any similar species? Other cherry (Prunus) species, especially *P. campanulata, P. serrulata, P. laurocerasus, P. lusitanica.*

Why is it weedy? Tolerant of cold, low rainfall, mod shade. Suckers, long-lived, forms dense stands, tall. Seeds long-lived, widely dispersed.

How does it spread? Birds carry seed medium distances, and suckers locally. Soil movement.

What damage does it do? Impacts on native plants. Forms dense stands in open and disturbed habitats, prevents native plant germination and growth.

Which habitats is it likely to invade? Disturbed forest and shrubland.



[Plate 8] Image source weedbusters.org.nz

2.11 Sweet briar (*Rosa rubiginosa*)

What does it look like? Deciduous, erect, occasionally dense, woody shrub to 3 m (occasionally 5 m) tall with stout branched roots that often sucker. Many arching stems grow from the base, with few to many, unequal, flattened, downward- pointing, curved thorns. Apple-smelling leaves are hairless dull green above, hairy below, and divided into 5-9 narrow-oval leaflets (12-40 x 8-28 mm). Clusters of 1-3 pink (or bright pink with whitish base) rose-like, 5-petalled flowers (25-40 mm diameter) appear from November to January, followed by prominent, egg-shaped, shiny red or orange-red rose hips (12-22 x 10-18 mm) from February to May.

Are there any similar species? Dog rose (*Rosa canina*) has even-sized thorns and is also weedy, especially in damp areas.

Why is it weedy? Long-lived seed is occasionally well dispersed and spread is also by suckers. Tolerates drought, hot to very cold temperatures, wind, low fertility, most well-drained soils and damage (little grazed). Can dominate the canopy.

How does it spread? Mostly via suckers and also by bird-dispersed seed. Abandoned gardens, poor and drought-prone pasture, roadsides, and river flats are all common sources.

What damage does it do? Forms dense, long-lived stands in tough, open habitats, inhibiting or preventing the seedlings of native species from establishing. Can alter riverbeds, causing flooding. Requires moderate to high light levels, and invades only open sites or badly degraded forest.

Which habitats is it likely to invade? Tall and short tussockland, shrubland, stabilised screes, steep open slopes, well drained sites, dunes, and bare land, mainly in drier eastern areas.



[Plate 9] Image source weedbusters.org.nz

2.12 Elderberry (*Sambucus nigra*)

What does it look like? Deciduous shrub or small tree (<6 m tall). Stems are grey-fawn with white pith and many small and corky lumps (glands). Leaves comprise of 5-7 leaflets that are purple when very young, becoming green. Leaflet at the tip is broadly oval (4.5-11 cm long, 3.5-6 cm wide), hairless or hairy on veins beneath and on midrib above, serrated except towards base, and has a pointed tip. Other leaflets are smaller and narrower. Flowers and fruit form in a flat umbrella-shaped cluster (10-20 cm diameter). Dull white, pungent flowers (2-3 mm long, Nov-Jan) are on stalks that usually turn red-purple when fruit develop. Berry-like, round fruits (4-9 mm diameter) mature to shining black, occasionally remaining green.

Are there any similar species? *Sambucus pubens* has pyramid shaped flower and fruit clusters and brown stem pith.

Why is it weedy? Produces many well-dispersed seeds. Leaves are toxic so it is not grazed. It tolerates sun, shade and dry soils.

How does it spread? Seed is dispersed by birds.

What damage does it do? It invades disturbed habitats, forming moderately dense stands that inhibit regeneration of native species.

Which habitats is it likely to invade? Scrub, shrubland, fernland, disturbed forest, forest margins, modified plant communities, roadsides in coastal and lowland habitats on medium to high fertility soils.



[Plate 102] Image source weedbusters.org.nz

2.13 Stonecrop (Sedum acre)

What does it look like? Low-growing, succulent, evergreen, mat-forming herb (<10cm high) with fibrous roots and fleshy, round, creeping stems that take root at nodes and many short erect sterile and flowering stems. Ovalish, yellowish, hairless leaves (5 x 3 mm) are very fleshy and acrid to taste. Bright yellow star-like flowers (12 mm diameter, Nov-Mar) have five sharp petals and are followed by many seeds in dry, splitting follicles.

Are there any similar species? No similar species occur on site.

Why is it weedy? Succulent leaf and stem fragments root, giving it a creeping habit. Quick maturing; produces very many, relatively long-lived and well-dispersed seeds. Tolerates wind, salt, very hot to hard frost, drought, poorest soils. Intolerant of poor drainage, wet sites.

How does it spread? Seed, stem and leaf fragments spread by soil and occasionally water, road graders, traffic and gravity (cliff areas) and also by deliberate movement and plantings. Sources include waste places, rail tracks, walls and banks, roadsides.

What damage does it do? Forms dense mats, excluding almost all other species. Threatens rare native low-growing cliff and shingle species.

Which habitats is it likely to invade? Tall and short tussockland, bare land, limestone cliffs, rocky, stony, gravelly areas from sea level to 1500 m.



[Plate 113] Image source weedbusters.org.nz

2.14 Gorse (*Ulex europaeus*)

What does it look like? Sharply spiny shrub (<2-3 m tall) with woody erect or spreading stems which are many-branched in younger plants but become bare at the base as the plant gets older. Leaves are reduced to spines, new leaves less so. Spines are deeply furrowed. Pea-like yellow flowers (13-20 mm long, May-Nov, sometimes all year) are followed by hairy seed pods (13-25 mm long) which turn black when mature and explode to release seeds.

Why is it weedy? Produces massive numbers of long-lived seeds, matures and grows rapidly, and is versatile about habitat. Tolerates hot to cold temperatures, high to low rainfall, wind, salt, damage and grazing, and all soil types.

How does it spread? Explosion of seed pods spreads seed up to 5 m from the parent plant, and seed is also spread by soil movement and road graders, contaminated machinery, animals, boots, stock food and lime. Hedges, roadsides, waste land, farms, quarries, forest tracks, metal dumps, fire breaks, exotic forests, skid sites, and riverbeds are all common seed sources.

What damage does it do? Forms pure associations temporarily in many habitats, inhibiting the establishment of native plant seedlings. Increased nitrogen in poor soil types changes native species able to grow there. Can be a nursery crop for native species, dying back when overtopped, but less likely on dry sites.

Which habitats is it likely to invade? Shrublands, forest margins, coastline, tussockland, fernland, wetland, consolidated sand dunes, gumlands, cliffs, disturbed forest, exotic plantations, poor pasture, and bare land.



[Plate 12] Image source weedbusters.org.nz

2.15 Spur valerian (*Centranthus ruber* subsp. *ruber*)

What does it look like? Perennial plant up to 80 cm tall, with a woody base and tap root. Leaves are green or blue/green. Flower heads are deep pink, red or white and are made up of many small flowers. In full flower from October to December but can flower until June.

Are there any similar species? No similar species occur on site.

Why is it weedy? Spur valerian can quickly form dense stands shading out other plants.

How does it spread? Spur valerian produces lots of wind spread seeds and roadsides are common seed sources.

What damage does it do? It outcompetes and inhibits the establishment of native plant seedlings. It is a serious threat to rare native plants which are found on rocky outcrops and cliffs.

Which habitats is it likely to invade? Spur valerian is usually found in rocky coastal areas but can also be found growing inland. In Canterbury it is spreading along roadsides.



[Plate 13] Image source nzpcn.co.nz

2.16 Pig's ear (Cotyledon orbiculata)

What does it look like? Succulent (<1.3m tall) with powdery-looking, grey-green opposite leaves (<13 x 6 cm) with red margins. In summer clusters of orange, bell-shaped, drooping flowers (2.5cm) form on stalks (60cm) from the centre of leaf rosette.

Why is it weedy? Fast growing, outcompetes native species.

How does it spread? Seed spreads by wind and gravity.

What damage does it do? It outcompetes and inhibits the establishment of native plant seedlings. It is a serious threat to rare native plants which are found on rocky outcrops and cliffs.

Which habitats is it likely to invade? Coastal slopes and beaches, often on steep banks, rocky outcrops, cliff faces and bare ledges, sometimes in low scrub and dry depleted grassland. Coastal cliffs, rocky bluffs.



[Plate 14] Image source weedbusters.org.nz

APPENDIX B – Plant Inspection Template



CREATIVE CONSTRUCTION"

Г

INCOMING / OUTGOING PLANT INSPECTION

| Contractor / Supplier: | | | |
|------------------------------|-----------------------------|--------------------------------|---|
| Description: | | Make: | |
| Rego Number: | | Model: | |
| Serial Number: | | Date of Manufacture: | |
| KM / HRS at Inspection: | | KMs / HRS at last Service: | |
| Serviced By: | | Date Serviced: | |
| Estimated Hire Duration: | | Next Service Due: | |
| MCD Allocated Site No.: | | Proposed / On Site Date: | |
| Record Result of Check: Good | d Condition: INITIALS Bad C | ondition: X Not Applicable: N/ | A |

Record Result of Check: Good Condition: INITIALS Bad Condition: X

| Description*Refer to Operators Manual#Refer to Plant Service History | S/C Confirm | MCD/BE Verify | Description | S/C Confirm | MCD/BE Verify |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|---------------------------------------------------------------------------------------------------------------------------|----------------|------------------|
| General Safety Equipment (All Plant) | | | Cranes | | |
| All safety signs / stickers are in place * | * | * | CraneSafe sticker. Date: / / | | |
| Emergency Stops are fitted / working | | | Regulatory authority plant registration certificates available in unit Date: / / | | |
| Beacon is fitted and working, if mobile plant / vehicle / UHF Fitted | | | Handrails, if required. | | |
| Any lifting / rigging gear is tagged | | | Load charts available/SWL clearly marked $*$ | * | * |
| Any lift point is engineered / stamped * | * | * | Load indicators fitted and working (electronic) * | * | * |
| Has a Noise Level Test been taken (where applicable) | | | Wire rope certs, hook certs 10yr inspection # | # | # |
| Fire extinguisher is fitted and in date – within 6 months. Date: / / | | | Concrete boom pump/ line pump | | |
| Bunding is supplied to ALL stationary plant | | | Regulatory authority plant registration certificates available in unit | | |
| Reverse alarm fitted & working, if mobile plant/vehicles | | | Line thickness testing reports completed and available? (Concrete volume records for twin wall lines – under OEM maximum) | | |
| Is first aid kit required YES / NO If yes, has it been supplied. Date: / / | | | All pipeline joints are fitted with safety clip and locks. | | |
| Access / egress adequate (steps, ladders, handrails) | | | Gensets / Light towers / Electrical / Welders | | |
| Operator controls in good condition and labelled where applicable for function (pedals, hand brakes, emergency stop controls etc.). | | | Electrics are tested and tagged | | |
| Walk Around Check (All Plant) | | | RCD is fitted and tested (monthly) | | |
| Panel damage | | | Any damage on leads | | |
| Oil / fluid leaks | | | Light operation and mast * | * | * |
| Broken lights / glass / mirrors | | | Excavators / Earthmoving Equipment | | |
| Lights operate correctly | | | Anti-burst valve * | * | * |
| Battery isolator fitted and working * | * | * | Quick Hitch in good condition * | * | * |
| All tyres are in safe condition | | | ROPS (Roll Over Protection Structure) and FOPS (Falling Object Protection Structure) fitted * | * | * |
| Seats / seat belts operational and in good condition | | | Condition of buckets / blades | | |
| Wipers / washers | | | Tracks and running gear in good condition | | |
| Check brakes are operational | | | Safety pin fitted to attachments e.g. hydraulic quick hitch | | |



CREATIVE CONSTRUCTION"

INCOMING / OUTGOING PLANT INSPECTION

| Description * Refer to Operators Manual # Refer to Plant Service History | S/C Confirm | MCD/BE Verify | Description | S/C Confirm | MCD/BE Verify | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|--------------------------------------------------------------------|----------------|------------------|--|
| Clean, free of soil, mud and foreign materials (including weeds and seeds) | | | Compressors and Pumps | | | |
| Forklifts / Access Equipment | | | Last receiver/boiler inspection date (max 2yrs) * | * | * | |
| Harness latch on bars present * | * | * | Safety valve test date (max 4yrs) * | * | * | |
| All attachments are tested and tagged | | | B/A Test Date://* | * | * | |
| ROPS (Roll Over Protection Structure) and FOPS (Falling Object Protection Structure) fitted * | * | * | Hydraulic Power Pack / Units | | | |
| Safe Working Limits (SWL) clearly marked | | | Oil / fluid leaks | | | |
| Electrical test and tag is current on power outlets | | | All hoses for wear and damage | | | |
| (Boom lifts) Fall arrest harnesses are available on plant, inspected, tagged, and in good condition | | | Hydraulic oil is biodegradable, if working near or over water * | * | * | |
| OEM Secondary Protective System (SPS) installed on all Boom Type Elevated Work Platforms (eg Pressure- sensitive operator contact device, Protective structure, Proximity systems, Contact switches) | | | All hoses are sheaved that work near or over water | | | |
| Marine Vessels & Equipment | | | | | | |
| Certificate of Operation (COO) is current & onboard | | | | | | |
| Certificate of Class survey is current & onboard | | | | | | |
| Vessel Safety Management System (VSMS) is current & onboard | | | | | | |
| Flag State Certificate (FSC) is current & onboard | | | | | | |
| All other maritime certificates & insurances are current (refer current Periodic Inspection – Marine Vessels & Equipment or equivalent) | | | | | | |
| Vessel name and number displayed clearly | | | | | | |
| Vessel's / ship's log onboard | | | | | | |
| Navigation, radios & safety equipment supplied, working & in date (as per survey requirements) | | | | | | |
| Visual hull, propellers, cargo damage evident | | | | | | |
| Refer to current Periodic Inspection for specific condition | | | | | | |
| TAKE PHOTOS OF THE ITEM – ENSURE YOU INCLUDE ANY DAMAGE | | | | | | |

| Supply of MANDATORY documentation: | | | | | |
|--------------------------------------------------------------------------------------------------------|----------------|-------------------|-----------------------------------------------------------------------------|----------------|-------------------|
| Description | S/C Confirm | MCD/BE Confirm | Description | S/C Confirm | MCD/BE Confirm |
| Plant Risk Assessment is supplied | | | Suppliers incoming inspection provided | | |
| Log book supplied | | | Operators manual specific to item of plant - sighted and kept with plant | | |
| Last inspection & service report/history are in the plant & service sticker applied/noted in log book. | | | Weed and seed hygiene declaration / certificate attached (if required) | | |
| Add site specific requirements | | | | | |

Notes / Comments

X : **BAD CONDITION** - where the plant is found to not conform to the above, then it will be Tagged out and prevented from commencing work on the site until the non-compliance is rectified.

| Actions / Repairs to be Undertaken: | Action Closed By (date & initial): |
|-------------------------------------|------------------------------------|
| | |
| | |

SUBCONTRACTOR CONFIRMS THAT THE ITEM OF PLANT COMPLIES WITH ALL SAFETY REQUIREMENTS AND (IF REQUIRED) ANY REPAIRS HAVE BEEN COMPLETED.

POSITION:



INCOMING / OUTGOING PLANT INSPECTION

SIGNED:

DATE: /

1

1

McConnell Dowell/Built Environs will not reimburse the Contractor / Supplier for any down / lost time so caused from any nonconformance. This form does not remove any liability for the plant supplier to conform to the relevant WHS Legislation.

OFFICE USE ONLY

| I consider that the equipment is in suitable con | ndition for use. | |
|--------------------------------------------------|------------------|---|
| NAME: | POSITION: | |
| SIGNED: | DATE: | 1 |

IF SUITABLE, ATTACH SITE INSPECTION STICKER TO PLANT / VEHICLE

This is to certify that the plant being supplied conforms to the relevant WHS legislation and the requirements as detailed above. McConnell Dowell/Built Environs will check this Incoming Outgoing Plant Inspection to ensure the supplier has verified compliance to legislative requirements and to register the plant on the site. The operator will be required to participate in ongoing training and perform work in accordance with the relevant Work Method Statement. Appendix L

B9 Ecology Management Plan



Mt Cass Wind Farm Construction Ecology Management Plan



Revision 5 – 23 March 2023

This document has been prepared for the benefit of Mt Cass Wind Farm Ltd (MCWF). No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person. This disclaimer shall apply notwithstanding that the report may be made available to other persons of an application for permission or approval to fulfil a legal requirement.

Revision History

| Version | Description | Date | Prepared by | Approved By |
|---------|------------------------------------------|-----------|-------------|-------------|
| Rev 1 | Draft | 03 Mar 21 | HW | |
| Rev 2 | Draft | 20 Apr 21 | CS, HL | |
| Rev 3 | MCD Input | 1 Dec 22 | DK | АН |
| Rev 4 | MCD Amendments post reviewer comments | 23 Dec 23 | DK | MC |
| Rev 5 | Post CLG review and Issue to HDC | 23 Mar 23 | MC | GG |

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1. Introduction

1.1 Purpose

The purpose of this plan is to inform people involved in the Mt Cass Wind Farm (MCWF) project how to control potential construction-related ecological impacts and to comply with the requirements of the resource consent and any other regulatory requirements during the construction works. The plan covers the construction phase of the wind farm and forms part of the Construction Management Plan (CMP).

1.2 Overview

Ecology Management is primarily the responsibility of the Project Director and begins with hazard awareness and risk minimisation.

The plan sets out construction Ecology risks and associated management processes to mitigate the identified Project Risks. This plan should be read in conjunction with the MCWF Environmental Management Plan (EMP), which addresses the pre-construction requirements for Ecology.

During construction, all contractors engaged by MCWF will be responsible for ensuring that this plan is correctly implemented and will review all documentation relating to this plan before they are finalised and issued.

1.3 Existing Site Conditions

The Project site has been recognised for its unique, diverse, and well-established ecological and indigenous habitats. It is located within a limestone ecosystem which is a rare ecosystem type with ecologically significant indigenous forest remnants and regenerating shrublands that comprise distinct assemblages of plants associated with limestone rock landforms. A large collection of ecological surveys and assessments have been completed in support of resource consent applications and the development of the CMP and the EMP.

Key species located within the Project site that are to be protected and will be supported through the development of the Mt Cass Conservation Management Area include:

- Indigenous vegetation communities e.g. Tõtara (matai)/kõwhai māhoe/kawakawa forest, Broadleaf – five-finger – (māhoe)/(ongaonga) forest and tussock grassland.
- Nationally Endangered McCaskill's hebe and Canterbury Limestone Wheatgrass, and other plant species considered Nationally Vulnerable or Declining.
- 18 native bird species, including the South Island pied oystercatcher and NZ pipit which are At Risk Declining and the NZ Eastern Falcon which is Nationally Vulnerable.
- Waitaha gecko and southern grass skink are two reptile species classified as At Risk: Declining.
- Wainuia edwardi snails, located between Chainage 80 and 800 (approx) on Mt Cass Road.

2. Consent Conditions

Appendix C of the Construction Management Plan includes a matrix of all consent conditions that are included in the Construction Management Plan and Subplans. The following Table contains the specific conditions that pertain to this plan:

| | | Relevant Consent: HDC RC070250 and CRC214150 | | |
|------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Ecan | HDC | Consent Conditions | Control for Consent Conditions | |
| 3 | 6 | No construction activities authorised by this consent shall occur within the exclusion zones identified in the Golder Associates plans referred to in conditions [3],[4] and [5] except for fencing, the walking track referred to in condition [143] and any stabilisation of rocks. | Design – The construction will be designed not to enter into these zones. The exclusion zones will be physically segregated from construction activities when they take place within distances dictated in condition 7. | |
| | 7 | Those parts of the boundaries of the exclusion zones identified on Golder Associates plans CG161.3-166.3 dated 20 December 2010 (being parts of those exclusion zones within 10 metres of proposed activities authorised by this consent) shall be physically identified and marked on the ground prior to any construction activities taking place within 50 metres of those areas. | Under the permit-to-work process, these zones will be fenced off prior to the permit being granted to work in the zone. | |
| | 9 | The final position of the activities referred to in conditions [3],[4] and [5] may be the subject of minor adjustment (also known as micrositing) provided that any such adjustment shall not result in the maximum limits set out in condition [13] being exceeded. | Micrositing has been completed and these areas will be taken into account in the design of the project and any disturbance accounted for under the consent limits. Should micro sitting be required due to unsuitable foundations then the disturbance limits in condition 13 will be taken into | |

| | | | account prior to agreeing the new location. |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| | 10 | In undertaking the micrositing process, the Consent Holder shall engage: A suitably qualified and experienced ecologist; and A suitably qualified and experienced expert in karst landscapes | Tony Payne of RMA Ecology has been engaged as the project ecologist. James Muirson of Aurecon has been |
| | | (both to be approved by the Manager Environmental Services of the Hurunui District Council) to advise (in consultation with a representative of the Department of Conservation) on the final placement of turbines and the final location of those activities referred to in [3],[4] and [5]. | engaged as the karst expert. |
| 6 | | The works shall be limited to the construction footprint identified in Plan CRC214150A and scope of the works limited to those shown on Plan CRC214150B and CRC214150C, except that the Consent Holder may change the final locations of the turbines (a process known as micrositing) provided that: | |
| a. | | No turbine shall be located more than 140 metres from the locations of the turbines shown on Plans CRC214150B and CRC214150C; | |
| b. | | The maximum vegetation clearance limits set out in Condition [2] shall not be exceeded; | |
| С. | | In undertaking the micrositing process the consent holder shall engage to provide advice a suitably qualified and experienced: ecologist; and expert in karst landscapes; and | |
| d. | | The final site layout plan and summary of ecology and karst landscape inputs to any micrositing shall be submitted to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance on request. | |
| | 11 | In undertaking the micrositing process provided by condition [10] the Consent Holder shall have particular regard to any advice received from the ecologist and the expert on karst landscapes. In any instance where the Consent Holder is unable to follow the advice from the ecologist or the expert on karst landscapes due to other micrositing factors, the Consent Holder shall provide the reasons in writing in a report to the Hurunui District Council, 40 working days prior to construction commencing. | Refer to section 5.5 |

| | 12 | , | provided for in condi | le the exclusion zones which are able to be avoided as tion [8] shall be physically identified prior to | Refer to section 5.5 |
|------|----|-------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 2 | 13 | • | on geotechnical inves not exceed the follow | ance and limestone pavement and boulder field tigations and construction activities shall be /ing: | Refer to Sub Plan B10 Landscape Management Plan for controls on Limestone Pavements and Boulder Fields. |
| | | Pavement and boulder field Pavement Vegetation Clearance | 2.04 0.89 | | The project will be designed to meet this condition and the design model will be over laid by the relevant GIS |
| | | (hectares) Indigenous shrubland Indigenous forest | R90 (Ha) 0.71 0.08 | | maps to ensure that the limits are met. The Pre-construction plan will demonstrate that this requirement has |
| | | For the avoidance of doubt the lin the construction of the walking tr | | ve table do not include the impact from fencing and dition [143] . | been achieved prior to construction. |
| 4/18 | 14 | condition [14] of the Consent Hol following approaches: Finalising the detailed alignment | der shall minimise effe | exclusion zone and the walking track referred to in ects on vegetation and limestone by adopting the y providing an outline plan to be certified by the t Council at least one month prior to any construction | Section 5.7 of this plan |

| | | Hand cutting of indigenous vegetation; Avoiding the use of wheeled mechanical equipment or tracked vehicles (such as tractors or excavators) on in situ limestone pavement; and | |
|---|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Otherwise minimising disturbance to limestone surfaces. | |
| | | But in any event | |
| | | The maximum extent of vegetation clearance for the construction of the walking track referred to in condition [143] shall not exceed 0.25 ha of indigenous shrubland and 0.05 ha of indigenous forest. | |
| | 19 | Every two weeks during construction the Consent Holder shall provide written confirmation to the Hurunui District Council of the total extent of clearance of indigenous shrubland and forest and impacts on limestone pavement and boulder field and confirmation that the limits set out in condition [13] have not been exceeded. If required, the Consent Holder shall facilitate site inspections and provide access to relevant GIS information to assist in the independent assessment of compliance with condition [13]. | Survey controls will be used to ensure that the areas constructed to design and only the minimum areas are disturbed. This will be reported fortnightly. |
| | 20 | Following the completion of the works authorised by this consent, the Consent Holder shall provide the Hurunui District Council with as-built plans showing the location of all constructed turbines, access roads, substations, buried cables, transmission lines and all other works. The Consent Holder shall also provide the Hurunui District Council with independently verified written confirmation that the maximum limits of shrubland and forest clearance and disturbance of limestone landforms set out in condition [13] have not been exceeded, and the areas identified in accordance with condition [12] have been avoided. | Refer Section 7 Reporting. A 3 rd party surveyor will check the contractors as-built survey in the areas identified in the GIS as being applicable to consent condition 13. |
| | | Construction | |
| | | Construction Management Plan | |
| 8 | 31 | The objective of the Construction Management Plan shall be to set out the practices and procedures to be adopted to ensure compliance with consent conditions and to meet the following objectives: | |

| a. To minimise the overall area of disturbance (by cuts, fills and placement of cover) of karst limestone | Controls to minimise the disturbance |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| features and indigenous vegetation, but in any event to ensure compliance with the maximum levels of | of karst limestone features and |
| indigenous shrubland and forest clearance and disturbance of limestone pavement and boulder field set out | pavements are discussed in B10 |
| in condition [13]; | Landscape Management Plan. |
| | To meet condition 13 MCWFL will conduct a presurvey of the site |
| | |
| | identifying the areas of indigenous |
| | vegetation, shrub and exclusion areas |
| | using an ecologist. |
| | The design team will take these areas into account during their design to ensure that the limits set in condition 13 are met. This will be communicated in the Pre-construction Plan issued to HDC. |
| | The limits will be communicated to the project team through site inductions and specific training given to machine operators working on the project. |
| | Survey control will be used to ensure |
| | that the areas constructed to design |
| | and only the minimum areas are |
| | disturbed. This will be reported |
| | fortnightly and verified by an |
| | independent party. |
| b. Avoid disturbance of vegetation and limestone features within exclusion zone as set out in condition 6 | The exclusion zone identified in the |
| | Golder Associates plans will be marked |
| | out prior to construction commencing. |

| | Avoidance of disturbance of vegetation and limestone features will be discussed site inductions and toolbox talks. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| k. To identify threatened indigenous flora within the construction zone and provide for their relocation as required by condition [32.n]; | Construction sites will be searched by a qualified botanist prior to construction for threatened or at-risk plant species (as per the Environmental Management Plan). All occurrences will be recorded using GPS. All threatened flora will be relocated prior to construction works occurring. Advice will be sought from appropriately experienced nursery people on the most appropriate methods at the time such relocations are required. MCWF will operate a permit to work system whereby a permit to start construction in designated zones will be required ensuring that all pre-construction requirements have been met prior to construction starting in a zone. |
| I. To identify Canterbury gecko and other lizard species within the construction zone and provide for their relocation as required by condition [79]; | Experienced herpetologists will be used for the rescue and relocation of geckos and lizards. All geckos and lizard species that are detected and captured by the project Herpetologist will be removed from the construction zone and relocated immediately to a |

| | | | pre-determined release site (refer to Environmental Management Plan). This will take place prior to construction starting on site by MCWFL. The permit to work system will have this consent condition being actioned as a condition prior to starting work. |
|---|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | m. Minimise potential for disruption to any active New Zealand falcon nest identified within 200 m of any construction or earthwork area; and | A 200 m construction setback will be implemented (as far as practicable) from any identified New Zealand falcon nests. No construction activities (earthworks etc.) or construction vehicles will encroach within 200 m of these nests (as far as practicable). This will be discussed in site induction training making the project team both aware of the condition and providing basic training on Falcon identification. |
| 9 | 32 | The Construction Management Plan shall include, but not be limited to: | |
| | | c. Details of a training programme for machinery operators working on the site who will be involved in indigenous vegetation or limestone pavement or boulder field disturbance. The training programme will include, but not be limited to, education on using least impact techniques when disturbing or clearing limestone or indigenous vegetation. | Refer to section 6 of this Plan for training requirements and further details in the Landscape Management Plan (sub plan B10). |

| | | n. Methods for the relocation of threatened indigenous flora (as defined by de Lange et al (2009))6 identified within the construction zone, and where practicable, At-Risk indigenous flora (defined by de Lange et al (2009)) identified within the construction zone. | Threatened and at-risk indigenous flora will be relocated (where practicable) prior to commencement of construction. Advice will be sought from appropriately experienced nursery people on the most appropriate methods at the time such relocations are required. Further detail provided in Environmental Management Plan (EMP). |
|-----|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | o. Methods for location and relocation of lizards as required by condition [79]. | All geckos and lizard species that are detected and captured by the project Herpetologist will be removed from the construction zone and relocated immediately to a pre-determined release site (refer to Environmental Management Plan). The capture for the relocation programme will involve daily surveys using multiple techniques over five consecutive days per site. This will happen prior to construction and a permit to work system will control that it has. |
| N/A | 60 | Prior to undertaking any construction activities, the Consent Holder shall engage a suitable qualified and experienced ecologist to undertake a survey of the vegetation in the areas which are to be disturbed for construction purposes as detailed in condition 61. The results of this survey shall be provided to the Hurunui District Council. | RMA Ecology has been engaged by MCWFL |

| N/A | 73 | If during construction, a falcon nest is identified on the site, the Consent Holder will ensure that, where | A 200 m construction setback will be |
|-----|-----|-------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| | , 5 | practicable, a 200m setback of construction activity from the nest is maintained while it is still active. | implemented (as far as practicable) |
| | | | from any identified New Zealand |
| | | | falcon nests. No construction activities |
| | | | (earthworks etc.) or construction |
| | | | vehicles will encroach within 200 m of |
| | | | these nests (as far as practicable). |
| | | | This will be discussed in site induction |
| | | | training making the project team both |
| | | | aware of the condition and providing |
| | | | basic training on Falcon identification. |
| 19 | N/A | All works up to and including the completion of commissioning of the Mt Cass Wind Farm Project and any | The Construction Management Plan |
| | | ecological works related to the Mt Cass Conservation Management Area shall be carried out in accordance with the: | meets this requirement. |
| | | a. Construction Management Plan (CMP) required by Conditions (8) to (13) of this resource consent; and | |
| | | b. Mt Cass Wind Farm Environmental Management Plan prepared in accordance with Condition (66) of | The MCWFL EMP meets this |
| | | the HDC land use consent RC07250 and any subsequent updates of that document. | requirement |
| 28 | N/A | During widening works on Mt Cass Road at Chainage 960 as shown on Plan CRC214150D, attached to, and | Section 5.6 Snail Habitat (Mt Cass Rd) |
| | | forming part of this resource consent, the potential adverse effects on snail habitat shall be avoided. The | |
| | | following measures shall be utilised by the consent holder: | |
| | а | A barrier fence shall be erected 5 metres from the road edge along road sections where road widening | Section 5.6 Snail Habitat (Mt Cass Rd) |

| b | No works shall occur outside of the barrier fence. This includes, but is not limited to, ground disturbance of | Section 5.6 Snail Habitat (Mt Cass Rd) |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| | any kind, the removal of pest plants (willow), rubbish, leaf packs or old fencing. | |
| C | Once the barrier fence is erected, and prior to any vegetation clearance or other works along the inside (road) edge of the barrier, a suitably qualified and experienced ecologist shall undertake an assessment of areas where vegetation clearance will be occurring to identify any live snails. If live snails are found, the snails shall be safely relocated to a suitable habitat, as determined by the suitably qualified and experienced ecologist, on the outer site of the barrier (away from the road). | Section 5.6 Snail Habitat (Mt Cass Rd) |
| d | The locations of any snails relocated shall be recorded and reported to Canterbury Regional Council, Attention: Regional Leader – Monitoring and Compliance and the Department of Conservation within one month of the relocation being completed. | Section 5.6 Snail Habitat (Mt Cass Rd) |
| е | At the conclusion of the earthworks, the barrier fence shall be removed. | Section 5.6 Snail Habitat (Mt Cass Rd) |
| 156 | Prior to undertaking any activities authorised by this consent, the Consent Holder shall offer to establish a Statutory Liaison Protocol with the Department of Conservation | A Statutory Liaison Group is established and is managed by MCWFL |
| 157 | A representative of the Department of Conservation shall be offered the opportunity to visit the site at regular intervals during construction and to offer comment on the construction process, to attend an annual meeting, and the provision of any information to which the Hurunui District Council is entitled by virtue of these consents. | |

Table 1 Ecology Management Plan Consent Conditions

It is noted that conditions and mitigation measures relating to protection of limestone boulder fields, limestone pavements and cut faces are addressed in the Landscape Management Plan (sub plan 10) and conditions relating to the monitoring and management of avifauna and herpetofauna is addressed in the Project EMP.

3. Project Zones

To enable the project team to manage a staged construction and to ensure that the controls are in place a Zone system will be run as shown in Figure 1 below. The intention of the zone system is it allows staged access to the site by the consent holder and a permit to work system to be implemented that ensures that all pre-construction requirements have been carried out prior to the contractor being allowed to commence work.

It also allows sub-zones to be created which ring fences different contractors work areas and allocates who is responsible for the area.

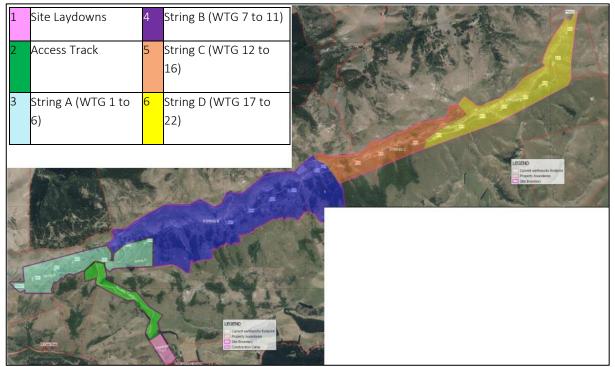


Figure 1 Mt Cass Zone Plan

4. General Control Measures

The key principles and approaches to be undertaken in relation to ecology management during construction are:

- Developing and maintaining awareness of the ecological values associated with the Project site
- Delineating and maintaining exclusion zones around areas of identified significant ecological value; and
- Identify any additional ecological aspects that may require protection or mitigation measures and seek further advice from Project Ecologists
- Design the construction scope to ensure that it meets the requirement of this consent.
- Monitoring and Reporting

5. Specific Controls

5.1 Pre-Construction Controls

Prior to construction occurring it is expected that the relocation of fauna and flora within the construction footprint would be complete in accordance with the EMP. MCWFL will issue the contractor a permit to work to confirm that an area is appropriately surveyed, and flora and fauna relocated where required prior to any construction starting.

The surveys required for each construction area are:

- Identification and where practical relocation of threatened and at-risk plant species, including the systematic search of construction sites and relocation of specimens
- Capture and relocation of lizards in accordance with the EMP
- Tussock areas surveyed and plants relocated

5.2 Exclusion zones

The plans in Appendix A of this document identify the exclusion zones where construction activities are not to take place, except for constructing or maintaining fences and the construction of the Mt Cass Walkway extension.

Fencing or delineation similar to that shown in Figure 2 around the exclusion zones is required prior to construction commencing within 50m of an exclusion zone. This delineation is to be always maintained to avoid intrusion into the exclusion zone.



Figure 2 Exclusion Zone Fencing

If a NZ falcon nest is identified during construction, a 200m setback of construction activities is to be implemented. Delineation of the setback is to be provided to ensure construction activities maintain the required distance.

5.3 Permit to Work

Prior to disturbance of land in a zone, MCWFL and the relevant contractor will need to issue a Vegetation Disturbance Permit which is designed to ensure that all pre-construction activities have been carried out, as required under the resource consent by MCWFL, such as lizard relocation, and that controls have been put in place by the contractor such as exclusion zone fencing.

An example template of this permit is found in Appendix B of this management plan.

5.4 Limits of Indigenous Vegetation Disturbance

The project is limited to the disturbance limits of indigenous vegetation shown in Table 2

| Vegetation Type | Limit (Ha) |
|----------------------|------------|
| Indigenous shrubland | 0.71 |
| Indigenous forest | 0.08 |

Table 2 Indigenous Vegetation Clearance Limits

The project will meet these requirements by incorporating a GIS map with base line data from the Ecological survey carried out on behalf of MCWFL into the design model. This will allow the project to ensure that the permanent works design and vegetation clearance measure meets condition 13.

These areas can then be input into the Earthworks subcontractors' machine control alerting them of the need to work accurately within the design footprint in these areas.

5.5 Micro Siting

MCWFL have carried out micro-siting as part of the early works phase of the project. Therefore, the only reason that a turbine foundation should have to be micro-sited is if ground conditions encountered during excavation is found to be unsatisfactory. For example, if a large tomo is exposed.

If micrositing is required, this will be reported to HDC and carried out within the conditions of the resource consent.

5.6 Snail Habitat (Mt Cass Rd)

The contractor awarded the Mt Cass Rd Upgrade will, prior to construction in the vicinity of CH960, indicated in Figure 3 erect a temporary fence 5m from the road edge to form an exclusion zone for the protection of snails. No foot traffic or disturbance of the ground and vegetation will occur outside of this exclusion zone.

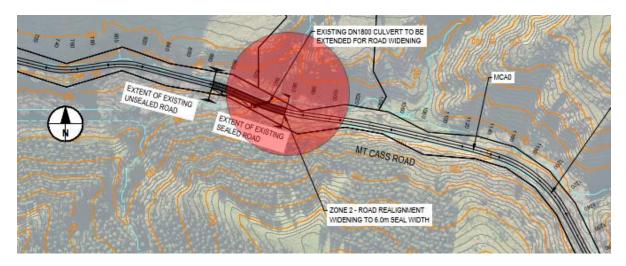


Figure 3 Mt Cass Road Snail habitat location CH 960m

Prior to any work being carried out a suitably qualified ecologist will undertake an assessment of the area and relocate any live snails into the exclusion zone. Locations of snails relocated shall be recorded and reported to ECan.

5.7 Site Fencing and Walking Track Disturbance

At the time of drafting this plan the site fencing and walking track are still under design. Once designed the final alignment will be issued to HDC with the pre-construction plan prior to construction taking place.

Where the fence or walking track traverse through exclusion zones or areas of indigenous shrub and forest the vegetation will be hand cut to minimise disturbance.

These areas of disturbance will be recorded and as-built to meet the requirements of conditions 14 of the HDC consent which states the limits of disturbance are shown in Table 3.

| Vegetation Type | Limit (Ha) |
|----------------------|------------|
| Indigenous shrubland | 0.25 |
| Indigenous forest | 0.05 |

Table 3 Vegetation Clearance Limits for the Walking Track

The contractor will avoid the use of wheeled mechanical equipment or tracked vehicles (such as tractors or excavators) on in situ limestone pavement to minimise the disturbance to limestone surfaces.

6. Training – On-site Personnel

All staff and subcontractors will receive appropriate training that is relevant to the environmental aspects of their work. This will include the training detailed out in the following sections.

6.1 Induction training

A comprehensive environmental induction will be provided to all staff and subcontractors prior to starting work on site. The induction will include a briefing on this plan, including the main content of the plan, relevant consent conditions and key requirements and staff responsibilities in relation to this plan.

This induction will include the items identified in the training matrix in Table 4 below that are specific to this management plan and are specific to the persons role on the project. A full training matrix is located in the CMP.

| Training Area | Construction Worker | Machine Operator | Management | Fire Response Team | Enviro Team | Visitor |
|------------------|----------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|-----------------------|---------------------------------------------------------------|-----------|
| Ecology | Exclusion Zones | Exclusion Zones | Exclusion Zones | N/A | Exclusion Zones | General |
| | NZ Falcon vs Hawk | NZ Falcon vs Hawk identification | NZ Falcon vs Hawk identification | | NZ Falcon vs Hawk identification | Awareness |
| | identification | training | training | | training | |
| | training | Lizard awareness training | Lizard awareness training | | Lizard awareness training | |
| | Lizard awareness training | Vegetation Permit to work requirements | Vegetation Permit to work requirements | | Vegetation Permit to work requirements | |
| | Vegetation Permit to work requirements | Least impact techniques for indigenous vegetation disturbance | Least impact techniques for indigenous vegetation disturbance | | Least impact techniques for indigenous vegetation disturbance | |
| | requirements | Indigenous vegetation limitation and survey requirements | Indigenous vegetation limitation and survey requirements | | Indigenous vegetation limitation and survey requirements | |
| | Sink Holes / Tomos | , Basic indigenous flora and fauna | Basic indigenous flora and fauna | | , Basic indigenous flora and fauna | |
| | Key ecology contacts | training | training | | training | |
| | | Sink Holes / Tomos | Sink Holes / Tomos | | Sink Holes / Tomos | |
| | | Key ecology contacts | Key ecology contacts | | Key ecology contacts | |
| | | | Reporting requirements | | | |
| | | | Micro-siting requirements | | | |

Table 4 Ecology Management Plan Training Matrix

6.2 Toolbox Talks

Weekly toolbox talks will be conducted for site personnel to deliver specific training and to ensure all personnel are aware of the key ecological issues relevant to the works.

6.3 Other Training

Additional is detailed in the training matrix in section 7 of the CMP.

7. Reporting

MCWFL will report the area of disturbance of indigenous shrub and forest provided to them by the earthworks subcontractor every fortnight to meet the requirements of condition 19.

The information for this report will be determined by carrying out an as-built survey of the areas identified as relevant to this consent condition in the GIS map and comparing it with the design areas.

At the end of project, a report will be issued providing the total area of vegetation disturbed. This will consist of the contractors as-built survey which has been third party verified by an independent surveyor.

8. Monitoring and Maintenance During Construction

As part of the control measures, on-going site monitoring by the contractor and wider project team will be undertaken. This will ensure that all the control measures detailed in this plan have been properly implemented and are functioning effectively.

Monitoring shall occur for the full duration of the works. Any control measures requiring maintenance or adaptation to allow construction tasks to occur shall be identified and implemented by the Environmental Manager to ensure continual compliance.

It is noted that significant ecological monitoring is required by the HDC consent conditions and is detailed in the EMP.

9. Roles and Responsibilities

9.1 Project Contact List

The project key contacts are list in Table 5 below.

| Consent Holder – Mt Cass Windfa | Consent Holder – Mt Cass Windfarm Ltd | | | | | | | | |
|-------------------------------------------|-----------------------------------------------------|------------------|--------------|----------------------------------|--|--|--|--|--|
| Role | Company Name Phone | | Phone | Email | | | | | |
| Project Director | MCWFL | Greg Gummer | 021 738 995 | greg.gummer@mainpower.co.nz | | | | | |
| Construction Manager (Primary Contact) | MCWFL | ТВС | | | | | | | |
| Secondary Contact (Civils) | MCWFL | Michael Carstens | 027 247 1713 | michael.carstens@mainpower.co.nz | | | | | |
| Secondary Contact (Electrical) | MCWFL | Neil Wiggins | 027 33133 | neil.wiggins@mainpower.co.nz | | | | | |
| Senior Project Coordinator | MCWFL | Lisa Yuyi | 021 779 380 | lisa.yuyi@mainpower.co.nz | | | | | |
| Ecology | RMA Ecology | Graham Ussher | 027 272 7930 | graham.ussher@rmaecology.co.nz | | | | | |
| Herpetofauna (Lizard) Management | RMA Ecology | Graham Ussher | 027 272 7930 | graham.ussher@rmaecology.co.nz | | | | | |
| Avifauna (Bird) Management | Kessels & Associates (T/A Bluewattle Ecology) | Gerry Kessels | 027 286 8449 | <u>gkessels@bluewattle.co.nz</u> | | | | | |
| Plant Management | RMA Ecology | Tony Payne | 027 807 9018 | tony.payne@rmaecology.co.nz | | | | | |

| Weed Management | Wai-Ora | Lauren Scott | 027 480 8007 | lauren@wai-ora.nz |
|------------------------|---------------------------|-----------------|--------------|-----------------------|
| Animal Pest Management | Pest Control Solutions | Fraser Maddigan | 027 525 3619 | Bradley855@gmail.com |
| Other advisors | Geotech Consulting Ltd | Andrew Hurley | 027 479 1516 | ahurley@geotech.co.nz |

Table 5 Mt Cass Wind Farm Project Ecology Contact List

| CBoP – McConnell Dowell | | | | | | | | |
|-------------------------------|--------------------|-----------------|------------|----------------------------|--|--|--|--|
| Role | Company | Name | Phone | Email | | | | |
| Project Manager | MCD | Phil Owen | 021638726 | Phil.owen@mcdgroup.com | | | | |
| Construction Manager | MCD | David Kidd | 0277039803 | David.kidd@mcdgroup.com | | | | |
| Site Manager | MCD | ТВС | | | | | | |
| HSEQ Manager | MCD | Clint Hill | 0277028309 | Clint.hill@mcdgroup.com | | | | |
| Project Environmental Advisor | MCD | Caitlin Burns | 021759938 | caitlin.burns@mcdgroup.com | | | | |
| Foreman (Environmental | MCD | ТВС | | | | | | |
| Earthworks Manager | Taylor Contracting | Shannon Proctor | 021501894 | shannon@taycon.co.nz | | | | |
| Batching Plant Manager | Firth | Mark Cresswell | 0274776958 | mark.cresswell@firth.co.nz | | | | |

Table 6 cBoP Key Project Contacts List

9.2 Responsibilities

Table 7 below defines the key responsibilities for the relevant roles to the management plan.

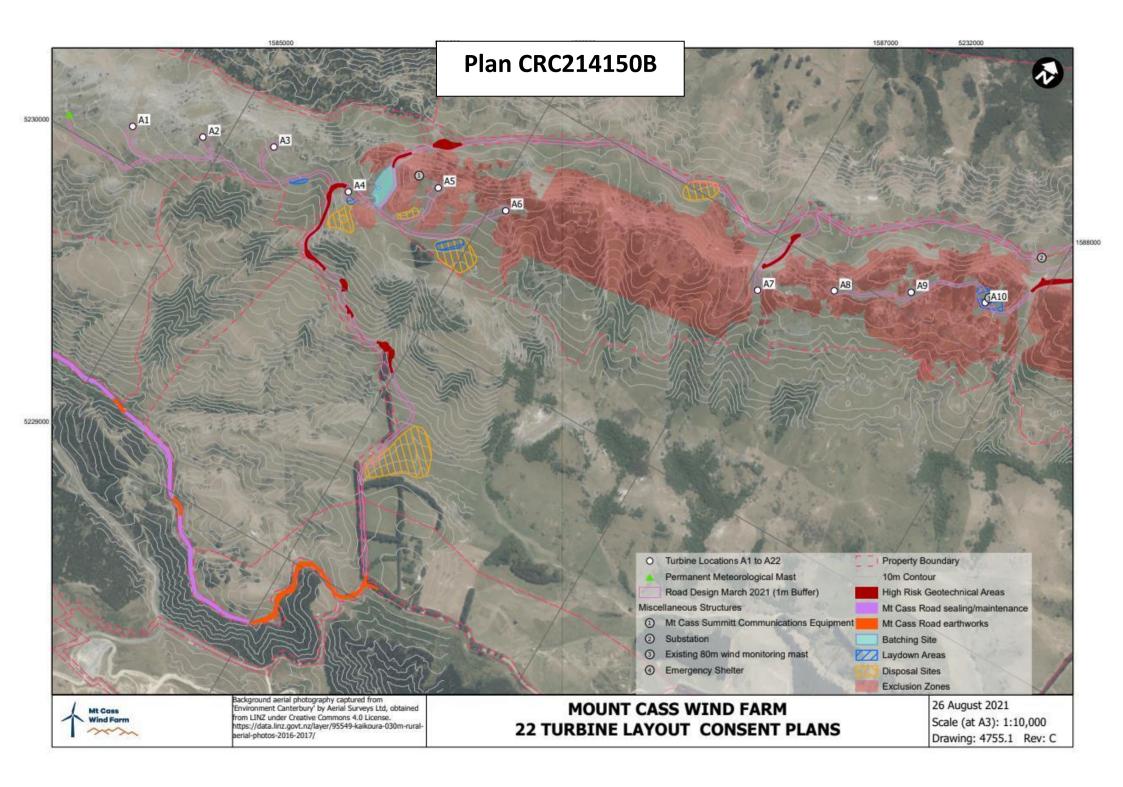
| Role | Role Responsibilities |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction Manager | Has responsibility for this plan. |
| | Is to engage suitable specialists to carry out the requirements of this consent and report to HDC and ECan. |
| | Running the permit to work system for the Mt Cass Construction Zones and ensuring that all ecological requirements are completed prior to issuing permit to work. |
| | Reporting to the regulator if micro siting results in engaged experts advice not being able to be followed. |
| | Report disturbance limits to the regulator fortnightly and final 3 rd party verified report. |
| Environmental Advisor | Reviewing and reporting on environmental performance. |
| | Inspection of works to assess compliance with the management plans. |
| | Inspections, auditing and checking of environmental management practices and procedures. |
| | Responds to and investigates all environmental complaints, issues or incidents. |
| | Responsible for on-site compliance with consent conditions and other requirements and tracking compliance information. |
| | Notifies the Construction Manager and Regulatory Authorities of any significant non compliances. |
| | Report to the Construction Manager changes to construction techniques or natural environmental changes which require alterations to existing consents or require new resource consents. |
| | Update and maintain the environmental portion of the Project Risk Register. |
| | Training of all staff including subcontractors on the ecological management requirements. |
| Ecological specialists | |
| Wildlife Act approved herpetologist | Responsible for lizard recovery. |
| • Botanist | Responsible for identification and relocation of threatened and at-risk plant species. |
| • Avifauna ecologist | Responsible for avifauna surveys and monitoring and identifying exclusion zones for Falcon nesting |
| Snail Ecologist | Responsible for the inspection for and relocation of snails at CH 960 on Mt Cass Rd and issuing a relocation report to MCWFL to issue to ECan. |
| Construction team | |
| | I |

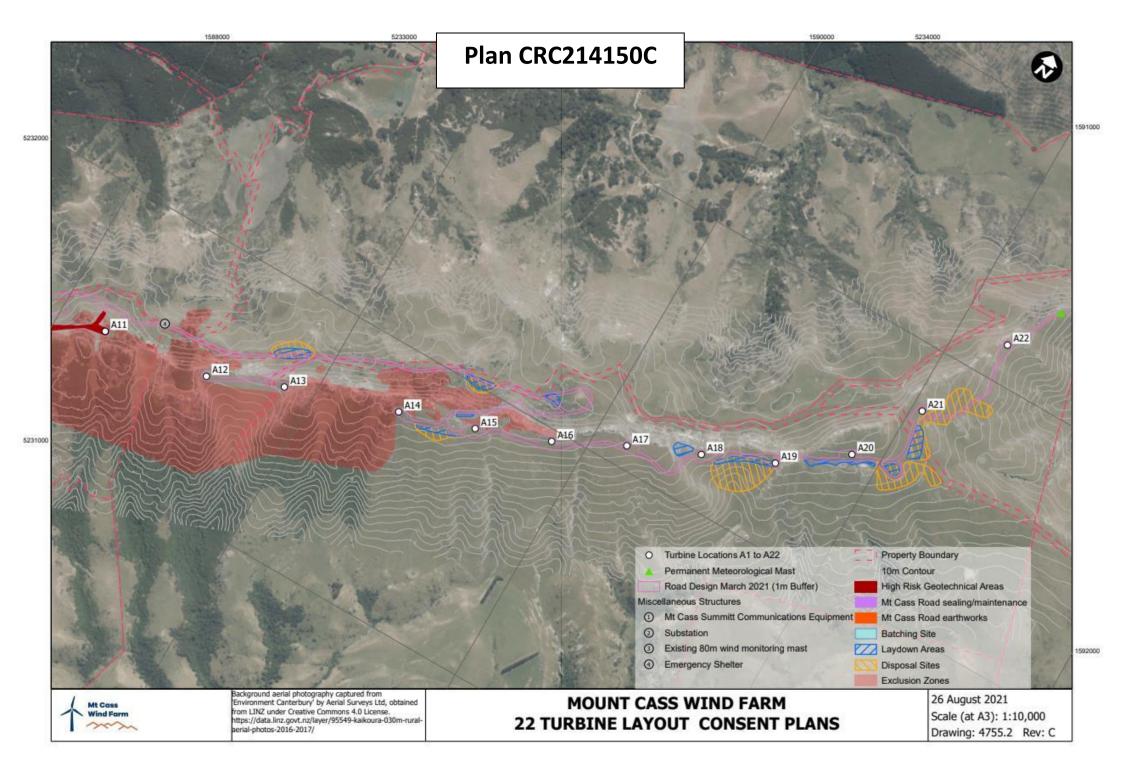
| Civil contractor PM Reports all ecological incidents and complaints to the Environmental Manager. Ensures that work is stopped if protected flora or fauna is found Carrying out fortnightly surveys of disturbed locations and issuing results to MCWFL. The installation of exclusion zone fencing Other Contractors PM(s) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ensures that work is stopped if protected flora or fauna is found Carrying out fortnightly surveys of disturbed locations and issuing results to MCWFL. The installation of exclusion zone fencing Other Contractors PM(s) |
| Carrying out fortnightly surveys of disturbed locations and issuing results to MCWFL. The installation of exclusion zone fencing Other Contractors PM(s) |
| • Other Contractors PM(s) results to MCWFL. The installation of exclusion zone fencing |
| Other Contractors PM(s) |
| Other Contractors PM(s) |
| |
| |
| Overall responsibility for ensuring this plan is correctly implemented fo |
| their section(s) of work. |
| Responsible for ensuring that their personnel are suitable trained in the |
| requirements of this plan. |
| |
| Mt Cass Rd Upgrade |
| Contractor PM |
| In addition to their responsibilities under this plan are also responsible |
| for the protection of snails at chainage 960 on Mt Cass Rd. |
| |
| |
| |
| |
| |

Table 7 Ecology Plan Roles and Responsibilities

10. Appendices

| Appendix | Description |
|----------|----------------------------|
| А | Exclusion Zone |
| В | Vegetation Permit Template |





Vegetation Disturbance Permit

| Section 1 - Permit Details | lump. | | | | 10 | tr of D | | 1 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------|--------------|---------|-----------|-------------------------------|-----------------------------|
| Permit No: Location of Work: | VDP: | | | | | Date of R | equest: Vorks to Commence: | |
| Nominated Permit Holder: | | | | | - | | vorks to Commence: | |
| This permit is required for ALL vegetation disturbance to ensure work areas and activities are assessed by the Environmental team to confirm | | | | | | | | |
| approval conditions are fulfilled and risks are appropriately managed. Permit Valid for 1 week. A minimum of 7 days' notice is required for this permit to be processed. Permit to disturb must be raised with the Environmental Team and site walk organised. | | | | | | | | |
| | Permit to disturb must be raised with the Environmental Team and site walk organised. | | | | | | | |
| Section 2 - Disturbance | 1 | | | | | | | |
| Type of Disturbance: | | | | | | | | |
| Detail type of disturbance required, type of impact, number of trees, total area, type of tree/veg, equipment used etc. | | | | | | | | |
| Scope of works | | | | | | | | |
| Map of Area/SEP attached | C Yes | | No | | _ | | | |
| Section 3 - Pre Walk Check | | | | | | | | |
| Tick box if applicable | P4 | | | Tak P | | | t iditional Ca | : 1-10 |
| In the distant or a factoriation | Prompt | ite al anticidade a do | | Tick B | Т | _ | 1 | ontrols/ Comments |
| Is the disturbance footprint kno | | | Yes | r | | □ N/. | A Add Images, SEPs,I | Photos etc to this document |
| Are works within a heritage ov | | onditions? | Yes | | <u></u> | □ N/. | A | |
| Have protected trees/ vegetation Do erosion and sediment contri | | | res | _ | 10 | | | |
| Will works be directly supervis | | | Yes | _ | 10 | □ N/. | | |
| Are the appropriate approvals | | | Yes | | •• | □ N/ | | |
| Are there any weed and hygier | ne protocols and have the | ey been followed? | □ _{Yes} | 0 | | □ N/ | | |
| Is an ecologist pre-clearance in | nspection required? | | Yes | _ | | □ N/ | | |
| Is an ecologist required to be p | present during clearing w | orks? | □ Yes | | _ | □ N/ | | |
| Is sequential or 2-stage clearing required for fauna management purposes? | | | □ Yes | | | □ N/ | | |
| Have community and stakehol | der notification procedure | es been followed? | Tes Yes | | 10 | □ N/. | | |
| Have minimum extents been approved by the project arborist? | | | □ _{Yes} | _ | | □ N/ | | |
| Have vegetation and soil stock | pile areas been identified | and approved? | □ Yes | | ٩٥ | □ N/ | A | |
| Is timber/ vegetation salvage, | mulching, storage, or trai | nsport required? | C Yes | | | N/ | | |
| [insert project specific requiren | nents] | | | | | | | |
| | - | | Yes | | | N/. | | |
| | | | Yes | | 10 | N/. | | |
| | | | Yes | | 10 | N/. | | |
| The above gut | Yes No N/A The above questions should be completed in field with the site team. List any controls and additional actions. Add actions in CMO | | | | | | as in CMO | |
| The above que | estions should be comple | ted in heid with the site | e team. List | any com | rois | anu auun | ional actions. Add action | |
| Section 4 - Team Sign off | | | | | | | | |
| Role | Nan | ne | | | | | Signature | |
| Environmental Representative | | | | | | | | |
| Supervisor | | | | | | | | |
| Operator | | | | | | | | |
| Arborist/Ecologist | | | | | | | | |
| (if applicable) Surveyor | | | | | | | | |
| (if applicable) | | | | | | | | |
| other | | | | | | | | |
| | | | | | | | | |
| Authorised McConnell Dowell Pe I authorise the task as stated above | | e conditions and precautio | ns as indicate | ed on this p | permi | it. | | |
| Full Name (print): | | | Signature: | | | | Date: | |
| Permit No: | | | | | 7 | | | |
| | | | | | | | | |
| | Vegeta | tion Disturbance Pe | ermit Clos | ure: (by | Per | mit Hold | er) | |
| | | | | | | | Actions Required t | to Close out |
| Have the conditions of the p | ermit been met | □ Yes | | No | | | | |
| Have activities been catalog | ued | Yes | | No | | | | |
| Have pre and post photos be | een saved | Yes | | No | | | | |

Name:

Time:

Date:

Signature:

1

Appendix M

B10 Landscape Management Plan



Mt Cass Wind Farm Landscape Management Plan



Revision 5 – 24 March 2023

This document has been prepared for the benefit of Mt Cass Wind Farm Ltd (MCWF). No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person. This disclaimer shall apply notwithstanding that the report may be made available to other persons of an application for permission or approval to fulfil a legal requirement.

Revision History

| Version | Description | Date | Prepared by | Approved By |
|---------|------------------------------------|-----------|-------------|-------------|
| Rev 1 | Draft | 03 Mar 21 | HW | AH/SB |
| Rev 2 | Draft | 19 Apr 21 | HL | AH/SB |
| Rev 3 | MCD Input | 1 Dec 22 | DK | АН |
| Rev 4 | SQIP – MCD Updates | 23 Feb 23 | DK | АН |
| Rev 5 | Post CLG review and HDC Submission | 24 Mar 23 | MC | GG |

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1. Introduction

1.1 Purpose

The purpose of this plan is to inform people involved in the Mt Cass Wind Farm project how to manage landscape aspects and to comply with the requirements of the resource consent and any other related regulatory requirements during the construction works. The plan covers the construction phase of the wind farm and the rehabilitation of construction activities.

1.2 Overview

The Landscape Management Plan is primarily the responsibility of the Construction Manager.

The plan sets out the earthworks and landscape and visual amenity risks associated with the construction works and the management processes to mitigate the identified Project Risks. Disturbance of indigenous vegetation is not covered in this plan and is addressed in the Ecology management plan in Appendix L of the CMP.

During construction, the Civil Contractor will be responsible for ensuring that this plan is correctly implemented and will review all documentation relating to this plan before it is finalised and issued.

Site induction for all personnel must include a briefing on this plan including the main contents and any SOP's relevant to the task being performed.

2. Consent Conditions

Appendix C of the Construction Management Plan includes a matrix of all consent conditions that are included in the Construction Management Plan and Subplans. The conditions in Table 1 below are the specific conditions that pertain to this plan:

| ГCon | | Concent Conditions | Control for Concert Conditions |
|------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECan | HDC | Consent Conditions | Control for Consent Conditions |
| | 9 | The final position of the activities referred to in conditions 3,4 and 5 may be the subject of minor adjustment (also known as micrositing) provided that any such adjustment shall not result in the maximum limits set out in condition [0] being exceeded. | Micrositing has been completed and these areas will be taken into account in the design of the project and any disturbance accounted for under the consent limits. Should micrositing be required due to unsuitable foundations then the disturbance limits in condition 13 will be taken into account prior to agreeing the new location. |
| 6c | 10 | In undertaking the micrositing process, the Consent Holder shall engage: a. A suitably qualified and experienced ecologist; and b. A suitably qualified and experienced expert in karst landscapes | RMA Ecology has been engaged as the project ecologist James Muirson of Aurecon has been engaged as the karst landform expert. |
| | | (both to be approved by the Manager Environmental Services of the Hurunui District Council) to advise (in consultation with a representative of the Department of Conservation) on the final placement of turbines and the final location of those activities referred to in conditions 3,4,and 5. | See the roles and responsibility table in 7 |
| | 11 | In undertaking the micrositing process provided by condition [0] the Consent Holder shall have particular regard to any advice received from the ecologist and the expert on karst landscapes. In any instance where the Consent Holder is unable to follow the advice from the ecologist or the expert on karst landscapes due to other micrositing factors, the Consent Holder shall provide the reasons in writing in a report to the Hurunui District Council, 40 working days prior to construction commencing | See the roles and responsibility table in 7 |
| | 12 | Any indigenous vegetation or limestone features outside the exclusion zones which are able to be avoided as a result of the micrositing process | Refer to section 4.2.3 |

| | provided for in condition 8 shall be physically identified prior to construction activities taking place in that location. | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 13 | 13. The total area of indigenous shrubland and forest clearance and limestone pavement and boulderfield disturbance due to pre- construction geotechnical investigations and construction activities shall be minimised, but in any event must not exceed the following: Pavement and Boulder Field 2.04Ha Pavement 0.89Ha | Geotechnical investigation has been carried out in the construction footprint to date and will form part of the current disturbance limits. |
| 14 | When constructing and maintaining fences within the exclusion zone and the walking track referred to in condition 143 the Consent Holder shall minimise effects on vegetation and limestone by adopting the following approaches: | Refer to 4.2.9 of this plan |
| а | Finalising the detailed alignment of the walking track by providing an outline plan to be certified by the Manager Environmental Services of the Hurunui District Council at least one month prior to any construction activities occurring; | A walkway alignment has been proposed by MCWF and agreed by HDC. This is in the 2019-2020 Annual environmental report Refer to 4.2.9 of this plan. |
| f | Avoiding the use of wheeled mechanical equipment or tracked vehicles (such as tractors or excavators) on in situ limestone pavement; and | With will be controlled through subcontract contractual conditions and work pack approvals. Refer to 4.2.9 of this plan. |
| d | Otherwise minimising disturbance to limestone surfaces | Refer to 4.2.9 of this plan. |
| 19 | Every two weeks during construction the Consent Holder shall provide written confirmation to the Hurunui District Council of the total extent of clearance of indigenous shrubland and forest and impacts on limestone pavement and boulderfield and confirmation that the limits set out in condition 13 have not been exceeded. If required the Consent Holder shall facilitate site inspections and provide access to relevant GIS information to assist the independent assessment of compliance with condition 13 | Refer to 4.2.2 of this plan. |

| | 20 | Following the completion of the works authorised by this consent, the Consent Holder shall provide the Hurunui District Council with as-built plans showing the location of all constructed turbines, access roads, substations, buried cables, transmission lines and all other works. The Consent Holder shall also provide the Hurunui District Council with independently verified written confirmation that the maximum limits of shrubland and forest clearance and disturbance of limestone landforms set out in condition 13 have not been exceeded, and the areas identified in accordance with condition 12 have been avoided | Refer to 4.2.2 of this plan. | |
|------------------------------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Construction Management Plan | | | | |
| 9 | 32 | The Construction Management Plan shall include, but not be limited to: | | |
| c | С | Details of a training programme for machinery operators working on the site who will be involved in indigenous vegetation or limestone pavement or boulder field disturbance. The training programme will include, but not be limited to, education on using least impact techniques when disturbing or clearing limestone or indigenous vegetation. | Refer to Section 5. And Appendix A Site Rehabilitation Earthworks Pattern Book. | |
| d | d | Limits of disturbance to indigenous vegetation and karst landforms in accordance with condition [13]. | Refer Section 4.2.2 of this plan | |
| e | e | Location of soil stockpiles and spoil disposal areas. | Refer Section 4.2.6 of this plan, Section 2.7.3 of the Pattern Book in Appendix A and the rehabilitation drawings in Appendix B | |
| i | i | Procedures for earthworks, erosion and sediment control, stabilisation of the site (including the removal or stabilisation of any unstable boulders) and revegetation of existing vegetation sites with locally eco— sourced indigenous species and non-invasive, low stature grasses such as perennial ryegrass (Lolium perenne) and annual poa (Poa annua) grass species only. Aggressive exotic grasses such as browntop (Agrostis caprillaris), cocksfoot (Dactylis glomerata) and brome (Bromus spp.) shall not be used. | Refer to section 4.2.7 of this plan, the Pattern Book in Appendix A and the rehabilitation drawings in Appendix B Also, the Erosion and Sediment Control Plan in Appendix D of the CMP | |
| j | j | Contouring of all spoil disposal sites to visually integrate into the natural landform. | The design will consider this in cut to waste volumes and the construction work packs will ensure that this is carried out on site. Refer to Section 4.2.6 of this plan. | |

| r | S | Procedures for rehabilitation of the areas directly affected by the construction and roading activities and the ongoing maintenance of the rehabilitation work. | Refer to section 4.2.7 of this plan, the Pattern Book in Appendix A and the rehabilitation drawings in Appendix B |
|---------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| t | u | Procedures for minimising the visual effect of any removal or stabilisation of unstable boulders for safety reasons during construction and operation. | Refer to Section 4.2.10 of this plan |
| u | V | Procedures to ensure compliance with conditions [45] and [46] for the treatment of identified areas of limestone pavement. | Refer to Section 4.2.4.2 of this plan. |
| Impleme | ntation of miti | gation measures —-Construction Phase | |
| | 36 | Any concrete batching plant on the wind farm site shall be removed within six months of completion of the wind farm construction. | Refer to Section 4.2.1 of this plan. |
| | 45 | Limestone pavement within the areas marked on Golder Associates plan CG161.3 and CG163.3 shall be covered to a sufficient depth with crushed limestone or other appropriate material as necessary so as to avoid cuts to limestone pavement. | Refer to Section 4.2.4.2 , Appendix B of this plan and section 2.6.6 of the Pattern Book in Appendix A of this plan. |
| | 46 | Limestone pavement in the areas identified in condition [45] shall be partially rehabilitated to a width for the running surface of the road of 3.5 metres in accordance with the Chris Glasson Plan, dated 15 November 2010, and the plan titled 'indicative Cross Section of the Completed Road Formation and Mitigation Measures', dated 24 July 2011, attached as Appendix 3. The Consent Holder may at any time for maintenance or decommissioning reasons reinstate full access in these areas for so long as that access is required. Once full access is no longer required the Consent Holder is to partially rehabilitate the area to the standard required by the Chris Glasson Plan dated 15 November 2010. | Refer to Section 4.2.4.2 and Appendix B of this plan and Appendix 3 of the Pattern book in Appendix A of this plan. |
| | 55 | All spoil disposal sites shall be designed, constructed and managed in accordance with the following: e. Contouring of all spoil disposal sites to visually integrate into the natural landform. | Refer to Section 4.2.6 of this plan. |

| Rehabilitation of | 57 disturb | Each spoil site shall be stabilised and planted over including being grassed (non-invasive species) or re-vegetated with silver tussock to no less than 20% cover, as soon as practicable after it has been fully utilised, in order to prevent scour and avoid sediment being washed into adjacent watercourses. Stabilisation may be staged, and stabilised areas diverted to a clean water diversion, to maintain a suitably small working catchment area. | Refer Section 4.2.6 of this plan. |
|-------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 60 | Prior to undertaking any construction activities, the Consent Holder shall engage a suitable qualified and experienced ecologist to undertake a survey of the vegetation in the areas which are to be disturbed for construction purposes as detailed in 61. The results of this survey shall be provided to the Hurunui District Council. | This has been carried out as far as possible as part of the EMP and will be updated by the project ecologist when the final design footprint is complete. |
| | 61 | Site areas disturbed for pre—construction geotechnical investigations and construction purposes, but not necessary for the ongoing wind farm operation, being the concrete batching area, laydown areas, spoil disposal areas, road batters, and parts of turbine platforms, shall be rehabilitated progressively, and in any event within 12 months of the completion of construction in accordance with the Construction Management Plan. The objective shall be to rehabilitate those areas to a similar condition to the condition identified in the pre—construction survey required by condition [60], or as otherwise agreed with the Hurunui District Council. | Refer to rehabilitation plans in Appendix B of this document and construction sequence in shown in section 4.2.4 |
| | 62 | Within 3 months of completion of the construction of the wind farm (including the rehabilitation required by condition [61]), the Consent Holder shall advise the Manager of Environmental Services of the Hurunui District Council in writing that all relevant conditions of this consent relating to construction activities have been complied with. | |

| | 92 | Where silver tussock is disturbed for pre-construction geotechnical | Refer Section 4.2.7 of this plan and section 2.1 in the pattern book |
|------------------|------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| | | investigations or construction purposes, but not necessary for the ongoing | |
| | | | |
| | | wind farm operation it shall be rehabilitated in accordance with condition | |
| | | [61] Rehabilitation of the area shall be to the standard identified in the | |
| | | preconstruction survey. | |
| Visual Effects N | litigation | Road construction mitigation and remediation | |
| | 94 | All surplus limestone and other excavated material shall be disposed of in | Refer to 4.2.6 of this plan |
| | | locations indicated on the Golder Associates plans referred to in conditions | |
| | | [3] and [4] and Mt Cass Wind Farm plans referred to in condition [5]. | |
| | 95 | Areas containing spoil disposal and surplus earthworks shall be finished in | Refer to 4.2.6 of this plan |
| | | accordance with conditions 31f and 31g | |
| | 96 | Uphill edges of cut faces for roads built through Amuri limestone shall be | Refer Section 4.2.4.2 of this plan. |
| | | finished in an irregular pattern. | |
| | 97 | Straight line interfaces between cut faces and original surfaces shall be avoided. | Refer Section 4.2.4.2 of this plan. |
| | 98 | Cut faces in Amuri limestone shall be finished so as to emulate naturally | Refer Section 4.2.4.2 of this plan. Also 2.4.6 of the Pattern book in |
| | 50 | occurring limestone faces. Techniques for this purpose shall | Appendix A of this Plan |
| | | reference naturally occurring patterns in local limestone faces and may include: | |
| | а | Cut faces shall be scarified to achieve a surface texture commensurate | Refer Section 4.2.4.2 of this plan. Also 2.4.6 of the Pattern book in |
| | | with naturally occurring surface textures in weathered Amuri limestone. | Appendix A of this Plan |
| | | Scarification shall be done with a tyned tool in the direction of the bedding plane or 'grain' in the limestone. | |
| | | | |
| | | I | |

| b | Continuous, sheer limestone cut faces shall be avoided through the creation of surface variations that emulate naturally occurring patterns. Shallow vertical and diagonal fissures, narrow rills and shallow pockets shall be cut into limestone faces in an irregular pattern at 3–5 m intervals. | Refer Section 4.2.4.2 of this plan. Also 2.4.6 of the Pattern book in Appendix A of this Plan |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| с | In cuts over 2 m in height, shallow benches approximately 200-400mm deep shall be cut into the face at approximately 2 m (but irregular) intervals, parallel to the bedding plane or 'grain' of the rock. These benches will provide locations for the accumulation of sediments and the products of natural erosion, which will in turn form a substrate for the establishment of plants. | Refer Section 4.2.4.2 of this plan. Also, Fig 30 & 31 in section 2.4.6 of the Pattern book in Appendix A of this Plan |
| 99 | During the construction of Northern Terrace Road and associated ramp roads to the main ridgeline, cut material shall not be side cast down-slope of the road, but shall be removed from the work areas and disposed of at disposal sites indicated on the Golder Associates Plans CG151.4-152.4 and Mt Cass Wind Farm plans 4755.1 and 4755.2 Rev B dated 4 May 2021. | Refer Section 4.2.4.1 |
| 100 | Mitigation techniques on the outside edges of roads referred to in Condition [0] shall include, but not be limited to, the following: | |
| а | Where these roads are cut through Amuri limestone, at irregular intervals along the outer edges of roads, topsoil shall be removed from the edge of the road to expose patches of underlying limestone. | 2.4.6 of the Pattern book in Appendix A of this Plan |
| b | Indigenous tussock and grey scrub species shall be established sufficiently close to the outer edge of the road to grow above the level of the roads formation. | Fig 36 on page 38 of the pattern book. |
| 101 | Limestone boulders within boulderfields derived from Weka limestone that will be displaced through the construction of the Northern Terrace Road and spur roads or displaced through stabilisation measures, shall be relocated locally in naturalistic patterns on the downhill side of the roads. | 2.3.6 of the Pattern book in Appendix A of this Plan |

| | To the extent practicable, boulders shall be located in ground to a similar depth and orientation as they were in their natural state. 102 The finish of cut limestone faces and fill surfaces, the establishment of replicated boulder fields, the design of spoil disposal areas and the establishment of plants for mitigation and remediation shall be guided by the preparation (by the Consent Holder in consultation with the Hurunui District Council) of a site 'landscape pattern book' of graphic examples drawn from the locality. The pattern book will provide a source book of examples that should be used to guide the visual appearance of landscape mitigation and remediation works. | |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 102 | The finish of cut limestone faces and fill surfaces, the establishment of replicated boulder fields, the design of spoil disposal areas and the establishment of plants for mitigation and remediation shall be guided by the preparation (by the Consent Holder in consultation with the Hurunui District Council) of a site 'landscape pattern book' of graphic examples drawn from the locality. The pattern book will provide a source book of examples that should be used to guide the visual appearance of landscape mitigation and remediation works. | Refer to Appendix A of this plan. |

| 103 | During excavation associated with the construction of roads, the | MCWFL have formed the landscape panel. |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | construction of the fence required by condition [86[a]] on the | |
| | northern side of the escarpment, and the implementation of | MCWFL Landscape Architect: Chris Glasson of Glasson Huxtable |
| | landscape mitigation and remediation works, including the | Landscape Architects |
| | disposal of surplus material to spoil disposal areas, a landscape | |
| | experts panel shall be available as necessary to provide | HDC Landscape Architect: Nikki Smetham of Rough & Milne Landscape |
| | guidance on the implementation of the landscape conditions | Architects |
| | described in this section. The panel shall be comprised of two | |
| | landscape architects; one nominated by Hurunui District | Refer to section 7 of this plan. |
| | Council, and one by the Consent Holder. | |
| 104 | The landscape expert panel shall liaise with geomorphological, | MCWFL have formed the landscape panel. |
| | geotechnical and ecological experts as necessary. | |
| | | MCWFL Landscape Architect: Chris Glasson HDC Landscape Architect: |
| | | Nikki SmethamRefer to section 7 of this plan. |
| litation of visuall | y prominent cut limestone surfaces | |
| | y prominent cut innestone surfaces | |
| 105 | Within 3 months of the commencement of consent the Consent Holder | This has been completed and the outcomes included in the landscape |
| | | |
| | Within 3 months of the commencement of consent the Consent Holder | This has been completed and the outcomes included in the landscape pattern book on Page 42, section 2.4.6 |
| | Within 3 months of the commencement of consent the Consent Holder shall commence a trial of methods for the remediation of freshly cut, un- weathered Amuri limestone surfaces to determine whether accelerated or simulated weathering can be achieved within a shorter time frame than | This has been completed and the outcomes included in the landscape pattern book on Page 42, section 2.4.6 |
| | Within 3 months of the commencement of consent the Consent Holder shall commence a trial of methods for the remediation of freshly cut, un- weathered Amuri limestone surfaces to determine whether accelerated or | |
| | Within 3 months of the commencement of consent the Consent Holder shall commence a trial of methods for the remediation of freshly cut, un- weathered Amuri limestone surfaces to determine whether accelerated or simulated weathering can be achieved within a shorter time frame than | pattern book on Page 42, section 2.4.6 |
| 105 | Within 3 months of the commencement of consent the Consent Holder shall commence a trial of methods for the remediation of freshly cut, unweathered Amuri limestone surfaces to determine whether accelerated or simulated weathering can be achieved within a shorter time frame than that of natural biofilm establishment. Methods for trialling shall be developed in consultation with the Hurunui | pattern book on Page 42, section 2.4.6 The Landscape Panel recommendations following remediation trials |
| 105 | Within 3 months of the commencement of consent the Consent Holder shall commence a trial of methods for the remediation of freshly cut, un- weathered Amuri limestone surfaces to determine whether accelerated or simulated weathering can be achieved within a shorter time frame than that of natural biofilm establishment. | pattern book on Page 42, section 2.4.6 The Landscape Panel recommendations following remediation trials indicated the methods for remediation would be incorporated in the |
| 105 | Within 3 months of the commencement of consent the Consent Holder shall commence a trial of methods for the remediation of freshly cut, unweathered Amuri limestone surfaces to determine whether accelerated or simulated weathering can be achieved within a shorter time frame than that of natural biofilm establishment. Methods for trialling shall be developed in consultation with the Hurunui District Council and the landscape panel referred to in condition [103], and | |
| 105 | Within 3 months of the commencement of consent the Consent Holder shall commence a trial of methods for the remediation of freshly cut, unweathered Amuri limestone surfaces to determine whether accelerated or simulated weathering can be achieved within a shorter time frame than that of natural biofilm establishment. Methods for trialling shall be developed in consultation with the Hurunui District Council and the landscape panel referred to in condition [103], and may include: | pattern book on Page 42, section 2.4.6 The Landscape Panel recommendations following remediation trials indicated the methods for remediation would be incorporated in the Landscape Pattern Book. Refer App. 7 of MCWF Annual Environmental Report 2014. |
| 105 | Within 3 months of the commencement of consent the Consent Holder shall commence a trial of methods for the remediation of freshly cut, unweathered Amuri limestone surfaces to determine whether accelerated or simulated weathering can be achieved within a shorter time frame than that of natural biofilm establishment. Methods for trialling shall be developed in consultation with the Hurunui District Council and the landscape panel referred to in condition [103], and | pattern book on Page 42, section 2.4.6 The Landscape Panel recommendations following remediation trials indicated the methods for remediation would be incorporated in the Landscape Pattern Book. Refer App. 7 of MCWF Annual Environmental |
| 105 | Within 3 months of the commencement of consent the Consent Holder shall commence a trial of methods for the remediation of freshly cut, unweathered Amuri limestone surfaces to determine whether accelerated or simulated weathering can be achieved within a shorter time frame than that of natural biofilm establishment. Methods for trialling shall be developed in consultation with the Hurunui District Council and the landscape panel referred to in condition [103], and may include: The application of organic materials to initiate natural biofilm colonisation; | pattern book on Page 42, section 2.4.6 The Landscape Panel recommendations following remediation trials indicated the methods for remediation would be incorporated in the Landscape Pattern Book. Refer App. 7 of MCWF Annual Environmental Report 2014. |

| Planting for mitig | 107 gation ar | At the same time as providing the Hurunui District Council with the information required by condition 33, the Consent Holder shall notify the Council of the method that shall be used to remediate Amuri limestone at the site both immediately after cutting and in the long term, providing that any such method will not jeopardise the natural process of biofilm colonisation. The Consent Holder shall implement the identified method as soon as is practicable but no later than six months after cutting. | The planned limestone treatment is set out in the Landscape Pattern section 2.4.6 |
|--------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 108 | Other than on cut limestone faces, cut and fill surfaces shall be rehabilitated in accordance with condition [61]. | Refer Section 4.2.4and 17 4.2.7 of this plan. |
| | 109 | Locations for the establishment of woody plants and silver tussock within the wind farm site for visual mitigation shall be determined through consultation between landscape and ecology experts nominated by Hurunui District Council and the Consent Holder. The location of mitigation planting shall take into account the effects arising as a consequence of visibility from important public viewpoints agreed upon by the landscape experts. | MCFWL have engaged RMA Ecology and Glasson Huxtable Landscape Architects A specimen design is included in Appendix B and the detailed design will be agreed once it is complete. |
| | 110 | The pattern of plantings undertaken for visual mitigation and remediation shall reflect natural patterns of plant distribution and association, as illustrated in the site landscape pattern book (see condition [102]). | The detailed design and Specification will be reviewed by RMA Ecology and the Landscape Panel. The Specimen design in Appendix B is approved in principle and will form the basis of the detailed design. |
| | 111 | The use of plants for mitigation and remediation of visual and landscape effects associated with cut and fill excavations shall be subject to | The detailed design and Specification will be reviewed by RMA Ecology and the Landscape Panel. The Specimen design in Appendix B is approved in principle and will form the basis of the detailed design. |

| | conditions specified for habitat enhancement, ecological restoration and weed management. | |
|--|-------------------------------------------------------------------------------------------|--|
| | | |

Table 1 Consent Conditions Relating to Landscape Management

3. Existing Project Site Conditions

The ridgeline feature between Mt Cass and Totara Peak is defined as an Outstanding Natural Feature as:

- the ridge is a fine example of a cuesta and is a geomorphological feature of regional significance.
- there are limestone ecosystem features include sinking streams, , caves, dry valleys, enclosed depressions, fluted rock outcrops, and springs.
- the Mt Cass-Oldham ridgeline and backslope exhibit a distinctive, potentially unique (within Canterbury) range of landforms and landscape elements.

Some of the windfarm earthworks will be visible from public viewpoints. For example, from SH1 and SH7 where the Northern Terrace Road and ramp roads are visible, and from the Mt Cass Road adjacent to Tiromoana Reserve, where the Southern Access Road is visible. Due to the natural features within the Project site and visibility of the works, landscape rehabilitation is required.

4. General Control Measures

4.1 Key Principles and Approaches

Landscape rehabilitation is proposed to ensure the landscape and visual impacts of the Project are minimised. Key principles to be followed are:

- Contouring of all areas of cut and fill to visually integrate into the natural landform including planting where necessary.
- Rehabilitation of all disturbed areas.

4.2 Specific Control Measures

Measures to rehabilitate the site to mitigate landscape and visual effects are described in the following sections.

4.2.1 Concrete batching plant

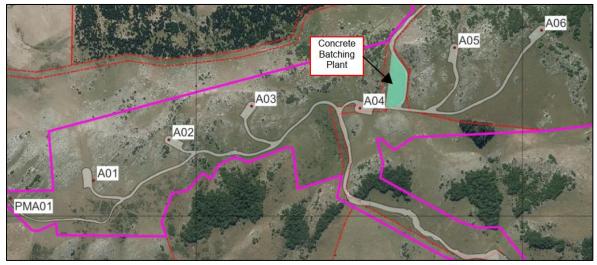


Figure 1 Concrete Batching Plant Location.

The concrete batching plant is required to be located at the top of the Southern Access Road as indicated in Figure 2 and is required to be removed within 6 months of completion of the wind farm construction. The area occupied by the concrete batching plant is to be rehabilitated to a similar condition identified in the pre-construction survey within 12 months of construction completion. Figure 2 – Concrete Batching Plant Location

4.2.2 Record of disturbance areas

Site clearing will be restricted to areas of the Project site within the outline of the earthwork area to comply with the limits in Condition 13 of the HDC land use consent, which is shown in Table 2:

| Ecosystem type | Limit |
|------------------------------------|---------|
| Exposed limestone disturbance (hee | ctares) |
| Pavement and boulder field | 2.04 |
| Pavement | 0.89 |
| Vegetation clearance (hectares)* | |
| Indigenous shrubland | 0.71 |
| Indigenous forest | 0.08 |

Table 2 Conditon 13 R90 Clearance Limits

*Refer to Sub Plan B9 Construction Ecology Management Plan for controls on Indigenous shrublands and vegetation.

To ensure that these disturbance limits are not exceeded, the design team will overlay the design model with the ecological survey data uploaded into a GIS map.

The mapping overlay will be completed once the design footprint has been finalised

The project team will conduct as-built surveys throughout the earthworks phase, which calculate the actual areas disturbed and report on them fortnightly to HDC per ecosystem type in table 2.

At the completion of construction, as built plans shall be provided and will be independently verified using an independent third-party and submitted to HDC.

4.2.3 Micro siting

MCWFL have carried out micro siting as part of the design phase of the project. Therefore, the only reason that a turbine foundation should have to be microsited is if ground conditions encountered were found to be unsatisfactory. – For example, if a tomo was found.

If micrositing is required, this will be reported to HDC and carried out within the conditions of the resource consent.

4.2.4 Rehabilitation

Areas disturbed during the construction of the Project are to be rehabilitated in accordance with the plans in Appendix B of this document.

The rehabilitation will be staged throughout the project to ensure that the timelines in the resource consent are met. A rehabilitation programme will be established once the detailed design is complete.

The maintenance of these areas will be allocated to the MCWFL operations team and sourced to experienced contractors.

Records of the rehabilitation are to be kept providing evidence of compliance to satisfy condition 62 of the HDC land use consent.

4.2.4.1 Earthworks Areas

All disturbed areas of the Project site not required to be used for the wind farm operation are to be rehabilitated progressively and within at least 12 months of the completion of construction. Glasson Huxtable Landscape Architects has prepared the Mt Cass Wind Farm – Pattern Book for Site Rehabilitation (Pattern Book) with input from MCWF, HDC and Dr David Norton – University of Canterbury Ecologist (School of Forestry). The Pattern Book is included in Appendix A and informs the methods to rehabilitate the site. The landscape rehabilitation design plans in Appendix B include details of the visibility impact for each section of the Project works and identifies the landscape rehabilitation works proposed to mitigate such effects.

By way of summary, the following types of landscape rehabilitation methods are proposed:

- Within grassland areas placing mounds on the downslope of parts of the alignment to obscure the alignment of roads and platforms.
- Creating textured surfaces along cut faces, screening with vegetation and varying the depth of cut to reduce views of straight cuts.
- Moving limestone boulders located within the alignment to the downslope of the alignment to be arranged in a naturalistic style and using stockpiled material to shape the area.
- Where batter slopes would be too steep, boulders are placed downslope of the alignment, ledges are to be formed to hold boulders in place.
- Amuri limestone surfaces are to be textured/cut irregularly to reduce the dominant cream colour characteristic and enable organic matter from the site to collect in cracks/crevices to allow vegetative matter to grow and reduce the visibility of cut material.
- Establishment of vegetation along the edge of the alignment in keeping with adjacent vegetation type and landscape.

- Cutting of benches adjacent to the road alignment and platforms where large cuts are required to enable the planting and natural establishment of vegetation on benches.
- When turbine construction is completed, portions of the gravel platform used during construction are to be removed, the ground scarified and soil placed in the area. Where platforms are adjacent to existing bush areas native shrubs will be planted in parts of the platform.

During the construction of the Northern Terrace Road which extends from the concrete batching plant to Turbine A15, the earthworks contractor is not allowed to side cast materials down slope and must excavate them into a truck and transport them directly to a consented disposal site.

4.2.4.2 Limestone Areas

Excavation of limestone rock is to be undertaken in accordance with landscape mitigation measures set out in the Pattern Book, including:

- Straight line interfaces between cut faces and original surfaces are to be avoided.
- Cut faces in Amuri limestone are to be finished to emulate naturally occurring limestone faces. Techniques for this purpose will reference naturally occurring patterns in local limestone faces.
- Cut faces are to be scarified to achieve a surface texture commensurate with naturally occurring surface textures in weathered Amuri limestone. Scarification is to be in the direction of the bedding plane or 'grain' in the limestone.
- Continuous, sheer limestone cut faces are to be avoided through the creation of surface variations that emulate naturally occurring patterns. Shallow vertical and diagonal fissures, narrow rills and shallow pockets will be cut into limestone faces in an irregular pattern at 3 to 5 m intervals.
- In cuts over 2 m in height, shallow benches approximately 200 to 400mm deep are to be cut into the face at approximately 2 m (but irregular) intervals, parallel to the bedding plane or 'grain' of the rock (note: this is unlikely to be parallel to the slope of the road). These benches will provide locations for the accumulation of sediments and the products of natural erosion, which will in turn form a substrate for the establishment of plants.

Areas where limestone pavement protection is required are identified on the design plans in Appendix B and both Section 2.6.6 and Appendix 2 of the Pattern Book. Prior to working in these areas, the earthworks subcontractor will need to issue a work pack for approval that demonstrates their construction method complies with these requirements.

4.2.5 Specific Protection of Limestone Pavement

Where the road on MC50 crosses the limestone areas, no equipment will be allowed to travel directly on top of the exposed rock. Fine aggregates will be tipped off prior to the area and pushed forward using a dozer to create the required road width. Works will progress forward using this methodology with trucks reversing along the alignment and tipping off at the tip head until the area is cleared. At no point will any heavy equipment be allowed to drive off the surface. The design will call for sufficient road pavement thickness so that when the aggregate is compacted it does not damage the limestone below.



Figure 3 – Section of limestone pavement on MC50

Similarly in areas of exposed limestone pavement encountered during the construction of fencing and walking tracks the use of wheeled and tracked vehicles driving on these areas will be explicitly forbidden.

4.2.6 Spoil Disposal Sites

All spoil disposal sites are to be located within the consented disposal sites identified on the design plans in Appendix B. Each site is to be designed, constructed and managed to ensure contouring to visually integrate into the natural landform. The following typical construction stages are to be followed at disposal sites:

- stripping of topsoil and soft materials from the surface to be stockpiled for later use
- benching of slopes and installation of subsurface drainage where required
- compaction of spoil and arrangement to appropriate surface level
- cover with topsoil and vegetate with suitable ground cover.

Refer Section 2.7.3 of the Pattern Book in Appendix A for rehabilitation of spoil disposal sites.

Each spoil site is to be stabilised and planted over including being grassed (non-invasive species) or revegetated with silver tussock (for selected sites) to no less than 20% cover, as soon as practicable after it has been fully utilised, in order to minimise erosion and sediment risks.

4.2.7 Planting

Areas where trees and vegetation are proposed to be planted are identified on the design plans in Appendix B and are in areas where roads and turbines will be more visible from off-site locations. Planting mitigation measures are described in the Pattern Book in Appendix A and in summary include:

- replanting of silver tussock through direct vegetation transfer or other appropriate method in areas where silver tussock has been identified with a median greater than 10% density
- revegetation is to be with locally eco—sourced indigenous species and non-invasive, low stature grasses such as perennial ryegrass (Lolium perenne) and annual poa (Poa annua) grass species only.
- No aggressive exotic grasses such as browntop (Agrostis caprillaris), cocksfoot (Dactylis glomerata) and brome (Bromus spp.) are to be used.
- In open pasture areas, over sowing of grass seed will occur using a mix of short rye, fescue and NZ browntop.
- Planting of *Poa cita* is required where tussock has been damaged or removed.
- Areas of planting are to follow current and natural patterns of the site area with planting areas fenced off to assist with survival.
- The types of species to be planted are set out in Appendix 1 Sections 1.4 to 1.7 of the Pattern Book.

To date geotechnical investigations have been completed within the construction footprint to mitigate the need to plant disturbed areas. Should further investigations be required then this will be the method employed.

4.2.8 Operations and Maintenance Area

Landscaping is proposed around the Operations and Maintenance Area (O&M) with amenity planting of trees and shrubs around the front of the O&M Area and revegetation planting in zones of trees and shrubs uphill of the buildings and downslope of the road. The Landscape Plans for the O&M Area are included in Appendix C.

4.2.9 Fencing

At the time of drafting this plan the site fencing and walking track are still under design. Once designed the final alignment will be issued to HDC with the pre-construction plan prior to construction taking place.

The fencing contractor will be engaged by the Civil Contractor and the terms of their subcontract will tie them to meeting the resource consent requirements.

Prior to building the fences a work pack will be issued by the subcontractor and reviewed by the projects management. This document will require specific controls and methods that prevent the use of wheeled and tracked machinery on in situ limestone pavements and any other methods to minimise the disturbance to the limestone surface.

4.2.10 Unsafe Boulder Procedures

Where boulders are identified as a geohazard and require relocation for the safety of the project the project team will develop a work plan in conjunction with the MCWFL Ecologist and Karst expert to relocate it safely while minimise any visual effect and disturbance.

The general mitigations will be as described in section 2.3.6 of the Pattern Book.

5. Training – On-site Personnel

All staff working on the contract will be suitably experienced and competent for the tasks they are assigned to perform. This training will be a mixture of formal qualifications and onsite training depending on the persons role on the project, requirements by their employer and compliance with relevant legislation.

Training and awareness programmes are critical to ensuring that there is an appropriate level of environmental and sustainability knowledge for those staff and subcontractors involved in the project.

Training of site staff will be provided through project inductions, weekly toolbox talks, information posters such as spill response plans and any site-specific training considered necessary.

Notice boards will include environmental information including EHS Alert and relevant updates.

All staff and subcontractors will be inducted to the site prior to starting works. This induction will include the items identified in the training matrix in Table 3 below that are specific to this management plan and are specific to the persons role on the project. A full training matrix is located in the CMP.

| Training Area | Construction Worker | Machine Operator | Management | Fire Response Team | Enviro Team | Visitor |
|----------------|----------------------|------------------------|---------------------|--------------------|---------------------|---------|
| Rehabilitation | Landscape Management | Landscape | Landscape | N/A | Landscape | N/A |
| | Plan Awareness | Management Plan | Management Plan | | Management Plan | |
| | | Awareness | Requirements | | Awareness | |
| | | The requirements of | The requirements of | | The requirements of | |
| | | the landscape | the landscape | | the landscape | |
| | | rehabilitation | rehabilitation | | rehabilitation | |
| | | handbook. | handbook. | | handbook. | |
| | | least impact | least impact | | least impact | |
| | | techniques when | techniques when | | techniques when | |
| | | disturbing or clearing | disturbing or | | disturbing or | |
| | | limestone | clearing limestone | | clearing limestone | |
| | | Methods for working | Methods for | | Methods for | |
| | | on limestone | working on | | working on | |
| | | pavements | limestone | | limestone | |
| | | Limits of disturbance | pavements | | pavements | |
| | | and reporting | Limits of | | Limits of | |
| | | requirements | disturbance and | | disturbance and | |
| | | | reporting | | reporting | |
| | | | requirements | | requirements | |

Table 3 Landscape Rehabilitation Training Matrix

6. Monitoring and Maintenance During Construction

As part of the control measures, on-going site monitoring by the contractor and wider project team will be undertaken. This will ensure that all the control measures detailed in this plan have been properly implemented and are functioning effectively.

Monitoring shall occur for the full duration of the works to identify areas of planting that require attention or support to survive. Any control measures requiring maintenance or adaptation to allow construction tasks to occur shall be identified and implemented by the Environmental Advisor to ensure continual compliance.

| Role | Role Responsibilities |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction Manager | Has ultimate responsibility for this plan. |
| | Is to engage suitable specialists to carry out the requirements of this consent and report to HDC and ECan. |
| | Running the permit to work system for the Mt Cass Construction Zones and ensuring that all ecological requirements are completed prior to issuing permit to work. |
| | Reporting to the regulator |
| | Have regard to any advice received from the ecologist and the expert on karst landscapes during micrositing and provide a report to HDC if unable to meet this advice. |
| | Appoint the Landscape Panel |
| | |
| Environmental Advisor | Reviewing and reporting on environmental performance. |
| | Inspection of works to assess compliance with the management plans. |
| | Inspections, auditing and checking of environmental management practices and procedures. |
| | Responds to and investigates all environmental complaints, issues or incidents. |
| | Responsible for on-site compliance with consent conditions and other requirements and tracking compliance information. |
| | Notifies the Construction Manager and Regulatory Authorities of any significant non compliances. |
| | Report to the Construction Manager changes to construction techniques or natural environmental changes which require alterations to existing consents or require new resource consents. |
| | Update and maintain the environmental portion of the Project Risk Register. |
| | Training of all staff including subcontractors on the ecological management requirements. |
| MCWFL Specialists | Responsible for providing advice if micro siting is required. |

7. Roles and Responsibilities

| A suitably qualified and experienced expert in karst landscapes | Provide training to key Project team members on technical aspects of meeting this plan. Provide information for site inductions to help inform site team on meeting this plan. |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Landscape Panel | Advise the project team on landscape issues to ensure compliance with the consent. Liaise with geomorphological, geotechnical and ecological experts as necessary. Review detailed design drawing and specifications |
| | |
| Construction team | |
| Contractors Project Manager | Overall responsibility for ensuring this Plan is correctly implemented for their section of work. |
| | Responsible for ensuring that their personnel are suitably trained in the requirements of this plan. |
| | Reports all ecological incidents and complaints to the Environmental Manager. |
| | Ensure that permits to work are issued for their relevant scope. |
| Civil Contractor PM | Carrying out fortnightly surveys of disturbed locations and issuing |
| | results to MCWFL. |
| | Ensure that detailed design meets the requirement of this plan |
| | Review construction work packs and ensure that they meet the requirements of this plan. |
| | |

8. Appendices

| Appendix | Description |
|----------|----------------------------------------------------------|
| А | Mt Cass Wind Farm – Pattern Book for Site Rehabilitation |
| В | Landscape Rehabilitation Plans |
| С | Operations and Maintenance Building Landscape Plans |

Mt Cass Wind Farm - Pattern Book for Site Rehabilitation



mainpower







Contact Details:

Name: Sarah Peddie and Diarmuid O'Reilly Glasson Huxtable Landscape Architects 149 Victoria Street P.O. Box 13162 Christchurch 8141 New Zealand (+64) 03 3654599 www.ghla.co.nz

Acknowledgements:

We wish to acknowledge the following people:

Andrew Hurley – Consultant to Mt Cass Wind Farm Ltd. Geotech Consulting Ltd. New Zealand

Scott Bennett – Project Director Mt Cass Wind Farm Ltd. PO Box 346 Rangiora 7440 New Zealand

Document Details

Date: 5 April 2020 Reference: 0616

Status: Prepared by Diarmuid O'Reilly and Sarah Peddie

Reviewed by:

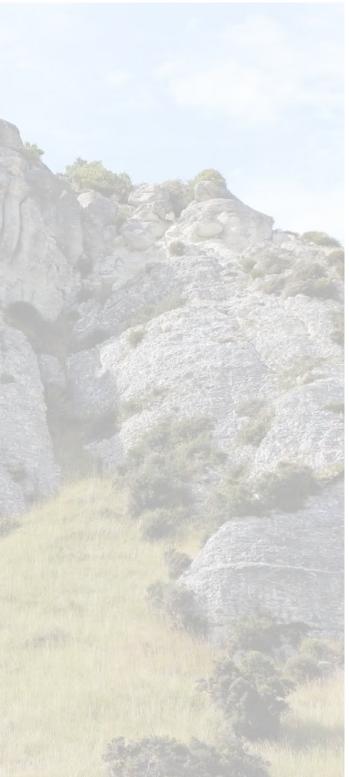
Chris Glasson (FNZILA Registered)

Nikki Smetham – Consultant Landscape Architect to Hurunui District Council Rough and Milne Landscape Architects PO Box 3764 Christchurch 8140 New Zealand

Dr David Norton – Ecologist School of Forestry University of Canterbury 20 Kirkwood Avenue Christchurch 8041 New Zealand

List of Abbreviations

| CoC | Conditions of Consent |
|-----|-------------------------------|
| EMP | Environmental Management Plan |
| HDC | Hurunui District Council |
| NTR | North Terrace Road |
| ONL | Outstanding Natural Landscape |
| РВ | Pattern Book |
| SAR | Southern Access Road |
| SH1 | State Highway One |
| SH7 | State Highway Seven |



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Introduction



Introduction

1.1. Purpose

The conditions of consent (CoC) for the Mt Cass wind farm require methods to mitigate the landscape and visual effects occurring due to engineering solutions for components of the windfarm. To achieve these requirements, a panel of two landscape architects representing Hurunui District Council and Mt Cass Wind Farm Ltd have compiled this Pattern Book.

The Pattern Book is a guide for the civil designer for how the landscape mitigation will occur on the site in different situations. As such, it contains a set of guidelines for contractors to adhere to when undertaking the implementation of the wind farm.

The pattern book provides:

Guidance for rehabilitation and visual mitigation of the North Terrace Road (NTR), Southern Access Road (SAR), ramp roads, disposal areas, laydown areas, and turbine platforms. (refer to the 'Map: Zones of Landform and Landcover' plan for the location of these areas). The PB applies to areas both inside and outside of the conservation management area but includes all civil works onsite.

The PB is the result of liaison between Mt Cass Wind Farm Ltd. and the HDC regarding suitable methods of rehabilitation and visual mitigation. Other relevant disciplines (e.g.: geomorphologists, ecologists and project engineers) have been consulted and provided input into the PB as required to ensure consistency with the Environmental Management Plan (EMP) and engineer construction drawings. (CoC 104)

This is an initial document and it is anticipated that there will be ongoing discussions between the designers and contractors during the design phase. As

part of the construction process the project landscape architect, Chris Glasson of Glasson Huxtable and the HDC representative landscape architect (Nikki Smetham of Rough & Milne) shall:

- Undertake site visits when necessary, at any stage of the project including construction phase.
- Liaise with the project manager and make on-site decisions where necessary during the construction phase.
- Provide written reports to HDC and Mt Cass Wind Farm Ltd. regarding onsite decisions.
- Peer review civil design in accordance with the PB.

The above input is in accordance with the CoC (103-104).

At the time of preparing the PB, the engineering and architectural plans and details had not been prepared. The PB is a conceptual guideline for the engineering designers and contractors, it is not a specification document and as stated earlier, it shall be used in conjunction with ongoing collaboration between the designers and contractors during the design phase.

The construction of the NTR and ramp roads, and to a minor degree the disposal sites, batching areas and turbine platforms will require various combinations of cuts (including short sections of box cuts), cut and fill, and areas of fill. The limestone outcrops close to the existing farm tracks indicate the topsoil is a relatively thin veneer and the proposed cuts are likely to expose fresh and un-weathered limestone.



Purpose (continuued)

With regard to earthworks for roading rehabilitation, the plans indicate that cuts are typically up to 5-6m, but in places there may be cuts up to 12 m in height. Downhill of the NTR, below Mt Cass, are filled areas of up to 10 m height. The base of the fill will be 40 m along the length of the road.

It is the cut faces and the constant gradient line of the roads across the face of the slopes that have the most potential for significant adverse effects. This is exacerbated by a margin of uncertainty regarding the exact nature of the substrate that will be encountered during the construction of the NTR and ramp roads where they cross the scarp face and ridgeline. Where the road or platform cuts intrude into limestone base rock, then effects are likely to be significantly more visible than if the cuts are into fractured rock and soil.

Some of the windfarm earthworks will be visible from public viewpoints. For example, from the SH1 and SH7 where the NTR and ramp roads are visible, and from the Mt Cass Road adjacent to Tiromoana Reserve, where the SAR is visible. Therefore, it is important to reduce any landscape and visual impact as much as possible by applying the measures outlined in the PB. (See Introduction, Table 1: Viewpoints and 1.4.2 Viewpoints Map).

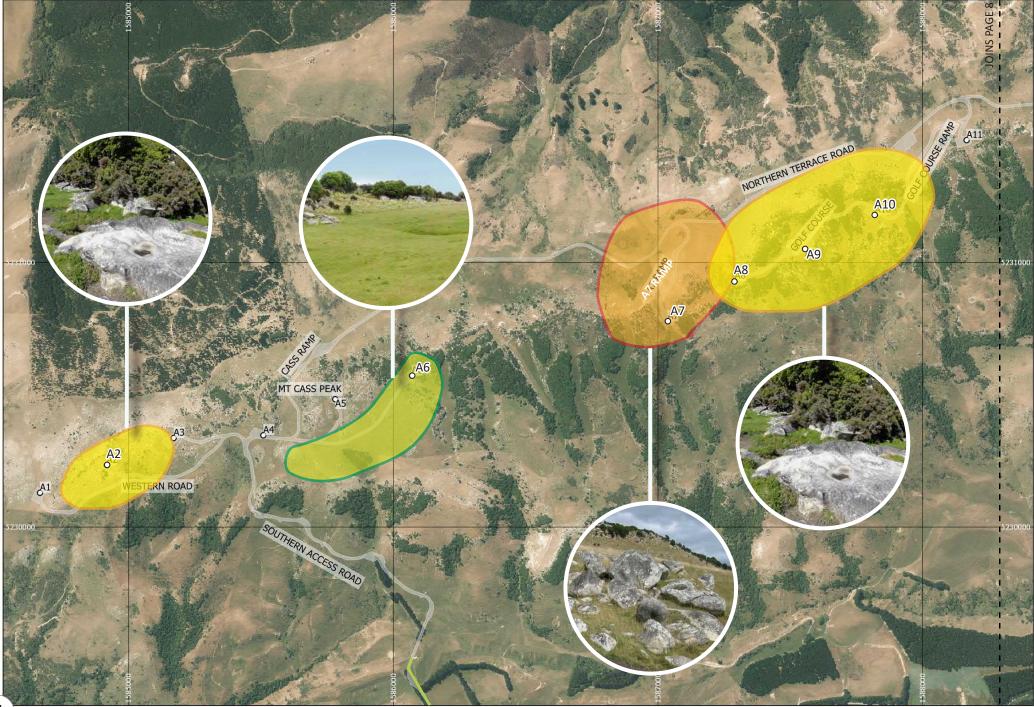
In areas where the roads and turbines will be more visible from locations off site, mitigation planting treatment is to be focussed in order to lessen the visual impact for those off site. These areas are identified on 1.5 Visibility Map.

As well, the area of forest and pavement form part of an outstanding natural landscape (ONL), giving status to the high quality of the Mt Cass landscape. This means that any development on, or in the vicinity of the ONL, should be undertaken to maintain ONL values.

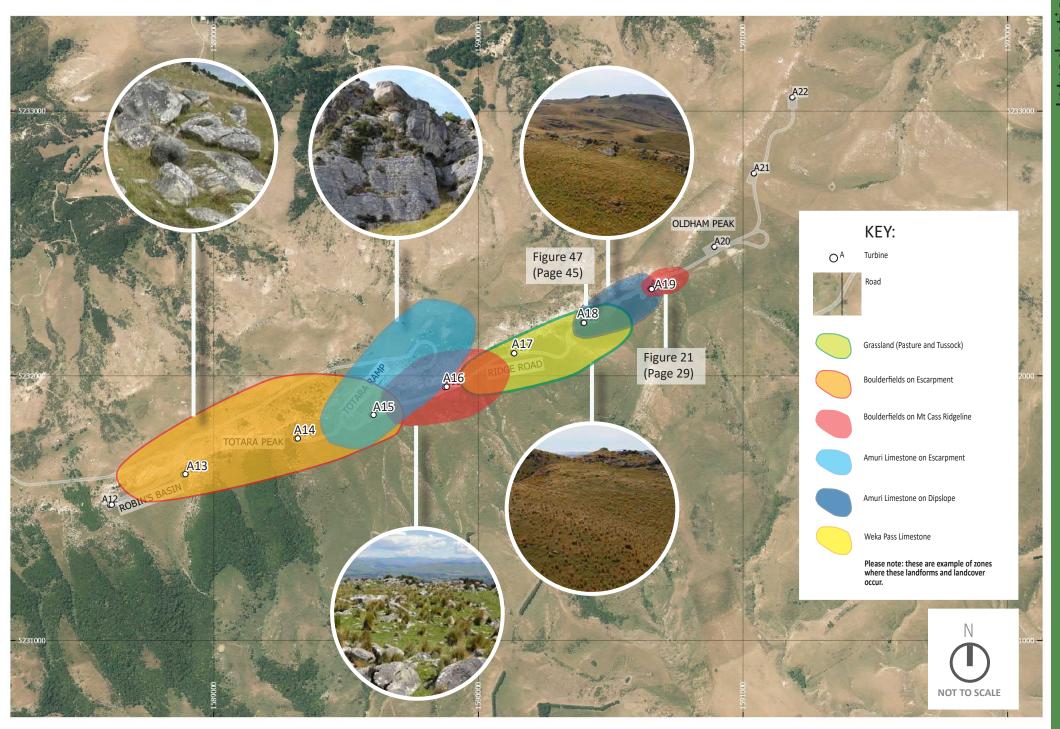
1.2 Structure

The PB has been organised according to the differing landform and landcover types across the site. Each type has been described and the landscape and visual effects assessed, with mitigation measures applied in order to gain an acceptable outcome. This provides a consistent approach to the landscape mitigation, but with a consequence that some repetition will occur where similar treatments are used in different landforms.

1.3 Map: Landform and Landcover Character







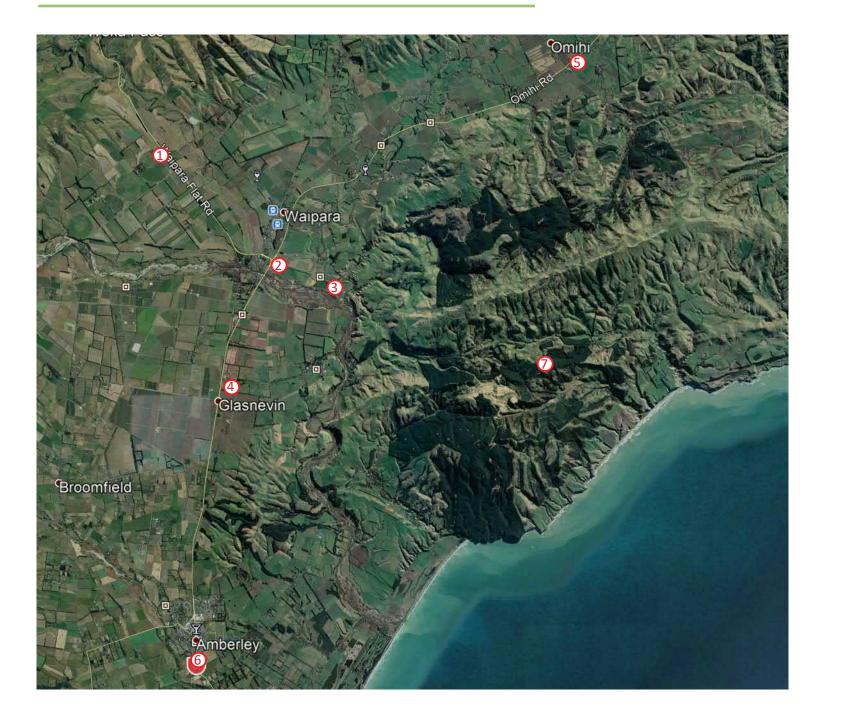
1.4 Viewpoints

The aim is to reduce the visual impact, reducing ecological effects and to protect and enhance the landscape. The following elements are visible from the main public viewpoints of SH1, SH7, Mt Cass Road, Amberley and the Tiromoana walkway.

1.4.1 Table of Viewpoints

| Viewpoint | Element | Distance | Degree Visibility |
|--------------------------------------|-------------------------------------------------------------------------------|----------|--------------------------------|
| SH7 (at Maungatahi farm gate) | Ramp Roads off Northern Terrace Roads | 10.9km | Very low in am Low in pm |
| SH1 (at Mt Cass Road junction | None | 7.8km | - |
| Mt Cass Road | Southern Access Road | 2.6km | Low in am Very low in pm |
| Stockgrove Road | None | 9.6km | - |
| SH1 at Omihi | Ramp Roads for A12 and A15 | 5.0km | Very low in am Low in pm |
| South end of Amberley township | Southern access Road and West extension road at west end | 14.35km | negligible |
| Tiromoana Walkway | Can view part of Southern Access Road through to viewing no elements | 2.6km+ | Low in am Very low in pm |

Table 1: Viewpoints



KEY:

1

2

3

(4)

(5)

6

0

SH7 (at Maungatahi farm gate

SH1 (at Mt Cass Road

junction)

Mt Cass Road

Stockgrove Road

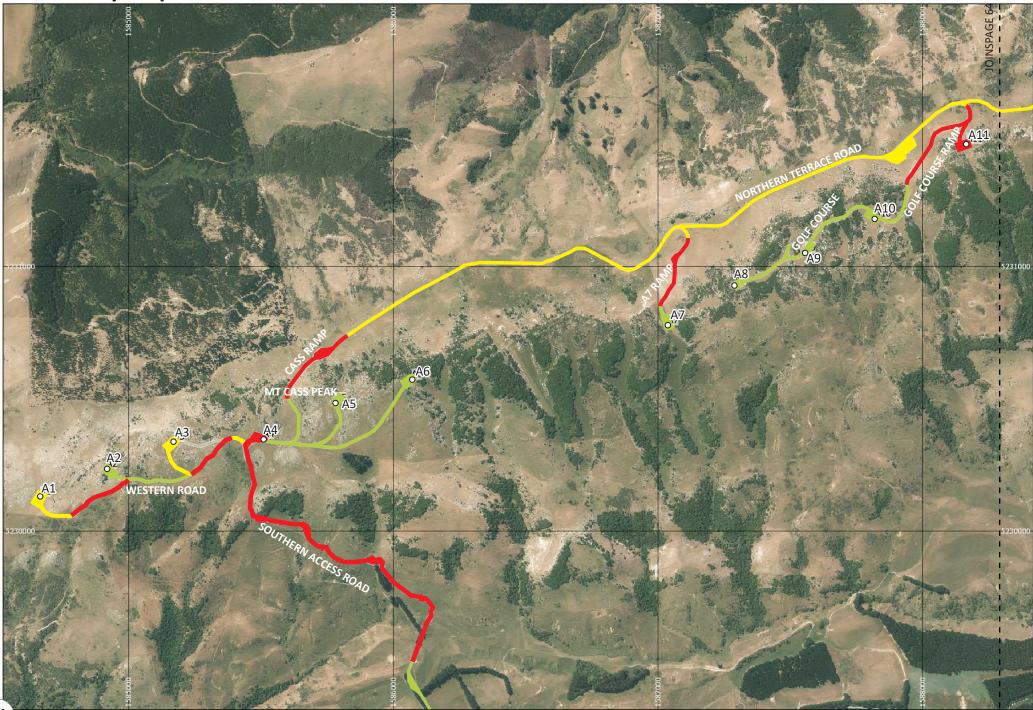
South end of Amberley

Tiromoana Walkway

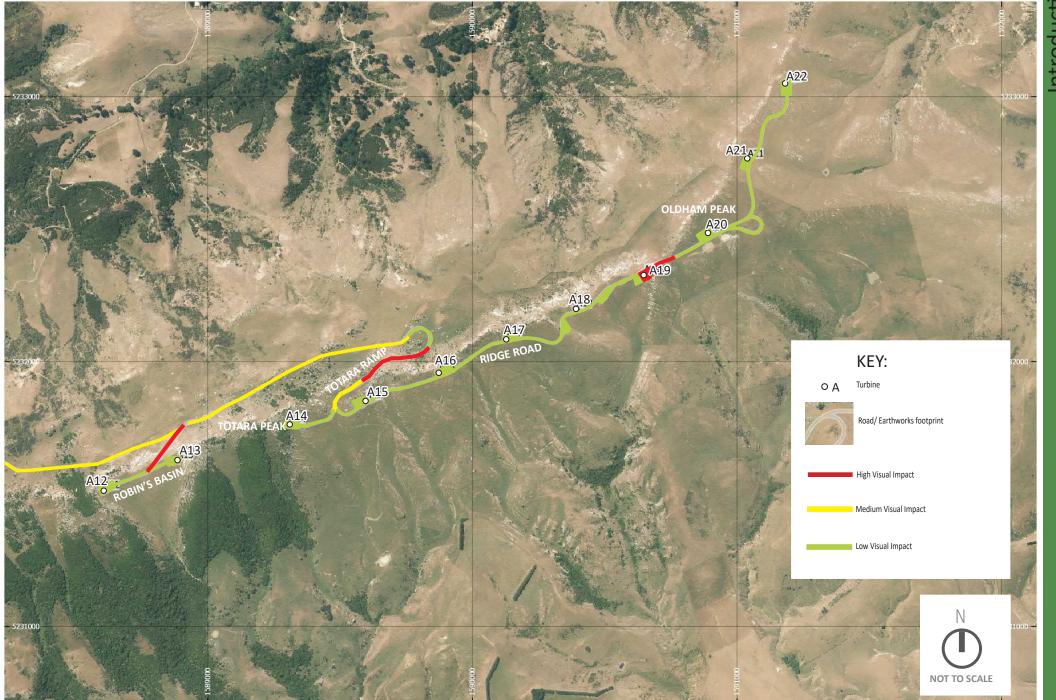
SH1 at Omihi

township

1.5 Visibility Map



Introduction 1.5 Visibility Map



Landforms and Landcover

2.1 Grassland (Pasture and Tussock)

2.1.1 Context



Figure 1: Pasture grassland.



Fig. 2 Road through grassland approaching turbine A6.



2.1.2 Description of the landscape

Pasture grassland areas are generally located on the north facing slopes and along the broad ridgeline of Mt Cass where some of the areas are surrounded by broadleaf forest. There are also areas on the dip slope adjacent to the SAR.

The tussock land is more common at the east end, from turbine A12 to A19, and also between turbines A2 and A4.

Much of the NTR, ramp roads and many of the turbine platforms are to be located in existing pasture areas.

The large tussock areas have been avoided except for the eastern end between turbines A16 and A19.

2.1.3 Characteristics of the visual landscape

The characteristics of the visual landscape for both pasture and tussock land is one of a fine textured and open landscape. Any changes to this landscape could be visible from SH1, with a lack of vegetation and rocky outcrops to screen the NTR and ramp roads. 92. Where silver tussock is disturbed for pre-construction geotechnical investigations or construction purposes, but not necessary for the ongoing wind farm operation it shall be rehabilitated in accordance with condition [61] Rehabilitation of the area shall be to the standard identified in the pre-construction survey.

93. Where areas of silver tussock of a median greater than 10% density as identified on Golders Associates Plan CG241 dated 17 November 2010 are permanently removed as a result of wind farm development, an equivalent quantity of silver tussock shall be established and maintained on the wind farm site using direct vegetation transfer, planting, or other appropriate method.

2.1.5 Effects of activities in this landscape

The impact of the road alignment over open pasture and tussock grassland in an exposed landscape like Mt Cass is the result of its line expression, and also in colour changes where cuts and fills occur.

This line impact is to be lessened by taking care when aligning the road and side roads. The objective is that it is done so in uniformity with existing line expressions; e.g. a smoothly curved alignment in a landscape where smoothly curved lines dominate is to be achieved by following the contour. Colour impact is to be lessened by the regrading of side slopes and incorporating appropriate revegetation programmes or creating a textured rock surface. The aim is to integrate the new slopes into the existing slopes by rounding off hard edges.

2.1.6 Mitigation Measures

Mitigation measures are required to reduce the landscape and visual impacts of the road, such as the change of line and colour that will occur. This includes the following mitigation measures:

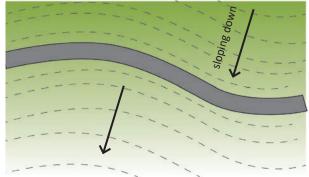


Fig. 4 Road following existing contours.

For straight line alignments the following measure is to be applied to reduce the visibility of the straight lines:



Fig. 5 Before: Straight line alignment of road.

Strip the grassland and soil off the road and place into a mounded area on the downhill side of the road, texture the cut surface so that organic matter will fill the crevices, mound the downhill side of the road to obscure part of the straight line alignment.

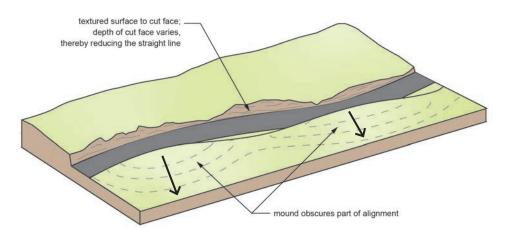


Fig. 2 Road through grassland approaching turbine A6.

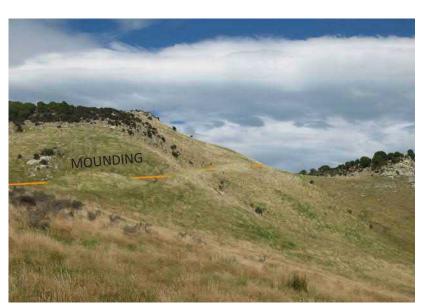


Fig. 7 After: Add fill material to create mounds or vegetation to reduce impact of road.

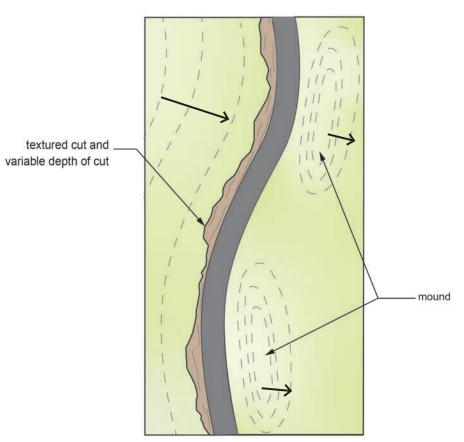
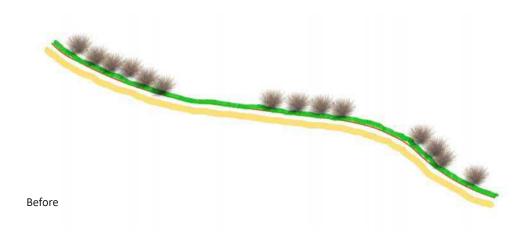


Fig. 8 Ramp Road scenario (plan).



In open pasture areas it is unlikely that anything other than over-sowing of grass seed will occur in terms of revegetation. This intention is that this shall consist of a mix of short rye, fescue and NZ browntop.

Where there has been tussock damage, then planting of *Poa cita* is required at centres of less than 1.0m.

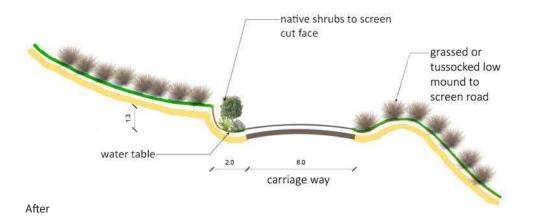


Fig. 9 Ramp Road scenario (section).



Fig. 10 An example of high-impact cuts and poor mitigation.

2.2 Boulderfields on Escarpment

2.2.1 Context





2.2.2 Description

Weka limestone boulders are found on the north facing escarpment and ridge of Mt Cass. They are found partly submerged surrounded by pasture, tussock or broadleaf vegetation. On the upper slopes of the escarpment there is a greater predominance of dense vegetation occurring due to the protection from stock by the boulders, and therefore revegetation is successfully occurring.

The ramp roads and the top part of the SAR will be affected by the boulderfields, but the NTR alignment has generally avoided boulderfields where possible e.g. between turbines A5- A11. Most of this area is of a pasture land cover. Between A13 to A18 there are boulder fields through which the NTR runs.

Fig. 11 & 12 Existing boulderfield above road will be relocated to below the road.



Fig. 13 Road crosses scarp face boulderfield on ramp to turbine A7.



Fig. 14 NTR across boulderfield with broadleaf vegetation.

2.2.3 Characteristics of the visual landscape

The characteristics of the visual landscape for the boulderfields is one of a fine textured and open landscape and in part a vegetated landscape. Changes to this landscape could be visible from SH1, especially the ramp roads, due to the visibility of the alignment.

2.2.4 Relevant conditions of consent

101. Limestone boulders within boulderfields derived from Weka limestone that will be displaced through the construction of the Northern Terrace Road and ramp roads or displaced through stabilisation measures, shall be relocated locally in naturalistic patterns on the downhill side of the roads. To the extent practicable, boulders shall be located in ground to a similar depth and orientation as they were in their natural state.

102. The finish of cut limestone faces and fill surfaces, the establishment of replicated boulderfields, the design of spoil disposal areas and the establishment of plants for mitigation and remediation shall be guided by the preparation (by the Consent Holder in consultation with the Hurunui District Council) of a site 'landscape pattern book' of graphic examples drawn from the locality. The pattern book will provide a source book of examples that should be used to guide the visual appearance of landscape mitigation and remediation works.

2.2.5 Effects of the activities in this landscape

The impact of the road through boulderfields is the result of colour changes due to the displacement of the boulders themselves, and the line expression of the roads.

The line impact is lessened due to the presence of boulders and vegetation which reduces the visual appearance of the road.

The aim is that the colour impact, due to a whiter appearance of the displaced limestone boulders, shall be lessened by placing them in depressions and orienting them in their original position, with the grey lichen and surface treatment being exposed. The objective is that they shall be located below the road, with planting added, for screening purposes.

2.2.6 Mitigation Measures

To manage the changes of line and colour and to reduce the landscape and visual impacts of the road, the following mitigation measures are required:

(i) Alignment

- Avoid boulderfields where possible,
- Strip the pasture and soil stockpile and use this material for mounding on the downhill side of the road to "break" the line of the road. the pasture and soil, and stockpile,
- Remove the boulders and place below the road, bury up to 1/3 and arrange in a naturalistic style (ie: in informal groups of 5 to 7 boulders),
- Use the stockpiled soil to place around the boulders and shape this material,
- The boulder shall be placed using a webbing sling so as not to mark them, in a depression and in their original orientation.

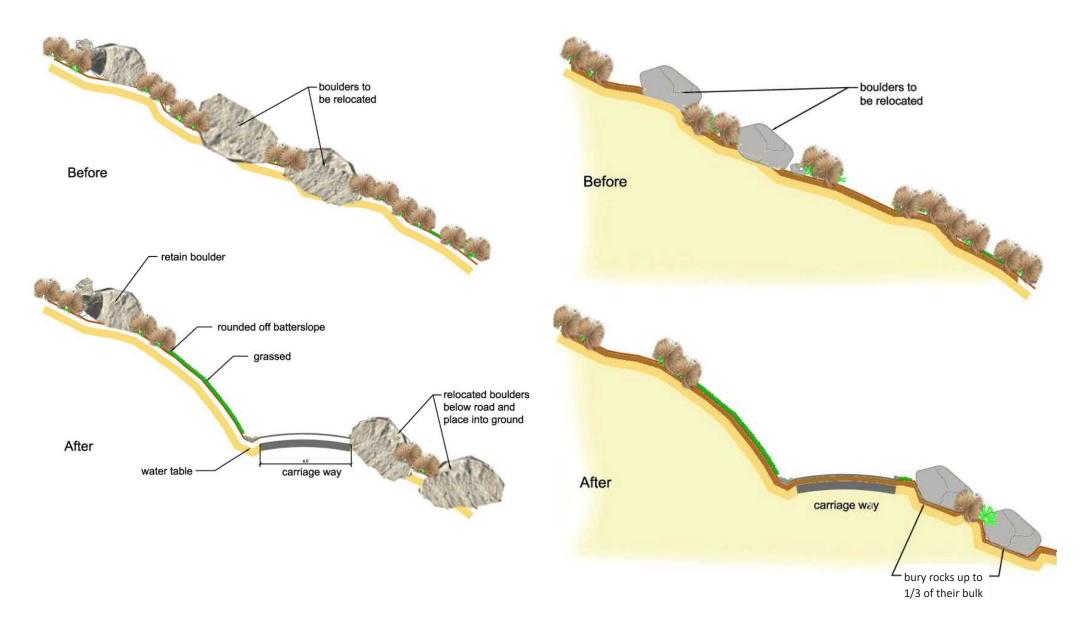
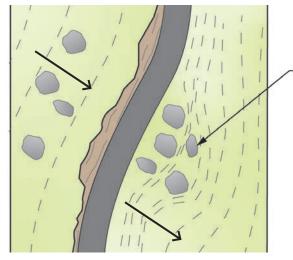
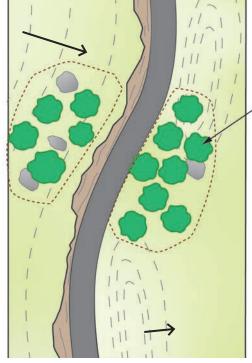


Fig. 15 Weka boulderfields and placement of boulders below the road.

- (ii) While not all the displaced boulderfields will be placed to the same depth and orientation, if not treated, the pale cream colour of the newly exposed rock will colour to a grey colour approximately 5 years after being displaced.
- (iii) Where the slopes may be too steep to replace the boulders ie: in slopes over 1v:2.5h (ie: 1 vertical in 2.5 horizontal), the boulders are to be removed and then buried within a re-contoured landform to ensure stability, using ledges to hold them in place. This is subject to confirmation by the civil design team.



boulders integrated into landscape; ledges formed if slope is too steep (ie: over 1v:2.5h)



 Planted area with broadleaf plants where this pattern exists in the adjacent context. All planting is to be fenced.

Fig. 18 Planted area with broadleaf plants where this pattern exists in the adjacent context.

Fig. 17 Integration of boulders into landscape.

2.3 Boulderfields on the Mt Cass Ridgeline

2.3.1 Context





2.3.2 Description of the Landscape

The ridgeline of Mt Cass is relatively flat within the boulderfield, and broadleaf vegetation is common e.g. between turbines A8-A11; while between turbines A14-A22 the ridge is less flat with little broadleaf vegetation existing amongst the boulderfields.

A road between turbines A15-A19 traverses the ridgeline where there are boulderfields, broadleaf vegetation and open grassland. Because it is generally flat the boulders can be easily moved to the edge of the road.

2.3.3 Characteristics of the visual landscape

The visual characteristics of the boulderfields on the ridgeline is one of coarse texture with boulders and vegetation. While the ridgeline is a relatively exposed landscape, its topography and coarse texture can generally accommodate access roads without large or noticeable areas of cut and fill. Changes to this landscape would therefore not be as readily visible from any public viewpoint.

2.3.4 Relevant conditions of consent

These relate to CoC 101-102 for limestone boulders, but also to the limestone pavement, which is discussed in the section on "Weka Pass Limestone".

101. Limestone boulders within boulderfields derived from Weka limestone that will be displaced through the construction of the Northern Terrace Road and spur roads or displaced through stabilisation measures, shall be relocated locally in naturalistic patterns on the downhill side of the roads. To the extent practicable, boulders shall be located in ground to a similar depth and orientation as they were in their natural state.

102. The finish of cut limestone faces and fill surfaces, the establishment of replicated boulderfields, the design of spoil disposal areas and the establishment of plants for mitigation and remediation shall be guided by the preparation (by the Consent Holder in consultation with the Hurunui District Council) of a site 'landscape pattern book' of graphic examples drawn from the locality. The pattern book will provide a source book of examples that should be used to guide the visual appearance of landscape mitigation and remediation works.

2.3.5 Effects of the activities in this landscape

The road through the ridgeline boulderfields in an exposed landscape will have an impact, as could occur adjacent to turbine A19 (Figure 21). This will be the result of its line expression, and the colour changes where cuts and fill occur.

The objective is to lessen the impact of the NTR and ramp roads by aligning the roads along the contours as smoothly curved lines. Colour impact is to be lessened by regrading the batter slopes, creating a textured rock surface, placing the weathered rocks in the original position and establish revegetation patterns.



Fig. 21 Ridge Rd crosses boulderfield on ridge just past turbine A19.

N.

2.3.6 Mitigation Measures

Mitigation measures to reduce the landscape and visual impacts of the road traversing the ridgeline boulderfields are to include the following:

(i) Alignment

- Avoid boulderfields where possible
- Strip the pasture and soil, and stockpile
- Remove the boulders and place below the road in a depression and in a naturalistic style (ie: in informal groups of 5 and 7 boulders)
- Use the stockpiled soil to place around the boulders and shape this material
- It is intended that the boulders be placed using a webbing sling so as not to mark them, in a depression and in their original orientation.

(ii) While not all the displaced boulderfields will be placed back to the same depth and orientation, if not treated, the pale cream colour of the newly exposed rock will colour to a grey colour in approximately 5 years after being displaced. (iii) Where the slopes may be too steep to replace the boulders ie: in slopes over 1v:2.5h the boulders shall be removed and then placed in a safe and stable manner, using ledges to hold them in place, subject to confirmation by civil design team.

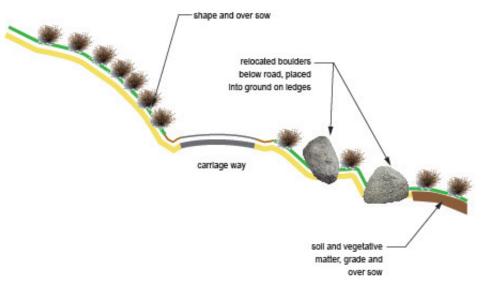
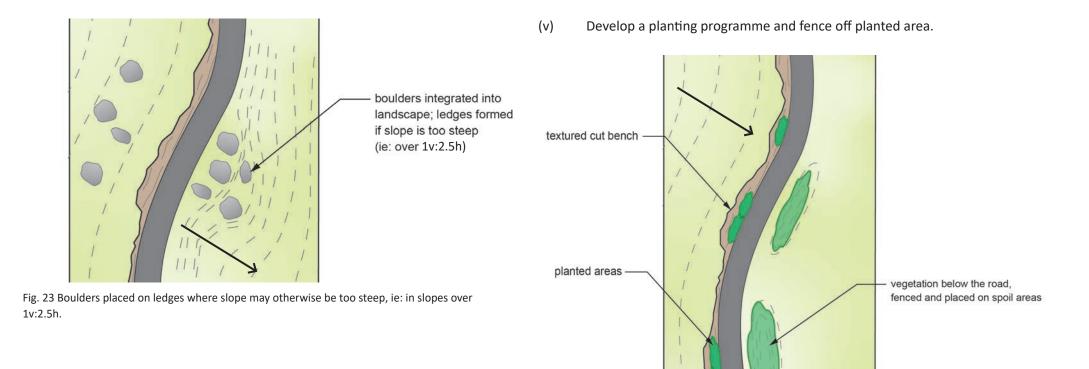


Fig. 22 Boulders placed on ledges where the slope may otherwise be too steep ie: in slopes over 1v:2.5h.

Mitigation Measures (continued)



(iv) Grade the fill material and over-sow with grass seed.

Fig. 24 Planting can reduce the impact of the road alignment.

(vi) Use plants suitable for north facing slopes. (see Appendix 1.0)

2.4 Amuri Limestone on the Escarpment

2.4.1 Context



Fig. 25 Amuri limestone outcrop.



2.4.2 Description

Amuri limestone is a layered material with a textured surface and appears as very large outcrops embedded into the escarpment.

It is a landscape of coarse texture with outcrops and scattered vegetation on the north facing slopes of the escarpment. A large percentage of the NTR is aligned through this type of landscape, for example the ramp to turbine A15. The limestone outcrops appear intermittently amongst the grassland landscape.

2.4.3 Characteristics of the visual landscape

Characteristics of the visual landscape for the Amuri limestone are of a coarse textured landscape with scattered rocky outcrops and some isolated clumps of vegetation.

Any changes to this landscape with road alignments may be visible from SH1, only where there is a lack of vegetation and rocky outcrops. These would be long distance views.

2.4.4 Relevant conditions of consent

96. Uphill edges of cut faces for roads built through Amuri limestone shall be finished in an irregular pattern.

97. Straight line interfaces between cut faces and original surfaces shall be avoided.

98. Cut faces in Amuri limestone shall be finished so as to emulate naturally occurring limestone faces. Techniques for this purpose shall reference naturally occurring patterns in local limestone faces and may include:

a. Cut faces shall be scarified to achieve a surface texture commensurate with naturally occurring surface textures in weathered Amuri limestone. Scarification shall be done with a tyned tool in the direction of the bedding plane or 'grain' in the limestone.

b. Continuous, sheer limestone cut faces shall be avoided through the creation of surface variations that emulate naturally occurring patterns. Shallow vertical and diagonal fissures, narrow rills and shallow pockets shall be cut into limestone faces in an irregular pattern at 3—5 m intervals.

c. In cuts over 2 m in height, shallow benches approximately 200-400mm deep shall be cut into the face at approximately 2 m (but irregular) intervals, parallel to the bedding plane or 'grain' of the rock. These benches will provide locations for the accumulation of sediments and the products of natural erosion, which will in turn form a substrate for the establishment of plants.

Road Edges:

"99. During the construction of Northern Terrace Road and associated ramp roads to the main ridgeline, cut material shall not be sidecast down-slope of the road, but shall be removed from the work areas and disposed of at disposal sites indicated on the Golder Associates Plans CG151.4-153.4.

100. Mitigation techniques on the outside edges of roads referred to in Condition [99] shall include, but not be limited to, the following:

a. Where these roads are cut through Amuri limestone, at irregular intervals along the outer edges of roads, topsoil shall be removed from the edge of the road to expose patches of underlying limestone.

b. Indigenous tussock and grey scrub species shall be established sufficiently close to the outer edge of the road to grow above the level of the roads formation.

2.4.5 Effects of the activities in this landscape

The impact of the road through the Amuri limestone on the escarpment, as occurs on the ramp road to turbine A15 in an exposed landscape, will be the result of its line expression, and the colour changes. This will be where the cuts occur, and will be highlighted by a light cream colour of the rock material.

It is intended that the line impact be lessened due to care taken when aligning the NTR and ramp roads and keeping a uniformity with the existing landforms, and reducing harsh and incongruous alignments.

Colour impact is to be lessened by regrading batter slopes to fit in with the surrounding landforms, mounding and scarifying the rock type and establishing revegetation which replicates existing vegetation patterns.

2.4.6 Mitigation Measures

Mitigation measures required to reduce the landscape and visual impacts of the road and platforms are to include:

(i) Alignments

Avoid the limestone outcrops if and where possible, but in most cases, this is generally impossible due to gradient and horizontal alignment.

- (ii) Strip the pasture cover and vegetative matter and place in stockpiles.
- (ii) Conditions 100a and 100b:

Mitigation techniques on the outside edges of roads referred to in Condition [99] shall include, but not be limited to the following:

a. Where these roads are cut through Amuri limestone, at irregular intervals along the outer edges of roads, topsoil shall be removed from the edge of the road to expose patches of underlying limestone.

b. Indigenous tussock and grey scrub species shall be established sufficiently close to the outer edge of the road to grow above the level of the roads formation.

(iv) Soils and Vegetative Matter

All soil and vegetative matter is to be placed and shaped as a mound below the road.

(iv) Soils and Vegetative Matter

The Amuri limestone surface is to be textured in order to reduce the dominant cream colour characteristic. It is intended that organic matter from the site shall collect in the cracks, crevices and gaps and this will grow vegetative matter, thereby reducing the visibility of the cut material.



Fig. 27 Striated texture of Amuri Limestone. Organic matter collects in the crevices and ledges.



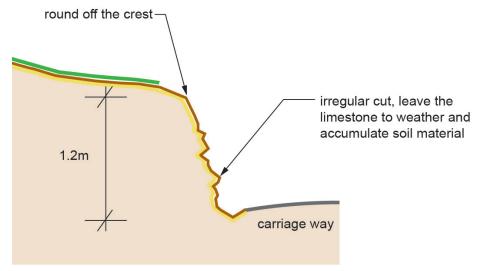


Fig. 28 & 29 A 1.2 m high cut into Amuri Limestone.





round off the crest irregular cut, leave the limestone to weather and to accumulate soil material from the site planting at base of bench 1.8 - 5.0m fence carriage way

Fig. 32 Organic matter in crevices.

Topsoil will be removed, and the limestone face is cut to the batter slope above the road. The cut is to be irregular, as per condition 96, so that ledges and crevices are created to enable organic matter from the site to be placed on, within, or accumulate.

Fig. 30 & 31 A 1.8 - 5.0 m high cut batter constructed in an irregular fashion so that organic matter will accumulate. The organic matter shall be material which is sourced on site, with a seed mix added. The crest needs to be rounded off it is intended that planting shall take place at the base of the batter.

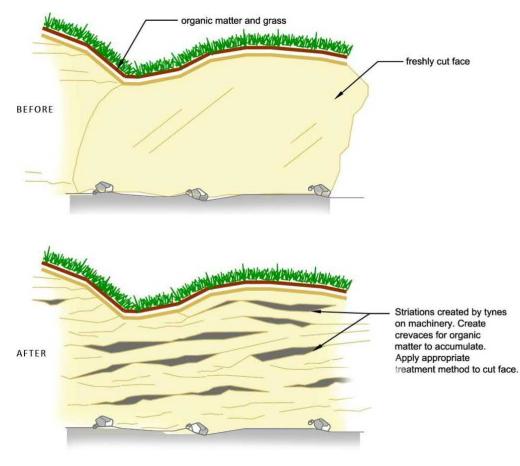


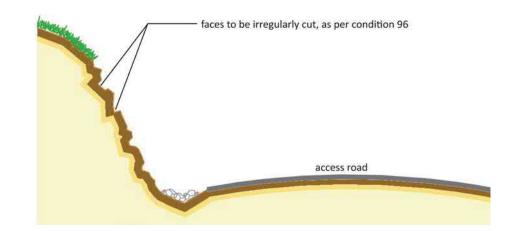
Fig. 34 A textured Amuri limestone outcrop.

Fig. 33 Scarification of cut faces in direction of bedding plane/grain.

The aim is that the scarifying of these cut faces or exposed faces shall be in the direction of the bedding plane or grain. Shallow vertical and diagonal fissures, pockets and rills shall be cut into limestone faces in an irregular pattern as per condition 96 and depending on the direction of the limestone grain, at approximately 3m intervals.

Texturing the surface assists, along with the weathering process, to reduce the visual impact of flat and reflective cut faces. The objective is that the textured surface is deep enough, e.g. 25-50mm, for organic matter (ie: material collected on site) to accumulate. This is a passive mitigation technique, creating a rough surface that allows soil to accumulate. The more fragmented cut surfaces weather faster and allow vegetation to establish and so reduce visual effects.

To further speed the process, some discrete cuts and pockets are to be hydroseeded on the south side. Refer to Figure 34. This is an active mitigation technique. However, for the northern facing slopes this is unlikely to be effective, due to the dry site conditions.





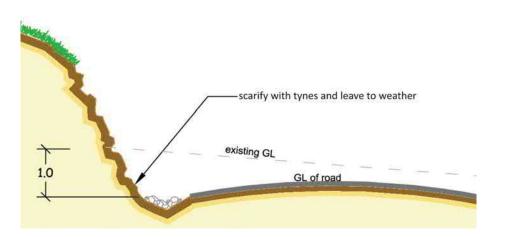


Fig. 35 Cut Faces of Amuri Formation (e.g. northern terrace road).

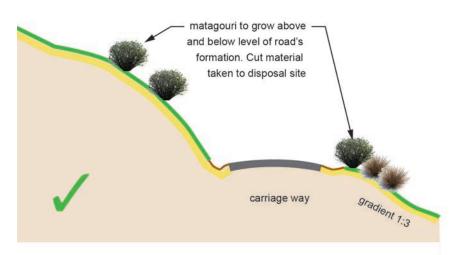
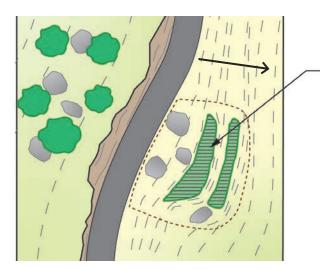


Fig. 36 Vegetation established on road edge.

(vii) Revegetation

For the cut faces of the Amuri limestone apart from texturing the surface, undertake mounding on the lower side, and relocate the excess cut materials. Slopes are to be flatter than 1v:2.5h. Another method to reduce the limestone visibility is to undertake the following forms:

- Hydroseeding the cut faces on the south side with grass seed or native plant seeds
- Over-sowing of any damaged grassland areas
- Stockpile the vegetation and soil matter and form up naturally appearing formations to integrate with the landform
- Planting of tussocks and or broadleaf plants (see list in appendix)



 vegetated areas require fencing off from grazing stock and pests

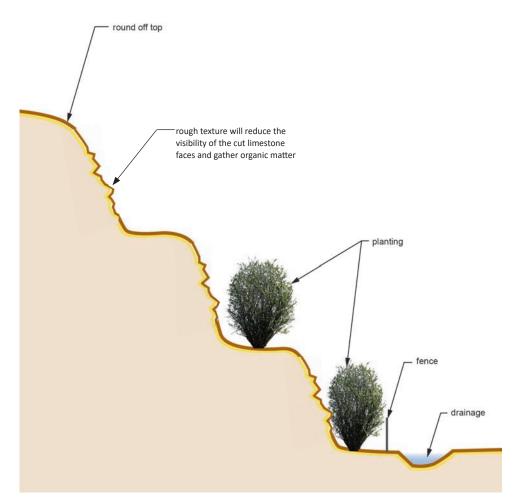


Fig. 38 Vegetated areas fenced off from grazing stock and pests.





Fig. 39 Avoid benching in even steps.

(viii) Removing topsoil to expose limestone

For the cut faces of the Amuri limestone where the slopes are greater than 1v:2.5h, with the terrain too steep to revegetate, the method outlined in 100a Conditions of Consent is to be used. By creating cuts at irregular intervals, the road will not be read as a line in the landscape, so reducing the landscape and visual impacts of the road.

Mitigation techniques on the outside edges of roads referred to in Condition [99] shall include, but not be limited to the following:

a. Where these roads are cut through Amuri limestone, at irregular intervals along the outer edges of roads, topsoil shall be removed from the edge of the road to expose patches of underlying limestone.

b. Indigenous tussock and grey scrub species shall be established sufficiently close to the outer edge of the road to grow above the level of the roads formation.



Fig. 42 Road ramp to turbine 15 through boulders and vegetation. (see 2.5.4)

(viii) Limestone Treatment

Another possibility to mitigate the visual effects of the limestone cuts, is a method already used on limestone rock work at Broken River, Canterbury. This is using the application of a 5% solution of black oxide, washed over the limestone areas.

it is important that the percentage of oxide is to be no higher than 5%, as if there is a much higher concentration of black oxide in the solution, then the resultant colour will appear unnatural.

2.5 Amuri Limestone on Dip Slope

2.5.1 Context





2.5.2 Description

The dip slope is on the south side of the escarpment. This slopes south and has less sun with moister slopes. Amuri limestone is overlaid with a competent Weka Rock formation in places . Turbine A18 is located on a dip slope, with Amuri Limestone at the surface, as are Turbines A12 and A13, along with the Southern Access Road (SAR).

The south facing slopes exhibit a better quality tussock and broadleaf forest, although pasture does exist as well. The turbines and road are mainly located in grassland (pasture and tussock land). See 2.0.

2.5.3 Characteristics of the visual landscape

The characteristics of the visual landscape for this location is one of a fine textured and open landscape which is not visible from any public viewpoint on land, but visible from the sea at a considerable distance.

While not visible on the surface, there is an underlying rock formation which will be exposed, particularly at A18 where there will be 8 m vertical cuts into the Amuri Limestone.

2.5.5 Effects of the activities in this landscape

Between turbines A15 to A22, the road is located on the dip slope of an Amuri limestone landscape, with the turbines located consecutively along this route.

It is an exposed landscape of pasture and tussock grassland and the resulting expression of the road will be its line and colour. The colour will result from where the cuts will occur for the road and turbine platforms, especially where the cuts occur in the limestone.

The objective is to lessen the line expression by reducing the height of the cuts and with the alignment in keeping with the uniformity of the existing landform.

Scarifying the limestone cuts, reducing any harsh edges and developing a revegetation programme is to be used also to assist in reducing the visual impact of the road and platforms.

2.5.6 Mitigation Measures

Mitigation measures required to reduce the landscape and visual impacts of the roads and platforms are to include the following approaches, subject to confirmation by a civil design team:

- (i) Alignments
 - Avoid large cuts and fills
 - Avoid forested areas
- (ii) Stripping of landcover including all vegetative matter and soil. This is to be stockpiled in readiness for shaping and mounding.
- (ii) Cutting of benches adjacent to the road and platforms. All limestone material is to be crushed and used for fill in designated fill and disposal areas, where it will be placed on the adjacent landform, shaped and covered with topsoil. Cut benches are to be formed at, for example turbine A18, where the vertical height is approximately 8.0m. (see Figure 47)

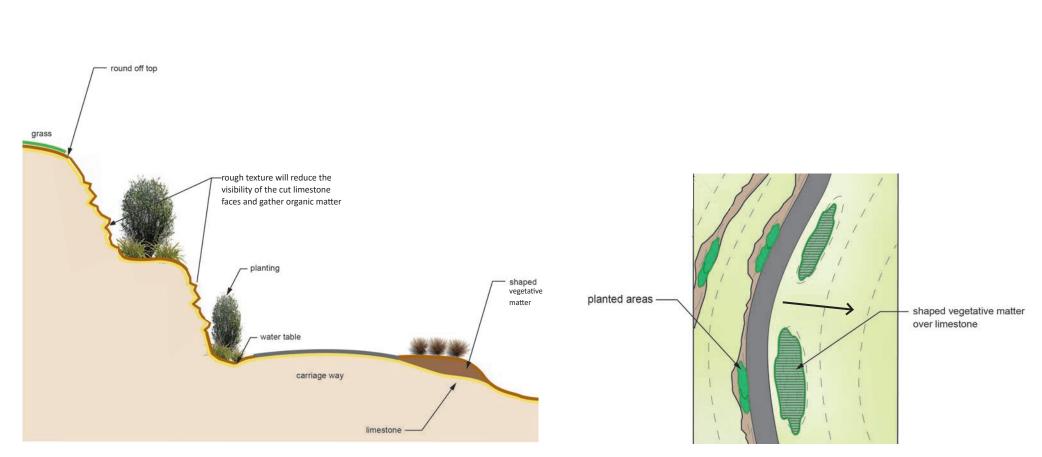


Fig. 43 Shaped vegetative matter and cut benches.

Fig. 44 Shaped vegetative matter and cut benches.

The cut surface will be striated and planted in places. The objective is to undertake pocket planting with shrubs that grow in this location like Coprosma and NZ Broadleaf.

Mitigation Measures (continued)







Fig. 46 An example of high-impact cuts and poor mitigation.

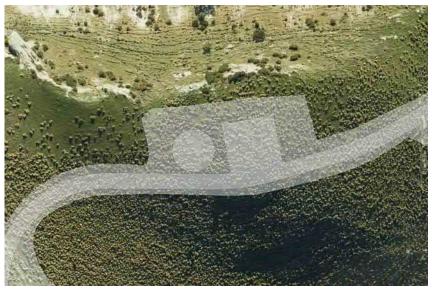


Fig. 47 Tussock grassland with 8m cuts into Amuri dip slope at turbine A18.

2.6.1 Context





2.6 Weka Pass Limestone

2.6.2 Description

The Weka Pass limestone is identified as limestone pavement in the "golf course" area between turbines A8 and A10, at A2, and on the dip slope at turbine A16. The pavement areas are found on the flat ridgeline amongst broadleaf vegetation and grassland, and are manifested either on the surface or partially buried as slabs of rock. Water erosion has taken place to create interesting patterns on the rock surface.

On the dip slope there is pavement above and below ground level. Where it is below ground level often it is covered by tussock and pasture.

A ridge link road between turbines 8 and 10 passes through the pavement area, while the Ridge Road connects turbines A16-A22 in the dip slope area.

Fig. 48 & 49 Exposed Weka Pass limestone.



Fig. 50 "Golf course". Pavement between A9 and A10 to be buried.

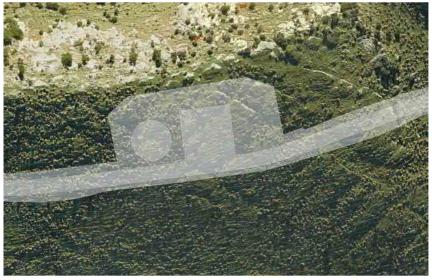


Fig. 52 Turbine A16 Weka Pass dip slope, likely to result in cuts up to 9m in height.



Fig. 51 Road crosses pavement at turbine A2.

2.6.3 Characteristics of the landscape

The characteristics of the landscape, which contribute to the ONFL values for the pasture and tussock area, is one of a fine textured and open landscape, dominated by an ochre colour in summer and a green colour in winter. Any changes to this landscape would not be visible from any public viewpoint.

The characteristics relating to the crest or ridge area of pavement is one of an enclosed landscape of dense broadleaf vegetation and pasture.

Any changes to this landscape would not be visible from any public viewpoint.

2.6.4 Relevant conditions of consent

Treatment of Identified Limestone Pavement Areas

45. Limestone pavement within the areas marked on Golder Associates plan CG161.3 and CG163.3 shall be covered to a sufficient depth with crushed limestone or other appropriate material as necessary so as to avoid cuts to limestone pavement.

46. Limestone pavement in the areas identified in condition [45] shall be partially rehabilitated to a width for the running surface of the road of 3.5 metres in accordance with the Chris Glasson Plan, dated 15 November 2010, and the plan titled 'Indicative Cross Section of the Completed Road Formation and Mitigation Measures', dated 24 July 2011, attached as Appendix 3. The Consent Holder may at any time for maintenance or decommissioning reasons reinstate full access in these areas for so long as that access is required. Once full access is no longer required the Consent Holder is to partially rehabilitate the area to the standard required by the Chris Glasson Plan dated 15 November 2010.

2.6.5 Effects of Activities in this Landscape

The impact of the road and turbine platforms within the enclosed "golf course" area will result in a change to the pattern and colour of the location. This is due to the road alignment and materials, loss of pavement and vegetation. The road will generally traverse a pasture landscape.

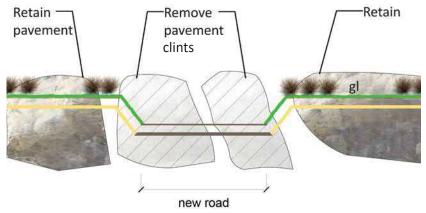
In the dip slope location, the roading and platforms will result in a line expression and colour change.

2.6.6 Mitigation Measures

Mitigation measures to reduce the landscape and visual impacts of the road and turbine platforms include:

(i) Alignment

- Within the 'golf course' area, align the road through the pasture 'fairways' as much as possible.
- Where the road crosses over pavement, this shall be covered with crushed limestone (CoC 45) to avoid cuts to the limestone pavement.
- In other locations, the road design is to follow the grain of the pavement and the earthworks perimeter is to follow the natural joint patterns wherever possible (see Appendix 2: Rehabilitation of Limestone Pavement). That is to say, where possible, a section of a limestone pavement separated from adjacent sections by a fracture, or a "clint", is to be removed as a whole block of pavement, rather than be cut through. The removed pavement is then to be crushed and used for fill.





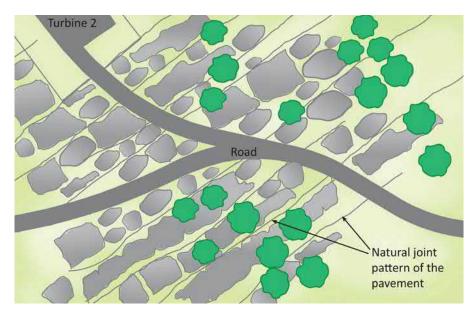
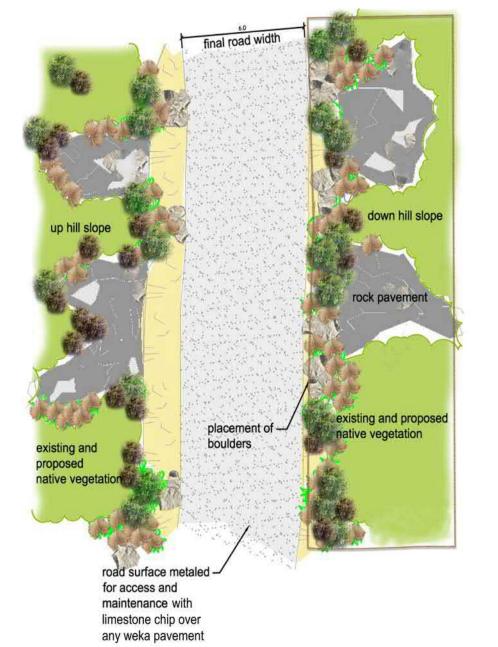


Fig. 54 Turbine 2. Limestone pavement solutions, plan view.



- (ii) Strip the grassland and cut the vegetation and stockpile until the road alignment is constructed.
- (iii) Shape the organic matter into low mounds that relate to the existing landform.

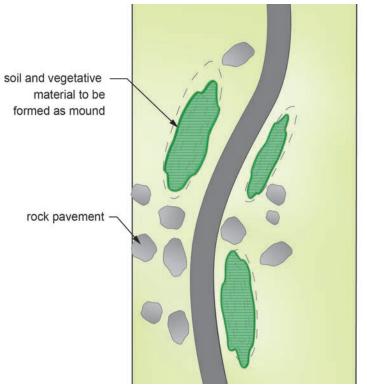
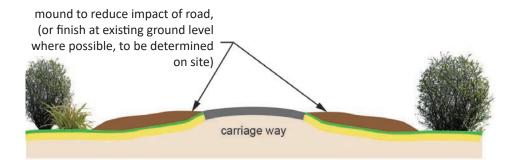


Fig. 56 Limestone pavement with shaped mounds.



(iv) Slope Finish

• Within the Weka limestone dip slope there will be up to 9 m cuts. These are to be treated as a series of benches, with a rough surface texture, as shown in Figure 60. 1) The bench spacing is to be determined by the bedding planes in the rock, with the width and spacing to be determined in the design phase. Noting that as per CoC 33. a. iv, in the turbine cuts the skyline is not allowed to be broken, which may limit the width available for benching.

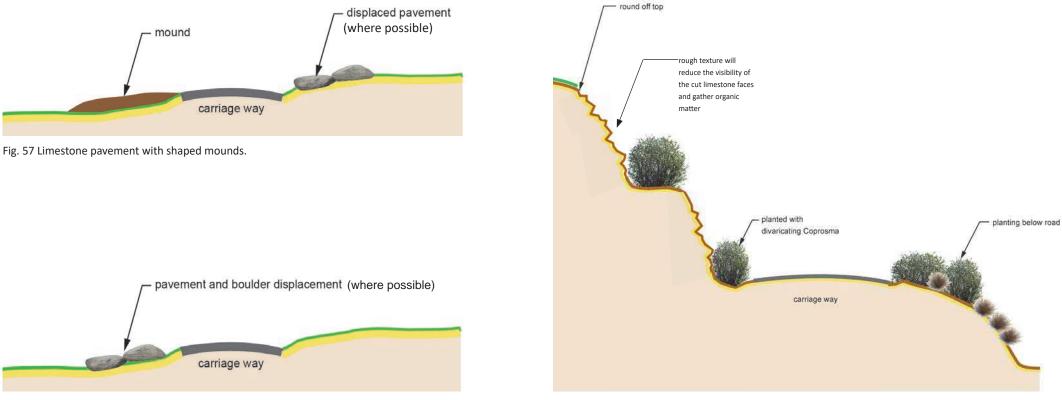


Fig. 58 Pavement boulder displacement where this is possible, otherwise the displaced pavement is to be crushed and used for fill.

Fig. 59 Planting on terraces and below road.

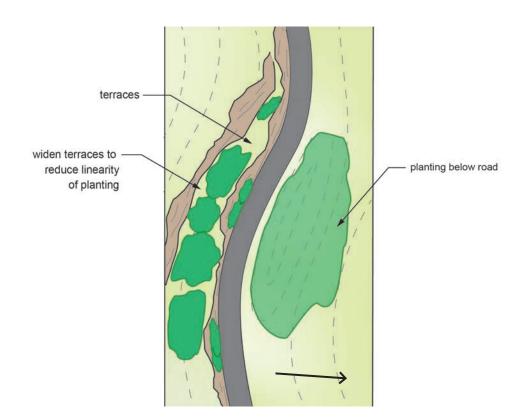


Fig. 60 Widen terraces to reduce linearity of planting.

(v) Limestone Treatment

Another possiblilty to mitigate the visual effects of the limestone cuts, is a method already used on limestone rock work at Broken River, Canterbury. This is using the application of a 5% solution of black oxide, washed over the limestone areas.

it is important that the percentage of oxide is to be no higher than 5%, as if there is a much higher concentration of black oxide in the solution, then the resultant colour will appear unnatural.

2.7 Ancillary Activities

2.7.1 Description

Ancillary activities include other elements of the windfarm such as disposal areas, batching plant sites, loading areas and turbine platforms. These are located along the access road and in grassland areas.

2.7.2 Characteristics of the landscape

Characteristics of the landscape and visual impacts include the long term incongruity of disposal areas, batching plants and loading areas in the landscape. The areas will be returned to a natural appearance.

2.7.3 Relevant conditions of consent

57. Each spoil site shall be stabilised and planted over including being grassed (non-invasive species) or re-vegetated with silver tussock to no less than 20% cover, as soon as practicable after it has been fully utilised, in order to prevent scour and avoid sediment being washed into adjacent watercourses. Stabilisation may be staged, and stabilised areas diverted to a clean water diversion, to maintain a suitably small working catchment area. 60. Prior to undertaking any construction activities, the Consent Holder shall engage a suitable qualified and experienced ecologist to undertake a survey of the vegetation in the areas which are to be disturbed for construction purposes as detailed in condition [61]. The results of this survey shall be provided to the Hurunui District Council.

61. Site areas disturbed for pre-construction geotechnical investigations and construction purposes, but not necessary for the ongoing wind farm operation, being the concrete batching area, laydown areas, spoil disposal areas, road batters, and parts of turbine platforms, shall be rehabilitated progressively, and in any event within 12 months of the completion of construction in accordance with the Construction Management Plan. The objective shall be to rehabilitate those areas to a similar condition to the condition identified in the preconstruction survey required by condition [60], or as otherwise agreed with the Hurunui District Council.

The sites for disposal areas have been chosen where there is a large and flat area available and good access. However, the details of the shape of the disposal area and how it fits into the landscape is important as well as the type of cover.

2.7.3 Relevant conditions of consent (continued)

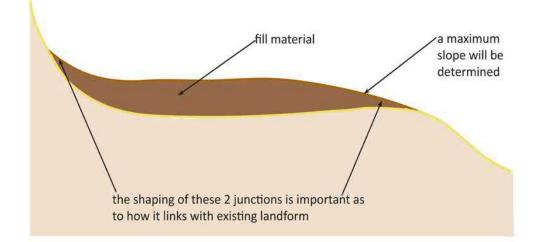


Figure 61 Where it is a pasture or tussock area, then the disposal mound is to be planted with the same ground cover. See 2.0.

2.7.4 Effects of the activities in this landscape

The impact of these activities in generally exposed grassland landscapes will result in pattern and colour changes. These changes are to be lessened by removal of objects and regrading cuts, fills and slopes, oversowing and revegetation.

2.7.5 Mitigation Measures

Once the construction has been completed, the various batching, stockpiles and loading areas require rehabilitation. The aim is that this shall take various forms:

- Removal of all hard material and cut vegetation.
- Contouring the ground.
- Spreading of topsoil.
- Oversowing with a seed mix of short rye and fescue.
- Fencing off planted areas.
- Where scars have been left, planting of native vegetation is required.

2.7.5 Mitigation Measures (continued)

Following the completion of the turbine construction, the gravel pad, except for an access way to the turbine, shall be removed, the ground scarified and soil placed onto this area. A few areas adjacent to existing bush areas will have part of the platform rehabilitated for native shrubs to be planted.

Appendices





Appendix 1: Revegetation

Appendix 2: Rehabilitation of Limestone Pavement

Appendix 1: Revegetation

1.1 Relevant conditions of consent include

Rehabilitation of disturbed areas

60. Prior to undertaking any construction activities, the Consent Holder shall engage a suitable qualified and experienced ecologist to undertake a survey of the vegetation in the areas which are to be disturbed for construction purposes as detailed in condition [61]. The results of this survey shall be provided to the Hurunui District Council.

61. Site areas disturbed for pre-construction geotechnical investigations and construction purposes, but not necessary for the ongoing wind farm operation, being the concrete batching area, laydown areas, spoil disposal areas, road batters, and parts of turbine platforms, shall be rehabilitated progressively, and in any event within 12 months of the completion of construction in accordance with the Construction Management Plan. The objective shall be to rehabilitate those areas to a similar condition to the condition identified in the pre-construction survey required by condition [60], or as otherwise agreed with the Hurunui District Council.

Planting for mitigation and remediation of cut and fill batters

108. Other than on cut limestone faces, cut and fill surfaces shall be rehabilitated in accordance with condition [61].

109. Locations for the establishment of woody plants and silver tussock within the wind farm site for visual mitigation shall be determined through consultation between landscape and ecology experts nominated by Hurunui District Council and the Consent Holder. The location of mitigation planting shall take into account the effects arising as a consequence of visibility from important public viewpoints agreed upon by the landscape experts.

1.2 Revegetation

110. The pattern of plantings undertaken for visual mitigation and remediation shall reflect natural patterns of plant distribution and association, as illustrated in the site landscape pattern book (see condition [102]).

111. The use of plants for mitigation and remediation of visual and landscape effects associated with cut and fill excavations shall be subject to conditions specified for habitat enhancement, ecological restoration and weed management."

Rehabilitation measures necessary to reduce landscape and visual impacts associated with roads, turbine platforms, building sites and disposal pits, to reinforce existing stands of vegetation, and to enhance the general amenity, shall take the form of:

- Broadleaf planting
- Tussock planting.
- Over-sowing with grass seed .
- Hydroseeding with grass seed (south side only).

Hydroseeding with native seeds and cuttings, and direct transfer of tussocks was not considered appropriate on the northern slopes given the drought like conditions on Mt Cass, but is to be considered on the moister southern slopes.

Planting will be undertaken according to the current patterns that exist, and all planting to be securely fenced from grazing stock and protected from rabbits and hares. Deer and goats are to be removed from the area. The fencing includes a farm fence with chicken wire for hare and rabbit control or plants individually protected.

Plants will be propagated by Mt Cass Wind Farm Ltd at least 18 months ahead of planting season.

1.3 Location of Mitigation Re-vegetation

1.3.1 Relevant conditions of consent include

109. The location of mitigation planting shall take into account the effects arising as a consequence of visibility from important public viewpoints agreed upon by the landscape experts.

There are certain areas in the landscape where the roads and turbines will be more visible from locations off site. This is due both to the type of landscape in these areas, as well as the extent and nature of works required for the installation of the turbines. These areas are key areas for focussing mitigation planting treatment.

These key areas are graded in terms of visual impact into high, medium and low impact and shown on the Visibility Map in Section 1.5. In areas where the impact is most high, there is to be more targeted mitigation planting in order to lessen the visual impact for those off site.

1.4 Types of Vegetation



Fig. 62 Escarpment boulderfield vegetation.







Fig. 65 Limestone Pavement Vegetation.

1.5 Broadleaf Planting

The vegetation of the Mt Cass ridgeline comprises a complex mosaic of mixed angiosperm forest remnants, regenerating divaricating shrubland communities and grasslands.

1.5.1 Vegetation Communities

- 1. Pasture and tussock grassland (Poa cita)
- 2. Grey shrubland (mingi mingi)
- 3. Forest scrub (mingi mingi, five finger, kohuhu)
- 4. Kowhai forest (kowhai, broadleaf)
- 5. Mahoe raukawa- fuchsia forest
- 6. Broadleaf forest (broadleaf, five finger)
- 7. Mahoe Broadleaf forest (broadleaf, lemonwood)
- 8. Mahoe kaikomako- ribbonwood forest
- 9. Totara forest (totara, fivefinger, mahoe)
- 10. Totara kowhai forest (totara, matai,kowhai, mahoe)
- 11. Matagouri shrubland

Suitable plant species are to be propagated from the site and Tiromoana Bush area and include:

| Species | Southern Slope | Ridge and Crest | |
|-------------------------|----------------|-----------------|--|
| Griselinia littoralis | \checkmark | \checkmark | |
| Coprosma crassifolia | | \checkmark | |
| Coprosma propinqua | | \checkmark | |
| Coprosma virescens | \checkmark | \checkmark | |
| Coprosma robusta | \checkmark | | |
| Pittosporum tenuifolium | \checkmark | | |
| Hebe salicifolia | \checkmark | | |
| Sophora microphylla | \checkmark | | |
| Pittosporum eugenioides | \checkmark | | |
| Plagianthus regius | \checkmark | | |
| Myoporum laetum | \checkmark | | |
| Olearia avicenniaefolia | | \checkmark | |
| Poa cita | | \checkmark | |
| Podocarpus totara | | \checkmark | |

The planting shall take place on cuts and fills of the road alignment, crevices and ledges where the planting pockets are large enough, ramp roads, open ground where broadleaf species are found adjacent to the site, adjacent to limestone pavement (turbines 8-10).

1.6 Tussock Grassland

1.6.1 Relevant Conditions of Consent Include

92. Where silver tussock is disturbed for pre-construction geotechnical investigations or construction purposes, but not necessary for the ongoing wind farm operation it shall be rehabilitated in accordance with condition [61] Rehabilitation of the area shall be to the standard identified in the preconstruction survey.

93. Where areas of silver tussock of a median greater than 10% density as identified on Golders Associates Plan CG241 dated 17 November 2010 are permanently removed as a result of wind farm development, an equivalent quantity of silver tussock shall be established and maintained on the wind farm site using direct vegetation transfer, planting, or other appropriate method."

Silver Tussock planting will be undertaken where roading alignments and turbine platforms will create impacts and disturb the existing tussock cover. This occurs more at turbine 3 and the associated road, NTR adjacent to turbines A12, 17, 18 and 19.

Silver Tussock planting is to be undertaken where roading alignments and turbine platforms will create impacts and disturb the existing tussock cover. This occurs more at turbine 3 and the associated road, NTR adjacent to turbines A12, 17, 18 and 19.

1.6.2 Effects of Activities in this Landscape

Hydroseeding is to occur on the moister southern sites. Hydroseeding with NZ Browntop, fescue and ryegrass seed is to be applied to cuts as a wet mix comprising soil, cow manure at a ratio of 2:1 with seeds and a wetting and bonding agent. The aim is that this occurs occur on the ramp road cuts.

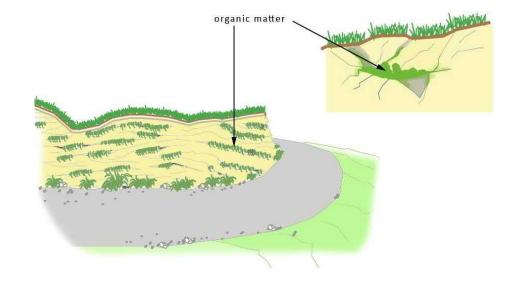


Fig. 66 Hydroseeding of cuts on the moister southern sites.

67

1.7 Over-sowing

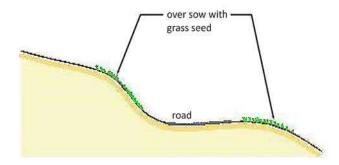
Over-sowing of the batter slopes will take place in the existing pasture areas on the SAR and NTR (turbine A1, below A5, A6, A7, A8, A9, A10, A11, A12 and A13, A20, A21, A22).

Over-sowing shall also occur elsewhere on the ramp roads, especially on gentle batter slopes of less than 1v:3h surrounded by existing pasture. The sites will be graded, top soiled and over-sown with a grass seed mix of short rye, Fescue and NZ Browntop.

1.8 Livestock and Pest Management

All areas of new planting require livestock and pest removal. This includes cattle and sheep grazing, deer, goats, pigs, possums, stoats, rabbits and hares.

Appropriate fencing and combi guards shall exclude such animals and pests, and this is to include a farm fence with chicken mesh covering the wires as well as burying the mesh footing to prevent burrowing pests.



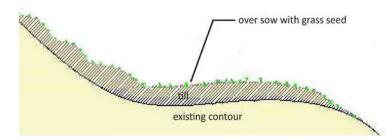


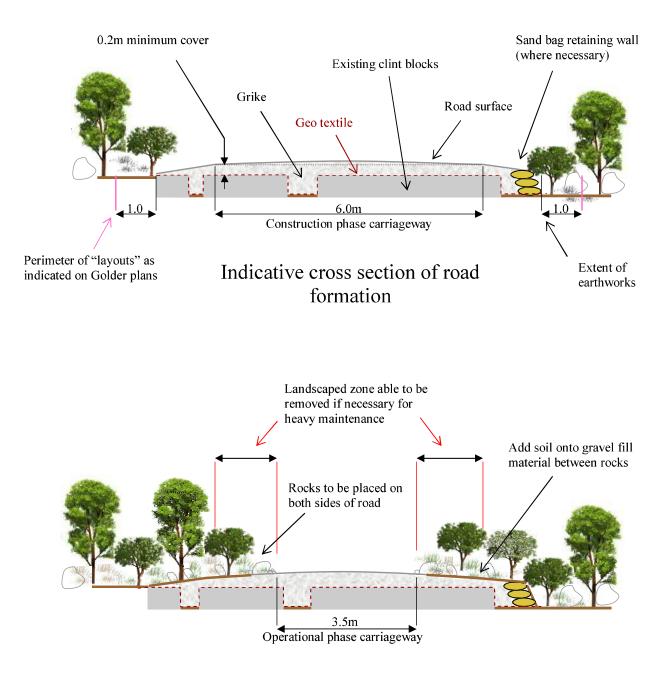
Fig. 67 Oversowing of grass seed

Appendix 2: Rehabilitation of Limestone Pavement

2.1 Rehabilitation of Limestone Pavement

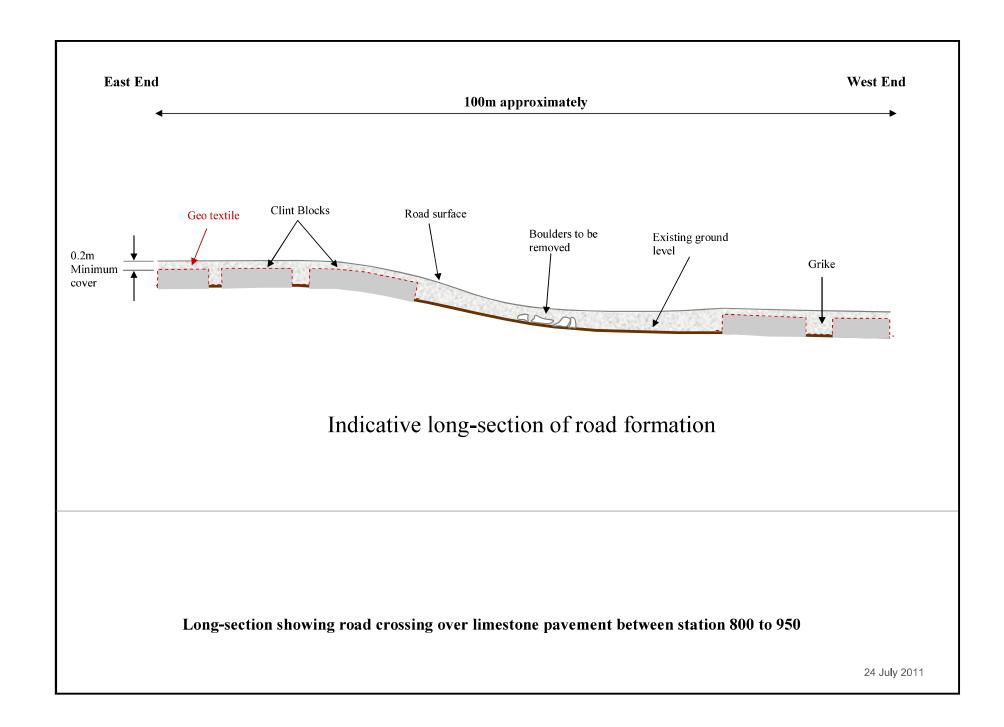
The following sheets are from the consent hearing, Appendix 3 to Conditions, showing the treatment of limestone pavement and rehabilitation.





Indicative cross section of completed road formation and mitigation measures

Road crossing over limestone pavement between location 800 to 950





P.O. Box 13162, Christchurch 8141

Phone:(03) 365 4599

Email: info@ghla.co.nz

www.ghla.co.nz



CONSULTANT

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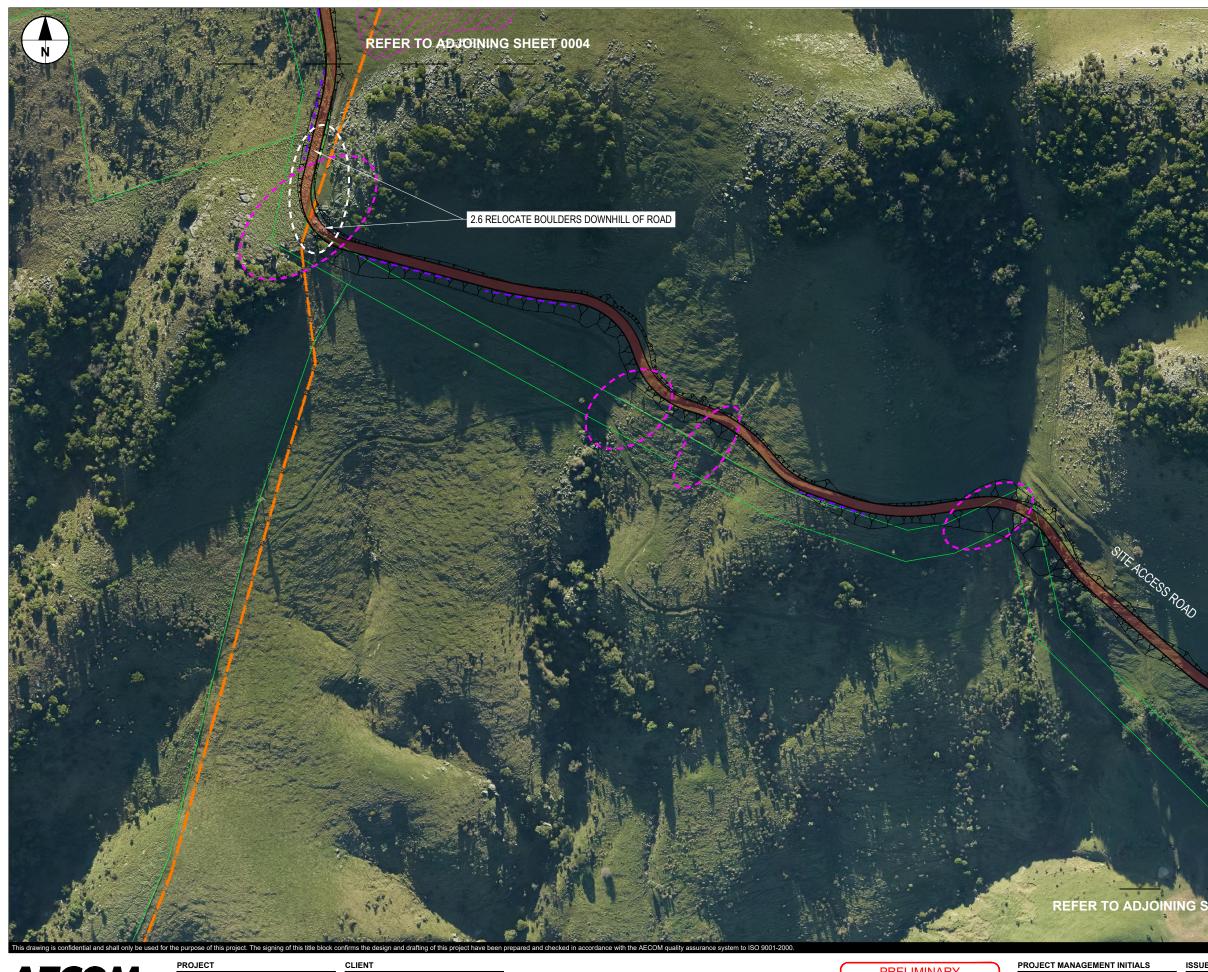
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SHEET TITLE

EARTHWORKS LANDSCAPE REHABILITATION SHEET 1 OF 12

SHEET NUMBER



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MT CASS WIND FARM EARLY WORKS DESIGN



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EARTHWORKS LANDSCAPE REHABILITATION SHEET 2 OF 12

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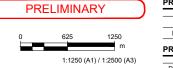
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PROJECT MT CASS WIND FARM EARLY WORK DESIGN



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PROJECT MANAGEMENT INITIALS

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| This drawing is confidential and shall only be used for the purpose | REFER TO ADJOINING SHEET.0002 of this project. The signing of this title block confirms the design and drafting of this project have been prepared and checked in accordance with the AECOM quality assurance system to ISO 9001-2000. | 1. A. 193 |

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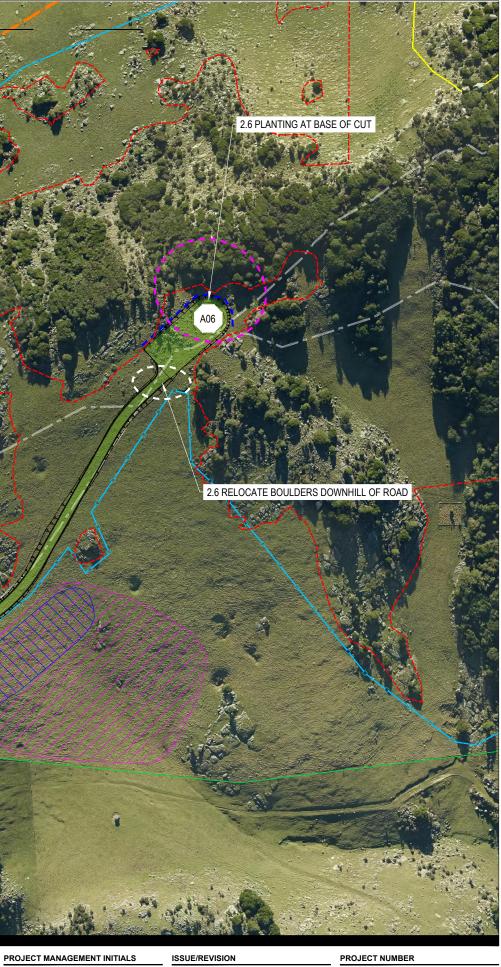
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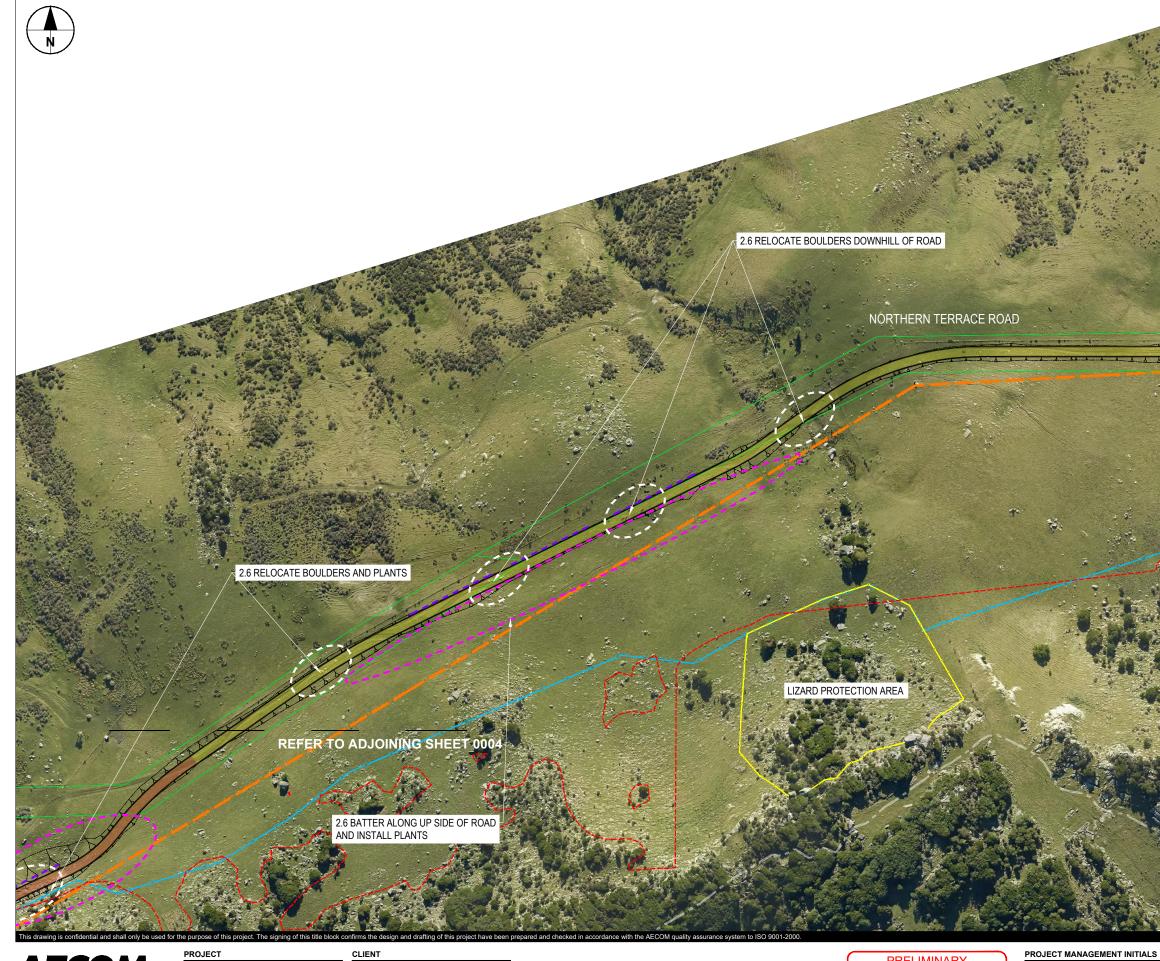
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PROJECT NUMBER 60642250

SHEET TITLE

EARTHWORKS LANDSCAPE REHABILITATION SHEET 4 OF 12

SHEET NUMBER



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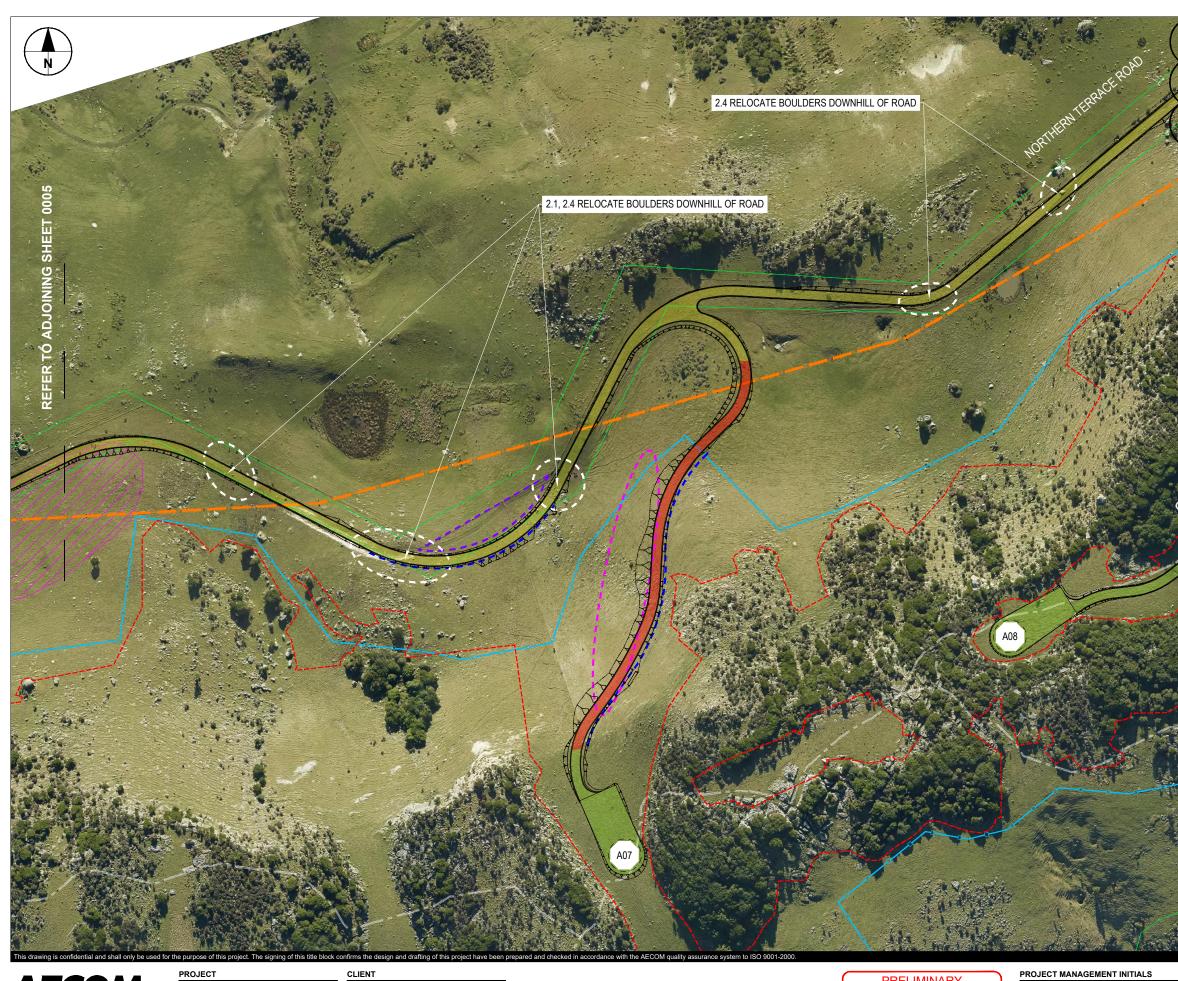
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PROJECT NUMBER 60642250 SHEET TITLE

EARTHWORKS LANDSCAPE REHABILITATION SHEET 5 OF 12

SHEET NUMBER



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MT CASS WIND FARM EARLY WORKS DESIGN

PROJECT



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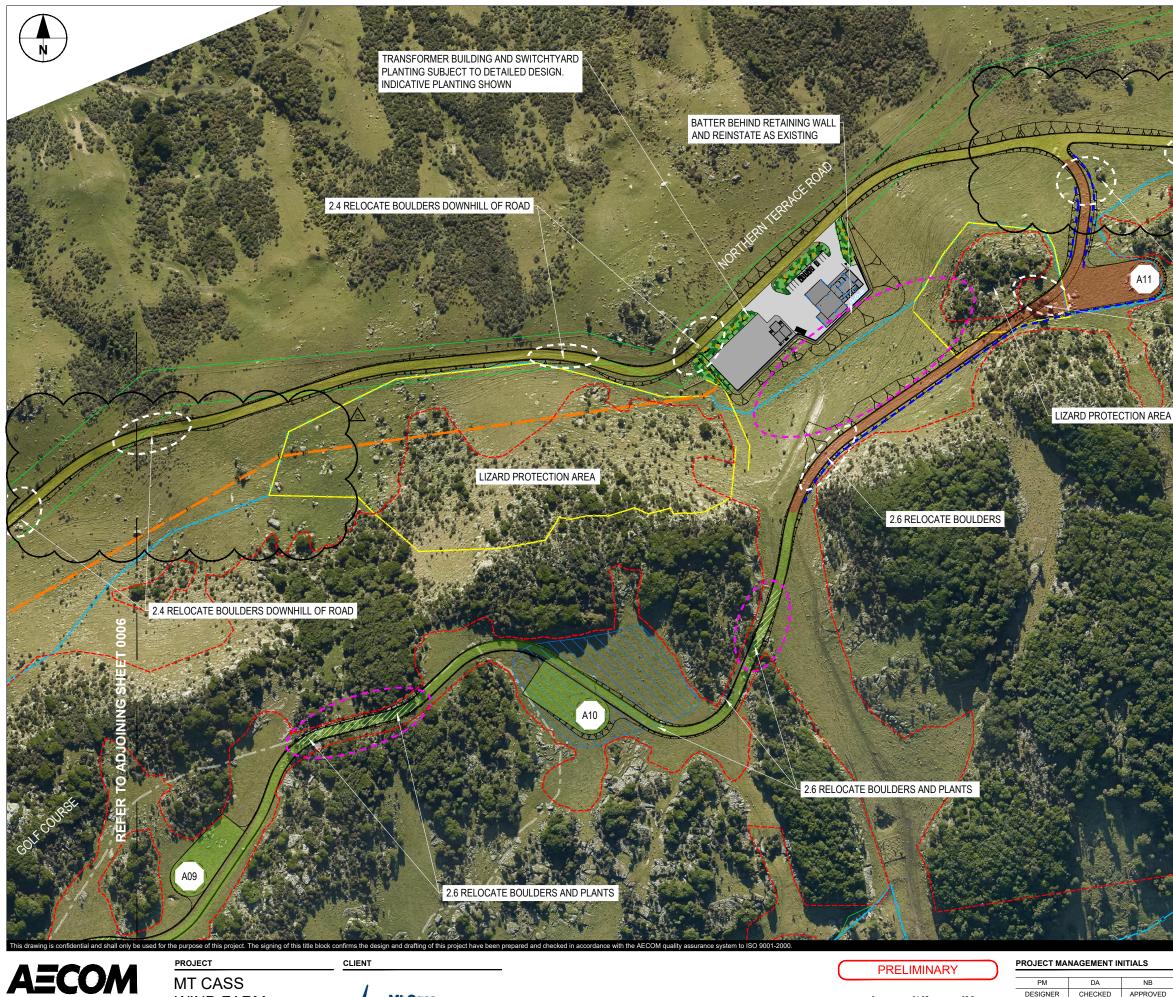
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SHEET NUMBER



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2.6 RELOCATE BOULDERS

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| CUT & FILL EARTHWORKS REINSTATION - TOPSOIL AND VEGETATE | <u>PPP</u> |
| MOUNDING | |
| LIMESTONE CUT SLOPES | |
| BOULDERS | 4124 |
| TREES AND VEGETATION | 1226 |
| LIMESTONE PAVEMENT PROTECTION | |
| GENERAL: | |
| PROPERTY BOUNDARY | |
| MT CASS CMA BOUNDARY | |
| WALKING TRACK | |
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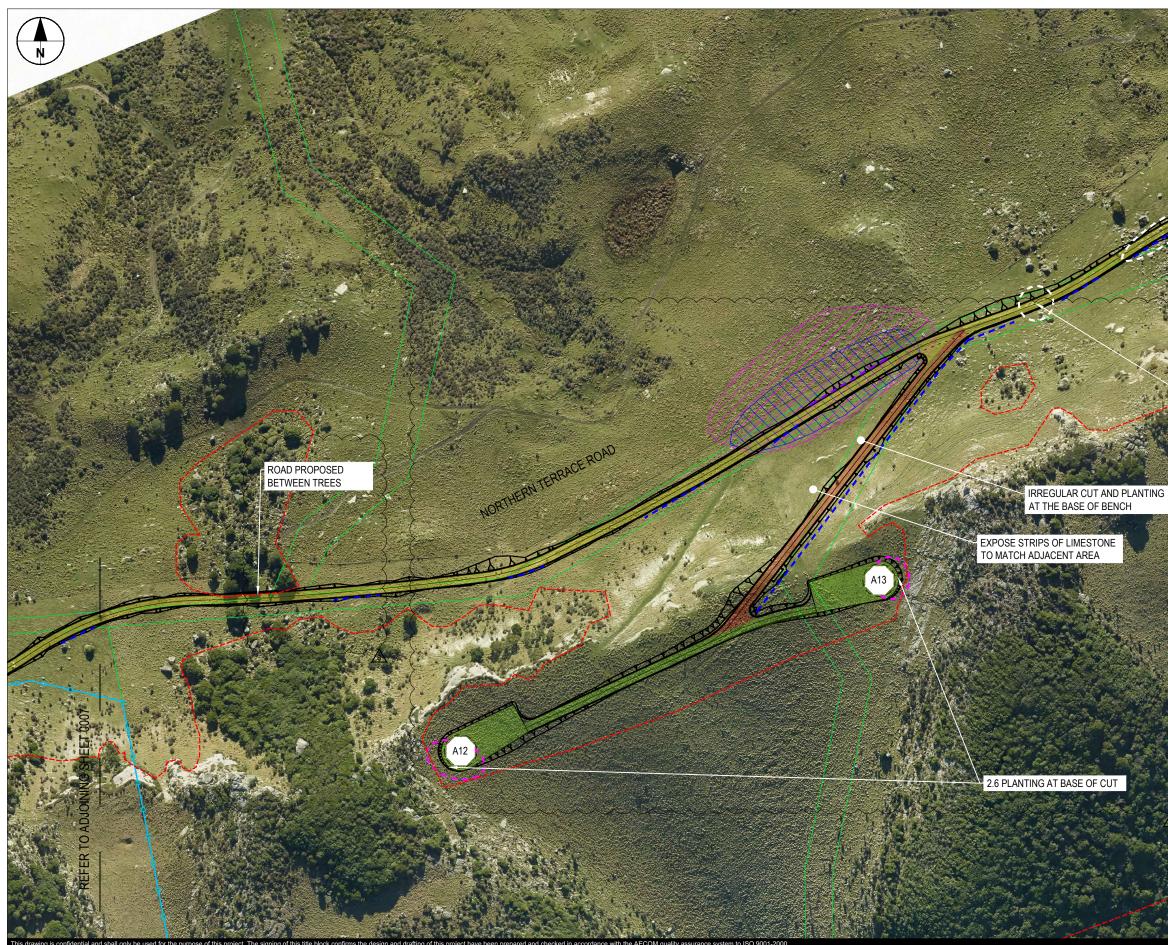
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EARTHWORKS LANDSCAPE REHABILITATION SHEET 7 OF 12

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PROJECT MANAGEMENT INITIALS

2.6 RELOCATE BOULDERS AND PLANTS

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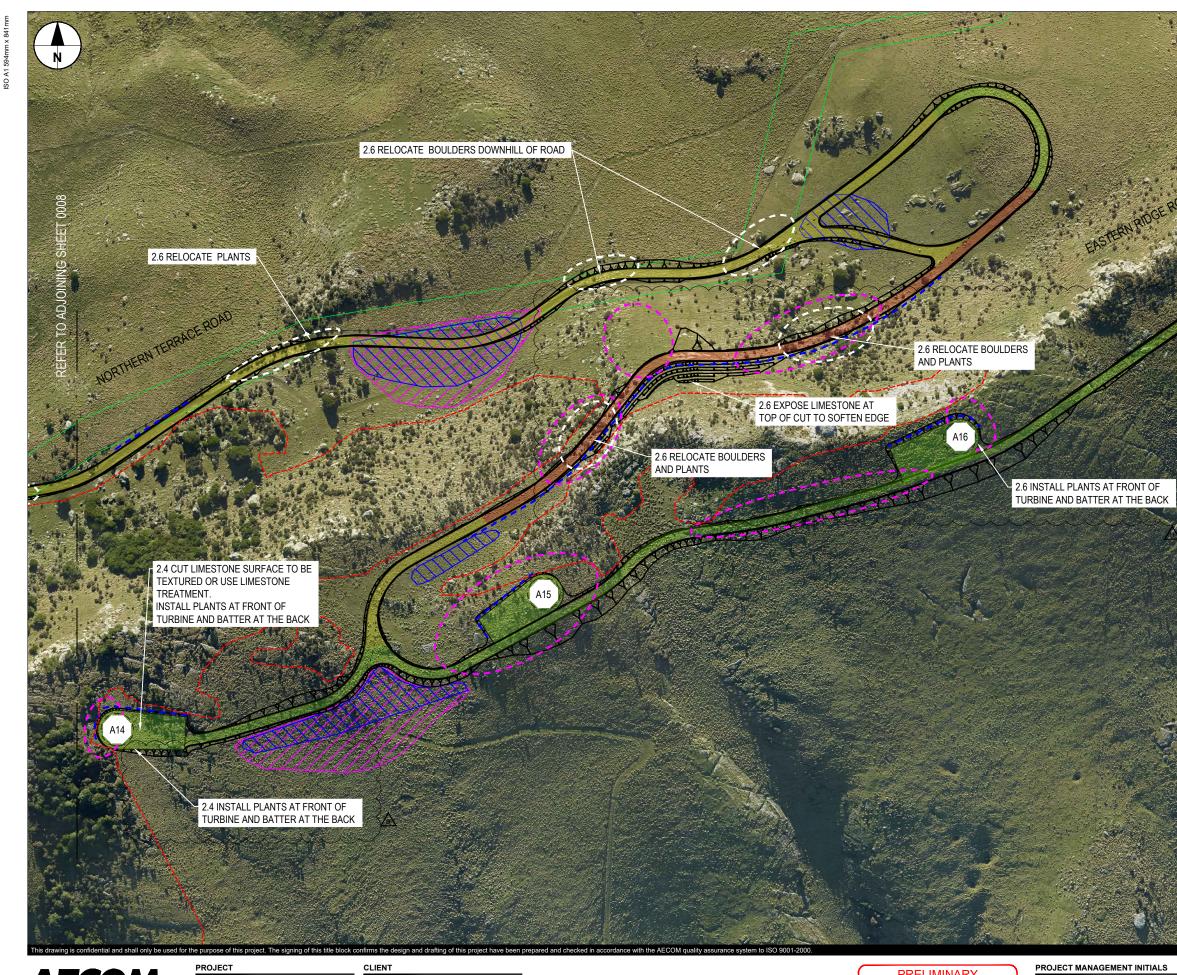
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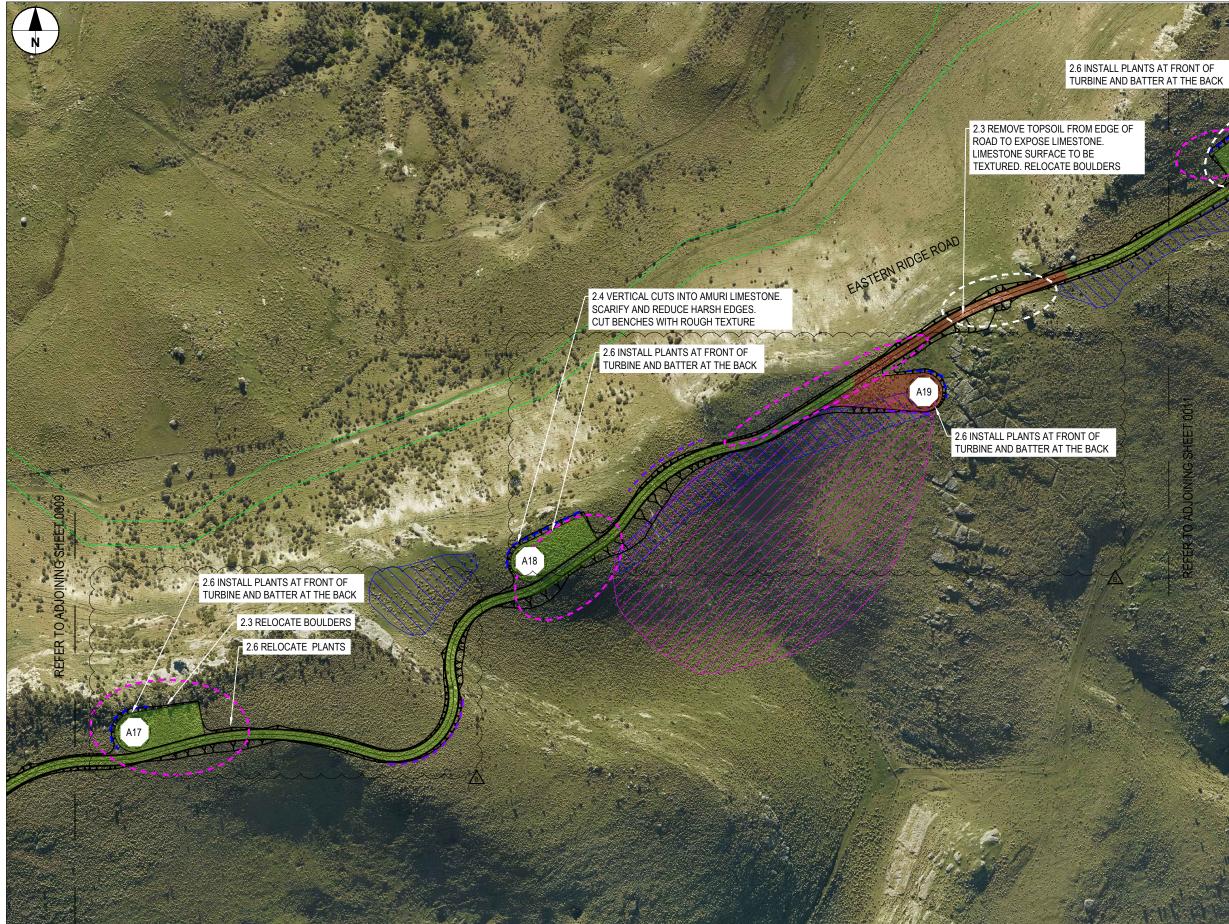
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PROJECT NUMBER 60642250

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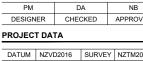
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PROJECT MANAGEMENT INITIALS

2.6 RELOCATE BOULDERS AND PLANTS

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| BOULDERS | \$224 |
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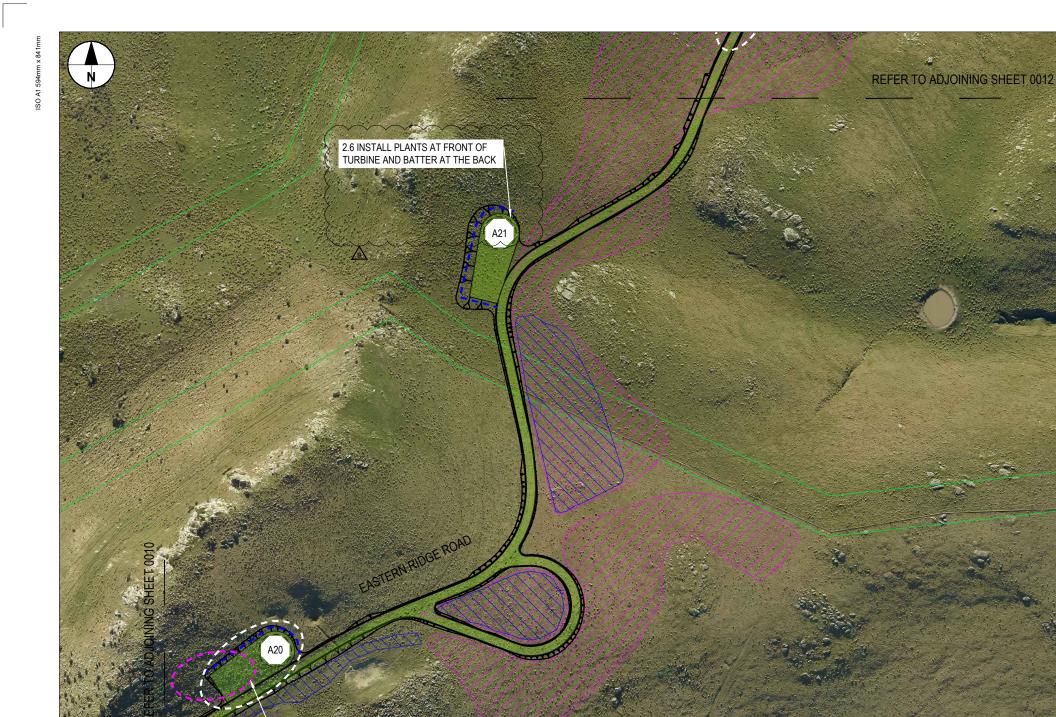
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SHEET NUMBER

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2.6 RELOCATE BOULDERS AND PLANTS

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EARTHWORKS LANDSCAPE REHABILITATION SHT 11

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Mt Cass: Utilities Area Landscape Drawing List

PLANTING PLAN KEY 02.00_ Planting Plan Key

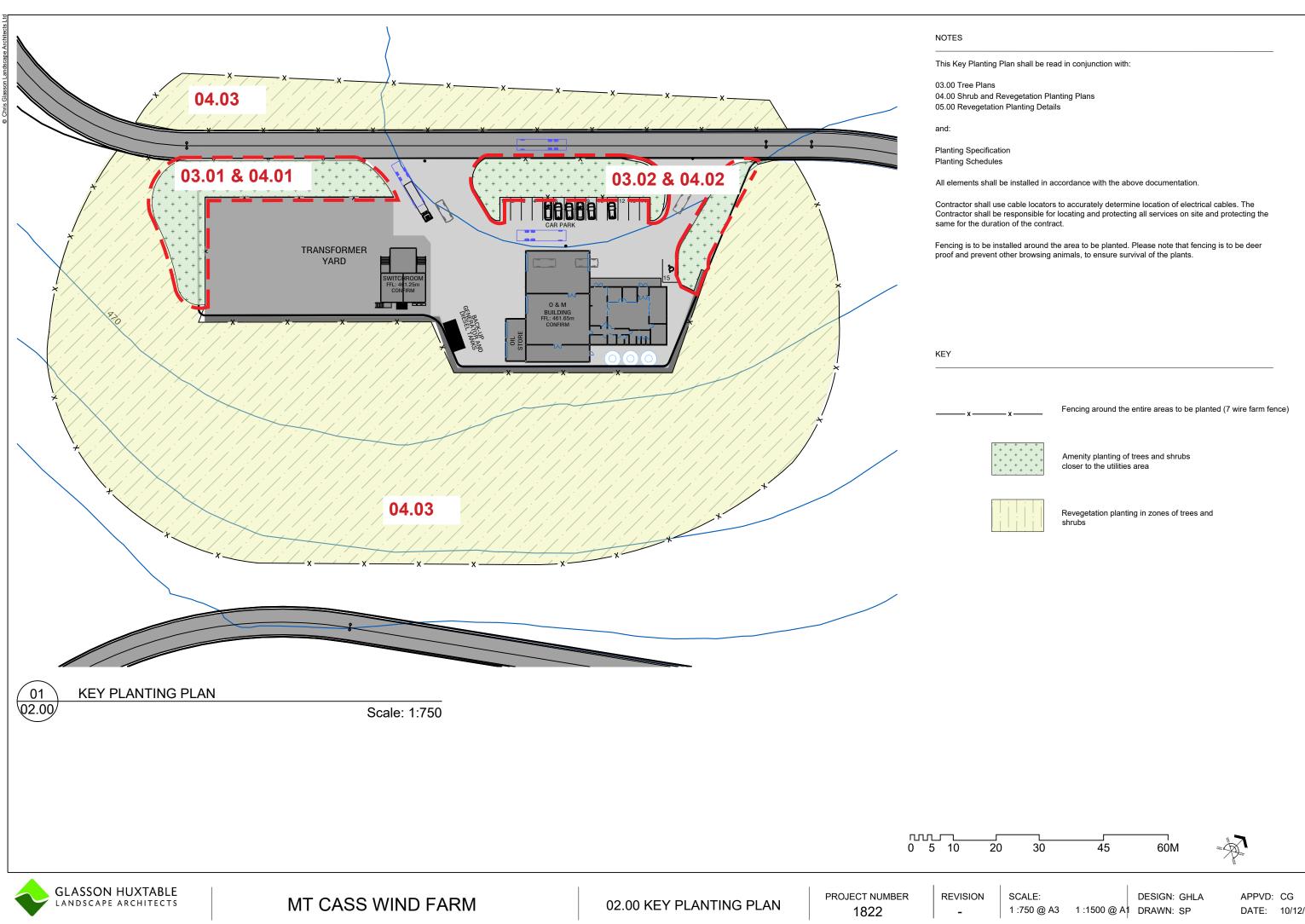
TREE PLANS 03.01_Tree Plan 03.02_Tree Plan

SHRUB AND REVEGETATION PLANTING PLANS

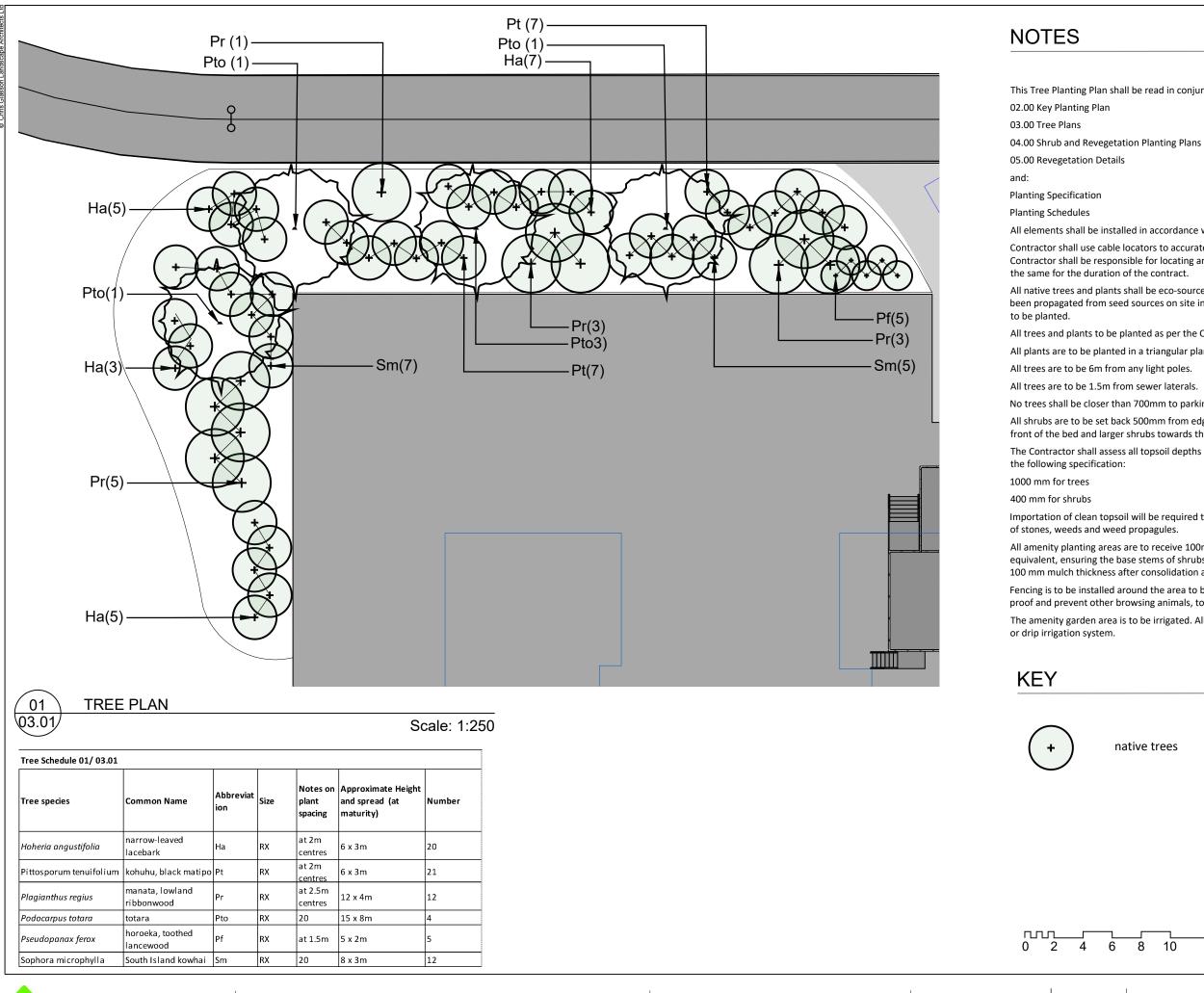
04.01_Shrub Planting Plan 04.02_Shrub Planting Plan 04.03_Revegetation Planting Plan

DETAILS 05.01_Revegetation Planting Details

10/12/2020



Chris Glasson Landscape Architects Ltd, 149 Victoria Street, Christchurch, New Zealand T: +64 3 3654599 E: chris@chrisglasson.co.nz www.chrisglasson.com



GLASSON HUXTABLE LANDSCAPE ARCHITECTS



Chris Glasson Landscape Architects Ltd, 149 Victoria Street, Christchurch, New Zealand T: +64 3 3654599 E: chris@chrisglasson.co.nz www.chrisglasson.com

03.01 TREE PLAN

PROJECT NUMBER 1822

REVISION

This Tree Planting Plan shall be read in conjunction with:

All elements shall be installed in accordance with the above documentation.

Contractor shall use cable locators to accurately determine location of electrical cables. The Contractor shall be responsible for locating and protecting all services on site and protecting

All native trees and plants shall be eco-sourced where possible. The trees and shrubs will have been propagated from seed sources on site in a separate contract and held in a nursery ready

All trees and plants to be planted as per the CCC CSS7.

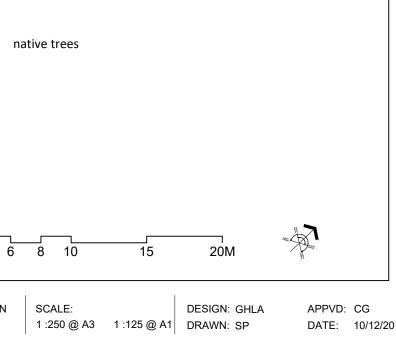
- All plants are to be planted in a triangular planting pattern.
- No trees shall be closer than 700mm to parking areas or road kerbs.
- All shrubs are to be set back 500mm from edge of mulch. Smaller shrubs are to be set at the front of the bed and larger shrubs towards the middle of the bed.
- The Contractor shall assess all topsoil depths and top up with good quality topsoil to achieve

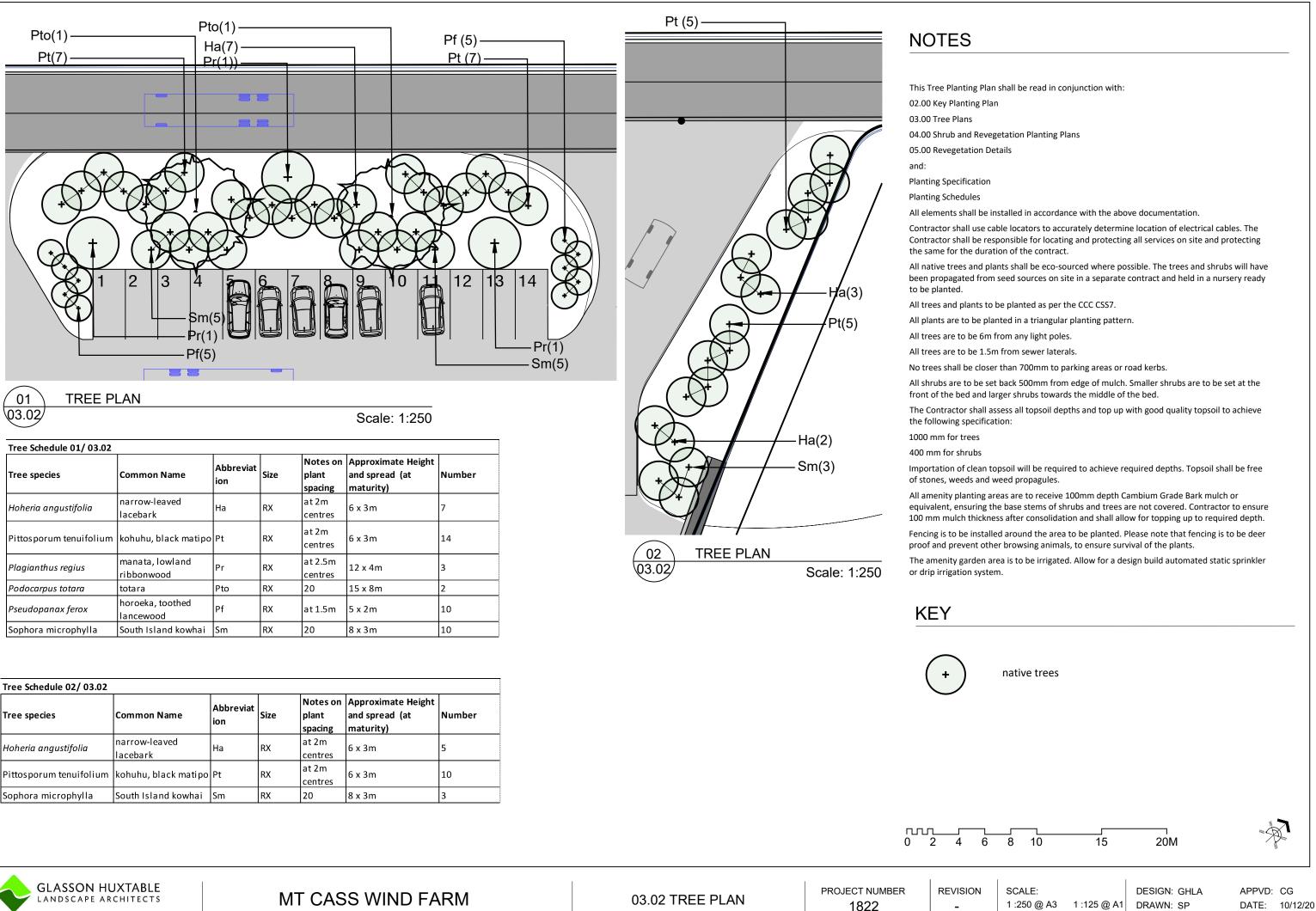
Importation of clean topsoil will be required to achieve required depths. Topsoil shall be free

All amenity planting areas are to receive 100mm depth Cambium Grade Bark mulch or equivalent, ensuring the base stems of shrubs and trees are not covered. Contractor to ensure 100 mm mulch thickness after consolidation and shall allow for topping up to required depth.

Fencing is to be installed around the area to be planted. Please note that fencing is to be deer proof and prevent other browsing animals, to ensure survival of the plants.

The amenity garden area is to be irrigated. Allow for a design build automated static sprinkler

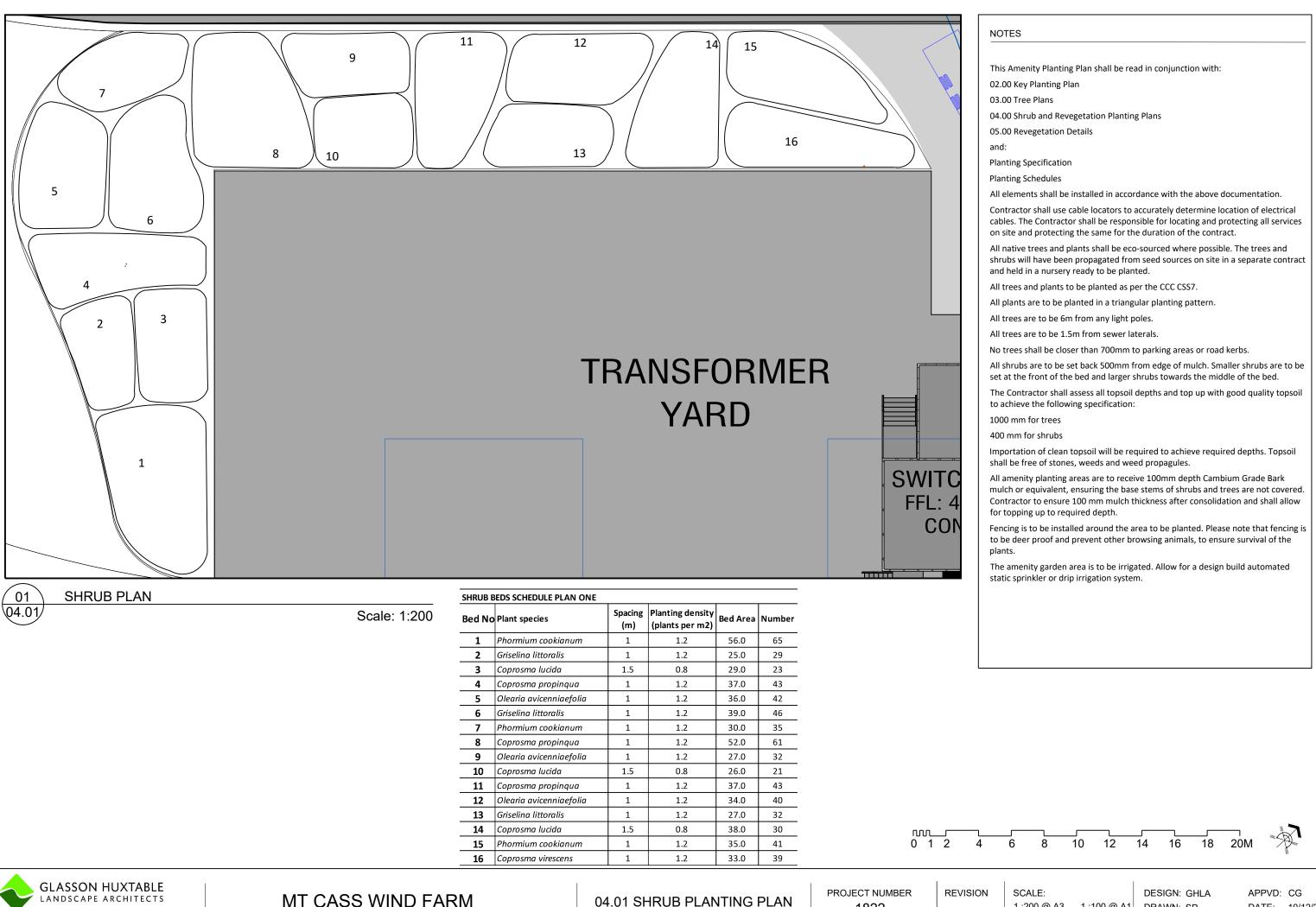






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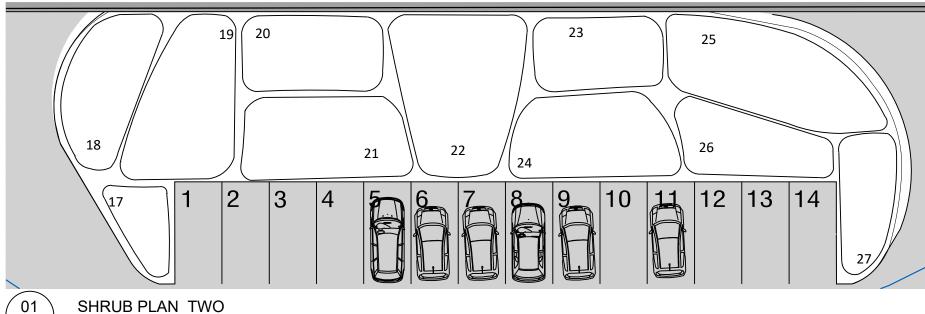
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04.01 SHRUB PLANTING PLAN

1822

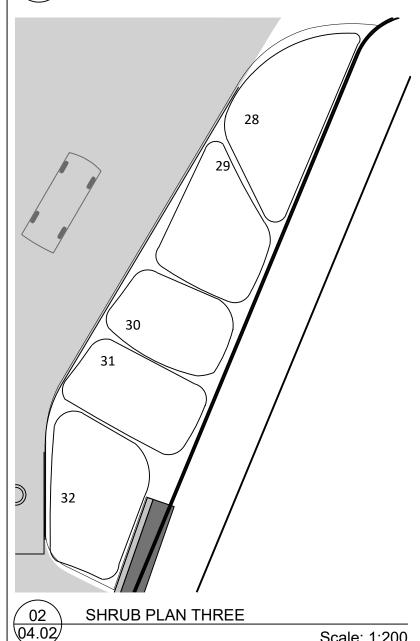
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DATE: 10/12/20



04.02

Scale: 1:200



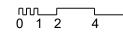
| SHRUB B | SHRUB BEDS SCHEDULE PLAN TWO | | | | | | | | | |
|---------|------------------------------|----------------|-------------------------------------|----------|--------|--|--|--|--|--|
| Bed No | Plant species | Spacing (m) | Planting density (plants per m2) | Bed Area | Number | | | | | |
| 17 | Coprosma virescens | 1 | 1.2 | 14.0 | 17 | | | | | |
| 18 | Phormium cookianum | 1 | 1.2 | 29.0 | 34 | | | | | |
| 19 | Coprosma lucida | 1.5 | 0.8 | 41.0 | 32 | | | | | |
| 20 | Olearia avicenniaefolia | 1 | 1.2 | 29.0 | 34 | | | | | |
| 21 | Phormium cookianum | 1 | 1.2 | 36.0 | 42 | | | | | |
| 22 | Coprosma propinqua | 1.5 | 0.8 | 50.0 | 39 | | | | | |
| 23 | Olearia avicenniaefolia | 1 | 1.2 | 25.0 | 29 | | | | | |
| 24 | Phormium cookianum | 1 | 1.2 | 35.0 | 41 | | | | | |
| 25 | Phormium cookianum | 1 | 1.2 | 47.0 | 55 | | | | | |
| 26 | Coprosma lucida | 1.5 | 0.8 | 25.0 | 20 | | | | | |
| 27 | Coprosma virescens | 1 | 1.2 | 19.0 | 22 | | | | | |

SHRUB BEDS SCHEDULE PLAN THREE

| Bed No. | NO. Plant species | | Planting density (plants per m2) | Bed Area | Number |
|---------|-------------------------|---|-------------------------------------|----------|--------|
| 28 | Phormium cookianum | 1 | 1.2 | 39.0 | 46 |
| 29 | Coprosma virescens | 1 | 1.2 | 31.0 | 36 |
| 30 | Olearia avicenniaefolia | 1 | 1.2 | 25.0 | 29 |
| 31 | Coprosma propinqua | 1 | 1.2 | 27.0 | 32 |
| 32 | Phormium cookianum | 1 | 1.2 | 35.0 | 41 |

and:

plants.



Scale: 1:200

GLASSON HUXTABLE LANDSCAPE ARCHITECTS

MT CASS WIND FARM

04.02 SHRUB PLANTING PLAN

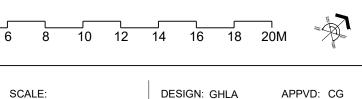
Chris Glasson Landscape Architects Ltd, 149 Victoria Street, Christchurch, New Zealand T: +64 3 3654599 E: chris@chrisglasson.co.nz www.chrisglasson.com

PROJECT NUMBER 1822

REVISION -

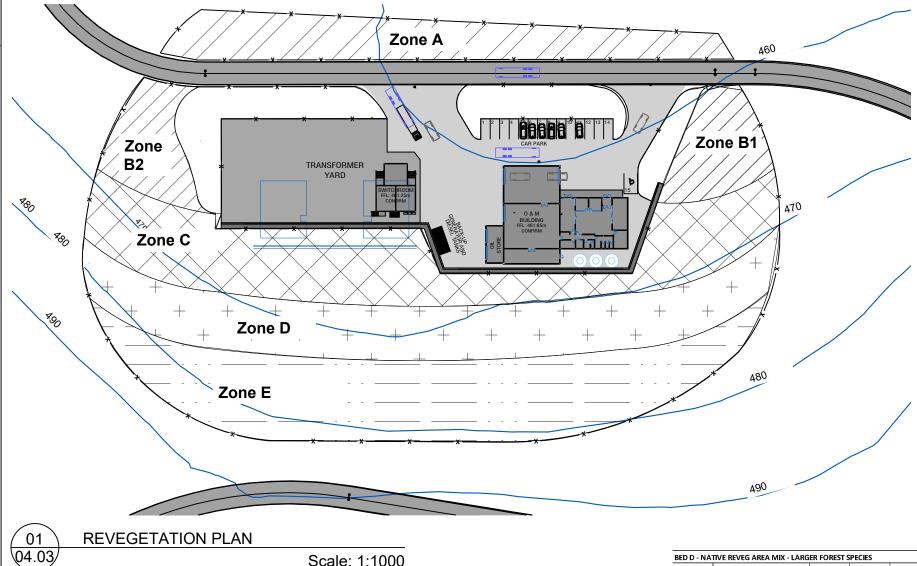
NOTES

- This Amenity Planting Plan shall be read in conjunction with:
- 02.00 Key Planting Plan
- 03.00 Tree Plans
- 04.00 Shrub and Revegetation Planting Plans
- 05.00 Revegetation Details
- **Planting Specification**
- **Planting Schedules**
- All elements shall be installed in accordance with the above documentation.
- Contractor shall use cable locators to accurately determine location of electrical cables. The Contractor shall be responsible for locating and protecting all services on site and protecting the same for the duration of the contract.
- All native trees and plants shall be eco-sourced where possible. The trees and shrubs will have been propagated from seed sources on site in a separate contract and held in a nursery ready to be planted.
- All trees and plants to be planted as per the CCC CSS7.
- All plants are to be planted in a triangular planting pattern.
- All trees are to be 6m from any light poles.
- All trees are to be 1.5m from sewer laterals.
- No trees shall be closer than 700mm to parking areas or road kerbs.
- All shrubs are to be set back 500mm from edge of mulch. Smaller shrubs are to be set at the front of the bed and larger shrubs towards the middle of the bed.
- The Contractor shall assess all topsoil depths and top up with good quality topsoil to achieve the following specification:
- 1000 mm for trees
- 400 mm for shrubs
- Importation of clean topsoil will be required to achieve required depths. Topsoil shall be free of stones, weeds and weed propagules.
- All amenity planting areas are to receive 100mm depth Cambium Grade Bark mulch or equivalent, ensuring the base stems of shrubs and trees are not covered. Contractor to ensure 100 mm mulch thickness after consolidation and shall allow for topping up to required depth.
- Fencing is to be installed around the area to be planted. Please note that fencing is to be deer proof and prevent other browsing animals, to ensure survival of the
- The amenity garden area is to be irrigated. Allow for a design build automated static sprinkler or drip irrigation system.



1:200 @ A3 1:100 @ A1 DRAWN: SP

APPVD: CG DATE: 10/12/20



Scale: 1:1000

| ZONE A - N | ATIVE REVEGETATION AREA | MIX - FORES | Т | | | | ZONE B2 - | NATIVE REVEGETATION AREA | MIX - SHRU | BS AND SMA | ALL TREES |
|--------------------------------------------------------------|-------------------------|----------------|-------------------------------------------|------------|------------------------|--------|-----------|--------------------------|----------------|-------------------------------------------|------------|
| Bed No. | Plant species | Spacing (m) | Planting density (plants per m2) | Percentage | Total bed Area (m2) | Number | Bed No. | Plant species | Spacing (m) | Planting density (plants per m2) | Percentage |
| | Coprosma propinqua | 1.5 | 0.8 | 20 | 1472.0 | 227 | | Coprosma crassifolia | 1.5 | 0.8 | 5 |
| | Coprosma virescens | 1.5 | 0.8 | 10 | 1472.0 | 113 | | Coprosma propingua | 1.5 | 0.8 | 10 |
| | Griselina littoralis | 1.5 | 0.8 | 10 | 1472.0 | 113 | | | | | |
| Bed No. Cop Gri My A Pho Pho Pho Pse | Myoporum laetum | 1.5 | 0.8 | 5 | 1472.0 | 57 | | Coprosma virescens | 1.5 | 0.8 | 15 |
| | Olearia avicenniaefolia | 1.5 | 0.8 | 10 | 1472.0 | 113 | | Griselina littoralis | 1.5 | 0.8 | 20 |
| Α | | | | | | | B2 | Hoheria angustifolia | 1.5 | 0.8 | 5 |
| | Phormium cookianum | 1.5 | 0.8 | 10 | 1472.0 | 113 | | Kunzea robusta | 1.5 | 0.8 | 15 |
| | Pittosporum tenufolium | 1.5 | 0.8 | 15 | 1472.0 | 170 | | Olearia avicenniaefolia | 1.5 | 0.8 | 10 |
| | Podocarpus totara | 1.5 | 0.8 | 5 | 1472.0 | 57 | | Phormium cookianum | 1.5 | 0.8 | 10 |
| | Pseudopanax ferox | 1.5 | 0.8 | 5 | 1472.0 | 57 | | | | | |
| | Sophora microphylla | 1.5 | 0.8 | 10 | 1472.0 | 113 | | Pittosporum tenufolium | 1.5 | 0.8 | 10 |

| Bed No. | Plant species | Spacing (m) | Planting density (plants per m2) | Percentage | Total bed Area (m2) | Num |
|---------|-------------------------|----------------|-------------------------------------------|------------|------------------------|-----|
| | Coprosma crassifolia | 1.5 | 0.8 | 5 | 607.0 | 23 |
| | Coprosma propinqua | 1.5 | 0.8 | 10 | 607.0 | 47 |
| | Coprosma virescens | 1.5 | 0.8 | 15 | 607.0 | 70 |
| | Griselina littoralis | 1.5 | 0.8 | 20 | 607.0 | 93 |
| B1 | Hoheria angustifolia | 1.5 | 0.8 | 5 | 607.0 | 23 |
| | Kunzea robusta | 1.5 | 0.8 | 15 | 607.0 | 70 |
| | Olearia avicenniaefolia | 1.5 | 0.8 | 10 | 607.0 | 47 |
| | Phormium cookianum | 1.5 | 0.8 | 10 | 607.0 | 47 |
| | Pittosporum tenufolium | 1.5 | 0.8 | 10 | 607.0 | 47 |

| Bed No. | Plant species | Spacing (m) | density (plants per m2) | Percentage | Total bed Area (m2) | Number |
|------------|--------------------------|----------------|-------------------------------|------------|------------------------|--------|
| | Coprosma crassifolia | 1.5 | 0.8 | 5 | 593.0 | 23 |
| | Coprosma propinqua | 1.5 | 0.8 | 10 | 593.0 | 46 |
| | Coprosma virescens | 1.5 | 0.8 | 15 | 593.0 | 68 |
| | Griselina littoralis | 1.5 | 0.8 | 20 | 593.0 | 91 |
| B2 | Hoheria angustifolia | 1.5 | 0.8 | 5 | 593.0 | 23 |
| | Kunzea robusta | 1.5 | 0.8 | 15 | 593.0 | 68 |
| | Olearia avicenniaefolia | 1.5 | 0.8 | 10 | 593.0 | 46 |
| | Phormium cookianum | 1.5 | 0.8 | 10 | 593.0 | 46 |
| | Pittosporum tenufolium | 1.5 | 0.8 | 10 | 593.0 | 46 |
| | • | | | | | |
| BED C - NA | TIVE REVEGETATION AREA I | VIX - FORES | г | | | |
| | | Spacing | Planting density | | Total bec | 4 |

| ed No. | Plant species | Spacing (m) | density (plants per m2) | Percentage | Total bed Area (m2) | Number |
|--------|-------------------------|----------------|-------------------------------|------------|------------------------|--------|
| | Coprosma lucida | 1.5 | 0.8 | 10 | 2930.0 | 226 |
| | Coprosma virescens | 1.5 | 0.8 | 5 | 2930.0 | 113 |
| | Griselina littoralis | 1.5 | 0.8 | 10 | 2930.0 | 226 |
| | Hoheria angustifolia | 1.5 | 0.8 | 10 | 2930.0 | 226 |
| c | Myoporum laetum | 1.5 | 0.8 | 5 | 2930.0 | 113 |
| | Pittosporum eugenioides | 1.5 | 0.8 | 5 | 2930.0 | 113 |
| | Pittosporum tenuifolium | 1.5 | 0.8 | 20 | 2930.0 | 451 |
| | Plagianthus regius | 1.5 | 0.8 | 10 | 2930.0 | 226 |
| [| Podocarpus totara | 1.5 | 0.8 | 10 | 2930.0 | 226 |
| | Sophora microphylla | 1.5 | 0.8 | 15 | 2930.0 | 338 |

| BED D - NA | BED D - NATIVE REVEG AREA MIX - LARGER FOREST SPECIES | | | | | | | | |
|------------|-------------------------------------------------------|----------------|-------------------------------------------|------------|------------------------|--------|--|--|--|
| Bed No. | Plant species | Spacing (m) | Planting density (plants per m2) | Percentage | Total bed Area (m2) | Number | | | |
| | Coprosma lucida | 1.5 | 0.8 | 15 | 2688.0 | 310 | | | |
| | Coprosma virescens | 1.5 | 0.8 | 5 | 2688.0 | 103 | | | |
| | Griselina littoralis | 1.5 | 0.8 | 20 | 2688.0 | 414 | | | |
| | Myoporum laetum | 1.5 | 0.8 | 5 | 2688.0 | 103 | | | |
| | Pittosporum eugenioides | 1.5 | 0.8 | 5 | 2688.0 | 103 | | | |
| D | Pittosporum tenuifolium | 1.5 | 0.8 | 5 | 2688.0 | 103 | | | |
| | Plagianthus regius | 1.5 | 0.8 | 10 | 2688.0 | 207 | | | |
| | Podocarpus totara | 1.5 | 0.8 | 15 | 2688.0 | 310 | | | |
| | Pseudopanax arboreus | 1.5 | 0.8 | 10 | 2688.0 | 207 | | | |
| | Sophora microphylla | 1.5 | 0.8 | 10 | 2688.0 | 207 | | | |

| BED E - NATIVE REVEG AREA MIX FOREST AND SHRUBS | | | | | | |
|-------------------------------------------------|-------------------------|----------------|-------------------------------------------|------------|------------------------|------|
| Bed No. | Plant species | Spacing (m) | Planting density (plants per m2) | Percentage | Total bed Area (m2) | Numb |
| | Coprosma propinqua | 1.5 | 0.8 | 5 | 3281.0 | 126 |
| | Coprosma virescens | 1.5 | 0.8 | 10 | 3281.0 | 253 |
| | Griselina littoralis | 1.5 | 0.8 | 10 | 3281.0 | 253 |
| | Hoheria angustifolia | 1.5 | 0.8 | 10 | 3281.0 | 253 |
| E | Kunzea robusta | 1.5 | 0.8 | 5 | 3281.0 | 126 |
| | Myoporum laetum | 1.5 | 0.8 | 5 | 3281.0 | 126 |
| | Olearia avicenniaefolia | 1.5 | 0.8 | 10 | 3281.0 | 253 |
| | Phormium cookianum | 1.5 | 0.8 | 5 | 3281.0 | 126 |
| | Pittosporum eugenioides | 1.5 | 0.8 | 5 | 3281.0 | 126 |
| | Pittosporum tenuifolium | 1.5 | 0.8 | 10 | 3281.0 | 253 |
| | Plagianthus regius | 1.5 | 0.8 | 5 | 3281.0 | 126 |
| | Podocarpus totara | 1.5 | 0.8 | 10 | 3281.0 | 253 |
| | Sophora microphylla | 1.5 | 0.8 | 10 | 3281.0 | 253 |

NOTES

This Revegetation Planting Plan shall be read in conjunction with:

02.00 Key Planting Plan 03.00 Tree Plans 04.00 Shrub and Revegetation Planting Plans 05.00 Revegetation Planting Details

and:

Planting Specification Planting Schedules

All elements shall be installed in accordance with the above documentation.

Contractor shall use cable locators to accurately determine location of electrical cables. The Contractor shall be responsible for locating and protecting all services on site and protecting the same for the duration of the contract.

All native trees and plants shall be eco-sourced where possible. The trees and shrubs will have been propagated from seed sources on site in a separate contract and held in a nursery ready to be planted.

All trees and plants to be planted as per the CCC CSS7.

All trees are to be 6m from light poles. All trees are to be 1.5m from sewer laterals. No trees shall be closer than 700mm to parking areas or road kerbs.

In the planting revegetation zones, the smaller shrubs are to be set at the edges of the planting areas and the larger shrubs towards the middle of the zone, as occurs in naturally revegetating areas of planting elsewhere on the site. All plants are to be planted in a triangular planting pattern.

Shrubs are to be in groupings of the same species of 10 to 15 plants minimum, to create a drift of plants of the same species, as would occur in natural revegetation patterns seen elsewhere on the Mt Cass site.

Trees are to be planted in groups of 5 to 7 minimum plants of the same species, to likewise create a drift of plants.

Fencing is to be installed around the area to be planted. Please note that fencing is to be deer proof and prevent other browsing animals, to ensure survival of the plants.

Planting shall take place between 1 April and 30 September (the planting season). Planting in the winter months will ensure the establishment of plants, this is particularly vital for the revegetation area where there is no irrigation.

| ហហ | ···· | | |
|----|------|----|----|
| 0 | 10 | 20 | 30 |
| 0 | 10 | 20 | 30 |

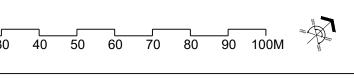
GLASSON HUXTABLE LANDSCAPE ARCHITECTS

MT CASS WIND FARM

Chris Glasson Landscape Architects Ltd, 149 Victoria Street, Christchurch, New Zealand T: +64 3 3654599 E: chris@chrisglasson.co.nz www.chrisglasson.com

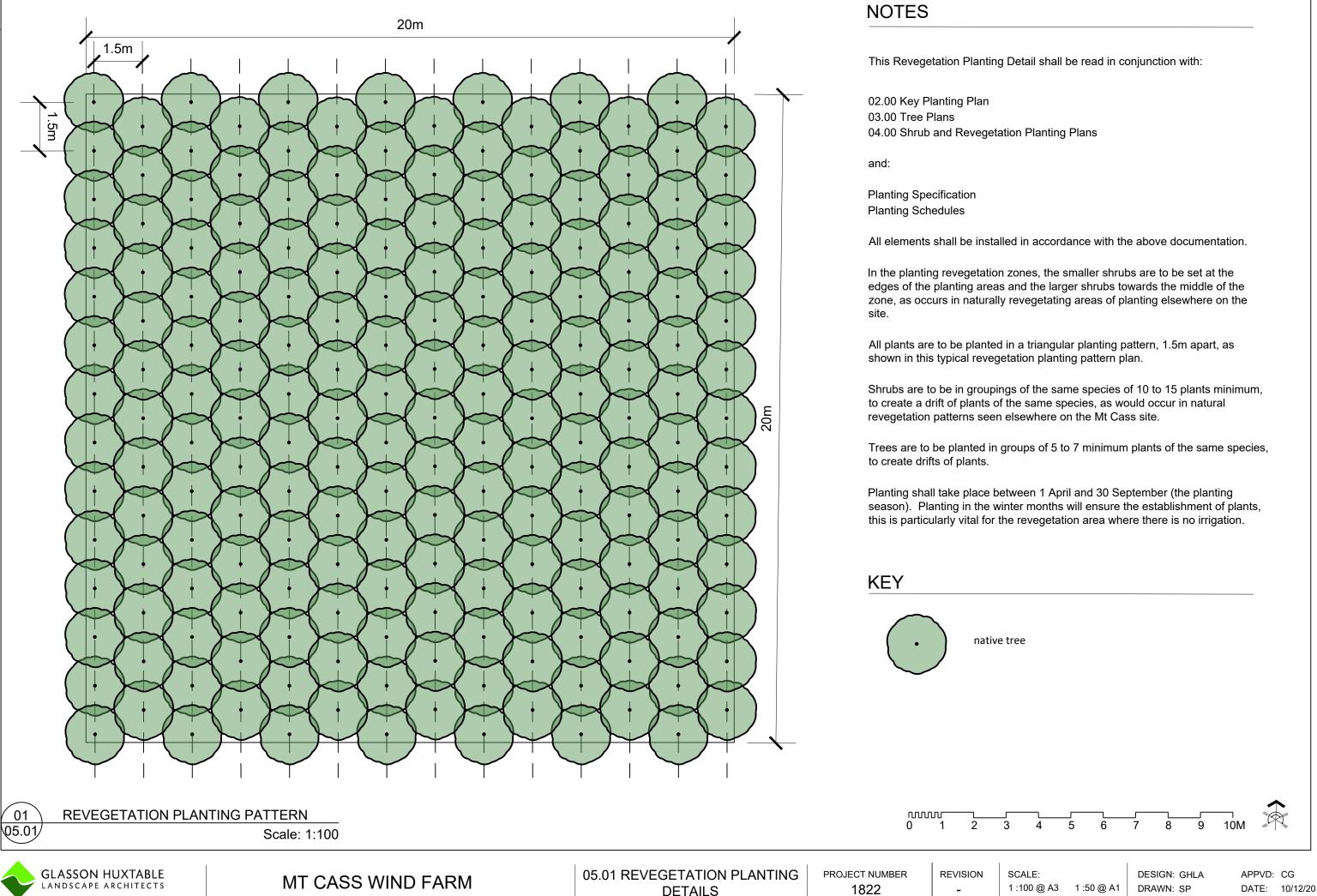
04.03 REVEGETATION PLAN

PROJECT NUMBER 1822



DESIGN: GHLA DRAWN: SP

APPVD: CG DATE: 10/12/20



Chris Glasson Landscape Architects Ltd, 149 Victoria Street, Christchurch, New Zealand T: +64 3 3654599 E: chris@chrisglasson.co.nz www.chrisglasson.com

Appendix N

Mt Cass Wind Farm Site Access Work Instruction



Mt Cass Wind Farm Site Access Work Instruction

The information contained herein is confidential to Mt Cass Wind Farm Ltd and may not be reproduced without express permission.

1. Introduction

This document covers the land access protocols and safety issues associated with field work for the Mt Cass Wind Farm prior to the commencement of construction.

2. Land Ownership

Six owners (refer appended plan) are involved in accessing the full wind farm site.

- 1. MainPower owns the 168ha ridge property that covers a 3km length of the ridge from the fence line west of Mt Cass trig to the Dovedale boundary.
- 2. Dovedale Farm Ltd own the next 3km of ridge to just past Oldham Peak
- 3. Hamilton Glens Ltd own the forked ridge to the east of Oldham Peak and all land to the north of the fence along the northern terrace and east of the Omihi forest block
- 4. Organic farm Holdings Ltd owns the part of the wind farm to the west of Mt Cass trig (the Department of Conservation Covenant Area) and the primary access routes via Symonds Road and the Airstrip track. They are lessees of the MainPower land and any Transwaste farm land associated with the Kate Valley Landfill.
- 5. Tiromoana Station Ltd (TSL a Transwaste subsidiary) owns the Kate Valley landfill, the Tiromoana Bush Covenant area and some remaining farmland of the former Tiromoana Station. Entering via the main wind farm access road (off Mt Cass Road to the Airstrip track) crosses a short length of TSL land.

The primary access to the site currently uses Symonds Road and the farm track which traverses round to the Mt Cass walkway and thus crosses land owned by Organic Farm Holdings Ltd.

3. Access Protocol

A. General Provisions

| Notification | Landowners and Mt Cass Wind Farm must be notified when it is intended to visit site. Specific provisions for landowners are noted below. Mt Cass Wind Farm can be notified by phone call or email to Greg Gummer (Greg.Gummer@mainpower.co.nz or Ph: 021 738 995). | |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Requests from Landowners | Mt Cass Wind Farm and its Contractors will comply with all reasonable requests from Landowners regarding access, including deferring visits where conditions make the visits unsafe or where there is a conflict with farming activities. Access during lambing is to be avoided if possible. | |
| Hazards | Known hazards are outlined in Section 4 below. Mt Cass Wind Farm and its Contractors will advise Landowners of any new hazards they encounter in carrying out their work. | |
| Weed Precautions | The Mt Cass Site is relatively free of noxious weeds and must be kept that way. Mt Cass Wind Farm is operating a weed management programme on its own land and is responsible for any introduced weeds associated with wind farm development. Of particular concern at present is Chilean Needle Grass. Accordingly, Mt Cass Wind Farm and its contractors will ensure that all vehicles, clothing and footwear are free of weed seeds, each day, before entering the site. Further information on weeds can be obtained from the Environment Canterbury website. | |
| General behaviour | Mt Cass Wind Farm and its Contractors will: Leave all gates as they find them (open or closed); Not take dogs onto the site; Not take firearms or hunt on the site; Not light fires Mt Cass Wind Farm site is a "No Smoking" site. Remove all rubbish; Make good and report any damage to tracks, fences, water supply equipment and other farm assets. | |
| Notification | Mt Cass Wind Farm must be notified when it is intended to visit site. Specific provisions for landowners are noted below. Mt Cass Wind Farm will then notify the landowners of details of the intended visit. Mt Cass Wind Farm can be notified by phone call or email to Greg Gummer (Greg.Gummer@mainpower.co.nz or Ph: 021 738 995). | |

| Notification | Prior notification of access is required using the standard form (appended) emailed to Greg Gummer (<u>Greg.Gummer@mainpower.co.nz</u> or Ph: 021 738 995). |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signing in/out | A Visitor Book is located outside the portacom offices through the gate and to the right of the yard area in front of the main implement shed at Washcreek Workshop (turn left off Symonds Road). Visitors are to sign in and out in the Visitor Book and review the Hazard Board. |
| | Visitors should also text Greg Gummer, Ph: 021-738-995 on entry and exit from site, as well as signing the Visitor Book on site. |
| Access Routes | Typically, access is to be via Symonds Road, unless there is a specific need to visit other parts of the farm. |
| | Vehicles must keep to the formed tracks and keep to a speed limit of 20km/h, particularly when driving past any farmhouses. |
| | Suitable four-wheel drive vehicles appropriate to the site conditions and the work to be carried out are to be used (see requirements at Section 5). |
| Lambing | Lambing restrictions can apply from July to October (exact timing must be checked each year) with different parts of the farm affected at different times. |
| | Access may be possible during lambing but at the discretion of and under guidance of the Landowner. |

B. Organic Farm Holdings Ltd Land

C. Tiromoana Station Ltd (Transwaste Canterbury Limited)

| Notification | Transwaste Canterbury Ltd requires 24 hours' notice by email prior to visiting or working on Tiromoana Station Ltd land. Much of the Tiromoana Station Ltd land is leased by Organic Farm Holdings Ltd therefore access requirements, including requirements during lambing for Organic Farm Holdings Ltd also need to be observed. |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signing in/out | On the day of the visit visitors are to sign in and out in the visitor book and review any hazard notices in the box outside the door to Transwaste's office. Visitors must also sign in at the Washcreek workshop as for Organic Farm Holdings Ltd . Visitors should also text Greg Gummer Ph: 021-738-995 |
| Access Routes | If crossing Tiromoana Station Limited land via the wind farm proposed access route (airstrip track) then an email advising the use of the route 24 hours in advance is all that is required. |

D. Dovedale Farm

In addition to the General Provisions in Section A, the following requirements apply for access to Dovedale Farm:

| Who can access | Persons with adequate experience of working on Dovedale Farm, or, all visitors to be accompanied by a Mt Cass Wind Farm representative who has that experience. |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Notification | Dovedale are to be given seven days notification by email of any intended access to the site. This should be requested from Mt Cass Wind Farm who will communicate with the landowner. This notification will be updated if dates change (e.g. if weather is unsuitable). On the day of access Dovedale is to be advised by phone message that the access is occurring as planned and are to be phoned again when the party has left the site. Visitors should also text Greg Gummer Ph: 021-738-995 |
| Access routes | Typically access to Dovedale is to be on foot from Mt Cass Wind Farm's land. If there is a particular need to take a vehicle onto Dovedale then this must first be discussed with the owners and then must enter via the Dovedale Homestead and use the main access track. |
| Signing in/out | Where access is via the main Dovedale access track then signing in and out at the woolshed is required and is acceptable as a substitute for phone calls (sign in book is located in the wall mounted red container in the covered area outside woolshed) Visitors should also text Greg Gummer Ph: 021-738-995 |
| Footrot Precautions | The requirement for footrot hygiene is to be maintained by all people accessing Dovedale Farm. Specifically: If accessing on foot from Mt Cass, boots are to be cleaned of all mud and sprayed with disinfectant at the boundary fence. Alternatively, a clean pair of boots may be changed into at the boundary. If accessing by vehicle, Dovedale shall be the first farm visited on the day and the vehicle shall be free of mud. If not able to visit Dovedale first, the vehicle shall be waterblasted to remove loose mud. If using an ATV the vehicle shall be waterblasted to remove mud before entering Dovedale. |
| Lambing | Access during lambing (typically September and October each year) is unlikely to be permitted. |

Note that these access protocols are primarily intended for work outside of the immediate wind farm area (for example the groundwater monitoring and five minute bird count sites) however, as a matter of courtesy and good communication these protocols should be used for all access to Dovedale.

4. Known Hazards

Field work has been conducted at all times of year and is at an altitude of approximately 500m. Safety issues are definitely more of a concern in winter but problems can occur at any time of year.

Known site hazards include:

- Traffic (including Kate Valley landfill trucks)
- Fire (in dry conditions)
- Slippery tracks (when wet or icy)
- Wandering stock
- Rough ground and slippery limestone rocks
- Potholes (some scarcely visible at ground surface) or Sinkholes (Tomos)
- Precipitous drops (mainly on northern escarpment)
- Changeable weather, frequent strong winds and severe cold at times
- Sun, heat
- Lack of potable water along the ridge
- Isolation
- Ford at Wash Creek in heavy rain
- Suspended cables and pipes (a hazard if helicopter work is required)
- Trampers on Mt Cass Walkway track
- Onga-onga, Urtica ferox, or tree nettle is common, stings can be severe
- Electric and barbed wire fences
- Patchy Cell Phone Reception

All field staff must be suitably skilled and equipped to deal with the conditions that may be encountered. All contractors shall assess the site hazards and provide Mt Cass Wind Farm Ltd with a copy of their site specific safety plan which addresses the site hazards as applicable to their work. Visitors to the site who are not Mt Cass Wind Farm contractors (or subcontractors) may be asked to provide a site-specific safety plan depending on the purpose of their visit.

5. Hazard Controls

The Health and Safety at Work Act 2015 requires that workers and other persons should be given the highest level of protection against harm to their health, safety and welfare from hazards and risks arising from work as is reasonably practicable. The following controls are recommended for the hazards listed above; these recommended controls shall not be taken to limit the extent of controls that may be put in place by a consultant for its workers.

| Hazard | Risks | Control |
|-------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Traffic (including Kate Valley landfill trucks) | Collision | All workers are to be made aware of the heavy use of the road by large vehicles accessing the Kate Valley Landfill. Extra care is necessary at all times. |

| Hazard | Risks | Control |
|------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fire | Environmental damage Smoke inhalation Burns | Follow any operable fire management plan for the site Be aware of site conditions Vehicles must carry a fire extinguisher and be fitted with spark arresters (except turbo-diesels) Don't park in long grass if conditions are dry Call the Emergency Services if fire is seen Attempt to supress any small fires if it is safe to do so |
| Rough and slippery (when wet or icy) tracks | Loss of vehicle control Collision | Workers travelling to the site must check weather conditions before leaving for the site. Four-wheel drive vehicles will be necessary. In some circumstances UTV's will be preferred. Four-wheel drive vehicles are to have suitable tyres for the terrain, low ratio gear box and at least 220 mm ground clearance (e.g. Ford Ranger or Toyota Hi-Lux). Drivers must be appropriately skilled and/or trained (e.g. 4WD training to NZQA Standards). Assess conditions frequently while on route and on the site. Where the risk is considered unacceptably high, DO NOT attempt to proceed. |
| Wandering stock | Vehicle collision Attack by animal (e.g. bull) | All persons to be made aware of the possibility of wandering stock. Exercise care at all times when working in the area. |
| Sun, heat | Sunburn/ Sunstroke | Carry sun protection cream in vehicles at all times. Wear/ carry appropriate clothing for conditions Take breaks in the shade when working in heat. Stay hydrated. |
| Rough ground, slippery rock, potholes, sinkholes and precipitous drops | Slips, trips and falls | All workers to be advised of the nature of the terrain. Watch your step. Wear appropriate footwear. Take no unnecessary risks. If it looks risky, it probably is. Assess the situation and do not proceed unless completely confident it is safe. Do not climb down into sinkholes without the necessary safety systems. Use fall arrest systems where necessary. |

Work Instruction

| Hazard | Risks | Control |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Changeable weather, frequent strong winds and severe cold at times | Hypothermia (resulting from exposure to cold) Hyperthermia (exposure to heat) Frostbite | Check weather conditions before leaving for the site. Wear clothing appropriate to the weather conditions. Always be prepared for weather changes. Discuss with locals where possible. Carry clothing suitable for wet and cold weather in the vehicle. |
| Strong Winds | Opening vehicle doors | Park vehicle facing into the direction the wind is coming from. Use both hands to ensure door is secure while opening If travelling with others in one vehicle, open one door at a time. |
| Lack of potable water | Dehydration Hygiene | Bring own supply of bottled water.Bring wipes or sanitizer for keeping hands clean. |
| Isolation | Separation from party (especially if injured) | All staff are to detail where / when / how / duration for work on isolated sites. Arrange communication system with check in times and clear protocols for missed schedules. Note that cellphones may not work in some areas but reasonable reception is usually found on the ridge crest. Minimise lone working, two forms of communication are required, one being a cell phone and the other being an EPIRB (emergency beacon) or a Satellite phone. Carry a first aid kit at all times. The minimum standard kit required is the fold out St John General type. Wear Hi-Viz vests to aid in finding people if lost. |
| Onga-onga, Urtica ferox | Stings | Wear protective clothing and/ or avoid walking through Onga- onga. |
| Fences | Cuts on barbs (tetanus risk) Electric shock (probably leading to cut on the barbs) | Use gates where possible. Otherwise cross with care, under or through may be better than over. |
| Omihi Stream ford – at Wash Creek Workshop (in heavy rain) | Loss of control of vehicle Drowning | Assess conditions carefully – walk the crossing before driving. Call for assistance or wait for water to recede if it appears dangerous. |

6. Mt Cass Wind Farm Site Representative

During periods of intense activity on site Mt Cass Wind Farm may choose to have a Site Representative to support the fieldwork from a Health and Safety and Access Protocol perspective.

Any person coming and going from site during a fieldwork day is to check in <u>and out</u> with Mt Cass Wind Farm's representative and make arrangements for regular scheduled contact (e.g. at lunchtime).

The Site Representative will have a 4WD vehicle equipped with a:

- first aid kit
- cellphone and/or radio
- fire extinguisher.

When people are working on Dovedale the Site Representative will typically station themselves at the Mt Cass Wind Farm Shelter (if accessible by 4WD).

Mt Cass Wind Farm has a heated radio equipment shed just east of the Mt Cass trig. In an emergency this can be used for shelter. The Site Representative will have a key.

7. Key Contacts

| Mt Cass Wind Farm Project Director | Greg Gummer | m) 021 738 995 e) greg.gummer@mainpower.co.nz |
|----------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Mt Cass Wind Farm Snr Project Coordinator | ТВС | p) 03 311 8350 m) e) |
| Mt Cass Station Ltd | Jackie Taylor David Wooldridge | m) 021 226 2901 m) 027 259 4859 e) <u>office.mtcass@xtra.co.nz</u> |
| Dovedale Farm | Dean Gardiner Emma Gardiner | p) 03 314 6744 (Farm Office) m) 027 863 8872 (Dean) e) <u>dgardiner@hotmail.co.nz</u> & <u>rm.cm@xtra.co.nz</u> |
| Hamilton Glens | Leighton Croft Jane Croft | p) 03 314 5889 m) 027 877 6390 (Leighton) m) 027 2084187 (Jane) e) <u>hamiltonglens@xtra.co.nz</u> |
| Kate Valley Landfill Manager | Rangi Lord | m) 021 228 4348 p) 03 359 1800 e) <u>rangil@cws.co.nz</u> |

8. Case Studies

Accidents and Incidents can happen on this site. Here are a few real situations:

| Inciden | it | Response |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Α. | A site visit during an archaeological survey saw a 4WD vehicle slide off the track (in fairly gentle terrain) and come to rest on a rock. Fortunately a contractor working nearby was able to rescue the vehicle with his excavator. | This event was early in the project investigations. Since then greater emphasis has been placed on suitability of vehicles and driver capability. Greater use has also been made of "all-terrain" vehicles including hire of a 2-seater Rhino and 6-seater Argo for work in adverse weather conditions. |
| В. | On a night surveys for lizards rain arrived after the ecologists had started work. On leaving site they found a steep section of track had become too slippery for the 4WD. After one failed attempt to climb the hill they chose to abandon the vehicle and walk out to the main road. | In preparing for the migratory shorebird survey (when observers were required to be on site after dark in winter). It was decided to build an emergency shelter near the Dovedale boundary where equipment could be stored, and anybody caught on site could shelter if necessary. |
| C. | A rigger working on one of the anemometer masts had his thumb caught in a lifting chain. Access to the site that day was on foot (because of weather conditions) and the accident occurred too late in the day to walk back out. Emergency services were called and the victim was taken out by rescue helicopter. | This is an operational matter for the contractor involved. However, to the extent that fatigue played a part in this incident then the use of all-terrain vehicles for transport may have reduced the risk. |
| D. | A surveyor was setting out turbine locations and stepped | Bird population surveys have to be carried out in all seasons and to a tight schedule. Delays in walking about |

| Incide | ent | Response |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | between two limestone outcrops. The limestone was slippery and the surveyor fell and badly broke his leg. Again the rescue helicopter was sent to pick up the victim. | the site would make it very difficult to complete the work. The ecologists on this task decided that crampons would be the best option to manage the risk of slipping without slowing themselves down too much. |
| E. | An SUV drove over some dry tussock which then caught fire (several tussocks burned). This was at another MainPower wind farm site but could easily happen at Mt Cass | The immediate response was to stamp out the fire (fortunately it was spring and the ground was not too dry, also there was no breeze). The longer term response was not to take that vehicle (Mitsubishi Outlander) back to site. |

Incidents 3 and 4 resulted in serious "lost time" injuries. We want to avoid these in future.



9. Acknowledgement

All personnel working on site are to sign this sheet as acknowledgement that they have read and understood these instructions. This only needs to be done once unless a significant revision is notified.

| Name | Organisation | Contact Number (Cell phone) | Vehicle to be taken on Site* | Designated Driver & 4WD competency | Signature | Date |
|------|--------------|--------------------------------|---------------------------------|---------------------------------------|-----------|------|
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• Registration number, vehicle type (i.e Ford Ranger 4WD), equipment (i.e fire extinguisher, first aid kit, radio).

10. Appendices (attached)

- A. Mt Cass Station Access Notification Form
- B. Land Ownership Map

Conditions of Entry on to Mt Cass Station

| Name of Visitor: | |
|------------------------------------|--|
| Address: | |
| Telephone: | |
| Proposed Date(s) of Access: | |
| Proposed Location of Access: | |
| Reason for Access ("the Purpose"): | |
| Expected time of entry & exit | |
| | |

In consideration of being granted access to Mt Cass Station ("the Property"), the Visitor acknowledges and agrees that:

- 1 The Visitor may access the Property solely for the purpose and does so at his/her/its own risk. The Visitor must, at all times, use all due care when accessing and using the Property, and the Visitor shall be:
 - (i) responsible for any person or thing accompanying the Visitor or in the Visitor's possession or control; and
 - (ii) liable for any loss or damage caused by or resulting from any wilful or negligent act or omission of the Visitor or any person or thing accompanying the Visitor or in the Visitor's possession or control.
- 2 The Visitor must notify Mt Cass Station Limited of any persons who may accompany the Visitor on to the Property. Mt Cass Station Limited may notwithstanding anything in these Conditions at any time refuse access to the Visitor and/or any such persons accompanying the Visitor.
- 3 Mt Cass Station Limited is not liable in any way whatsoever for any injury, loss, expense or other damage howsoever incurred or suffered by the Visitor whilst accessing or using the Property.
- 4 Without limiting any of the above conditions, Mt Cass Station Limited will endeavour to advise the Visitor of any hazards on the Property that Mt Cass Station Limited considers may be relevant to the Visitor, but is not under any duty to do so. The Visitor shall do all things necessary to protect himself, herself or itself, and any persons accompanying the Visitor against such hazards.

| Date: | Visitor's sig | nature |
|--------|------------------------------------------------|-----------------------------------------------------------------------|
| Access | S Approved: | |
| Date: | Signature | |
| • | Please email a copy of access form to Greg Gum | For Mt Cass Station Ltd mer (<u>Greg.Gummer@mainpower.co.nz</u> . |

