

Site Restoration Protocol between Treble Cone and the Department of Conservation

Revised May 2015

1 Introduction

This protocol sets out the restoration measures required in order to avoid, remedy or mitigate the adverse effects of construction works or earthworks requiring the removal or disturbance of indigenous vegetation within the ski area boundary.

The protocol provides a practical means of achieving agreed environmental outcomes in an area of ecological and scenic importance. The protocols and code of practice provide for:

- Work site control measures
- Vegetation and top soil removal
- Vegetation and top soil storage
- Work site re-planting and restoration
- Ongoing maintenance of restoration planting areas and management of disturbed sites

2 Objective of the Protocol

The objective of this Protocol is to ensure:

1. A clear understanding of the standards and performance expectations is maintained between the Department of Conservation (DOC) and Treble Cone (TCIL) and their contractors regarding the protection, remediation or mitigation of disturbance to soil, vegetation and wetlands.
2. That the vegetation disturbed during the course of construction, installation of services or earthworks is restored as near as possible to its original density and diversity, or has made progress towards the recovery of the required density and diversity at the conclusion of a five year initial maintenance period such that if left undisturbed appropriate restoration is likely to be achieved.

3 Method of Implementation

The primary method of implementation of the protocol will be through the adoption and adherence to the code of practice by all parties and as specified below.

The protocol will be used to inform DOC staff, to alert staff to the requirements and implementation measures contained within the code of practice.

TCIL will require its staff and contractors to adhere to the protocol and code of practice and shall include a reference to or copy of the code of practice in all contracts let by TCIL that are likely to result in the disturbance of soil, vegetation or wetlands.

This protocol is based on the experience and expertise developed by TCIL, DOC and Natural Solutions for Nature Ltd (NSN) since 1986, the inception of major terrain modifications for ski area development.

DOC staff or an independent environmental monitor appointed by DOC will be on-site on a schedule agreed by DOC and TCIL such that practical and reasonable work progress inspections can be undertaken and advice provided to DOC, TCIL and their contractors.

The purpose of monitoring is two-fold.

1. To confirm compliance with conditions relating to environmental protection, remediation and mitigation the achievement of restoration objectives following approved works.
2. To provide advice during the progression of works to minimise the effects on the environment (particularly previously unforeseen effects) or identify and achieve consensus where the need for remediation or mitigation arises during the course of any approved works.

4 Code of Practice

The following code of practice reflects an understanding between TCIL and DOC with regard to how the works can best be undertaken to minimise the effects on soil, vegetation and wetlands, and how these disturbed sites should be appropriately restored in recognition of the high natural and scenic values of the area.

The purpose of the code of practice is

1. to set operational standards that will minimise the impacts on the environment from the works undertaken and
2. to rehabilitate work sites to a high standard ensuring the shortest possible time required for the reinstatement of soil stability, the recovery of disturbed vegetation communities and ensure wetlands downstream of work sites are not adversely affected by sedimentation.

5 Vegetation Clearance

The vegetation of the Treble Cone Conservation area is dominated by *Chionochloa macra* and associated grasses, herbs, cushion plants and low woody (non-cushion habit) species up to an elevation of around 1880 to 1900 metres above sea level (masl). Above this areas of bare ground increase along with rock outcrops and bluff features, soils are thin and poorly developed. The vegetation is characterised by cushion plants, snow bank communities and fellfield.

Seepages, streams and bogs are vegetated by tussock grassland and a variety of herbs and cushion plants.

1. Where possible only contractors experienced at working in alpine environments shall be used. The contractor will have a proven record of working in highly natural environments

and will have a high regard and sensitivity towards achieving quality finished and landscaped works that reinstate the land to a condition as close as possible to its original state, replicating the surrounding natural (undisturbed) environment.

2. Prior to the contractor starting works at the site the Concessionaire shall ensure that an onsite briefing takes place between the jointly appointed environmental monitor and the contractor(s). The purpose of the meeting is to ensure that all parties have a common understanding of the construction zone boundaries, the areas to be used for vegetation stock piling and storage, a plan of how the works will be undertaken, identification of critical works (in terms of the actual or potential adverse effects and their avoidance, remediation or mitigation) and a clear understanding for the standards expected for the earthworks (including stream crossings, the removal and re-instatement of vegetation and topsoil).
3. The contractor must remove the vegetation layer with the prime focus being to minimise the damage to the plants and to maximise the likelihood that whole plants will remain intact, and retain as much root material and soil as possible to maximise the potential for successful re-establishment and survival when transplanted or re-instated.
4. All vegetation uplifted within the approved work zones will be carefully stored in designated areas. Where required, plants may be stockpiled with care, within an area cleared of vegetation, with a maximum of 2 - 3 plants stored on top of each other (pile can be up to about 1 metre high) to reduce smothering and breakage of crowns and stems.
5. Plants shall be placed into piles or laid adjacent and close to the work site rather than being tossed or tumbled out of the bucket of the excavator. Plants must where possible be stored roots down and packed tightly together to prevent drying out and improve ease of handling during replacement.
6. Cushion vegetation affected by earthworks will where possible be lifted as whole plants by digger or hand so that most of the root structure and surrounding soil remains intact. The plants and associated turf and topsoil will be re-instated over the exposed areas as soon as practicably possible.
7. Where possible, vegetation will be progressively or directly reinstated during the course of works. When undertaken by a skilled and experienced digger operator, direct or progressive reinstatement offers a significantly improved chance of plant re-establishment and survival. Plants will be placed into a scrape or depression made by the excavator and soil packed around them to ensure plants are reinstated flush with the surrounding ground.
8. All stored/ stockpiled vegetation must be re-instated within 3 weeks or watered if conditions are very dry and this cannot be achieved. This may require a water tanker to gain access to the work site in extremely dry conditions if works are not near a reticulated water supply and water cannot otherwise be delivered to the site.
9. Alternatively, plants that cannot be reinstated within 3 weeks could be transported and used to reinstate another previously disturbed site requiring supplemental planting.
10. Any surplus plants and turf that cannot be used to restore previously disturbed and recovering sites will be removed from the site in consultation with the DOC representative. Where possible these plants should be sent to a nursery for division, propagation and storage to be returned to the site when needed for the restoration of future work programmes.
11. Where possible, works requiring revegetation using these methods should be undertaken when soil moisture conditions are good, e.g. after snow-melt and prior to the onset of

winter conditions (freeze/ thaw cycles). May 1st is an appropriate deadline for the completion of revegetation work following summer development works.

12. Works undertaken in the vicinity of streams, seepages or bogs or that intercept sub-surface slope drainage must ensure that measures are in place to prevent soil erosion or sedimentation of downstream environments or vegetation communities. These measures must be in place prior to the commencement of works. Monitoring should ensure that measures in place are working effectively.
13. Water intercepted by construction work, installation of services or earthworks must be managed to maintain the integrity and flow to downstream environments. Measures shall be put in place to ensure that water intercepted does not create or contribute to soil erosion and sedimentation in or downstream of the work site.
14. Where required, water tables must be established to prevent water from eroding soil and undermining the successful restoration of vegetation disturbed by works. Water tables should where possible be constructed such that they prevent sediment from being discharged into vegetation within the receiving environment below the outfall of the water tables.

6 Maintenance & Aftercare

The maintenance period shall continue until the pre-disturbance density has been achieved and colonisation of the site by herbs and grasses from the surrounding area is occurring and the process of natural regeneration and recovery is evident, or 5 years, whichever is the lessor.

In the event that sufficient recovery has not been achieved within 5 years, an extended maintenance period will be agreed by TCIL and DOC for the site involved.

Practical maintenance and aftercare of reinstated vegetation is achieved by:

1. The avoidance of additional or subsequent disturbance of recovering areas
2. Management to prevent, control or contain erosion and sedimentation within or downhill of the disturbed area,
3. The removal of any weeds found in the disturbed area.
4. Control of hares should they threatened the re-establishment of vegetation to be mutually agreed by TCIL and DOC.
5. Transplanted or re-instated vegetation should be alive (although some dieback may occur), have shoot initiation, growth, fruiting and flowering within 3 to 5 years. Natural regeneration of some colonising herbs and grasses is likely to occur within 3 to 5 years of remediation works.
6. Should die-back be observed in the re-planted areas during the maintenance period (5 years following the completion of works), or the reinstatement of pre-disturbance plant density (of tussocks) cannot be achieved at any site, or portion of any site, nursery tussock may be required to ensure continued progress towards the restoration of pre-disturbance tussock density. This measure is to protect soil from erosion or adjacent wetlands from sedimentation.

7. The need for supplemental planting will be determined by the independent monitor in consultation with TCIL and DOC.
8. Where plants are to be replaced, with nursery tussock, these should be eco-sourced from a reputable nursery and free of weeds.
9. Where natural regeneration of species associated with the pre-disturbance community are present in the recovering area, the replacement of tussocks may not be required. This should be determined on a case by case or site by site basis following an assessment of overall progress towards restoration goals in the approved work area.
10. Priority for supplemental planting shall be given to steep, erosion prone slopes that cannot be remediated in the course of undertaking the approved works.
11. Where tussocks slump or roll down steep slopes, or slips or landslides occur within the area affected by earthworks, recovered tussocks may be divided (into groups of at least 20 tillers) and replanted following stabilisation of the slope.
12. Where a shortfall of tussocks is likely to occur, available tussocks should be planted at the toe of the slope or where they will filter sediments or buffer wetlands downslope with the remaining area supplemented by nursery grown or propagated tussock.

7 Monitoring

The affected areas shall be monitored prior to the commencement of works, during critical phases of the works, following completion but prior to machinery leaving the site, and over the maintenance period, for up to 5 years following completion of construction, depending on the scale of works, vegetation affected and progress towards recovery.

The purpose of the monitoring is to

- assess the work required to achieve the re-instatement of the vegetation cover,
- assess progress towards re-instatement and restoration of vegetation cover,
- identify soil erosion and sedimentation issues that may or will require remediation or mitigation,
- ensure adverse effects on wetland environments are avoided or appropriately remediated or mitigated,
- detect weed species introduced to the area, and
- Identify management responses to issues arising from proposed and approved works.

Photo monitoring sites may be requested to be set up by the concessionaire and environmental monitor or representative of DOC prior to the commencement of works and shall be monitored for no less than the 5 year maintenance period. These points are to be located outside the area affected by the earthworks.