



[Draft] CONSTRUCTION MANAGEMENT PLAN

ADDRESS

765 MUHUNOA WEST ROAD , ŌHAU

Client Grenadier Limited  
June 2021

**DOUGLAS LINKS GOLF COURSE**

**PREPARED ON BEHALF OF:**

**GRENADIER LIMITED**

---

**Prepared by:**

---

**Tom Bland**  
Senior Planner

**Reviewed by:**

---

**Bryce S Holmes**  
Principal Planner and Director

**Date:**  
**Version:**  
**Job Ref:**

JUNE 2021  
DRAFT  
709

This document is the property of Land Matters Limited. Any unauthorised employment or reproduction in full or part is forbidden.

## TABLE OF CONTENTS

---

1. INTRODUCTION.....	3
2. LOCATION OF WORKS .....	4
3. ENVIRONMENTAL OBJECTIVES .....	4
4. REQUIREMENTS .....	5
5. RESPONSIBILITIES.....	6
6. PROGRAMME.....	7
7. SPECIFIC DESCRIPTION OF WORKS.....	8
8. ENVIRONMENTAL IMPACT AND RISK ASSESSMENT.....	10
9. MAINTENANCE.....	14
10. DECOMMISSIONING OF CONTROLS .....	14
11. EMERGENCY RESPONSE PROCEDURE.....	15
12. AMENDMENTS TO THE PLAN .....	15

**APPENDIX 1**  
**EROSION AND SEDIMENT CONTROL PLAN**

**APPENDIX 2**  
**PROPOSED GOLF COURSE CONTRUSTCION PROCESS**  
**MAHI TAHI GOLF PROJECTS**

## 1. INTRODUCTION

---

### 1.1. Introduction

This draft Construction Management Plan (**CMP**) accompanies a resource consent application for an eighteen hole links golf course on the land at 765 Muhunua West Road, Ōhau.

The CMP details the principles, practices and procedures to be implemented by Grenadier Limited to manage the construction phase of the development. The CMP provides details of the potential construction effects, including traffic movements, hours of operation, noise, earthworks and erosion and sediment control.

The proposed development will require bulk cut to fill earthworks to be undertaken to create the proposed golf course profile, followed by shaping and sculpting of the landform to achieve the final landform. Irrigation and drainage systems will be installed within the course and the landform will be stabilised with grass seed and mulch. These works will be managed in accordance with the principles of this CMP.

This CMP is submitted in draft only. It is submitted to demonstrate an indicative and potential means of ensuring the construction activities can be undertaken without generating more than minor adverse environment effects from erosion, stormwater and dust.

### 1.2. Purpose and application

The purpose of this draft CMP is to describe the overall management and monitoring principles procedures to be implemented during the construction phase of the development.

A draft Erosion and Sediment Control Plan (**ESCP**) is provided at **Appendix 1** to this CMP. The ESCP provides specific detail of the controls and management techniques to be applied during the bulk earthworks phase of the development, in accordance with the overall principles contained in this CMP.

Ultimately, the CMP and ESCP are prepared with the aim of ensuring:

- Compliance with any operational conditions of resource consents;
- Compliance with the Resource Management Act 1991 (**RMA**); and
- Environmental risks associated with the project are properly managed.

The CMP sets out the management and mitigation measures to be implemented during the works and specifies when, where, how and by who this will be done. The CMP covers all anticipated construction elements and presents processes for implementing good environmental management.

### 1.3. Scope

The general approach to managing the environmental effects is set out in the main body of this document. The management of earthworks effects through erosion and sediment control measures is provided in outline for the site as a whole in the ESCP at **Appendix 1** to this CMP.

The project team will be required to undertake all construction activities on site in accordance with the provisions of the relevant management plans and resource consent conditions.

***The consent holder shall provide a copy of any resource consent and any documents and plans referred to in this document to each operator or contractor undertaking works authorised by consents within this document, prior to the works commencing.***

***Any amendment proposed to this CMP shall be submitted in writing to Horizons Regional Council (HRC) and Horowhenua District Council (HDC). Implementation of any amendment shall only occur once the amendment has been authorised in writing by HRC and HDC.***

## 2. LOCATION OF WORKS

The works are to take place on land at 765 Muhunua West Road, Ōhau. Details of the site are provided below:

<b>Street address</b>	765 Muhunua West Road , Ōhau (and part of Esplanade Reserve 770 Muhunua West Road)
<b>Legal Description</b>	Lots 1 & 2 DP 51446 (and part of Lot 4 DP 44581 Blks I III Waitohu SD (Esplanade Reserve)
<b>Certificate of Title (CT)</b>	WN20D/892 & WN20D/893
<b>Registered interests</b>	<ul style="list-style-type: none"><li>• No interests registered on WN20D/892</li><li>• WN20D/893 contains a notice (ref. 9110030.1) pursuant to Section 195(2) of the Climate Change Response Act 2002 identifying part of the land as pre-1990 forest.</li></ul>
<b>Site area</b>	107.2ha (20.8ha + 86.4ha)

## 3. ENVIRONMENTAL OBJECTIVES

### 3.1. Overall objective

The construction activities are to be progressed in a manner that preserves and enhances the amenity and environmental integrity of the site.

### 3.2. Earthworks

To minimise the effects of earthworks as much as practicably possible by using site specific solutions to earthworks, erosion and sediment control.

### 3.3. Erosion and sediment control

The construction activities will employ the most effective means of erosion and sediment control available. These controls shall be actively managed to ensure the deposition of silt and debris into any watercourse is avoided.

### 3.4. Haulage routes

Internal haulage routes through the site will be kept at the required standard for the vehicles carting material within the site.

No trucks will be allowed to exit the site if they are likely to deposit debris on the public road.

### 3.5. Summary

To achieve these objectives, the following matters are addressed in this draft CMP:

- Statutory and contractual requirements;
- Project structure and responsibilities; and

- Control of construction activities and the sequencing of work.
- General guidelines for erosion and sediment control on the site; and
- Inspection programmes, reporting, review, corrective action and contingency measures.

## 4. REQUIREMENTS

---

### 4.1. Statutory requirements (indicative)

- Resource Management Act 1991
- NZS4431 1989 – “Code of Practice for Earthfill for Residential Development”
- NZS4402 1986 – Methods of Testing Soils for Civil Engineering Purposes
- Erosion and Sediment Control Guide for Land Disturbing Activities in the Wellington Region (2021) (*adopted by HRC*)

### 4.2. Consent requirements

#### 4.2.1. Horowhenua District Council Land Use Consent

Land use consent has been sought from HDC to ‘*establish and operate an 18 hole links golf course, visitor accommodation and associated earthworks*’ (ref. 501/2020/229). The following consents have been sought:

1. Land use consent for a golf course activity as a **discretionary activity** under Rule 19.4.1 of the Horowhenua District Plan.
2. Land use consent for a clubhouse, 10x two-bedroom accommodation units and driving range building as a **discretionary activity** under Rule 19.4.1 of the Horowhenua District Plan.
3. Land use consent for earthworks both within and outside the Coastal Outstanding Natural Feature and Landscape as **restricted discretionary activities** under Rule 19.3.1(a).

As part of the further information request from HDC (dated 3 February 2021), a CMP has been requested for the proposed activity.

#### 4.2.2. Horizons Regional Council Resource Consents and Permits

Consents have been sought from HRC for the proposal as follows:

4. Land use consent for land disturbance outside the coastal foredune and any identified at-risk or rare habitats as a **controlled activity** under Rule 13-2 of the Horizons One Plan;
5. Land use consent for land disturbance and vegetation clearance within the coastal foredune but outside any identified at-risk or rare habitats as a **discretionary activity** under Rule 13-7 of the Horizons One Plan;
6. Land use consent for land disturbance and vegetation clearance within identified at-risk habitats as a **discretionary activity** under Rule 13-8 of the Horizons One Plan;
7. Land use consent for land disturbance and vegetation clearance within identified rare habitats as a **non-complying activity** under Rule 13-9 of the Horizons One

Plan;

8. Discharge consent for the discharge of treated domestic wastewater into ground as a **discretionary activity** under Rule 14-30 of the Horizons One Plan;
9. Consent to take groundwater at a rate exceeding 50m<sup>3</sup>/day per property for golf course irrigation as a **discretionary activity** under Rule 16-9 of the Horizons One Plan

#### 4.3. Contractual requirements

Resource consent conditions may require the consent holder and the contractor to meet a number of obligations before, during and after construction. The contractor is required to ensure they are familiar with their obligations under this document, any relevant resource consent conditions and the contractor documentation.

The requirements may include:

- Site-specific 'Specification for Earthworks'
- Monthly Reports from the Contractor
- Environmental Compliance Meetings
- Feedback Register

## 5. RESPONSIBILITIES

There are [TBC] groups with responsibility for environmental management of the project:

- Grenadier Limited – the project owner and resource consent applicant;
- [TBC] as the project managers;
- [TBC] as the designers engineers and supervisors of the project; and
- [TBC] as the contractors undertaking the works.

The main earthworks contractor will be responsible for the environmental management of the whole site. The contractor undertaking these works will be required to read the CMP and sign a declaration that they have read and understood it. Other contractors will be required to read and have input into the approved CMP and any other relevant Management Plan and sign a declaration of understanding. The table below identifies environmental management roles on site:

Name	Company	Position	Responsibilities
[TBC]	Grenadier Limited	Consent Holder	Overall responsibility for the project and the project team
[TBC]	[TBC]	Engineer to the Contract	Responsible for overall site works and for ensuring all activities comply with resource consent conditions
[TBC]	[TBC]	Project Manager	Ensuring Contractor compliance with the contract documents, which will include requirement for carrying out the works in

			accordance with the relevant resource consents.
[TBC]	[TBC]	Environmental Manager	Compile monitoring results and prepare monthly construction monitoring reports.  Approval of CMP updates.
[TBC]	[TBC]	Contract Supervisor	Reporting to the Project Manager and Engineer to the Contract on construction progress and compliance, undertakes daily site inspections with the Site Manager. Inspection of works to ensure compliance with the CMP.
[TBC]	[TBC]	Site Manager	Overall responsibility for environmental management compliance and contract compliance onsite: <ul style="list-style-type: none"> <li>• Reviewing environmental performance</li> <li>• On-site compliance with consent conditions</li> <li>• Adherence to CMP</li> <li>• Daily inspections and monthly reporting</li> <li>• Receives complaints for inclusion in the public feedback record and responds</li> <li>• Ensure training is undertaken</li> </ul> Ensuring all sub-contractors know the requirements of the CMP

## 6. PROGRAMME

The construction component of the proposed development will be undertaken broadly in accordance with the Mahi Tahī Golf Projects document 'Douglas Links – Proposed Golf Course Construction Process' at **Appendix 2** to this CMP, and summarised below:

### General Notes

- *The construction process from start to finish will take approx. 18-24 months.*
- *The golf course will be 'playable' approximately 12-18 months after the last part of the golf course is sown out.*

### Golf Course Construction Process - Summary

#### 1. Vegetation clearance

- Remove all undesirable trees and shrubs.*
- Spray out any undesirable grasses and vegetation eg couch and lupin. This process will be ongoing due to the seed bed in the sandy/soil.*
- Harvest any useable timbers.*
- Mulch and/or burn remaining vegetative piles. Slash piles to be buried.*





- Establish a yard at a suitable location;
- Establish and document erosion and sediment controls.

During construction, the contractor will have full control of the site. Any visitors to the site will be signed in and escorted around the site, any regular visitors will be inducted.

Earthworks will be undertaken in accordance with the ESCP at **Appendix 1** to this CMP and with the GWRC guideline document *Erosion and Sediment Control Guide for Land Disturbing Activities in the Wellington Region* (2021).

Health and Safety requirements will be observed by all truck and machine operators on-site.

## 7.2. Working hours

The following working hours are proposed during the construction phases of the golf course:

Monday to Friday (excluding public holidays)	7.00am to 6.00pm
Saturdays, Sunday and Public Holidays	7.00am to 4.00pm

## 7.3. Vehicle movements

During construction activities, apart from cartage of construction material/machinery, vehicle movements to and from the site will be limited to light commercial vehicles bringing site staff to and from the property. It is likely a maximum of 10 people will be on site at any one time and therefore 5-7 vehicle movements to the site in the morning and the same leaving the site in the evening.

## 7.4. Traffic management

No works requiring a Traffic Management Plan (**TMP**) for works affecting a public road will commence until an approved TMP is in place.

The construction traffic for the duration of the development will access the site via the existing access from Muhunua West Road. The existing road network has been assessed as being adequate to accommodate the construction vehicles anticipated.

Appropriate measures will be installed at the site entrance to ensure construction vehicles using the public road network do not deposit mud or debris on public roads. Such measures may include:

- Sheeting of loads for transport to/from site, if there is potential for material to be windblown;
- Visual inspection of vehicles leaving the site;
- Methods to remove debris from wheels prior to vehicles leaving site.

Dedicated areas will be identified within the site for parking of site plant and vehicles. These areas will be progressively moved within the site as the work progresses.

## 7.5. Signage

Suitable 'Construction Site Access' signage is proposed at all site access points to ensure traffic is aware of speed and safety requirements.

Other appropriate site signage will be displayed at the site entrance as required under health and

safety and other construction regulations.

## 7.6. Archaeological discoveries

An archaeological assessment was undertaken for the subject property and the proposed development.

An appropriate archaeological management plan and archaeological authority will be required for the proposal.

Any archaeological finds will be managed in accordance with the archaeological authority and management plan in place for the works.

## 8. ENVIRONMENTAL IMPACT AND RISK ASSESSMENT

---

This section identifies the main activities associated with the construction and commissioning of the project and the potential adverse effects. Based upon these potential adverse effects an Environmental Effects Register will be prepared that identifies how these impacts can be avoided, remedied or mitigated. The Environmental Effects Register is designed to ensure that awareness of potential adverse effects and their management is maintained throughout the life of the project.

### 8.1. Site description

The application site is three parcels of land held in one fee simple title and one esplanade reserve. It is located at the western end of Muhunua West Road, accessed from the south side of the road end. The property is approximately 107ha in area and extends south west from the end of Muhunua West Road to the Ōhau River in the south and to the coast in the west. An esplanade reserve runs along the coastal (western) boundary between the subject property and the coast.

There are a number of existing internal farm tracks across the property providing access to a small bach, the river estuary and along the eastern boundary of the property from the site access towards the river to the south.

The property is to the south of the western end of Muhunua West Road and currently has a single entrance from the public road network via a formed, unsealed vehicle crossing and farm gate leading to a farm access track into the property.

### 8.2. Site limitations, sensitive receptors and potential hazards

#### 8.2.1. Ōhau River

The Ōhau River forms the southern boundary of the property. The lower reaches of the river are managed through a number of stopbanks either side of the river for flood control. The channel of the river itself has been largely left to meander through the farmland across the coastal plain to the coast.

As it passes the southern edge of the site the river is coastal estuary with saltmarsh wetland and a moving river channel and river mouth. Currently the river swings to the south at the coast to reach the sea 500m to the south of the subject property.

#### 8.2.2. Saltmarsh wetland

As described above, part of the Ōhau River estuary along the southern edge of the site has been identified as saltmarsh wetland. The area of saltmarsh wetland will need to be protected from adverse effects during the proposed construction works.

### 8.2.3. Coastal foredune

The coastal edge including the foredunes and adjacent stable dunelands, have been identified as an Outstanding Natural Feature and Landscape (ONFL). The coastal dunes have also been identified as having a high level of Natural Character. In addition, the Coastal Environment has been identified as having a high amenity value. The District Plan also recognises the vulnerability of the coastal dunes, their characteristic topography, their visibility and visual qualities and their susceptibility to change.

### 8.2.4. Schedule F habitats

Areas of indigenous vegetation on the site have been identified as Schedule F habitats (areas of indigenous vegetation that meet the description for rare, threatened or at-risk habitat under Schedule F of the One Plan). Adverse effects on areas of significant indigenous vegetation, in particular those identified as Schedule F habitats, will be managed throughout the construction of the golf course.

## 8.3. Main construction activities

The main construction activities for each stage are:

- Site establishment and construction of erosion and sediment controls;
- Isolation of sensitive areas (including existing vegetation to be retained and any existing on-site utilities);
- Clearance of vegetation from works area;
- Stripping and storage of topsoil from the areas to be disturbed;
- Cut to fill earthworks to achieve desired landform;
- Removal of any unsuitable material;
- Re-spreading of topsoil and/or stabilisation of the completed areas through grassing/tarmacking/etc. to facilitate erosion and sediment control;
- Removal of all controls and reinstatement of site.

## 8.4. Potential adverse effects

If not managed appropriately, the construction activities associated with this development could lead to adverse effects. These effects will be avoided through compliance with this CMP and the associated requirements outlined in Section 4.

The resource consent application and this CMP address the following potential adverse effects:

- Deterioration of water quality in surface water bodies from the effects of sediment discharges from disturbed areas;
- Damage or destruction of sensitive and valued habitats, including the Ōhau River estuary, saltmarsh wetland and coastal dunes;
- Excessive noise or dust nuisance on neighbouring properties;
- Loss of topsoil due to poor storage and handling.

## 8.5. Erosion and sediment control principles

The minimisation of accelerated erosion and the effective management of sediment runoff from

the area of works is the main focus of the erosion and sediment control at the site.

The erosion and sediment controls proposed for this project are therefore aimed at ensuring a high level of protection against sediment discharges into any waterbodies or sensitive environments during low to medium intensity rainfall events, and protection against uncontrolled discharges and scour during high intensity rainfall events.

The management procedures proposed for the control of erosion and the treatment of sediment run-off, from earth-worked areas, for this project are based on the following principles:

- Minimise disturbance;
- Staged construction;
- Protect steep slopes;
- Protect ecological features and water bodies;
- Stabilise and rehabilitate exposed areas rapidly and progressively;
- Install perimeter controls;
- Employ detention devices;
- Implement an evolving CMP;
- Inspect the performance of the erosion and sediment control devices;
- Maintain all erosion and sediment control measures to ensure maximum efficiency; and
- Install additional measures prior to medium to high intensity rainfall events, where this is considered necessary and practicable.

The controls proposed will include:

- Stabilised construction entrance;
- Surface roughness and battering;
- Cleanwater diversions around areas of disturbed ground where steep slopes are uphill of earthworks areas;
- Sediment laden diversions;
- Use of silt fences, super silt fences and earth bunds as required; and
- Stabilisation of disturbed ground as soon as practical following completion of works.

In addition to the above controls, the consent holder will employ a range of management procedures during the construction activities to both minimise the potential for, and remedy the effect of, any potential adverse effects from construction. These procedures are detailed in the ESCP for the development, and include:

- Implementation of an adaptable ESCP to respond to any changes in conditions or effectiveness of controls;
- Regular inspection of site and controls to assess performance;
- Installation of additional measures prior to medium to high intensity rainfall events where practicable.

These measures will remain in place for the duration of works for the development. Controls will

be in place prior to any soil disturbance and will remain in place until the area has been stabilised and cover established.

Site specific solutions will be implemented as detailed in this CMP, taking into account construction and maintenance requirements. The solutions proposed are used on a number of well managed earthwork projects throughout New Zealand and are based on the methods documented in GWRC's "*Erosion and Sediment Control Guide for Land Disturbing Activities in the Wellington Region*".

### 8.6. Dust and odour control

Dust and odour may become a problem during certain weather conditions, causing disturbance to neighbouring properties. Dust and odour may be generated from both works on site and haulage of materials to the works area.

If dust and odour become a problem, the contractor shall employ appropriate control measures to avoid, remedy and mitigate any adverse effects.

The following measures should be used to minimise effects of excessive dust and odour on adjoining properties:

- Wherever practicable, scheduling soil disturbance works for outside periods of likely dry/windy conditions to minimise potential dust generation.
- A water cart with sufficient water resources shall be available on short notice for the duration of the contract works. Where the water cart is unable to mitigate any hazard, earthworks shall cease until the hazard is removed by alternative means, as discussed in the contingency plan.
- All storage areas, loading and unloading operations and other activities carried out on site shall be conducted and managed in such a manner as to ensure that all dust and particulate emissions are kept to a practical minimum.
- Progressive stabilisation of disturbed ground should be undertaken to minimise the total area of ground uncovered at any one time.
- Where the existing landform or vegetative cover is being disturbed, ground cover is to be established immediately following earthworks and with a minimum of delay to ensure the wind erosion of soil or other material does not become a nuisance.

Site works shall be managed in such a manner to ensure that there shall not be any objectionable odour at or beyond the boundary of the subject property.

### 8.7. Noise control

Noise will be generated by the on-site works during construction activities. On-site works will be undertaken in a manner that minimises the potential impact of noise generation through the following measures incorporated into the methodology:

- Adhering to the construction hours set out in the in Section 7.2 above to ensure no significant noise-generating activity occurs during evening or early morning;
- Machinery will be operated in accordance with the manufacturers' specifications and, where appropriate, will be fitted with mufflers and/or other noise controlling equipment;
- A procedure will be established for dealing with and addressing any noise complaints raised by neighbours. The procedure will be maintained for the duration of the works.

Practical steps will be taken to minimise adverse noise effects from construction vehicles on the public. Measures to minimise noise effects include:

- Truck operating times will be limited to between the hours of 7am and 6pm;
- Truck horns and engine brakes will only be used in an emergency;
- Trucks will not park and idle in front of residential dwellings; and
- Trucks will observe all speed limits.

Any complaints from members of the public in relation to these activities will be addressed by the contractor and consent holder in an appropriate and timely manner.

### 8.8. Important contractor requirements

The consent holder shall ensure that:

- All on-site storage areas for fuels and lubricants are bunded or contained in such a manner so as to prevent the discharge or spillages of such contaminants;
- All machinery is regularly maintained in a manner to minimise the potential for leakage of fuels and lubricants;
- No equipment or machinery is cleaned, stored or refuelled within 20 metres of any watercourse;
- All machinery is thoroughly cleaned of unwanted vegetation (*e.g.* weeds), seeds or contaminants prior to entering the site;
- No contaminants (including but not limited to oil, petrol, diesel, hydraulic fluid) shall be released into water from equipment being used for the works;
- Any excess material from the construction and implementation of the works shall be removed from site and disposed of in an appropriate manner;
- Any archaeological finds must be managed in accordance with the approved archaeological authority and archaeological management plan developed for the development.

NOTE: Evidence of archaeological material may include burnt stones, charcoal, rubbish heaps, shell, bone, old building foundations, artefacts and human burials.

## 9. MAINTENANCE

---

Daily visual checks of the controls will be undertaken by the site foreman with any repairs noted in a daily diary and completed as required.

Weekly meetings between contract supervisor and the contractor will be held to discuss works on site and management issues. In the event that there is a conflict between works on site and the CMP, a review of the CMP will be undertaken.

If deemed necessary, a review of the CMP will be undertaken in consultation with all appropriate persons. The revised CMP will be approved by HRC and HDC prior to implementation.

## 10. DECOMMISSIONING OF CONTROLS

---

Decommissioning and removal of any temporary controls, including the erosion control measures, will not take place until all earthworks within the relevant phase has ceased and the site has been stabilised.

## 11. EMERGENCY RESPONSE PROCEDURE

---

The Contractor will be responsible for preparing a Site Specific Safety Plan, which will include an Emergency Response Procedure.

The following contacts will be appointed once the Contractor and Engineer to the Contract has been determined:

- **Site Manager**

The Site Manager will be responsible for management of the site, including staff, to ensure that the consent requirements are met, and that the construction works are carried out in accordance with the approved plans and specifications. The site manager will be responsible for liaison with the Engineer to the Contract.

- **Engineer to the Contractor**

The Engineer to the Contract will be responsible for the management of any environmental issues that arise. The Engineer to the Contract will be responsible for the solution to the issue and will liaise with the Site Manager, Site Supervisor and Council Officers to ensure that the appropriate solution is found.

- **Site Supervisor**

The Site Supervisor will be responsible for the daily onsite works and ensuring that these meet the consent requirements and plans. This includes ensuring that the environmental controls and erosion and sediment controls are protected and maintained on a daily basis. If an environmental issue should arise, the Site Supervisor will work closely with the Site Manager, Engineer to the Contract and Council Officers to implement solution.

- **Contractor**

The Contractor will be responsible for the environmental management of the site in relation to the consent requirements. The Contractor will appoint a Site Manager and Site Supervisor to the construction project.

- **HRC and HDC Compliance Officers**

The HRC and HDC Compliance Officers will be the first point of contact for all matters that require liaison with the local authorities.

## 12. AMENDMENTS TO THE PLAN

---

Throughout the course of the project, as monitoring identifies areas where amendments can be made to improve environmental outcomes, these improvements will be made to the relevant plans.

This document sets out the principles to be employed in the control of erosion and sediment discharge during the construction of the development. It is proposed that the detailed ESCP provides more specific information and measures for erosion and sediment control.

Where changes to this CMP are identified these shall be discussed with HRC and HDC. Any amendment proposed to the approved CMP will be submitted in writing to HRC and HDC. Implementation of any amendment shall only occur once the amendment has been approved by HRC and HDC.



**EROSION AND SEDIMENT CONTROL PLAN**

DRAFT

**PROPOSED GOLF COURSE CONTRUSTCION PROCESS  
MAHI TAHI GOLF PROJECTS**

DRAFT



**Project :** Douglas Links - Proposed Golf Course Construction Process

**Date :** 1<sup>st</sup> December 2020

---

### General Notes

- The construction process from start to finish will take approx. 18-24 months.
- The golf course will be 'playable' approximately 12-18 months after the last part of the golf course is sown out.

### Golf Course Construction Process - Summary

1. Vegetation clearance
  - a. Remove all undesirable trees and shrubs.
  - b. Spray out any undesirable grasses and vegetation eg couch and lupin. This process will be ongoing due to the seed bed in the sandy/soil.
  - c. Harvest any useable timbers.
  - d. Mulch and/or burn remaining vegetative piles. Slash piles to be buried.
  - e. Strip the topsoil, if any, to stockpile for re-use
2. Bulk Earthworks
  - a. Undertake the cut to fill earthworks programme in accordance with the golf designers plans
3. Rough Shaping
  - a. Sculpt and shape the material in accordance with the designers plans and site instruction, to create natural patterns and landforms, so that it appears that nothing has actually been done to the landscape at all.
  - b. Ensure that general overland drainage patterns are functioning. Adjust as required to ensure positive drainage.
4. Final Shaping
  - a. Create the detail shapes and features that bring the course 'alive' for the designer and golfer.
5. Irrigation
  - a. Install pump delivery system.
  - b. Install the irrigation system on a hole by hole basis.
  - c. The irrigation install follows in behind the golf course construction team so that 'sow out' can occur shortly after install, to stabilise the ground.

6. Drainage
  - a. Install subsurface drainage, if required. A sandy subgrade will require little drainage due the 'free draining' natural of the land.
  
7. Final Preparation & Sow Out of Golf Hole
  - a. Undertake final preparation of the finished sandy surface after drainage and irrigation has been installed.
  - b. Sow out and hydro-mulch the golf hole.
  - c. Irrigate little and often to ensure an early grass strike.
  - d. Establish for a period of approx 16 week.
  
8. Grow In
  - a. Grow- In : Post establishment. The process of taking the newly grown turf, from the 16 week timeframe through to maturity, to the point when golf will be playable. A period of approx. 12- 18 months.