E A R T H W O R K S
M A N A G E M E N T P L A N

For Steve & Linda Simmons

WDC REF:	201.2017.945
LOCATION:	LAKE OHAU ROAD OHAU
PREPARED BY:	CAMERON LECKIE JULY 2017

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REPORT DETAILS:

Applicant: Steve & Linda Simmons

Location: Lake Ohau Road
Ohau

Site Legal Description: Section 3 Block IV Ohau Lake SD (OT10C/19)

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Cameron Leckie *revision A 12.07.2017*
Licensed Surveyor

Signed on behalf of the Applicant

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1. **Introduction:**

This site management plan relates to earthworks that will be required to construct the access tracks to both proposed dwelling and implement shed, and foundations for both buildings.

The purpose of this plan is to provide supporting information for the associated land use consent application that is currently with Waitaki District Council (WDC ref 202.2017.945).

The plan provides:

- A description of site
- A description of proposed works
- A general construction methodology
- A sediment control management plan

Please refer to the main land use consent application for overall project detail and main description of site and surroundings.

2. **Site:**

The site is 20ha in area and is bare land currently grazed by dry stock. Site topography includes glacial moraine landforms, and is of an undulating contour rising from lake level (approx. 520m) to a high point of approximately 584m.

The ecological assessment identifies no threatened or at risk plant species at the areas affected by proposed earthworks. The site cover is a mix of grasses, shrub and scrub, with some boulders and rock piles present.

Flood plain or ground water is not an issue at elevations of proposed earthworks – shed site 552.5m and dwelling 565.0m. The nearest waterway is Lake Ohau 200m from the dwelling site (approx. lake level = 520m) Overhead electricity lines are present at the Ohau Road end of the site and are well clear from proposed works. No below ground infrastructure is located on site.

No overland storm water paths exist at the proposed earthworks sites, or crossing either of the proposed access tracks.

Figure 1: Excerpt from LINZ topo showing the site and surrounding environment.

3. Description of the work:

Earthworks will be required to establish access tracks to both buildings and prepare the dwelling and shed site for building construction.

The earthworks will involve approximately 750m^3 of material cut to fill. The total area of ground disturbance will be approximately 3800m^2, representing less than 2% of the site.

All excavated material will remain on site, and be used as part of the landscaping and site rehabilitation works following the main excavation.

Building construction will commence as soon as practical following earthworks are complete, to minimise exposure of the excavated subgrade.

4. Earthworks methodology:

The proposed methodology is as follows:

- Establish site access and plant on site
- Setout earthworks and design levels
- Establish sediment control measures and drainage paths where required
- Stage construction - progressively clear vegetation, and excavate to design subgrade levels
- Reinstate exposed batters
- Decommission sediment control measures

5. **Sediment Control Management Plan**

Sediment control practices will include:

- Controlled vehicle entry/egress point where the existing graveled access will be used. This will minimise risk of sediment spreading off site from vehicle traffic.
- Minimise ground disturbance to minimise the risk of run off. Sediment controls are to be deployed where required to contain and control run off. These will be in the form of silt fences, straw bales, and sediment logs.
- Stage the construction
- Protect steep slopes
- Protect watercourses
- Stabilise exposed areas with urgency
- Install perimeter controls where required
- Monitor controls
- Be flexible to evolve as site and weather changes
- Continually assess and adjust erosion and sediment controls as necessary
- Minimise stockpiles of material or aggregate, if not contained stockpiles can discharge sediment or generate dust. Keep stockpiles sheltered and away from prevailing wind. Monitor stockpiles regularly, and remove stockpiles as soon as practicable.

Sediment control procedures will include:

- Stage the works to minimise the potential for erosion and sediment run off
- Ensure effective capture and treatment of run off within the site
- Ensure effective onsite management

Monitoring – all sediment control measures will be monitored daily to ensure they are well maintained and performing as intended. Additional checks will be made before heavy rain events and after events to ensure all measures are operating effectively. Any issues to be addressed immediately.

Dust control

Water will be available during construction and the nominated contractor will use water to suppress dust as required.

6. **Noise control**

Noise will be managed in accordance with the District Plan rules, and any particular conditions of consent. It is not expected noise will exceed a permitted level on neighbouring sites.

7. **Refueling of plant and machinery**

All machinery that can refuel off-site will do so at an authorised facility. No fuel will be stored overnight on site. Any refuelling onsite will be by portable refuelling trailers or small containers. Spill kits will be carried onsite by the contractor. All spills will be immediately contained and rectified in accordance with best industry practice.

8. **Traffic**

With no material leaving site the traffic generated will be minimal. Aggregate will be introduced for the access track pavement, and building foundation work, and this will generate a short term increase in construction traffic. The existing access and surrounding road network can safely accommodate this increase.

9. **Completion**

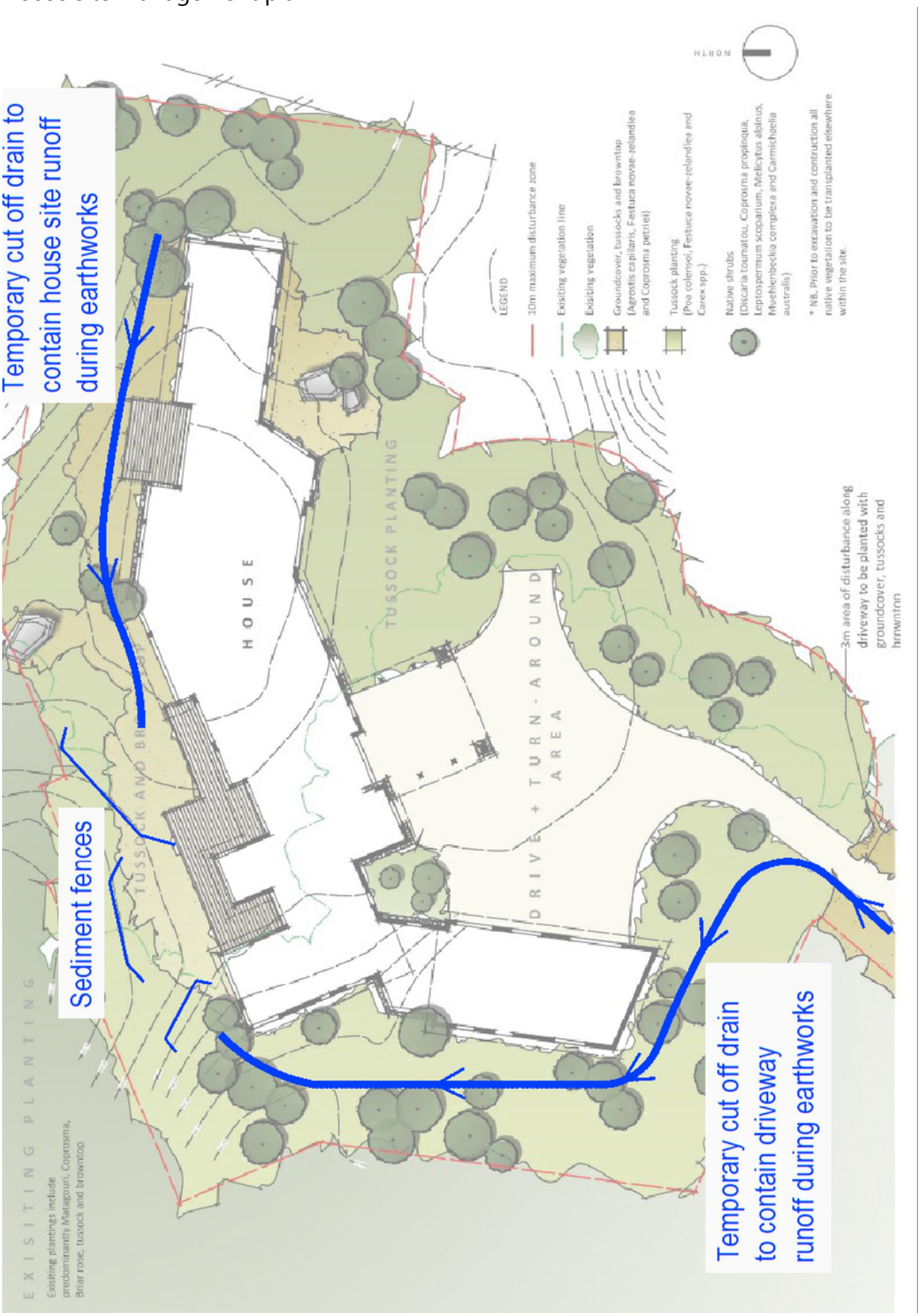
At works completion, all exposed surfaces will be stabilised and reinstated with landscape planting completed. At this point any risk of erosion and run off is negated and erosion and sediment control measures can be removed from site.

10. **Summary**

It is concluded that due to the relatively minor disturbance and quantity of excavation in relation to the site, and distance from overland flow paths and waterways, by following the practices set out by this plan, any adverse environmental effects associated with the proposed earthworks on the site will be no more than minor.

11. Appendix A

House site management plan



1. Appendix B

Excerpts from Environment Canterbury Erosion and Sediment Control Guideline 2007.

Decommissioning

- Keep straw bale barriers in place until the contributing catchment has been stabilised and is no longer contributing sediment.
- Remove and correctly dispose of all accumulated sediments.
- Remove and re-use stakes.
- Backfill the trench and compact the soil; re-grade and smooth as required.
- Stabilise all areas disturbed as part of the removal process with topsoil, grass seed and straw mulch (or use the decommissioned bales) as required.

Useful tips

✓ Well butted and staked.
✗ Located in concentrated flow path.

✓ Alignment of barrier is along the contour.
✓ Good use of vegetative buffer strip with straw bale barrier.
✗ Bales are lying on their strings; bales must sit on their edges with the strings horizontal.
✗ Bales need to be staked.
✗ Returns are needed at 20m intervals.

- Backfill the trench and compact the soil. Re-grade and smooth as required.
- Stabilise all areas disturbed as part of the removal process with turf, mulch, gravel, etc. as required.

Useful tips

	✓ Trenched 200mm into the ground. ✓ Main length of fence along the contour. ✓ Good waratah spacing. ✓ Use of top wire and fabric well fastened. ✓ Good use of vegetative buffer strip behind fence (section 7.1.1) ✓ Good end wing distance upslope of the main body of fence to contain site runoff.
	✓ Main length of fence along the contour. ✓ Pool of water forming behind the structure, allowing sedimentation to occur. ✓ Good post spacing. ✓ Good toeing in of fabric. ✓ Note the 'high tide' mark and the effect that the weight of water has on the fabric. Sediment fences quickly block with fine-textured sediment.
	✓ Good use of returns, isolating small sections of the site.