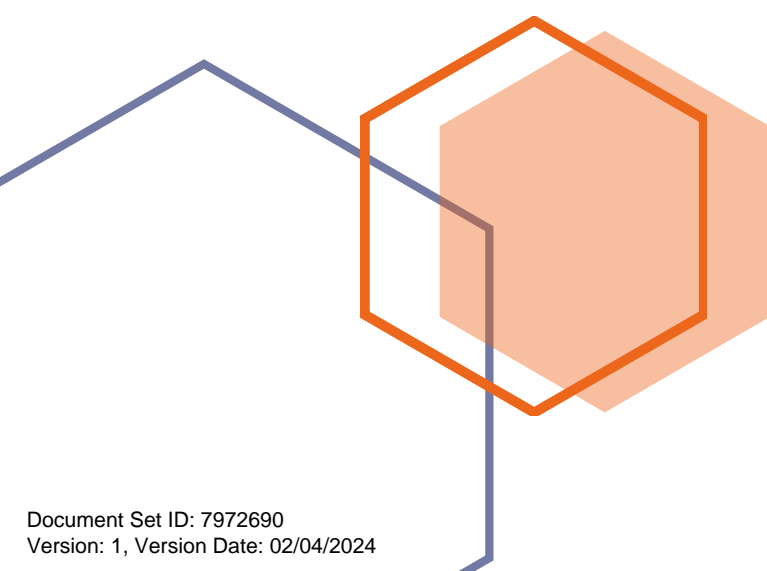




Environmental Management Plan (Rev B)

350 Wanaka-Mount Aspiring Road

March 2024



Document Control	
Title	Environmental Management Plan
Address	350 Wanaka – Mount Aspiring Road, Wanaka
Consent Number	RM230683
Client	Willowridge Developments Limited
Our Reference	23122
Prepared by	 Tom Grandiek (BAppSc, CEnvP) Senior Environmental Consultant 

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Revision	Revision Date	Revision Details	Prepared by
A	4/10/2023	Prepared for client	TG
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Disclaimer

EnviroSCOPE has exercised due skill, care, and attention in preparing this EMP on the basis of their understanding of the subject site through their own site visits as well as information provided by the client and its consultants. EnviroSCOPE has no control over the physical actions, detailed design, equipment, services, and methodologies undertaken by the client or other third parties tasked with implementing EnviroSCOPE's instructions or recommendations. EnviroSCOPE does not accept any responsibility for any environmental incidents or other defects of control measures if there is any departure or variance from the measures detailed in this EMP and any supporting documentation.

Emergency Contacts

Contact made with any of the following shall be undertaken with due consultation of the Environmental Representative or Project Manager.

Element	Emergency Contact	Details
Pollution incident	Otago Regional Council (ORC) Spill Hotline	0800 800 033 compliance@orc.govt.nz
Environmental complaint	Environmental Representative	Brendan Fenn
Discovery of contaminated land	Environmental Representative	Central Machine Hire 027 435 2133
Unexpected heritage finds	Environmental Representative	
Human remains	New Zealand Police	111
Fire including bushfire	Fire and Emergency New Zealand (FENZ)	111
Public utilities	Queenstown Lakes District Council (QLDC)	(03) 441 0499 rcmonitoring@qldc.govt.nz
Internal contacts	Project Manager	Alison Devlin Willowridge Developments 03 474 9911
Internal contacts	Environmental Consultant	Tom Grandiek EnviroSCOPE 027 2633 113

1.0 INTRODUCTION

1.1 Purpose and Scope

On behalf of Willowridge Developments Limited, EnviroSCOPE has prepared this Environmental Management Plan (EMP) for the earthworks associated with the construction of a hay barn at 350 Wanaka-Mount Aspiring Road. This EMP aims to reduce the effects of the project's construction activities on the environment and sensitive receptors.

This EMP is prepared according to the Queenstown Lakes District Council (QLDC) *QLDC Guidelines for Environmental Management Plans, June 2019* (EMP Guidelines). It is considered to have a 'Medium' environmental risk level as per the risk categories outlined in the EMP Guidelines.

The purpose of this EMP is to be an effective and practical reference manual for construction personnel that applies to all project activities during the construction phase and includes the following:

- Strategies to manage environmental aspects and risks, based on associated best practice.
- Provides for contingency planning.
- Provides a framework for monitoring, reporting, review and continual improvement.
- Defines roles and responsibilities.
- Procedures to investigate and resolve environmental non-conformances and initiate corrective and preventative actions.

An overview of the project and sequencing can be found in the construction methodology at Section 2.0.

1.2 Site Overview

The site is legally described as 350 Wānaka-Mount Aspiring Road. The site is accessed via a private driveway off Wanaka-Mount Aspiring Road and overlooks Lake Wanaka and Waterfall Creek. Waterfall Creek flows adjacent to the western boundary of the site and discharges into Lake Wānaka approximately 330 m north of the site. There are no neighbouring dwellings in the immediate vicinity of the site.

The site has a low-grade topography, sloping towards the north-west and is currently vegetated with a mix of pasture, and extensive semi mature landscaping surrounding the site.

This is shown in **Figure 1** below.



Figure 1: Location of the site (Source: QLDC GIS)

1.2.1 Soils and Geotechnical Summary

No geotechnical report has been prepared for the site as the existing soil profile is not to be disturbed during fill earthworks. The New Zealand (NZ) soils database (S-Maps) classifies soils in and in proximity to the site as “*weathered fluvial recent soils formed in alluvial sand silt or gravel deposited by running water, from schist parent material. The topsoil typically has loam texture and is slightly stony. The subsoil has dominantly loam textures, with very gravelly layer from less than 45 cm mineral soil depth to more than 100 cm*”. Upper layers of soil are expected to have rapid permeability to 30 cm. Soil is well drained.

1.2.2 Summary of Earthworks

A total of approximately 580 m³ of material of cut and 660 m³ of fill will be used within the site to form landscaping mounds and shed platform. The maximum area exposed at any one time is expected to be 2,200 m². The extent of earthworks is depicted on the Erosion and Sediment Control (ESCP) drawing in [Appendix 1](#).

1.3 Associated Resource Consents

This EMP has been prepared to ensure that all relevant conditions of associated resource consents are addressed. Provided the project undertakes its operations in accordance with this EMP, it will comply with the relevant conditions. The resource consents associated with this project are given in **Table 1**.

Table 1: Associated resource consents

Resource Consent Number	Related Council	Activity Description	Date of Decision Issue
RM230683	QLDC	Earthworks associated with the construction of barn to be used for the storage of hay and machinery.	TBC

1.4 Suitably Qualified and Experienced Professional

This EMP has been prepared by Tom Grandiek of EnviroSCOPE Limited. Tom is a certified Environmental Professional (CEnvP) and holds a Bachelor of Applied Sciences degree, majoring in Environmental Management. He spent five years working in RMA compliance with local government. Tom has extensive experience in the preparation and monitoring of EMPs and ESCPs.

Tom meets the criteria of a Suitably Qualified and Experienced Professional (SQEP) for the purposes of preparing this EMP and overseeing the environmental aspects of this project.

2.0 CONSTRUCTION METHODOLOGY

2.1 Sequencing of Works

The following sequencing will ensure the earthworks are undertaken efficiently while ensuring good environmental outcomes. This is a preliminary staging methodology and may be subject to change based onsite conditions encountered during construction. This methodology shall be read in conjunction with the Erosion and Sediment Control Plan (ESCP) attached as **Appendix 1**.

Preliminary works and site establishment

- Ensure the current EMP is available onsite.
- Complete site induction with Environmental Consultant.
- Establish site laydown at the existing shed.
- Install clean water diversion bund (CWDB) south of the proposed earthworks extent as per ESCP-001, **Appendix 1**.
- Install dirty water diversion channels (DWDCs) north of earthworks extent as per ESCP-001, **Appendix 1**.
- Install decanting earth bund (DEB) as per ESCP-001, **Appendix 1**.

Bulk earthworks

- Strip topsoil and stockpile.
- Complete cut to fill over subsoil to form building platform and mounding to design levels.
- Re-spread topsoil over completed earthworks and re-grass immediately.
- Undertake final landscaping and revegetation of any remaining exposed areas.

Decommissioning

- Remove erosion and sediment control devices once stabilisation has occurred across the entire site. This is generally defined as 80% vegetative cover.

2.2 Hours of Operation

Construction activities and the associated hours of operation shall comply with *NZS 6803:1999 Acoustics - Construction Noise Guidelines*. Site works may be undertaken between 0730 and 1800 hours, Monday to Saturday. No works are to be undertaken on Sundays or Public Holidays. However, this does not preclude any emergency works or works required for incident investigation or response. Additional detail relating to noise-producing activities are to be undertaken in accordance with Section 7.0 of this EMP.

3.0 EMP IMPLEMENTATION

3.1 Environmental Roles and Responsibilities

3.1.1 Project Manager

The Project Manager is responsible for the effective implementation of the EMP and has overall responsibility for the environmental performance of the project. Duties include:

- Ensuring adequate resources are in place to implement the EMP.
- Ensuring all staff and sub-contractors operate within the guidelines of the EMP.
- Ensuring that an EMP is prepared and that environmental standards, processes and procedures meet relevant resource consent conditions.
- Overseeing the successful implementation, monitoring and review of the EMP.
- Ensuring that inspections are carried out in accordance with the relevant EMP.
- Restricting or stopping any activity that has the potential to or has caused adverse environmental effects.
- Providing notification and reporting of Environmental Incidents to Council and other environmental reports as required by The Guidelines.
- Delegating authority of the above responsibilities.

3.1.2 Environmental Representative

The Environmental Representative supports the Project Manager in the day-to-day implementation of the EMP. Duties include:

- Ensuring the installation of environmental controls as per the EMP.
- Undertaking environmental site inspections.
- Overseeing the maintenance and improvement of defective environmental controls.
- Providing environmental inductions to all staff and sub-contractors.
- Assisting the project leadership in attending to Environmental Incidents and Complaints.

The Environmental Representative shall be familiar with environmental risks associated with the project, the EMP and best practice erosion and sediment control principles and practices.

3.1.3 Environmental Consultant

The Environmental Consultant (SQEP) will provide technical environmental management advice as required. Key tasks can include delivering the Site Environmental Induction to core staff and providing as-built confirmation of erosion and sediment controls to Council. The Environmental Consultant shall undertake monthly monitoring of the site and submit Monthly Environmental Reports to QLDC.

3.1.4 All Staff and Sub-Contractors

All staff and sub-contractors have a responsibility to undertake all activities in accordance with the requirements of this EMP. This includes reporting any activity that has the potential to or has resulted in an Environmental Incident to the Project Manager or Environmental Representative.

3.2 Site Environmental Induction

All staff and subcontractors shall attend an Environmental Induction to ensure they are aware of the project's environmental risks as well as their responsibilities to help manage these risks. Prior to ground-disturbing activities, the Environmental Consultant will deliver the induction to core staff. During the project, the Environmental Representative will induct sub-contractors and new staff.

The site induction handout is attached as **Appendix 3** and all persons inducted will be recorded on the Induction Register attached as **Appendix 4**.

3.3 Environmental Inspections

Table 2 outlines the regular environmental inspections to be undertaken.

Table 2: Environmental inspections

Environmental Inspection	Timing	Purpose
Weekly Inspection	Every seven days	<p>A comprehensive environmental inspection will:</p> <ul style="list-style-type: none"> • Confirm that all environmental controls are present, functional, and adequate. • Identify any activities that may cause an environmental incident or actual or potential environmental effects. • Identify maintenance requirements for implemented management measures. <p>All weekly inspections shall be recorded on the Weekly Site Inspection form attached as Appendix 5.</p>

Environmental Inspection	Timing	Purpose
Pre-Event Inspection	Prior to a significant rain event ¹	To ensure that erosion and sediment controls are present, functional, and adequate for forecast rain event. This inspection will inform any preventative work required and may result in the Rapid Response Procedure being implemented (see Section 4.6).
Rain Event Monitoring	During a significant rain event	To ensure that: <ul style="list-style-type: none"> • Erosion and sediment control devices continue to function correctly and inform any necessary emergency responses. • Sediment retention devices are functioning effectively and have capacity available. • No dirty² water is crossing the boundary of the site. Observations and remediation measures taken will be recorded in a daily job diary.
Post-Event Inspection	Immediately following a significant rain event	Any observations and corrective actions should be recorded in a daily job diary.

3.4 Monthly Environmental Inspection and Reporting by SQEP

The Environmental Consultant (SQEP) can monitor the site monthly to ensure that the EMP is correctly implemented, identify any unforeseen issues arising and advise on alternative environmental solutions. While the site classifies as a medium risk via the QLDC Guidelines due to the area of exposed soil and proximity of Waterfall Creek, the duration of the earthworks are anticipated to be completed quickly and the need for ongoing monthly inspections and reporting likely limited. Once the site has been stabilised and determined to pose a limited environmental risk, monthly monitoring and reporting can be appropriately reduced to the satisfaction of QLDC.

The Environmental Consultant (SQEP) will also submit a Monthly Environmental Report to QLDC within five working days of the end of each month. The report will include the following information:

- Updates to the EMP and the Erosion and Sediment Control Plan (ESCP) during the month.
- Number of weekly and pre and post-rain event site inspections completed.

¹ A significant rain event is defined as any forecast/actual rain event of 15 mm within a 24-hour period or a rain event that can generate overland flow, noting that this varies seasonally.

² 'Dirty water' is defined as water that exceeds the maximum allowable water quality value outlined in the Discharge Criteria at Section 5.2.

- Summary of corrective actions undertaken.
- Positive environmental outcomes achieved and opportunities.

3.5 Environmental Incident Management

Environmental incidents shall be responded to as soon as the project team becomes aware of them occurring. The response will generally involve oversight by the Environmental Consultant and will involve:

- Immediate cessation of the activity that caused the incident.
- Investigation into the cause of the incident.
- Initial response to bring the incident under control.
- Implement any remediation works.

The Project Manager shall notify QLDC of the details of any Environmental Incident within 12 hours of becoming aware of the incident. Notification will be through a phone call to Council monitoring staff (see Emergency Contacts on page four). The Project Team shall provide an Environmental Incident Report within ten working days of the incident occurring. The Incident Report form is attached as **Appendix 6**.

3.6 Complaints Procedure

Any complaint received will be recorded and an investigation will be carried out. The complainant will be provided with a response acknowledging receipt of the complaint and outlining corrective actions to be implemented. After the investigation, any necessary corrective actions will be carried out and a follow-up of the original complaint is to be conducted to ensure the actions implemented have been effective. All complaints will be recorded on the Complaints Register attached as **Appendix 7**.

3.7 EMP Non-Conformance and Corrective Actions

EMP non-conformances found during site inspections, monitoring or as a result of environmental incidents or complaints shall be recorded in the EMP Non-Conformance Register. The non-conformance register attached as **Appendix 8** will detail when corrective actions are due, how they are to be carried out and the close out date. The non-conformance register ensures that issues do not escalate or are missed, as well as, providing a clear record of evidence that can be used to defend any potential complaint or formal enforcement action.

3.8 Records and Registers

The records listed below will be collated onsite. If a request is made by a QLDC official, the records shall be made available to the official within 24 hours of the request being made.

- Environmental Induction Register - **Appendix 4**.
- Weekly Environmental Inspection Form - **Appendix 5**.
- Environmental Incident Reports - **Appendix 6**.
- Complaints Register - **Appendix 7**.
- EMP Non-Conformance Register - **Appendix 8**.
- Water Quality Monitoring Results - **Appendix 9**.

3.9 EMP Updates

The EMP will be regularly reviewed throughout the project to ensure the document remains fit for purpose and to drive continual improvement. This may be initiated by:

- Significant changes to the construction methodology.
- Improvements identified as a result of an Environmental Incident or Corrective Action.
- Where directed by QLDC's Monitoring and Enforcement team.

All EMP updates will be managed through the document control table on page one and shall be submitted to QLDC for acceptance.

4.0 EROSION AND SEDIMENT CONTROL MEASURES

4.1 Performance Criteria

Design, install and maintain erosion and sediment controls in accordance with industry best practices. Generally, *Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region 2016* (Auckland Council Guideline Document GD2016/005).

4.2 Erosion and Sediment Control Principles

Erosion and sediment control ('ESC') devices shall be installed, maintained and decommissioned in accordance with the following principles:

- Erosion and sediment controls are integrated with construction planning.
- Construction is staged to minimise the duration and area of exposed soil open at any one time.
- A 'treatment train' approach so that the sediment retention devices operate as efficiently and effectively as possible.
- Separation of 'clean' and 'dirty' water with clean water to be diverted around the site to minimise the volume of dirty water needing management onsite.
- The extent and duration of soil exposure is minimised.
- Controls are always maintained in proper working order.
- Progressively stabilise and revegetate disturbed or completed areas.
- The site is monitored, and erosion and sediment control practices are adjusted to maintain the required performance standard.
- Soil erosion is minimised as far as reasonable and practical.
- Avoidance of sediment discharge off-site and protection of receiving environments.

4.3 Guidance on Erosion and Sediment Control Devices

The effective control of surface water shall be achieved through the utilisation of carefully selected erosion and sediment control devices to achieve a specific purpose. These guidelines for the devices employed on this project shall be read in conjunction with the ESCP attached as **Appendix 1** of this document.

4.3.1 "Clean Water" Diversion Bunds

A clean water diversion bund (CWDB) will be used to capture and divert clean water from the undisturbed surfaces above the exposed works site. The purpose of these devices is to separate clean and dirty water and minimise the size of the contributing catchment. A CWDB will be installed south of the proposed earthworks extent to divert clean water run-on from above the paddock above and convey it into the Waterfall Creek gully, as indicated on ESCP-001. The upslope catchment is flat to modestly sloping, vegetated in pasture and 4 ha in size.

These devices shall be constructed in accordance with the specifications noted in the schematic diagram in ESCP-002, **Appendix 1** (complete guidelines on pages 38-42 of GD05).

4.3.2 “Dirty Water” Diversion Channels

Dirty water diversion channels (DWDC) will be installed north of the earthworks extent capture and carry sediment-laden runoff to the decanting earth bund (DEB) installed below. DWDCs will be constructed in accordance with the schematic diagram in ESCP-002, **Appendix 1** (complete guidelines on pages 43-46 of GD05). Full calculations are included in **Appendix 2**.

4.3.3 Decanting Earth Bund

A decanting earth bund (DEB) is to be used to capture flows from the DWDCs and allow sediment to settle out of the water column. The DEB shall be located north of the building platform and receive potential flows from the DWDCs, designed to accommodate the 2,500 m² contributing catchment. Beach gravels are often present in subsoils in this area, which will provide additional soakage capacity within the DEB basin.

The DEB will be constructed in accordance with the schematic diagram in ESCP-003, **Appendix 1** (complete guidelines on pages 106-112 of GD05). Full design specifications based on GD05 including depth, width and length are given in **Appendix 2**.

4.3.4 Chemical Treatment

Chemical treatment is not anticipated for this project. The DEB is considered sufficient given the relatively small catchment size and reduced earthworks extent. Floc pouches can be utilised in DWDCs and DEB if deemed suitable by the SQEP. If chemical treatment is deemed necessary based on site observations, a Chemical Treatment Management Plan (CTMP) shall be prepared.

4.3.5 Temporary Stockpiles

Stockpiles may be formed as part of earthworks. Stockpiles shall be formed in accordance with the schematic diagram in ESCP-002, **Appendix 1**.

4.3.6 Progressive Rehabilitation

Progressive stabilisation of earthworks is to occur promptly as areas are finished to minimise the area of exposed soil and thus the generation of sediment-laden water. Prior to final landscaping, this can comprise temporary grassing, turfing or clean aggregate.

4.4 As-Built Verification

The Environmental Consultant will provide the Council with as-built confirmation to verify that the erosion and sediment controls have been installed in accordance with the approved ESCP.

4.5 Maintenance of Erosion and Sediment Control Devices

Ongoing maintenance of the site shall be undertaken as follows:

- Clean out sediment of erosion and sediment control as soon as 20% capacity has been reached.

4.6 Rapid Response Procedure for Significant Rain Events

The Environmental Representative will stay vigilant of weather forecasts. If a significant rain event is imminent, all works will cease in sufficient time for staff to inspect and maintain erosion and sediment control devices and undertake any stabilisation required. Observations will continue through the rain event to ensure the functioning of erosion and sediment control devices.

4.7 Decommissioning and Removal

Erosion and sediment control devices will remain in place until ‘stabilisation’ of the site has been achieved. This is generally defined as 80% vegetative cover as depicted in **Figure 2**.

It is noted that the removal of controls may result in minor soil exposure. Any soils exposed during decommissioning will be stabilised with either grass, mulch or other appropriate erosion control.

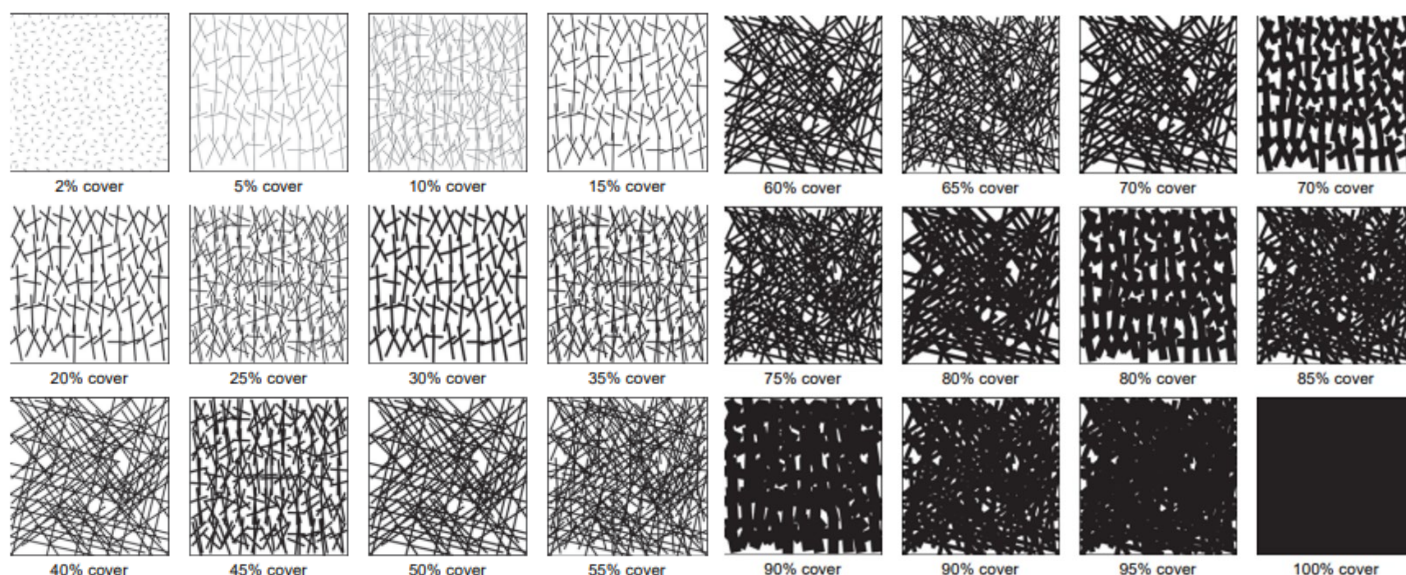


Figure 2: Visual cover estimation (Source: Catchments and Creeks Pty Ltd)

4.8 Inspections and Monitoring

Details of inspections and monitoring are stated in Section 3.3.

4.9 Contingency Measures

The following contingency measures in **Table 3** shall be deployed as required.

Table 3: Erosion and sediment control contingency measures

Issue	Contingency Measure
Sediment-laden stormwater flowing across the site boundary	Undertake measures to stop the flow immediately. Ensure controls are installed according to the ESCP. Contact the Environmental Consultant (SQEP) who will initiate the incident response.
Controls do not appear to be working as intended	Contact Environmental Consultant (SQEP) to inspect, advise and revise ESCP as required.
The site is inappropriately exposed prior to imminent rain event	Cease works and shift effort to checking erosion and sediment controls and stabilisation via the Rapid Response Procedure outlined in Section 4.6.
Sediment retention devices are near capacity and more rain is forecast	Contact the Environmental Consultant (SQEP) immediately for advice.
Abatement notice issued by Council	Contact the Environmental Consultant (SQEP) immediately to advise on methods to meeting abatement notice requirements within the time stated by the abatement notice.

4.10 Erosion and Sediment Control Incident

An erosion or sediment control incident is considered to have occurred where performance criteria outlined in Section 4.1 is not met. The incident procedures outlined in Section 3.5 shall commence.

5.0 WATER QUALITY MANAGEMENT

Surface water bodies (rivers, streams, lakes and wetlands) provide important habitats for many species of plants, fish, birds and animals, some of which are endemic and/or threatened. To protect these values, water quality must be safeguarded, and the natural flow of the watercourse maintained to the greatest possible extent. Where flow must be reduced or diverted, mitigation is required to ensure the values of the watercourse are not degraded.

5.1 Receiving Waterbodies

There are no waterways or critical source areas within the proposed earthworks footprint. Waterfall Creek flows adjacent to the eastern boundary of the site. The creek's catchment includes the northern face of Mt Alpha and the Wānaka-Mount Aspiring Highway. The southern portion of Waterfall Creek has steep banks covered with exotic grasses and weeds. The northern portion of the creek adjacent to the site has been enhanced by the property owner with extensive native plantings. Willows are present along the length of the banks. Waterfall Creek discharges into Lake Wānaka, 640 m north of the site.



Figure 3: Waterways within and in proximity to the site

5.2 Performance Criteria

Any waters flowing across the site boundaries will meet the criteria in **Table 4**.

Table 4: Water quality discharge criteria

Parameter	Discharge Criteria
Turbidity	≤ 100 NTU ³
<i>Or...</i>	
Comparative Visual Clarity (mm) ⁴	TBC
<i>If turbidity or visual clarity is exceeded, test for...</i>	
Total Suspended Sediment (TSS)	≤ 50 mg/L
pH ⁵	5.5 – 8.5
Hydrocarbons or tannins	No visible trace
Waste	No waste or litter is visible

5.3 Management Measures

The following measures will be deployed to ensure the protection of water quality:

- Erosion and sediment controls will be implemented and maintained in accordance with the Erosion and Sediment Control Measures in Section 4.0.
- Refuelling, servicing and storage of hydrocarbons will be in accordance with the relevant procedures in the Chemicals and Fuels Management in Section 10.0.
- All concrete washing is to be undertaken in the designated concrete wash-out pit as per the design specifications in **Appendix 1**.
- All plant and equipment onsite will be inspected regularly to ensure they are of an acceptable standard.

³ Turbidity can be instantly measured using a nephelometer. This is considered desirable as opposed to testing TSS which requires laboratory testing and can take several days. Turbidity can be inferred from the relationship with TSS via linear regression. If the specified turbidity value is not met, a water sample will be collected and sent for TSS laboratory testing.

⁴ In the absence of a turbidity measure, visual clarity can be inferred from the relationship with turbidity via linear regression. If the specified visual clarity value is not met, a water sample will be collected and sent for TSS laboratory testing.

⁵ pH to be tested only when chemical treatment is undertaken.

- Stockpiling of any organic, erodible or hazardous material onsite is not to be placed within close proximity of a watercourse/major drainage line, unless appropriate controls are in place.
- All chemical treatment of sediment-laden water will be undertaken in accordance with an approved Chemical Treatment Management Plan.

5.4 Monitoring

Water quality will be monitored in accordance with **Table 5**.

Table 5: Water quality monitoring measures

Sampling Scope	
Objective	To confirm that all controlled and uncontrolled water flowing from the site meets the Discharge Criteria referred to in Section 5.2.
Spatial boundaries	All water that enters and exits the site from rainfall or overland flow.
Frequency	Immediately following a 15 mm is forecast in a 12-hour period or when water is flowing across the boundary of the site. Where a Significant Rain Event occurs through the night, monitoring shall be undertaken the following morning.
Sampling Design	
Water Quality Criteria	As outlined in the Discharge Criteria referred to in Section 5.2.
Sampling Locations	At boundaries of the site where any water is flowing, specifically the following point discharges: <ul style="list-style-type: none"> • Water discharged from turkey nest.
Sampling Method	<ul style="list-style-type: none"> • TSS – Registered laboratory • Turbidity (NTU) – Nephelometer • pH – pH meter – only if utilising chemical treatment • Gross pollutants – visual observations • Tannins – visual observations (any unusual darkening of waters?) • Hydrocarbons – visual observations (is there any oily film⁶ on surface or smell?)
Quality Control	Any water quality meter will be calibrated according to manufacturer instructions. All observations will be recorded and analysed.

⁶ Some bacteria produce a naturally occurring film on the water surface. Bacteria films breaks apart in angular shapes when disturbed whereas hydrocarbon film separates as globules.

Recording	
Recording Results	All results will be entered into a spreadsheet and kept onsite (form attached as Appendix 9).
Actions	
Non-conformances	Any exceedances observed will be reported to the Project Manager/ Environmental Consultant who will investigate and ensure appropriate corrective actions are implemented immediately.

5.5 Contingency Measures

The following contingency measures in **Table 6** shall be adopted if required.

Table 6: Water quality contingency measures

Issue	Contingency Measure
Exceedance of water quality criteria	<ul style="list-style-type: none"> • Contact the Project Manager and Environmental Consultant (SQEP) immediately. • Works will cease or be modified to remove further risk of contamination. • QLDC will be verbally notified. • The Environmental Incident procedure will commence. • Remedial measures will be implemented and the Environmental Incident will be closed out by the Environmental Consultant (SQEP), with a copy of an Environmental Incident report to the Project Manager, QLDC.

5.6 Water Quality Incidents

A water quality incident is considered to have occurred where the water quality performance criteria outlined in Section 5.2 is breached. The incident procedures outlined at Section 3.5 shall commence.

6.0 DUST MANAGEMENT

Dust from construction activities, vehicle movements and stockpiles can contribute to sediment runoff and create a nuisance to the public, neighbouring properties, adjoining roads and service infrastructure. The key risks associated with dust occur during the bulk earthworks phase of the project.

There are a range of activities that may produce dust onsite including:

- General disturbance of soil (particularly during drier months).
- Inappropriate staging that does not seek to minimise the extent of exposed soil.
- Vehicle movements along haul roads.
- Sediment-tracking onto surrounding roads.
- Stockpiling of topsoil or subsoil.
- Slow or ineffective revegetation procedures.

6.1 Sensitive Receptors

Key sensitive receptors to protect from the effects of dust include users of Ruby Island Road and Wānaka-Mount Aspiring Highway. Other sensitive receptors include residential dwellings located to the east and south and users of the Glendu Bay Walking track located 300 m north of the site.

The prevailing wind is a north-westerly off Lake Wānaka. Due to the areas including and surrounding the project being rural and rural lifestyle the risk of dust impacts on nearby receptors is low.

6.2 Performance Criteria

The project must ensure that reasonable and practical measures are taken to avoid dust moving across the boundaries of the site at all times.

6.3 Management Measures

The following measures will be deployed to ensure dust generation onsite is minimised:

- Stage works where possible to minimise soil exposure extents and timeframes.
- Revegetate disturbed areas progressively throughout construction.
- Dust suppression of exposed areas and stockpiles by water trucks or other methods (e.g., k-lines) approved by the Environmental Representative.⁷
- If dust activities cannot be controlled during high winds, works will cease until favourable conditions return.
- All site access and surrounding roads to be swept clean regularly.
- To avoid spillage risks, trucks will not be overloaded.

⁷ Ensure a consented water take permit is approved by the local authority. If taking water from lakes and or rivers, ensure that the permitted volume of water is taken.

- All trucks must have tail gates up and swept or cleaned prior to exiting to external roads.
- Stockpile heights are to be minimised where possible (< three metres) unless they are covered (e.g. an erosion blanket, chemical sealant, temporary cover crop or mulched).
- Long-standing stockpiles (greater than six weeks) shall be appropriately stabilised.
- Within two weeks of completion, all earth worked areas will be sown out with grass, landscaped or otherwise stabilised by an appropriate erosion control.

6.4 Monitoring

Site staff will maintain continual vigilance for any increases in wind to ensure measures are deployed prior to dust crossing site boundaries. Weekly Environmental Inspections and the Monthly SQEP Environmental Inspections will also ensure that the management measures described above are sufficient and performing effectively.

6.5 Contingency Measures

The contingency measures in **Table 7** shall be adopted if required.

Table 7: Dust contingency measures

Issue	Contingency Measure
Excessive dust creation from soil disturbance	<ul style="list-style-type: none"> • Increase frequency of water truck spraying or increase irrigation. • Spray down excavation areas and activities where excavator bucket is operating. • Cease excavation during high winds, particularly if wind direction is likely to impact sensitive receivers.
Excessive dust creation from hauling operations	<ul style="list-style-type: none"> • Reduce truck speeds. • Cover or spray down loads causing dust impacts. • Apply skim of aggregate over the haul road surface. • Install shakedown devices at entry and exit points.
Excessive dust creation from stockpiles	<ul style="list-style-type: none"> • Hydro-mulch, seed or stabilise stockpiles, cover stockpiles with geofabric. • Locate stockpiles further away from sensitive receptors.
Abatement notice issued by Council	Contact the Environmental Consultant (SQEP) immediately to advise on methods to meeting abatement notice requirements within the time stated by the abatement notice.

6.6 Dust Incident

A dust incident is considered to have occurred where:

- Dust is observed crossing the boundary into sensitive receptors or,
- A justified complaint is received regarding dust emissions across the boundary of the site.

The incident procedures outlined at Section 3.5 shall commence.

7.0 NOISE AND VIBRATION MANAGEMENT

The following assessment and management measures are intended for standard construction equipment that is not expected to induce noise or vibration beyond the maximum limits in the QLDC District Plan. Where upper noise and vibration levels of district plans will be breached, an Acoustic Specialist may need to be engaged to assist with the management of these nuisance effects.

Potential noise and/or vibration effects may be generated by the following:

- Excavation and earth moving plant
- Light vehicles near sensitive receptors
- Ancillary plant and equipment
- Compaction equipment
- Reversing alarms

7.1 Sensitive Receptors

Key sensitive receptors to protect from the effects of noise and vibration include users of Ruby Island Road and Wānaka-Mount Aspiring Highway.

As this earthworks activity is located in an isolated area, potential construction noise and vibration effects are considered low.

7.2 Performance Criteria

1. Construction activities shall meet relevant noise limits specified under Rule 36.5.13 of the Queenstown Lakes Proposed District Plan. This rule requires Construction sound at any point within the site must comply with the limits specified in Tables 2 and 3 of *NZS 6803:1999 Acoustics - Construction Noise*, when measured and assessed in accordance with that standard (see **Table 8** below).
2. Construction activities shall meet relevant vibration limits specified under Rule 36.5.10 of the Queenstown Lakes Proposed District Plan. This rule requires vibration from any activity must not exceed the guideline values given in *DIN 4150-3:1999 Effects of vibration on structures* on any structures or buildings on any other site.
3. Construction activities shall be undertaken in accordance with the permitted hours of operation outlined at Section 2.2 above.

Table 8: Upper limits in dB(A) for construction work noise in residential areas for less than 20 weeks

Time of Week	Time Period	L _{Aeq(t)}	L _{Afmax}
Weekdays	0630 – 0730	60 dB	75 dB
	0730 – 1800	75 dB	90 dB
	1800 – 2000	70 dB	85 dB

Saturdays	0630 – 0730	45 dB	75 dB
	0730 – 1800	75 dB	90 dB

Table 9: Vibration Thresholds for Structural Damage (PPV mm/s)

	Short Term			Long-Term	
	At Foundation			Uppermost Floor	Uppermost Floor
Types of Structures	0 to 10 HZ	10 to 50 Hz	50 to 100 HZ	All Frequencies	All Frequencies
Commercial/Industrial	20	20 to 40	40 to 50	40	10
Residential	5	5 to 15	15 to 20	15	5
Sensitive/Historic	3	3 to 8	8 to 10	8	2.5

Note: When a range of velocities is given, the limit increases linearly over the frequency range.

7.3 Management Measures

The following measures will be deployed to ensure noise and/or vibration associated with the project are appropriately mitigated:

- Notify surrounding sensitive receptors prior to commencing particularly noisy or vibration inducing activities.
- Where practicable, select lower noise producing equipment or use lower noise generating alternatives.
- Regularly service equipment to ensure plant is running optimally.
- Plant and equipment to be fitted with noise control/attenuation devices as appropriate and maintained and operated in accordance with manufacturer's specifications.
- Revving of engines will be limited. All plant and vehicles will be turned off when not in use and if safe to do so.
- The use of audible alarms on mobile equipment will be limited, and two-way communication will be used.
- Undertake activities that may lead to noise or vibration effects, during reasonable and practical hours.

7.4 Monitoring

All earthworks activity will be closely monitored by the operator to ensure that noise and vibration remains within the required limits. If monitoring finds the activity cannot comply with performance criteria, an Acoustic Specialist may need to be engaged to assess the project and provide appropriate mitigation measures and monitoring. Weekly Environmental Inspections and Monthly SQEP Environmental Inspections shall include an assessment of the site to determine the effectiveness of noise and vibration management controls.

7.5 Contingency Measures

The following contingency measures in **Table 10** shall be adopted if required.

Table 10: Noise and vibration contingency measures

Issue	Contingency Measure
Noise and/or vibration complaint received	Manage the complaint in accordance with the Environmental Complaints procedure in Section 3.6.
Exceedance of performance requirement criteria	The Environmental Consultant (SQEP), in consultation with the Environmental Representative, will investigate and implement actions to reduce noise and/or vibration levels to below criteria levels.
Ongoing noise and/or vibration issues	Where noise or vibration emissions consistently exceed the performance criteria despite the site staff's best efforts, an Acoustic Specialist will be engaged to assist.
Abatement notice issued by Council	Contact the Environmental Consultant (SQEP) immediately to advise on methods to meeting abatement notice requirements within the time stated by the abatement notice.

7.6 Noise and Vibration Incident

A noise or vibration incident is considered to have occurred when a justified complaint is received and on investigation is found to exceed the performance criteria. The environmental incident procedures outlined in Section 3.5 shall commence.

8.0 CULTURAL HERITAGE MANAGEMENT

The loss or damage of cultural heritage items could be caused by construction activities. The damage or loss of artefacts can lead to the loss of culturally or historically significant items and information.

Examples of cultural heritage items include:

- Koiwi tangata (human skeletal remains).
- Waahi taoka (resources of importance).
- Waahi tapu (places or features of special significance).
- Māori artefact material.
- A feature or archaeological material predating 1900.
- Unidentified archaeological or heritage site.

8.1 Location of Known Cultural Heritage Significance

A search of QLDC's database indicates there are no known items of cultural or heritage significance on the site.

8.2 Performance Criteria

- The protection of cultural heritage artefacts and places in accordance with the *Heritage New Zealand Pouhere Taonga Act, 2014*.
- Strict adherence to Heritage New Zealand's *Archaeological Discovery Protocol* (attached as **Appendix 10**) in the case of unexpected finds.

8.3 Management Measures

All works on this project will be undertaken in accordance with the obligations of the *Heritage New Zealand Pouhere Taonga Act, 2014*.

8.4 Monitoring

Weekly inspections shall include a visual assessment of the site to ensure that no new significant artefacts have been encountered. However, operators must remain vigilant for such encounters as they occur.

8.5 Accidental Finds

If any unknown artefacts are uncovered, the project will work to Heritage New Zealand's *Archaeological Discovery Protocol* (attached as **Appendix 10**).

9.0 VEGETATION MANAGEMENT

9.1 Sensitive Receptors

The site is predominantly covered in exotic pastures associated with agricultural activities. Some mature Willow trees are located within the banks of Waterfall Creek, with a large portion of these removed, or being removed. Riparian planting alongside the waterways has been undertaken in some areas, with local indigenous species utilised.

9.2 Performance Criteria

- Maintain a clear distance from the vegetated banks of Waterfall Creek.

9.3 Management Measures

The following measures will be deployed to manage vegetation:

- Avoid the clearance of indigenous or protected vegetation where possible during excavation works.
- Demarcate vegetated areas outside of the earthworks footprint as no go zones.
- Treating weeds prior to disturbance of the natural surface.
- Maintain existing indigenous and or any protected vegetation.
- Weed free topsoil will be retained for reuse in site rehabilitation.

9.4 Monitoring

Weekly Environmental Inspections and Monthly SQEP Environmental Inspections shall include a visual assessment of the site to determine the effectiveness of vegetation management controls.

9.5 Vegetation Incident

A vegetation incident is considered to have occurred where:

- Protected vegetation is damaged or removed.
- A no-go zone is breached.

The environmental incident procedures outlined at Section 3.5 shall commence.

10.0 CHEMICALS AND FUELS MANAGEMENT

Hazardous substances can endanger both human health and the environment. Used incorrectly they can cause catastrophic accidents, such as fires and explosions, and serious harm to people who are exposed to them.

10.1 Sensitive Receptors

Key sensitive environmental receptors include staff members working on the site and the adjacent Waterfall Creek.

10.2 Performance Criteria

- Chemicals and fuels are stored and used in a manner that avoids contamination of site and surrounding environment.
- All spills are cleaned up immediately and the contaminated soils/waters disposed of appropriately.

10.3 Management Measures

The following measures will be deployed to ensure chemicals and fuels associated with the project are appropriately managed.

- All hazardous substances to be stored, transported and used according to the safety data sheet requirements.
- Storage of chemicals and fuels shall be located as far as practicably possible from waterways and concentrated flows.
- Refuelling of vehicles and plant onsite will occur in the designated refuelling bay as shown in **Appendix 1**.
- All concrete washing is to be undertaken in the designated concrete wash-out pit as per the design specifications in **Appendix 1**.
- One 240 L Oil and Hydrocarbon spill kit and one 240 L Chemical spill kit will be located in close proximity to the location of liquid hazardous materials storage and refuelling areas.
- The volumes of the hazardous substances listed in **Table 11** will not be exceeded.

Table 11: Maximum volumes of chemicals and fuels

Chemicals and Fuels	Maximum Volume	Storage Location
Diesel	1,000 L	Fuel tank or Jerry cans in lockable container
Unleaded Fuel	100 L	Jerry cans in lockable container
Oil	10 L	Packaging in lockable container
Lubricant (WD40 or similar)	Six Cans	Packaging in lockable container
Grease	5 L	Packaging in lockable container
Spot marking paint	2 L	Packaging in lockable container

10.4 Monitoring

Weekly Environmental Inspections and Monthly SQEP Environmental Inspections shall include a visual assessment of the site to determine the effectiveness of chemicals and fuels management.

10.5 Contingency Measures

The following contingency measures in **Table 12** shall be adopted if required.

Table 12: Chemicals and fuels contingency measures

Issue	Contingency Measure
Spills response	<ul style="list-style-type: none"> • Stop works in proximity to the spill and assess the safety of all personnel. • Take immediate action to contain the spill to prevent discharge into stormwater drains or natural waterways. • Use spill kits to contain and treat the spill. • Notify Environmental Consultant to advise on next steps. • If necessary, notify the Regional Council spill response unit. • Remove contaminated material to a suitable contained location for remediation/disposal (require any necessary approvals/permits from ORC). • The spill kits shall be replaced by an approved supplier.
Inappropriate storage	<ul style="list-style-type: none"> • Upgrade facility. • Clean-up of storage area. • Notify and train staff.
Inappropriate handling/transport	<ul style="list-style-type: none"> • Notify and train staff through toolbox meetings on the appropriate handling and transport methods.
Inadequate spill kit materials	<ul style="list-style-type: none"> • Order more materials. • Investigate types of chemicals onsite and consult a supplier for advice on appropriate equipment. • Develop or revise spill material monitoring and ordering system.
Inappropriate disposal of chemicals or fuels	<ul style="list-style-type: none"> • Provide appropriate disposal facilities or service providers. • Notify and train staff.
Inaccurate or insufficient records	<ul style="list-style-type: none"> • Advise staff and update records. • Monitor through inspections.

10.6 Chemicals and Fuels Incident

A chemicals and fuels incident is considered to have occurred where:

- A spill more than five litres has occurred.
- A situation is discovered where a spill of more than five litres would likely have occurred before it happens where the management measures listed above have not been followed.

The environmental incident procedures outlined at Section 3.5 shall commence.

11.0 CONTAMINATED SITE MANAGEMENT

There are no past HAIL activities identified within the earthworks area. This is confirmed in the Assessment of Environmental Effects report prepared by Willowridge Developments Limited and a search of QLDC and ORC HAIL register.

11.1 Contingency Measures

It is not expected that contaminated material will be encountered, however this cannot be ruled out. If a potential contaminated site is identified (e.g., by landfilled waste, odour) during construction works, the following contingency measures will be undertaken:

- Immediately notify the Project Manager.
- Prevent spread of contamination by installation of silt fencing, covering material with plastic or geofabric material. This will be done wearing appropriate PPE as outlined in the Health and Safety Management Plan.
- Engage the Environmental Consultant who will advise on the engagement of a Contaminated Soil expert.
- EMP to be amended to manage any new contaminated soil encountered in coordination with the contaminated soil expert (if engaged).

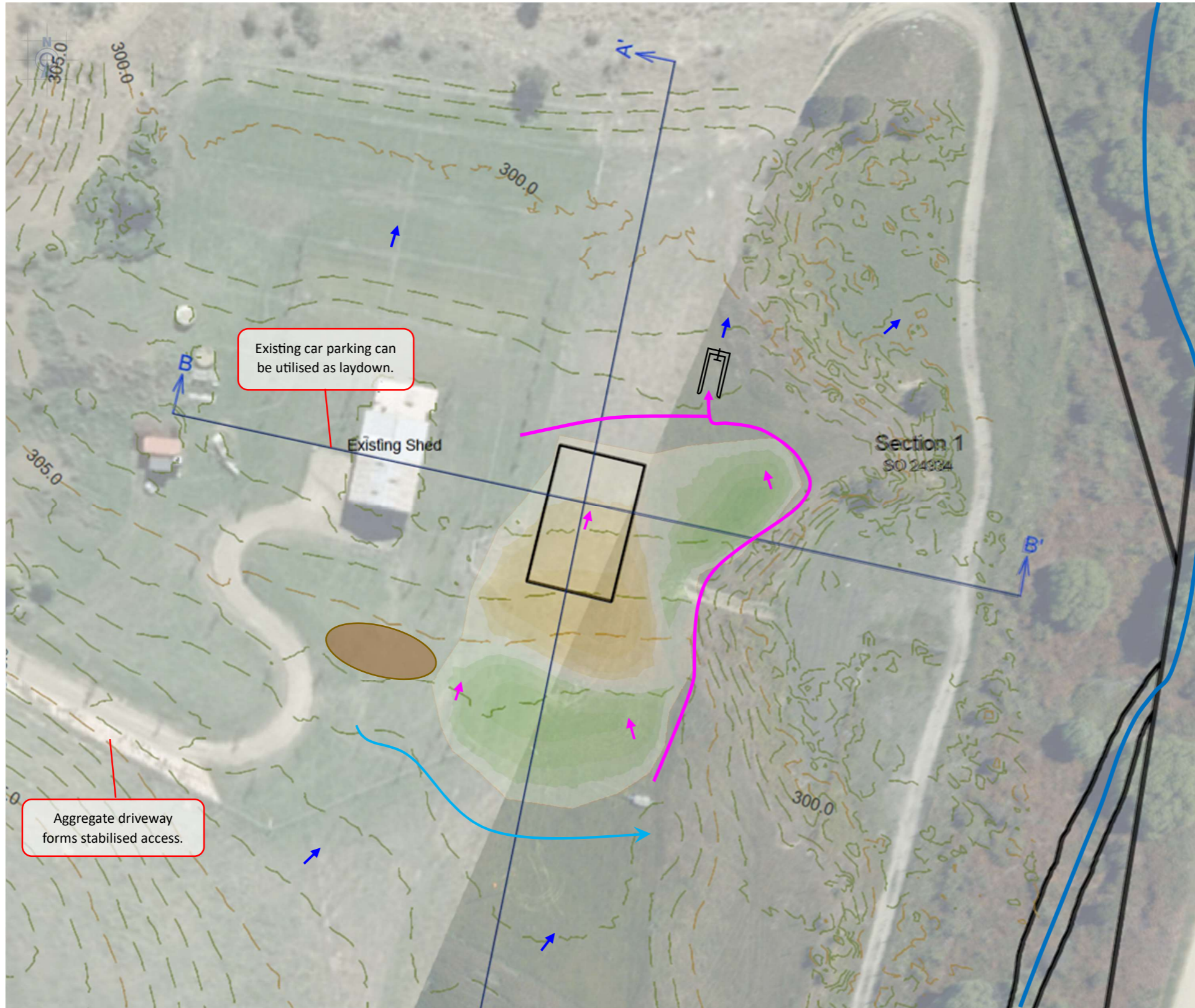
11.2 Contamination Incident

An environmental incident is considered to have occurred where inspection finds that excavation or other work continues within contaminated soil without report or remedial action.

The environmental incident procedures outlined in Section 3.5 shall be followed.



APPENDIX 1 **Erosion and Sediment Control Plan Drawing**



Legend

	Clean water overland flow
	Dirty water overland flow
	Clean water diversion bund (CWDB)
	Dirty water diversion channel
	Earthworks extent
	Waterfall Creek
	Decanting earth bund (DEB)
	Drop-out pit
	Topsoil stockpile

Notes

1. This plan is to be read in conjunction with the Environmental Management Plan document prepared by Enviroscope.
2. All locations of erosion and sediment control (ESC) devices are indicative and exact placement to be confirmed onsite.
3. ESC devices to be installed and maintained in accordance with Auckland Council's 'Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region (GD05)' and manufacturer's instructions where relevant.
4. All devices are to be inspected daily and pre- and post-rain event to ensure they are fully functional.



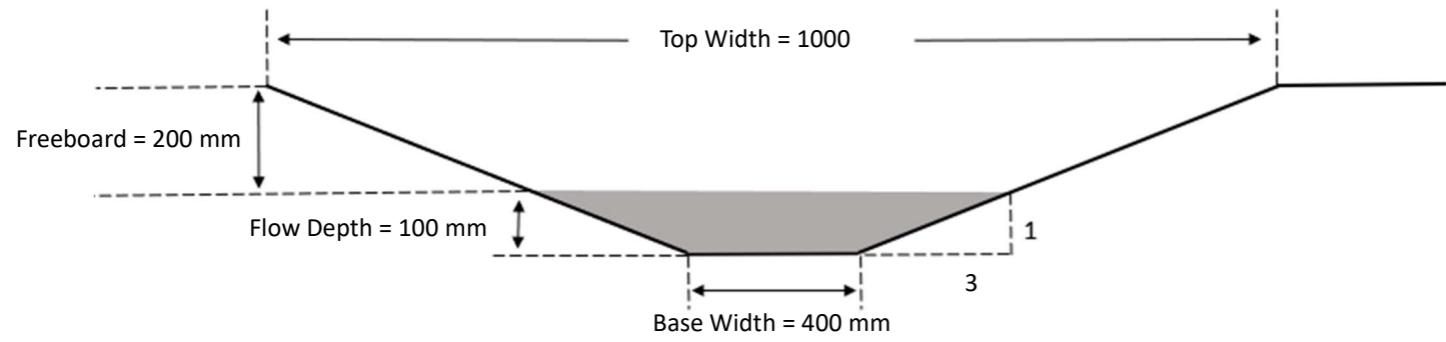
Project: 350 Wanaka-Mount Aspiring Road

Description: Earthworks Plan

Drawn	Approved	Date	Drawing No.	Revision
WT	TG	28/03/2024	ESCP - 001	B

DIRTY WATER DIVERSION CHANNEL

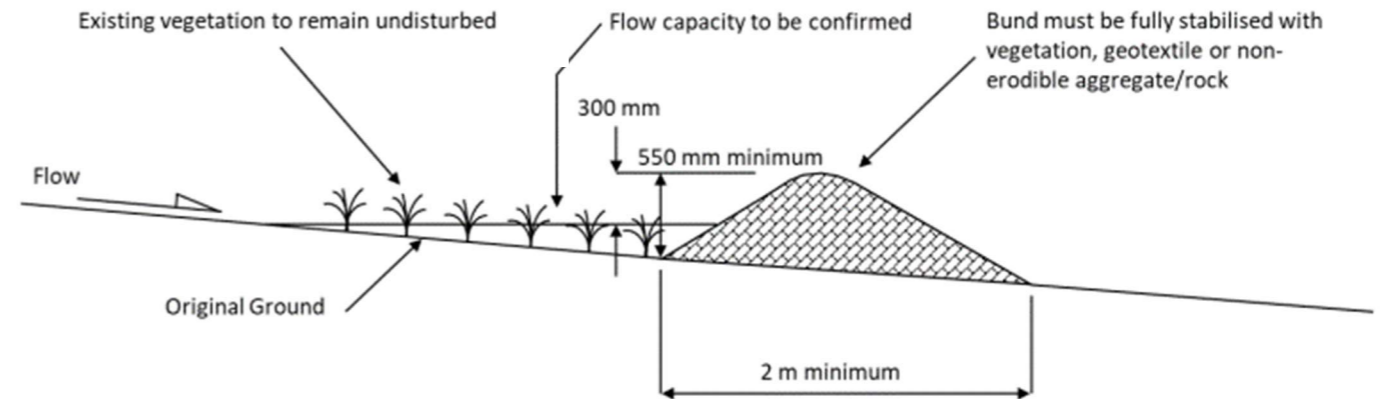
(Pages 43-46 from GD05)



- This has been designed to convey up to a 5% AEP design event.
- Trapezoidal shape
- Full calculations are included in [Appendix 2](#).

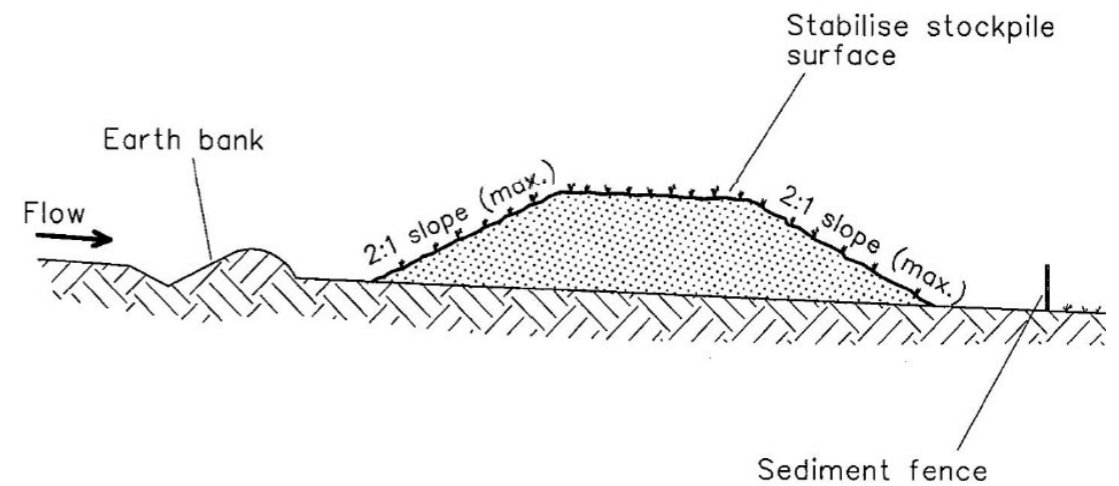
'CLEAN WATER' DIVERSION BUND

(Page 38-43 from GD05)



- Upslope catchment is a modestly sloping grassed paddock approximately 4 hectares.
- Ensure bund is well compacted and stabilised.
- Monitor the inlet and outlet for scour.
- Ensure there are no areas of ponding or blockages along the length of the bund.

TEMPORARY STOCKPILES



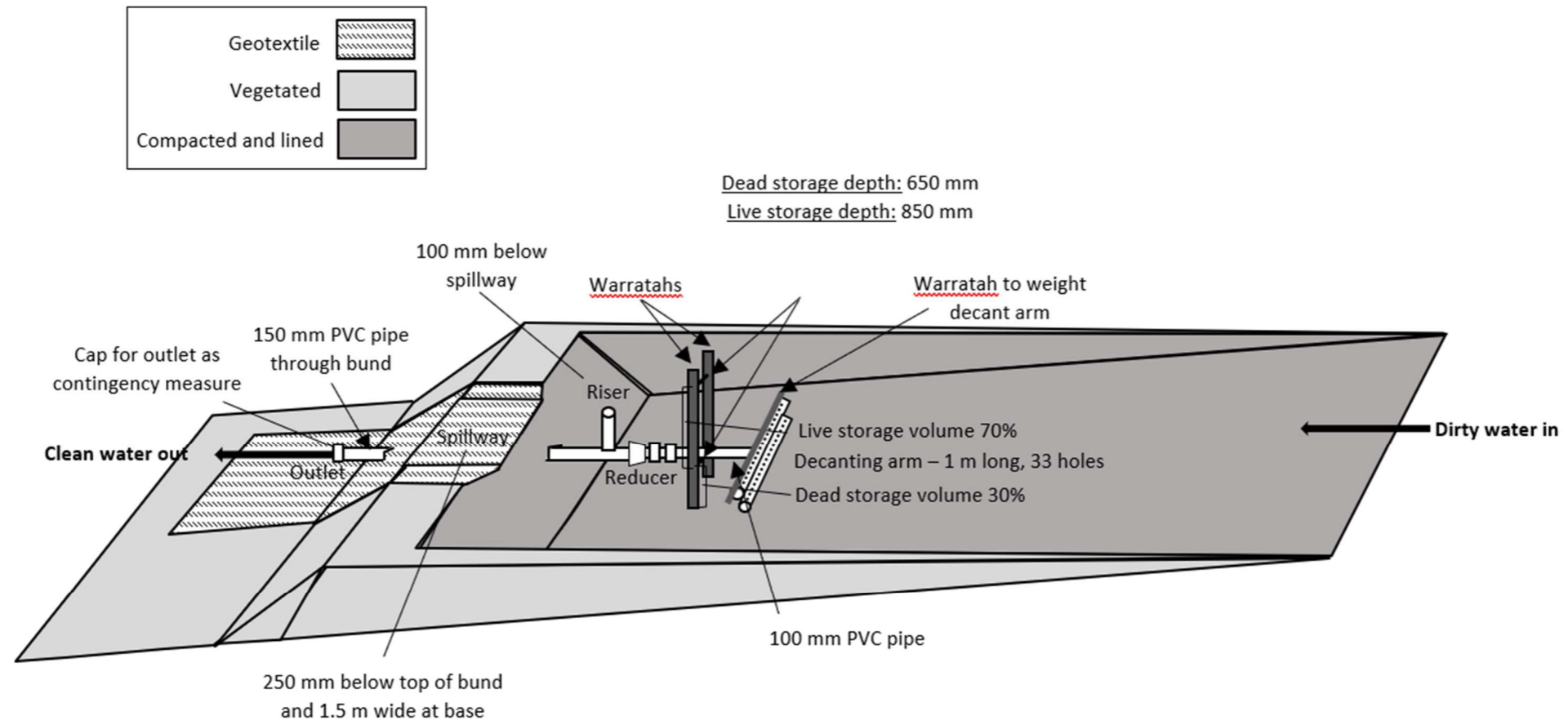
Project: 350 Wanaka-Mount Aspiring Road

Description: Erosion and Sediment Control Plan - Schematics

Drawn	Approved	Date	Drawing Number	Revision
WT	TG	28/03/2024	ESCP - 002	B

DECANTING EARTH BUND

Page 106-112 from GD05



- See **Appendix 2** for full calculations.



Project: 350 Wanaka-Mount Aspiring Road

Description: Erosion and Sediment Control Plan - Schematics

Drawn	Approved	Date	Drawing Number	Revision
WT	TG	28/03/2024	ESCP - 003	B

REFUELING BAY



- Locate the hardstand as far as practicably possible from waterways and concentrated flows.
- Ensure spill kit is located nearby.

CONCRETE WASHOUT PIT



- The concrete wash out pit consists of a plastic-lined bunded pit constructed with fill or straw bales.
- After concrete washout any water shall be left to evaporate.
- Cured concrete is to be disposed of within the plastic sheet to a licensed facility.

SPILL KITS



- One 240 L Oil and Hydrocarbon spill kit and one 240 L Chemical spill kits will be located in close proximity to the location of liquid hazardous materials storage and refuelling areas.

WASTE



- Where possible, waste shall be segregated into labelled bins.
- Wastes on site will be suitably contained and prevented from escaping off site. This may include covering skip bins during high winds.
- Waste storage is not permitted in or near drainage paths.
- Wastes will be removed from site when bin is full.



Project: 350 Wanaka-Mount Aspiring Road

Description: Erosion and Sediment Control Plan - Schematics

Drawn	Approved	Date	Drawing Number	Revision
WT	TG	28/03/2024	ESCP - 004	B



APPENDIX 2 **Calculations for Erosion and Sediment Controls**

DECANTING EARTH BUND CALCULATIONS - 350 WANAKA-MOUNT ASPIRING ROAD - REVISION B - 18/03/2024



Specification	Value	Value 2	Value 3	Units	Source / Notes / Reference
Site Details					
Contributing catchment				0.25 ha	Survey Plan
Percentage volume factor				2.00 %	
GD05 theoretical DEB volume				50.00 m ³	
DEB Specifications	Total Storage	Dead Storage (30%)	Live Storage (70%)		
Top length (A)	12.00	8.60		12.00 m	
Top width (B)	5.50	3.80		5.50 m	
Base length (a)	6.00	6.00		8.60 m	
Base width (b)	2.50	2.50		3.80 m	
Depth (h)	1.50	0.65		0.85 m	Measured from primary spillway down
Internal batter ratio= 1 to	1	1		1 ratio	Inlet batter is 1:3
Actual volume (v)	56.25	15.13		41.12 m ³	
Width to length ratio	2.2:1	2.3:1		2.2:1 ratio	
Buffer	12.50%			%	
Percentage of total DEB	100.00%	26.90%		73.10%	%
External batter ratio= 1 to	2	2		2 ratio	
Decant Details		Reduced Level (RL)			
RL at base of bund		302.40		m	
Bottom of decanting arm range		303.05		0.65 m	
Top of decanting arm range		303.90		1.50 m	
T-bar diameter				0.15 m	
Decant arm length				2.00 m	
Decant rate				0.75 L/sec	0.3 L/sec/1,000 m ²
Number of holes on T-bar				33 Holes	10 mm diameter holes to be evenly distributed on the decant
Primary Spillway Details		Reduced Level (RL)			
RL at primary spillway		303.90		m	0.1 m lower than emergency spillway invert
Outlet pipe diameter				150.00 mm	
Emergency Spillway		Reduced Level (RL)			
RL at emergency spillway invert		304.00		m	
RL at emergency spillway crest		304.25		m	0.25 m higher than emergency spillway invert
Spillway width at invert				1.50 m	

DIRTY WATER DIVERSION CHANNEL CALCULATIONS - 350 WANAKA-MOUNT ASPIRING ROAD - REVISION B - 18/03/2024



Specifications	Value 1	Value 2	Value 3	Value 4	Value 5	Units	Reference/Notes
Catchment Details							
Contributing catchment						0.25 ha	QLDC GIS + Google Earth
Design rainfall event						0.05 AEP	5% AEP as required by GD05
Time of Concentration							
Overland sheet flow path length (L)						100 m	
Hortons roughness value (n)						0.025	
Slope of surface (S)						8.0 %	
Time of Concentration (Tc)						4.1 minutes	
Rounded Tc to align with HIRDS						10 minutes	10 minute minimum required if Tc < 10
Rational Method: Q = (C*I*A)/360							
Area ground cover	Grass	Concrete	Forest	Shrubs	Bare soil		
Proportion of catchment	0	0	0	0	1		
Runoff coefficient (C)	0.4	1	0.25	0.5	0.8		Manning's Roughness Coefficient (n)
Rainfall intensity (I)	35.6	35.6	35.6	35.6	35.6 mm		NIWA HIRDS, 10 min (Tc), 5% AEP
Catchment Area (A)	0.00	0.00	0.00	0.00	0.25 ha		
Qp (Peak runoff flow)	0.0000	0.0000	0.0000	0.0000	0.0198 m ³ /s		Rational Method: Q = CIA
Total Qp (Peak runoff flow)					0.0198		
Channel Design							
Manning's Formula Uniform Trapezoidal Channel Flow							
Bottom Width						400 mm	
Batter ratio= 1 to						3 ratio	
Manning's roughness coefficient of channel (n)						0.025	Gravelly earth channel
Channel slope						3.1 %	
Flow depth						100 mm	
Channel depth						300 mm	
Flow (Q)						0.082 m ³ /s	
Buffer						315 %	
Top width						1000 mm	



APPENDIX 3 Environmental Site Induction Handout

ENVIRONMENTAL SITE INDUCTION HANDOUT

Key Roles and Responsibilities

Role	Responsibilities
Project Manager	<p>The Project Manager is responsible for the effective implementation of the EMP and has overall responsibility for the environmental performance of the project. Duties include:</p> <ul style="list-style-type: none"> • Ensuring adequate resources are in place to implement the EMP. • Ensuring all staff and sub-contractors operate within the guidelines of the EMP. • Ensuring that an EMP is prepared and that environmental standards, processes and procedures meet relevant resource consent conditions. • Overseeing the successful implementation, monitoring and review of the EMP. • Ensuring that inspections are carried out in accordance with the relevant EMP. • Restricting or stopping any activity that has the potential to or has caused adverse environmental effects. • Providing notification and reporting of Environmental Incidents to Council and other environmental reports as required by The Guidelines. • Delegating authority of the above responsibilities.
Environmental Representative	<p>The Environmental Representative supports the Project Manager in the day-to-day implementation of the EMP. Duties include:</p> <ul style="list-style-type: none"> • Ensuring the installation of environmental controls as per the EMP. • Undertaking environmental site inspections. • Overseeing the maintenance and improvement of defective environmental controls. • Providing environmental inductions to all staff and sub-contractors. • Assisting the project leadership in attending to Environmental Incidents and Complaints. <p>The Environmental Representative shall be familiar with environmental risks associated with the project, the EMP and best practice erosion and sediment control principles and practices.</p>
All staff and sub-contractors	<p>All staff and sub-contractors have a responsibility to undertake all activities in accordance with the requirements of this EMP. This includes reporting any activity that has the potential to or has resulted in an Environmental Incident to the Project Manager or Environmental Representative.</p>

Key Environmental Locations

Environmentally sensitive receptors: Waterfall Creek and Lake Wanaka.

Key Resource Consent Conditions

All resource consent conditions (issued by QLDC) are important to comply with in order to avoid or mitigate adverse environmental effects.

The site EMP has been prepared in response to all environmental-related conditions of consent and therefore provides direction for how compliance with these conditions will be achieved. Provided that the EMP is followed, the project will at the same time comply with all conditions of consent.

Limits of Clearing and Importance of Staging

The staging and sequencing of works is a key component to ensure that environmental effects of construction are appropriately managed. It is imperative that the sequencing outlined in Section 2.1 of the EMP is followed so that the site is stabilised in the most efficient manner.

All staff should be familiar with this sequence. Any potential changes to that sequence need to be approved by the Project Manager which will be discussed first with the Environmental Consultant.

Key Environmental Management Measures in EMP

Erosion and Sediment Control (Section 4 of EMP)

- Direction provided in Erosion and Sediment Control Plan (ESCP) in Appendix 1 of EMP.
- Separation of clean and dirty water is the most important principle to ensure that the contributing catchment of dirty water that needs to be treated is as small as possible.
- Progressive stabilisation (revegetation) of disturbed areas will ensure that the extent and duration of exposed soil is minimised. Keep it covered!
- All controls to be checked immediately before storm events to ensure they are in good-working order.
- Erosion and sediment control devices to remain in place until site is stabilised (defined as 80% vegetative cover).

Any works that disturb the controls outlined on the ESCP must be reinstated before moving to the next task.

Water Quality Management (Section 5 of EMP)

- Any water caught in the sediment devices to be re-used in dust suppression where possible and if required.
- Any observations of dirty water running offsite to be reported directly to the Project Manager.

Dust Management (Section 6 of EMP)

- Dust suppression should occur on any exposed soil on unsealed roads, this can be done using the water caught in the retention basin.
- Avoid all unnecessary vegetation clearing that exposes soil and work should be conducted in stages as this can increase the impact from dust in the event of strong winds.
- During high wind events and dust suppression is becoming difficult works must cease until more favourable weather conditions.
- Constant vigilance should be maintained onsite to ensure that dust is appropriately managed and weekly monitoring should be completed to ensure that management measures are effective.

Noise and Vibration Management (Section 7 of EMP)

- Noise producing works only be undertaken during the hours of 0730-1800 from Monday-Saturday and no works to be completed on Sundays or public holidays.
- Particularly noisy work should be completed during the middle of the day during business hours.
- Noise dampening should occur when possible.
- Weekly site inspections should be undertaken by the Environmental Representative to ensure the strategies in place are effective.

Historic Heritage Management (Section 8 of EMP)

- If any artefacts are found works must stop within 20 meters of the discovery and the site manager notified immediately.
- The site manager must then secure the area and notify the Heritage New Zealand Regional Archaeologist, who will advise when works can begin again.

Vegetation Management (Section 9 of EMP)

- Maintain vegetated surfaces as far as reasonably possible.
- Maintain protected or indigenous vegetation.
- Complete all landscaping and or ecological restoration in accordance with approved plans.

Chemicals and Fuel Management (Section 10 of EMP)

- Chemicals and fuels are stored and used so not to cause contamination of works areas and surrounding environment.

Contaminated Land Management (Section 11 of EMP)

- Prevent spread of contamination.
- Engage the Environmental Consultant (SQEP) to ensure that the site can be managed in accordance with statutory requirements (i.e., National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health).

Environmental Incidents

The procedure for managing environmental incidents is outlined in Section 3.5 of the EMP, however these can be summarised as follows:

- Environmental incidents must be reported as soon as they occur, and the Project team must respond immediately to mitigate further environmental impacts.
- Investigation into the cause of the incident should be completed and a solution should be constructed to remediate the Environmental damage.
- The Project Manager must then notify the QLDC and/or the ORC of the details of the incident within 12 hours of being made aware of the incident.

Rapid Response for Storm Events

The procedure for rapid response to storm events is outlined in Section 4.6 of the EMP, however these can be summarised as follows:

- The Project Manager will observe and understand the **weather forecast** throughout the project to ensure appropriate preparation onsite.
- If a **significant storm** event is forecast all works should stop within an appropriate amount of time to inspect ESC devices and undertake any maintenance or site stabilisation required.
- The sediment controls should be in operating condition and fully functional.
- Dirty water contour drains should be proactively installed prior to rainfall event.
- During the storm event the site should be monitored to sure the functioning of the ESC devices and maintained if required.

When storms are forecast it is crucial that tools are downed in time for the rapid response procedure to be implemented. This will help avoid environmental incidents, potential enforcement action and site shutdown.



APPENDIX 4 **Environmental Site Induction Register**

350 Wanaka – Mount Aspiring Road

ENVIRONMENTAL SITE INDUCTION REGISTER

Name	Organisation	Date Inducted	Induction Delivered by	Signature



APPENDIX 5 **Weekly Environmental Site Inspection Form**

350 Wanaka – Mount Aspiring Road



Item	Yes	No	Comment
Cultural Heritage			
Have any finds of cultural significance been found?	<input type="checkbox"/>	<input type="checkbox"/>	
Noise and Vibration			
Have any complaints been received during the week?	<input type="checkbox"/>	<input type="checkbox"/>	*If yes, complete Complaints Register
Are nearby sensitive receptors being notified before significant noise and/or vibration causing activities?	<input type="checkbox"/>	<input type="checkbox"/>	
Are works only occurring within the hours of operation?	<input type="checkbox"/>	<input type="checkbox"/>	
Dust			
Have any complaints been received during the week?	<input type="checkbox"/>	<input type="checkbox"/>	*If yes, complete Complaints Register
Are works being staged to minimise soil exposure?	<input type="checkbox"/>	<input type="checkbox"/>	
Have completed areas been revegetated or stabilised?	<input type="checkbox"/>	<input type="checkbox"/>	
Is dust suppression of disturbed work areas and stockpiles occurring?	<input type="checkbox"/>	<input type="checkbox"/>	
Are works ceasing during high winds?	<input type="checkbox"/>	<input type="checkbox"/>	
Are only designated access points and haul routes being used?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the site access and surrounding roads swept clean of sediment?	<input type="checkbox"/>	<input type="checkbox"/>	
Vegetation			
Are vegetated surfaces being maintained as far as reasonably possible?	<input type="checkbox"/>	<input type="checkbox"/>	
Contaminated Soils			
Have any contaminants been uncovered during excavations?	<input type="checkbox"/>	<input type="checkbox"/>	
Chemicals and Fuels			
Are all hazardous substances on site stored, transported and used according to the safety data sheet requirements?	<input type="checkbox"/>	<input type="checkbox"/>	
Are vehicles and plant being refuelled in the refuelling bay?	<input type="checkbox"/>	<input type="checkbox"/>	
Is concrete washing being undertaken in the concrete wash-out pit?	<input type="checkbox"/>	<input type="checkbox"/>	
Is there an adequate supply of spill kits onsite? Have any used materials been replaced?	<input type="checkbox"/>	<input type="checkbox"/>	
Waste			

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Item	Yes	No	Comment
Is the site in a safe, clean and tidy state?	<input type="checkbox"/>	<input type="checkbox"/>	
Are wastes segregated into labelled bins with lids?	<input type="checkbox"/>	<input type="checkbox"/>	
Are skip bins not overfilled?	<input type="checkbox"/>	<input type="checkbox"/>	
Is waste removed from open drains and drainage paths?	<input type="checkbox"/>	<input type="checkbox"/>	

Actions resulting from this inspection must be forwarded to the Project Manager any actions should be recorded in the Non-Conformance Register – Appendix 8.

Additional Comments:

Names and Signatures of inspection attendees:



APPENDIX 6 **Environmental Incident Report Form**

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ENVIRONMENTAL INCIDENT REPORT FORM

Project Address:	Consent Number:
Brief Project Description:	

Instructions- Complete this form for all environmental incident that cause contaminants (including sediment) or environmental nuisance to leave the site. Be succinct, stick to known facts and do not make assumptions. Once completed submit to Queenstown Lakes District Council at RCMonitoring@qldc.govt.nz and Otago Regional Council at pollution@orc.govt.nz and compliance@orc.govt.nz. Call the QLDC Regulatory team immediately on 03 441 0499 and ORC's Pollution Hotline on 0800 800 033 for any serious or ongoing incidents that cannot be brought under immediate control.

Date and Time	Date: <input type="text"/> / <input type="text"/> / <input type="text"/> Time: <input type="text"/> : <input type="text"/> hours
Description? Provide a brief and factual description of what happened during the incident, include relevant details such as: <ul style="list-style-type: none"> - The activity being undertaken when the incident occurred - The estimated distance to nearest waterway (include stormwater and dry courses) - The estimated distance to the nearest sensitive receiver Sketches/diagrams/photos may be referenced and appended to this report to aid in the description of the incident.	
Exact Location of the incident? Include address, landmarks, features, nearest tree, etc. Maps and plans can be attached.	
Quantity or volume of material escaped or causing incident? (provide and estimate quantity)	
Who identified the incident?	Contractor <input type="checkbox"/> Council <input type="checkbox"/> Community <input type="checkbox"/> Other <input type="checkbox"/>

What immediate actions/control measures were taken to rectify or contain the incident?
What initial corrective action will be taken to prevent similar incidents recurring in the near future?
Has the Queenstown Lakes District Council been notified? Yes <input type="checkbox"/> No <input type="checkbox"/> Will be notified <input type="checkbox"/> Has the Otago Regional Council been notified? Yes <input type="checkbox"/> No <input type="checkbox"/> Will be notified <input type="checkbox"/>

Role of person making report: Project Manager / Site Supervisor / Environmental Representative / SQEP	
Name.....	Signature.....
Organisation.....	Date.....
Mobile phone number.....	



APPENDIX 7 **Environmental Complaints Register**

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ENVIRONMENTAL COMPLAINTS REGISTER

Complaint #	Date and Time Received	Complainant details (name, address, phone number)	Details of Complaint	Investigation and Findings	Outcome	Close out Date



APPENDIX 8 **Environmental Non-Conformance Register**

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ENVIRONMENTAL NON-CONFORMANCE REGISTER


Ref Number	Date Observed	Found via (e.g., inspection, monitoring, complaint?)	Details of Non-conformance	Corrective Actions	Updated by	Close out Date



APPENDIX 9 **Water Quality Monitoring Results Form**

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WATER QUALITY MONITORING RESULTS FORM

Date	Monitoring Trigger	Yes	No	Location Description	Measurement
	Is the clarity of the water more than 100 mm?	<input type="checkbox"/>	<input type="checkbox"/>		___ mm
	Is turbidity less than 100 NTU?*	<input type="checkbox"/>	<input type="checkbox"/>		___ NTU
	Is the pH of the water between 5.5-8.5?*	<input type="checkbox"/>	<input type="checkbox"/>		pH ___
	Are total suspended solids less than 50 mg/L?*	<input type="checkbox"/>	<input type="checkbox"/>		___ mg/L
	Are hydrocarbons visible?	<input type="checkbox"/>	<input type="checkbox"/>		
	Are tannins visible in the water?	<input type="checkbox"/>	<input type="checkbox"/>		
	Is there any waste in the water?	<input type="checkbox"/>	<input type="checkbox"/>		
Description of any non-conformance and actions required:					
<ul style="list-style-type: none"> • 					
Include images of sampling location:					
					

*EnviroSCOPE can provide Water Quality Monitoring services to measure turbidity and pH. If 100 NTU is exceeded, collect a water sample to send to laboratory for TSS measurement.

HOW TO: WATER QUALITY SAMPLING

1. Select a Sampling Location

Sampling a discharge

Collect sample where water crosses the site boundary or enters a sensitive receptor from a retention device. Always photograph the location you sample from.



Sampling a waterway

Collect sample from the centre of the flow and the top third of the water column where possible.



Sampling a from a Sediment Retention Device

Collect sample from the discharge location, this is either near the decanting arms, spillway, hose or the outlet pipe.



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2. Collect a Water Sample

Taking a Water Sample

- Label container with site name, sampling location, date and time taken.
- Fill the container with water from the surface of your sampling location.

If you wade into the water to collect the sample, always collect the sample 'upstream' of where you're standing to avoid contamination by disturbed sediment.

Always ensure your meters are calibrated regularly to ensure accurate sampling results.



3. Measure and Record Turbidity, Clarity, and pH



Measuring Turbidity using a Turbidity Meter

- Fill the turbidity pottle with the sampled water. Wipe away any moisture on the outside of the pottle and insert it into the meter. Turn the meter on and once the standby value appears press read. Record the turbidity value.

Measuring Clarity using a field testing seechi disc

- Lower the seechi disc into the water sample until you can no longer see the disc. Then lift the seechi disc back up until the disc is just visible. Record the number where the water level sits.



Measuring pH using a pH Meter

- Submerge the probe of the pH meter into the water sample. Keep the probe in the water until the value on the meter is fixed. Swirling the probe can help the value fix faster. Record the pH value.



APPENDIX 10 **Archaeological Discovery Protocol**



HERITAGE NEW ZEALAND
POUHERE TAONGA

Heritage New Zealand Pouhere Taonga Accidental Discovery Protocol

This protocol does not apply when an archaeological authority issued under the Heritage New Zealand Pouhere Taonga Act 2014 is in place.

Under the Heritage New Zealand Pouhere Taonga Act (2014) an archaeological site is defined as any place in New Zealand that was associated with human activity that occurred before 1900 and provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand. For pre-contact Māori sites this evidence may be but is not limited to, bones, shells, charcoal, stones etc. In later sites of European/Chinese origin, artefacts including but not limited to bottle glass, crockery etc. may be found, or evidence of old foundations, well, drains, or similar structures. Burials/kōiwi may be found in association with any of these cultural groups.

In the event that an unidentified archaeological site is located during works, the following applies;

1. Work shall cease immediately at that place and within 20m around the site.
2. The contractor must shut down all machinery, secure the area, and advise the Site Manager.
3. The Site Manager shall secure the site and notify the Heritage New Zealand Regional Archaeologist. Further assessment by an archaeologist may be required.
4. If the site is of Māori origin, the Site Manager shall notify the Heritage New Zealand Regional Archaeologist and the appropriate papatipu rūnaka of the discovery and ensure site access to enable appropriate cultural procedures and tikaka to be undertaken, as long as all statutory requirements under legislation are met (*Heritage New Zealand Pouhere Taonga Act, Protected Objects Act*).
5. If human remains (kōiwi) are uncovered the Site Manager shall advise the Heritage New Zealand Regional Archaeologist, NZ Police and the appropriate papatipu rūnaka and the above process under 4 shall apply. Remains are not to be moved until such time as papatipu rūnaka and Heritage New Zealand have responded.
6. Works affecting the archaeological site and any human remains (kōiwi) shall not resume until Heritage New Zealand Pouhere Taonga gives written approval for work to continue. Further assessment by an archaeologist may be required.
7. Where iwi so request, any information recorded as the result of the find such as a description of location and content, is to be provided for their records.
8. Heritage New Zealand Pouhere Taonga will advise if an archaeological authority under the *Heritage New Zealand Pouhere Taonga Act 2014* is required for works to continue.

It is an offence under S87 of the *Heritage New Zealand Pouhere Taonga Act 2014* to modify or destroy an archaeological site without an authority from Heritage New Zealand irrespective of whether the works are permitted or consent has been issued under the Resource Management Act.

Heritage New Zealand Pouhere Taonga Archaeologist contact details:

Nikole Wills
Regional Archaeologist Otago/Southland
Heritage New Zealand
PO Box 5467
Dunedin
Ph. +64 3 470 2364, mobile 027 240 8715
Fax. +46 3 477 3893
nwills@heritage.org.nz