Southern Link Inland Port
DRAFT Construction Management Plan (CMP)

Prepared by

Andy Pullar (Port Otago Ltd)

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Appendix A: Development Masterplan
Appendix B: Contaminated Site Management Plan and Remedial Action Plan
Appendix C: Erosion and Sediment Control Plan

1. Introduction

This draft Construction Management Plan (CMP) has been developed by Southern Link Properties Limited (SLPL) to support the substantive application for the Southern Link Inland Port (SLIP) on the outskirts of Mosgiel, Otago (project). The draft CMP has been created to provide guidance and understanding of construction activities required to complete the site development and is one of a number of management plans required to ensure the works are completed in compliance with any granted consents and in line with industry best practice.

It must be noted that the CMP relates only to construction activities on the site and any management practices imposed or offered relate only to construction and not the design or ongoing operation of the facility once constructed. Ongoing post development environmental management and monitoring will be subject to separate management plans, or conditions of consent.

2. Development and Updating of the CMP

This CMP has been developed to a draft stage as detailed design has yet to be completed on several aspects of the development. Similarly, as contractors have yet to be engaged, the methodology and management of the construction is based on engineering judgement and is likely to be amended as designs are developed and contractors engaged. Conditions imposed through the consenting phase of the project will also lead to potential amendments to sequencing, methodology, resourcing and staged development of the project.

As such the development of the final construction phase CMP will be an iterative and evolving process.

The inputs as follows will be the key drivers for change or alteration to the CMP:-

1. Formulation and imposition of consent conditions;
2. Completion of investigations and development of detailed design for civil works;
3. Additional or revised construction methodology based on specific input from Contractors(s) with respect to their equipment, resources or product innovation;
4. Comments or input from mana whenua directly or through advisors Aukaha;
5. Comments or input from Dunedin City Council and / or Otago Regional Council;
6. Input resulting from changes to construction methodology resulting from monitoring and reporting undertaken as part of the works.

It is anticipated (and offered) that an updated CMP is reviewed by regulatory authorities Otago Regional Council and Dunedin City Council prior to commencement on site, through the certification process provided for in the proposed conditions of consent.

3. Project Description

The development will occur as described in the Project Description of SLPL's Substantive Fast-track Application which should be referred to for a complete description of the Inland Port development. In summary, the Inland Port will include:

- A new rail siding off the Taieri Branch Line to enable loading, unloading and operation of a rail freight shuttle service to Port Chalmers and the wider rail network;
- Approximately 155,000m² of high stud warehousing (chilled and ambient), and associated yard and canopy areas;
- Two road exchange areas for the loading and unloading of container trucks;
- A container depot facility enabling the inspection, cleaning, upgrading and repair of containers including for food grade repacking;
- Approximately 9 ha of container terminal for storage and movement of empty and full containers including refrigerated containers;
- Approximately 1,000m² of onsite offices ancillary to the Inland Port;
- Road widening and construction of a new intersection onto Dukes Road North;
- 24/7 operation with flood and road lighting for nighttime operation;
- Ancillary activities to support the above including vehicle parking, truck waiting areas, onsite road network, three waters and power infrastructure, flood mitigation, landscaping, security measures, acoustic barriers and lighting; and
- Ongoing management and monitoring activities including ensuring establishment of landscaping, stream health monitoring, wildlife management and effects management.

Construction of the Inland Port is anticipated to be undertaken in three stages however the timing and delivery of each stage, and discrete works within each stage, may change in response to demand for logistics capacity at the Inland Port. Each stage of works will involve site clearance, earthworks, construction of buildings, hardstanding and access, installation of infrastructure, landscaping and works and management activities necessary to manage environmental effects during construction including erosion and sediment controls and construction management activities:

- Stage 1 is estimated to be completed 1 to 3 years following commencement of the Project and will include clearance of the southern area of the site and construction of the 'Stage 1' container storage concrete pad, rail siding, container service area, warehouses, internal roading, parking and loading, road widening and construction of the new intersection on Dukes Road North, stormwater attenuation pond, Silver Stream stormwater outlets, servicing infrastructure, flood management measures, landscaping, acoustic barriers and eastern bund, and lighting.
- Stage 2 is estimated to be completed 3 to 5 years following commencement of the Project and will include clearance of the northern area of the site and construction of the 'Stage 2' container storage concrete pad, warehouses, ancillary offices, internal roading, parking and loading, emergency egress onto Dukes Road North, expansion of the stormwater attenuation pond, landscaping, extension of the servicing infrastructure and lighting.
- Stage 3 is estimated to be completed 5 to 10 years following commencement of the Project and will include clearance of the eastern area of the site, including the eastern acoustic bund, and construction of the 'Stage 3' warehouses, internal roading, parking and loading, landscaping, extension of the servicing infrastructure and lighting.

3.1. Location of Works

The proposed site for the Southern Link Inland Port (SLIP) is 270 – 292 Dukes Road North, North Taieri, 9092, within the territorial boundaries of the Dunedin City Council. The site is located adjacent to the Taieri Branch Rail Line / KiwiRail corridor on the corner of Stedman Road and Dukes Road North, with some ancillary activities associated with the SLIP proposed within the KiwiRail Corridor and the Dukes Road North road reserve. A site location map with the cadastral boundary and immediate surrounds is shown below as Figure 1.

Figure 1 Site Location: 270 – 292 Dukes Road North, North Taieri, Dunedin. Site (Yellow) and KiwiRail Corridor (Blue)

The land holdings for the Southern Link Inland Port are wholly owned by Southern Link Property Limited (SLPL), and are legally described as follows:

- Part Section 10 Block V East Taieri Survey District, held in Record of Title OT3C/897;
- Deposited Plan 5579, held in Record of Title OT304/127;
- Part Section 9 Block V East Taieri Survey District, held in Record of Title OT3C/899; and
- Part Section 9 Block V East Taieri Survey District, held in Record of Title OT329/233.

The rectangular property is approximately 40 ha in size, sitting northwest of urban Mosgiel and immediately adjacent west of the Dukes Road North industrial precinct.

3.2. Site Description

The site is currently farmland with a number of former residential buildings and several ancillary farm buildings. There are shelter belts or trees on all boundaries except the eastern boundary.

3.2.1. Site Access

Currently vehicular access to the site is off Dukes Road North on the site's northern boundary. There are several residential access points off Dukes Road North to the project site currently, however, these will be restricted to a single main access point following Stage 1 of the site's development. During Stage 1, and while the main access point is being constructed, access will be via an existing farm access point at 274 Dukes Road North.

All construction access will be through gates that will be closed and locked outside of site hours of work. The site entrance will be secured by a gatehouse during work hours.

3.2.2. Site Constraints

The site is "landlocked" on three boundaries by the Taieri Rail embankment on the west boundary, Silver Stream to the south and private farmland on the eastern boundary between the site and Puddle Alley.

The southern boundary of the site also sits beneath the flight fan (or Obstacle Limitation Surface (OLS)) as described and mapped in the Dunedin City Council 2nd Generation District Plan (2GP), see Figure 2 below. This OLS rises and widens from the end of the Taieri Aerodrome runway. The height restriction at the western boundary of the site is approximately 18m rising to 50m on the eastern boundary.

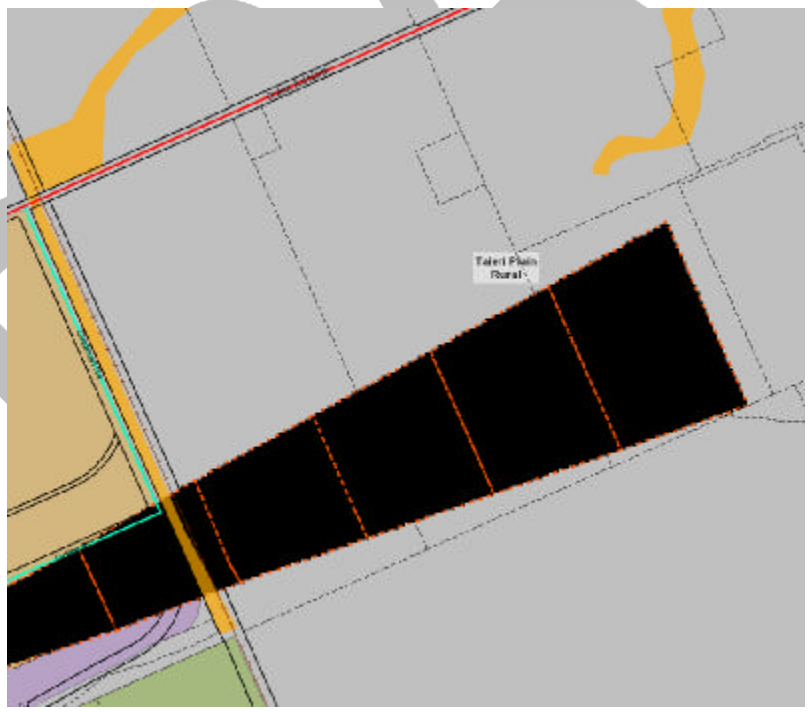


Figure 2: Taieri Aerodrome Obstacle Limitation Surface (height restriction)

This OLS will need to be considered when sizing cranes for the warehouse development and is included in this Construction Management Plan.

3.2.3. Existing Infrastructure

The site currently has insufficient infrastructure capable of providing for the final development layout.

There are three groundwater bores on site that will be investigated for use during construction to extract, store and then use water for dust suppression on the earthworks site. This negates the need to use potable water from the Dunedin City Council (DCC) network for dust suppression. There are two recorded residential water connections off the 150mm diameter DCC network on Dukes Road North with the property at 270 Dukes Road North having a water meter. This potable supply will be used for site offices and amenities.

Low voltage electrical connections to the dwellings at 270 and 274 Dukes Road North exist off the Aurora network and feed across Dukes Road via overhead lines to poles on the boundary.

4. Roles and Responsibility

This CMP sets out the environmental controls to undertake the development works associated with the Southern Link Inland Port. Southern Link Property Ltd (SLPL) has responsibility for ensuring compliance with all permits and consents issued to the Joint Venture (JV).

Whilst overall responsibility for compliance with environmental requirements will remain with SLPL, all contractors working on site are accountable for undertaking the construction activities in line with the requirements of this CMP and related consent conditions.

To assist in complying, the following roles are considered a minimum requirement although as the project is in the early stages of development and consenting the key personnel roles are not yet filled. This table will be updated as the roles are defined and filled.

The key responsibilities for each member of personnel are detailed in Table 1 below.

Table 1: *Roles and Responsibilities*

Role	Responsibilities	Contact
Project Steering Group (PSG)	▪ Overall project governance ▪ Strategic direction and high-level decision-making ▪ Approval of budgets and scope changes ▪ Approval of Contractor engagement ▪ Monitoring progress and reporting to stakeholders ▪ Risk assessment and management ▪ Ensuring environmental controls are identified and implemented ▪ Providing, and advocating for, necessary resources both personnel and plant	TBA
JV Project Manager	▪ Project planning and scheduling ▪ Ensuring legal and statutory requirements are met ▪ Overview of procurement process and presentation of Work Package approval to PSG ▪ Management of project programme ▪ Project reporting (programme, budget, quality, HS&E) ▪ Environmental compliance overview including auditing (on-site and process) ▪ Project quality overview and reporting ▪ Contract Management oversight and reporting	TBA
JV Environmental Manager	▪ Collation and communicating consent conditions and environmental legislation ▪ Ensuring compliance with consent conditions through instruction, monitoring and auditing of site personnel ▪ Reporting environmental compliance against conditions to PSG and stakeholders ▪ Management of any “accidental discovery” incidents (archaeological and contamination) through AD protocols ▪ Provide and record environmental induction to site personnel and visitors ▪ Investigate, action and respond to complaints	TBA

Role	Responsibilities	Contact
JV Health and Safety Manager	▪ Responsible for ensuring H&S standards are high and consistent across all sites and works packages ▪ Review of each Works Packages SSSP and associated Safe Work Method Statements and / or Job Safety Analysis (JSA) ▪ Undertake Health and Safety audits of all work sites ▪ Undertake and record site safety inductions in conjunction with Environmental Manager	TBA
Contractor Project Manager (several)	▪ Management and control of site construction activities including ensuring materials, labour and resources are delivered and available to meet programme ▪ Ensuring works are carried out in accordance with best practice and to a high standard ▪ Ensuring works are carried out in a logical and timely manner without impacting other sites or works packages ▪ Producing and implementing required management plans for their Works Package	TBA
Contractor Project Engineers (several)	▪ Overseeing Works Packages on a day-to-day basis to ensure adherence with CMP and appropriate JSA / SWMS ▪ Implementation of mitigation measures contained within CMP ▪ Undertaking daily pre-start briefings and regular toolbox meetings ▪ Completing site records of works undertaken incl. site inspections, as-built records, and QA documents ▪ Providing advice, support, monitoring and recording of environmental management compliance to meet the requirements of the CMP	TBA
Suitably Qualified and Experienced Practitioner (SQEP)	▪ Providing advice and guidance to the Project team on their area of expertise ▪ Responding to on-site queries regarding unexpected findings (Accidental Discovery) ▪ Auditing mitigation measures to ensure they comply with consents	Numerous: *Archaeological* *Contamination* *Ecology*

4.1. Contractors

Contractors will be appointed by the JV in accordance with the procurement strategy and approved by the Project Steering Group. The appointments will be based on several factors including:

- Cost
- Track record on delivering similar projects
- Health and Safety system maturity including the ability to pre-qualify
- Environmental awareness and delivery expertise
- Appropriate quality assurance systems (ISO 9001:2015 compliant)
- Resources (physically and financially) to undertake the works
- Sub-contractor engagement processes

The Contractors are the foundation for the completion of the Project and will lead the management and delivery of construction activities in accordance with their construction contract. All Contracts will include the obligation to meet all consent conditions and undertake works in alignment with current best practice.

4.2. Consultants or SQEPs

Consultants and / or Suitably Qualified and Experienced Practitioners (SQEPs), will be critical to ensuring works are carried out in accordance with the intention of their reports and consent conditions. SQEPs will be appointed by SLPL however will be available to all contractors for advice and support to ensure their work practices comply with requirements. Accidental Discovery protocols are in place for contaminated land and archaeological disciplines where SQEPs will lead the response.

4.3. Staff Awareness and Inductions

To ensure the works are completed in a safe, high-quality and environmentally aware manner the Project Manager will ensure all staff, contractors and other personnel attending site (consultants, consenting authorities, visitors) have the requisite level of training and awareness of the works and any potential effects of the activities.

All personnel physically working on site will be required to undertake an induction which will cover as a minimum:

- Health and Safety Induction covering:
  - Site rules including minimum Personal Protection Equipment (PPE)
  - Permit to Work and required permits (hot work, excavation, heights, special lift, isolation)
  - Site layout including high hazards and "no-go" zones
  - Site traffic rules
  - Emergency Plan including incident response procedures and Muster Points
  - Requirement for toolbox talks on specific issues (for example noise nuisance, dust control, lighting, etc)
  - Hazardous substances
- Quality Management induction covering:
  - Roles and responsibility for quality control and assurance
  - Requirements for quality assurance and reporting
  - Hold points, testing and sign-off procedures
- Environmental induction:
  - Brief overview of the CMP and key consent conditions
  - Wildlife (birds and lizards) awareness and identification
  - Erosion, sediment and dust control
  - Waste minimisation and control
  - Noise and dust management
  - Complaints procedure and reporting

Visitors to site will be expected to undergo an abridged version of the site induction.

A register of all personnel who have undertaken the site induction must be kept and available for audit.

4.4. Project Meeting

To ensure positive communication and resolution of any issues, regular project meetings will be held to discuss the progress of the construction works including any issues relating to:

- Health and safety compliance, both on site and within the surrounding public area
- Environmental monitoring and compliance
- Quality assurance
- Project progress including programme
- Complaints received including investigation, outcomes and actions (if any)

The meeting is likely to be held on a fortnightly basis, preferably on site or via Microsoft Teams with the following attendee's invited:

- Southern Link Properties Limited
- Main Contractors
- Key sub-contractors (on invitation)
- Environmental SQEP's (on invitation)

A summary of meeting outcomes will be forwarded to key internal stakeholders following the meeting including the Project Steering Group, consultants and / or SQEP's and key contractors. This summary will ensure stakeholders are aware of progress and any actions required from the wider group.

5. Stakeholder Engagement and Communication

The project is a major undertaking and will have many stakeholders interested in the progress and management of effects. These stakeholders are likely to include:

- Local residents
- Territorial Authorities (DCC and ORC)
- Mana whenua
- Mosgiel-Taieri Community Board
- WorkSafe
- KiwiRail
- Neighbouring industrial sites
- Road users

In order to keep wider stakeholders informed and engaged, regular updates will be provided via the Southern Link project website www.southernlink.nz and potentially emailed newsletters.

5.1. Stakeholder Reporting

SLPL will share with relevant stakeholders the information required in the resource consent conditions. The information and method of communicating will be finalised on receipt of consent conditions.

5.2. Public Notification and Engagement

The project will aim to positively engage the public in a way whereby the public feel their concerns are listened to and actively managed (if practicable). Ways of engaging with the public will be developed further in later iterations of this CMP following receipt of the consent conditions and prior to requesting its certification, however, as a minimum the following are anticipated:

- As above, digital platform (website, Facebook etc) and newsletters to inform
- Site signage at the entrance to the site will include contact details for key personnel to enable any complaints to be lodged
- Newspaper (Otago Daily Times) reporting and fact sheets
- Project “open days” for the community to engage with key project personnel and observe what is happening on site

Potentially the engagement of a Stakeholder Manager will assist in identifying any trends and circulating information in a timely manner.

6. Project Construction Activities

6.1. Introduction

The development of the Southern Link Inland Port will be undertaken over several stages spanning many years resulting from demand for warehouse activity and wider economic drivers. The development masterplan is included within Appendix A of this CMP and will be carried out in a staged manner.

This CMP covers the initial Stage 1 works in detail and will be developed further as stages progress to completion.

6.2. Scope of Works

The following is a brief description of the staged development of the works. The list is not exhaustive but intended to provide a general overview of the construction phasing.

6.2.1. Stage 1 Construction:

- Site establishment
  - Construction access
  - Site amenities and offices
  - Construction laydown areas
  - Refuelling compound away from waterways and bunded
  - Construction fencing and hoarding
- Erosion and sediment Control Measures including temporary Sediment Retention Ponds (SRP)
- Eastern boundary swale excavation, lining (erosion protection) and discharge structure to Silverstream
- HAIL contamination remediation
- Site earthworks associated with:
  - Rail siding
  - Container storage yard (approx. 60%)
  - Container repair depot
  - Warehouses 1A and 1B
  - Road interchange
  - Access roads
- Rail siding construction including tying into Taieri Line with a mix of ballasted track and concrete slab track
- Dukes Road North external swale excavation and lining
- Acoustic panelling on boundaries
- Site stormwater including trunk mains and inlets
- Stormwater treatment, attenuation pond and outlet structure
- Site foul sewer and trade waste trunk mains including pump station and connection to Dunedin City Council infrastructure
- Site potable water reticulation
- Connection and booster pumping stations for potable and non-potable water
- Data and electrical ducting network
- Container yard pavement construction
- Road widening Dukes Road North
- Site security fences and gates
- Main access road construction

- Site electrical transformer installation
- Electrical connection to Aurora HV electrical distribution network
- Light tower construction
- Container yard pavement surfacing
- Tilt-slab warehouse construction

6.2.2. Stage 2 Construction:

- Extension of erosion and sediment control measures
- Site earthworks associated with:
    - Remaining container storage yard (approx. 40%)
    - Warehouse subgrade for 2A, 2B and 2C
    - Office building and carpark
    - Road exchange
    - Road interchange and queuing
- Extension of services trunk mains (stormwater, foul sewer, potable and non-potable water)
- Connection and booster pumping stations for potable and non-potable water
- Extension of LV electrical network and communications ducting
- Light tower construction
- Container yard pavement surfacing
- Tilt-slab warehouse construction
- Staff Carpark area construction
- Demolition of remaining dwellings on site
- Office block construction

6.2.3. Stage 3 Construction:

- Extension of erosion and sediment control measures
- Site earthworks associated with Warehouse subgrade for 3A, 3B, 3C and 3D
- Removal off-site of screened topsoil bund
- Extension of services trunk mains (stormwater, foul sewer, potable and non-potable water)
- Extension of LV electrical network and communications ducting
- Tilt-slab warehouse construction
- Demobilisation and dis-establishment of construction activities

7. Construction Methodology and Sequencing

A draft construction methodology has been developed to assist in understanding the impacts and sequencing required to complete the project works. Several disciplines will be progressing simultaneously once establishment, earthworks and site stabilisation has been completed on each stage. The project will require a number of overlapping and non-sequential activities to be undertaken concurrently.

7.1. Stage 1 Methodology

7.1.1. Earthworks

- Establishment of site including:
  - Utilising existing buildings at 270 and 274 Dukes Road North as Project Office, amenities and car parking. This will be the primary site compound however there will be satellite compounds as the work fronts progress
  - Stripping and construction of gravelled construction laydown areas adjacent to the site office with geotextile
  - Construction fencing and hoarding around site offices and laydown areas
  - Upgrade of Site Egress at 270 Dukes Road North as temporary site access including stabilised entrance (consider paving) and wheel wash facilities (if required)
- Implementation of Erosion and Sediment Control Plan in general accordance with *GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region June 2016 Guideline Document 2016/005*. These measures are consistent across all stages and includes:
  - Excavation and construction of sediment retention pond (SRP) in south-west corner of site adjacent to, but separate from, stormwater attenuation pond.
  - Construction of diversion bund and cut off drain along southern boundary to prevent discharge directly to Silverstream
  - Construction of clean water bunds and cut off drains on eastern, northern and western boundaries to direct clean surface water away from site
  - Construction of dirty water bund and cut off drain (including check dams where appropriate) on western boundary directing flows to SRP
  - Construct clean water contour bunds across site (west to east) to direct clean water away from earthworks site as work front progresses
- Implementation of Contaminated Site Management Plan / Remedial Action Plan to enable:
  - Excavation of HAIL defined areas in Remedial Action Pan (RAP) (sheep dip area, burn pile and adjacent central woolshed / workshop) with material to be disposed off-site at Burnside landfill
  - Reinstatement of excavations with clean fill (site won)
- Commence stripping of topsoil in SW corner for construction of permanent stormwater attenuation pond with temporary discharge structure (pipe drop and rock armoured slope) to Silverstream
- Topsoil to be placed in bund on future Stage 3 (eastern boundary) and grassed / hydroseeded once at final height
- Construction of permanent noise control wall on northern, part western and southern boundaries
- Commence site stripping of topsoil at stormwater attenuation pond area working towards the north. Clean water cut-off drains to be cut ahead of stripping area and directed to clean water channel on western boundary.

- Super silt fences installed on stripped subgrade to slow overland flow and remove sediment load
- Commence construction of permanent stormwater attenuation pond, including:
    - Earthworks for excavation
    - Pond lining (if required)
    - Construction of discharge structures to western swale spillway
- Commence cut to waste unsuitable material from SW corner (waste to be exported off site) with:
    - Material unsuitable for fill to be cut and transported to stockpile site utilising Moxy type off road trucks
    - Materials will be loaded out from stockpile to road legal truck and trailer units
    - Maximum volume of cut to waste estimated at 8,000m³ (Stage 1)
    - Movements estimated at 3 - 4 units per hour (3 months duration)
- Commence cut to fill earthworks on site (71,000m³) utilising motor scrapers and / or excavator and Moxy trucks and compaction equipment
- Commence cut to stockpile activities
    - Suitable material to be cut and transported to stockpile (22,600m³) site utilising Moxy type off road trucks
    - Stockpile to be shaped and covered with geotextile
- First layer of hardfill (imported) to be placed following cut from SW corner in a northerly direction:
    - Maximum open area unfilled of 2Ha (200*100m typical) and minimum depth of fill 300mm
    - Material to be backloaded (where possible) from quarry to stockpile
    - Material loaded out from stockpile and spread on site using off road Moxy trucks
    - Stockpile management (dust and run-off) to be controlled by water and cover
- Construction of permanent eastern boundary swale, including:
    - Construct discharge structure (check weir and armoured slope / lined spillway) at Silverstream end of swale
    - Excavation to line and level starting from Silverstream working north
    - Erosion protection to channel (biodegradable geotextile such as Biomac C or BioCoir), rock weirs and hydroseeding / grassing and planting with *Carex*
- Construction of permanent Dukes Road North boundary swale, including:
    - Connect to western boundary swale (as below)
    - Excavation to line and level
    - Erosion protection to channel and rock weirs (as above) including planting with *Carex*
- On completion of Stage 1 topsoil stripping and first layer of hardfill progress to complete hardfill to sub-base level
- Provision of secondary overflow swale through Stage 2 land (level critical)
- Pavement and building foundation construction to follow

7.1.2. Rail Siding including Western Swale Construction

- Removal of mature eucalyptus trees on western boundary
- Completion of earthworks to subgrade level (see above methodology) and lime stabilise subgrade
- Construction of western boundary swale including rock weirs, lining and hydroseeding / grassing
- Construction of culvert at SW corner beneath rail for permanent stormwater swale flow

- Build up with structural hardfill to underside of concrete pad level and ballast section
- Permit to Enter for rail corridor
- Survey set out of rail alignment including tie into North Taieri line
- Weld rail into continuous strings
- Ballasted rail section (1 rake) including turnouts and run around line on western side of Railpad:
    - Placement of bottom ballast on hardfilled formation
    - Layout sleepers (or full track sets if using)
    - Place rail on sleepers to surveyed level and alignment
    - Clamp joints
    - Ballast placed over full track set
    - Tamp track in place with excavator
    - Weld remaining joints and destress rail (if required)
    - Post survey trolley gurney and as-built to KiwiRail requirements
- Concrete slab track rail section (2 rakes) including:
    - Prepare sub-base to CBR 15% or higher
    - Box up and provide construction joints in base slab
    - Place and compact bottom layer of slab (275mm typical of fibre reinforced concrete)
    - Survey alignment and baseplate locations
    - Drill, fix and level baseplates for rail
    - Grout baseplates (if required) and install rail in 75m long strings to correct torque
    - Re-survey and confirm alignment to level and line
    - Place and compact top layer of fibre reinforced concrete
- Cut in and connect turnout on North Taieri line including signalling upgrade (Block of Line)
- Stop Block construction at Dukes Road North end of line
- Commissioning and testing of rail

7.1.3. Services Installation

- Survey set out of main trunk services (stormwater, foul sewer, electrical and communications ducts)
- Commence construction of foul sewer and trade waste pumping stations in SW corner
- Thrust / directional drill conduit under North Taieri rail line for foul sewer and water connection
- Setout and trench rising main to connect to Dunedin City Council gravity sewer in Odlins Place
- Trenching for trunk stormwater (1350 to 900mm diameter) and manholes undertaken
- Dewatering of trenches and excavation not expected due to depth of groundwater (8-9m)
- Trunk stormwater installed (bedding, laying and jointing, backfill, as-builts)
- Site foul sewer (gravity and pumped) in SW washpad corner and to extent of Stage 1 earthworks installed
- Communications and electrical ring main ducting and pits to be trenched and as-built
- Connect to DCC watermain in Stedman Road (Connection B)
- Connection of water supply to DCC watermain in Dukes Road North to potable and non-potable supply networks
- Installation of non-potable water storage tanks in NE corner
- Installation and commissioning of non-potable firefighting water booster pump station
- Installation and commissioning of potable water booster pump stations
- Potable and non-potable water distribution network installed and end capped within Stage 1 footprint

- Potable water connected to Connection B

7.1.4. Pavement Construction

- Subgrade stabilisation with lime on Stage 1 pavement extents
- Importation and compaction of granular sub-base and basecourse to pre-paving condition
- Earthworks cut/fill for Main Access Road from Dukes Road North
- Pavement construction and surfacing for Main Access Road while site access remains through temporary access at 270 Dukes Road North
- Temporary traffic management for Dukes Road North and ESC set up for widening
- Construct road widening and access on Dukes Road North

7.1.5. Infrastructure Construction

- Construction of concrete washpad drainage connections to SW and FS
- Procure and install transformer and connect to Aurora high voltage (HV) network
- Install low voltage (LV) network to Stages 1A and 1B warehouses, repair area and light towers
- Foundations and erection of light towers on perimeter and within Stage 1 container yard
- Security fences, barriers and gates compatible with the intention of the International Ship and Port Facility Security Code (ISPS Code)
    - 1800mm high minimum with 3 barb wire
    - Controlled access (swipe card or pin pad)
    - Security cameras on all entries
- Pavement surfacing to be completed following installation of inground services
- Roadmarking for container stacks, Main Access Road and Railpad

7.1.6. Warehouse 1A and 1B Construction

- Earthworks cut / fill with subgrade lime stabilisation
- Importation and compaction of granular sub-base for building foundations
- Services connection (SW / FS/ electrical / comms) to warehouse perimeter
- Tilt-slab warehouse construction:
    - Prepare site to line and level with formwork for main slab extents
    - Reinforced steel tied in base slab pour
    - Base pour concrete slab placed and vibrated
    - Wall panel formwork set up on cured base pour
    - Wall reinforcing and lifting eyes tied in wall panels
    - Concrete is placed and cured to allow for storing or lifting / tilted into place
    - Wall panels are braced in position with reinforcing for footing infill placed and then concreted in place
    - Structural steel portal frame fabrication, transporting and fixed in place
    - Roofing installation and final fix of internal services
- Pavement construction underneath canopies
- Set up and install container loading canopy on container yard (if applicable)

7.2. Stage 2 Methodology

7.2.1. Earthworks

- Extend Erosion and Sediment Control Plan with installation of Stage 2 sediment retention pond (SRP) in southwest corner of Stage 2 earthworks footprint. Pond outlet to connect to Stage 1 trunk stormwater system following treatment

- Strip topsoil from SRP corner working towards the north away from the pond and place in bund on Stage 3 footprint
- Commence cut to fill earthworks on site (32,800m³) utilising motor scrapers and / or excavator and Moxy trucks and compaction equipment from cut sites and stockpile
- Imported hardfill to follow cut and fill activity with super silt fences to control sediment run-off
- Maximum open area unfilled of 2Ha (200*100m typical) and minimum depth of fill 300mm
- On completion of Stage 2 topsoil stripping and first layer of hardfill progress to complete hardfill to sub-base level
- Subgrade stabilisation with lime on Stage 2 pavement extents
- Importation and compaction of granular sub-base and basecourse to pre-paving condition
- Extend earthworks and pavement construction to include connection to Main Access Road and Staff Carpark

7.2.2. Services Installation

- Continuation of main trunk services (stormwater, foul sewer, electrical and communications ducts) extending from Stage 1 manholes / ducting pits
- Potable and non-potable water distribution network installed and connects to Stage 1 pipes
- Extension of LV and comm's network to Warehouses (2A, 2B, 2C) and Office
- Foundations and erection of light towers on perimeter and within Stage 2 container yard
- Construction and installation of reefer (refrigerated container) towers including HV transformer and connections

7.2.3. Pavement Construction

- Lime stabilisation prior to import and compaction of granular sub-base and basecourse in all Stage 2 areas including Staff carpark
- Road exchange and queuing lanes to be filled and lime stabilised
- Import and compact granular sub-base and basecourse through truck lanes
- Extend services (communications and LV) into truck queuing area, overhead gantry location and warehouse footprints
- Pavement surfacing of road interchange / queuing area
- Decommission Stage 2 SRP and remove all silt fences and contour drains
- Pavement surfacing following services installation and decommissioning of SRP
- Establish temporary site huts and amenities adjacent to Staff Carpark

7.2.4. Warehouse 2A, 2B and 2C and Office Construction

- Closure of 270 Dukes Road North access point, all traffic through Main Access Road
- Demolish residential buildings and outbuildings within Stage 2B and 2C footprint following asbestos survey as required by CSMP
- Demolition material to be recycled where possible with granular material (concrete foundations, bricks, pavements) crushed and utilised on site as bulk fill
- Complete earthworks cut / fill with subgrade lime stabilisation
- Importation and compaction of granular sub-base for building foundations
- Services connection (SW / FS/ electrical / comms) to warehouse perimeter
- Tilt slab warehouse construction (see Stage 1A and 1B above)
- Pavement construction underneath canopies
- Set up and install container loading canopy on container yard (if applicable)
- Construct Office building adjacent to Warehouse Stage 2B

7.3. Stage 3 Methodology

7.3.1. Earthworks

- Extend Erosion and Sediment Control Plan with installation of Stage 3 sediment retention pond (SRP) in southeast corner of Stage 3 earthworks footprint. Pond outlet to connect to Stage 1 trunk stormwater system following treatment
- Dirty water diversion channels to constructed adjacent to Main Access Road
- Topsoil bund from earlier stages to be screened and exported off-site
- Strip topsoil towards the north away from SRP and export off site
- Commence cut to fill earthworks on site (1,100m³) excavator and Moxy trucks and compaction equipment
- Cut to waste material following topsoil stripping utilising Main Access Road
    - Material to be cut and transported to stockpile site utilising Moxy type off road trucks
    - Materials will be loaded out from stockpile to road legal truck and trailer units
    - Maximum volume of cut to waste estimated at 39,600m³ (Stage 3)
    - Movements estimated at 6 - 8 units per hour (3 months duration)
- Backload imported hardfill placed to seal off site subgrade and lime stabilise
- Decommission site offices and amenities

7.3.2. Pavement and Services Construction

- Extend potable water, non-potable water, stormwater and foul sewer networks to Warehouse construction boundaries
- Extension of LV and comm's network to Warehouses 3A, 3B, 3C and 3D

7.3.3. Warehouse 3A, 3B, 3C and 3D Construction

- Complete earthworks cut / fill with subgrade lime stabilisation
- Importation and compaction of granular sub-base for building foundations
- Construct Warehouses in reverse stage order, ie 3D, 3C, 3B and then 3A
- Tilt slab warehouse construction (see Stage 1A and 1B above)
- Remove SRP on completion of Warehouse 3A earthworks
- Pavement construction underneath canopies
- Completion of landscaping

7.3.4. Completion

- Remove all Erosion and Sediment Control measures (ponds, bunds, cut-off drains, silt fences etc)
- Demobilize from site and remove any site offices and temporary service connections

8. Construction Management

8.1. Introduction

The following provides further details on those activities within the Construction Methodology that have the potential to create adverse effects within or beyond the extents of the site.

8.2. Hours of Work

Generally, all construction work will be undertaken between the hours of 7am and 7pm, Monday to Saturday, excluding public holidays. Works on maintaining plant or amenities (cleaning, etc) may take place outside these hours as long as excess noise and light nuisance does not occur.

Works associated with the supply and placement of concrete will also take place outside of these hours with early morning pours required. These can start as early as 3am to ensure that concrete pours are completed before the heat of the day. This is a quality control issue with high temperatures potentially leading to the concrete drying too fast, cracking, or setting before it can be properly finished.

8.3. Complaints Procedure

The following complaints procedure will be implemented with any project team member able to receive and record complaints. Signage on site will also advise contact details for complaints.

Any complaints received in relation to the project shall be directed to the JV Environmental Manager within 24 hours of being made.

The JV Environmental Manager will maintain a register of complaints with the following minimum details to be recorded:

a) The date, time, location and nature of the complaint;
b) The name, phone number, and address of the complainant, unless the complainant elects not to supply this information;
c) Action taken to remedy the situation and any policies or methods put in place to avoid or mitigate the problem occurring again.

All complaints will be included within the agenda for the fortnightly Project Team meeting for discussion and resolution if required.

8.4. Noise and Vibration

The Contractor must minimise the effects of noise generation by including in the planning of the work such factors as placing of plant, programming the sequence of operations and other management functions.

The Contractor, and sub-contractors shall limit construction noise to comply with the following noise limits as per New Zealand Standard NZS 6803:1999, the requirements of the Resource Management Act sections 326, 327 and 328 and the Health and Safety in Employment Regulations Clause 11.

Table 2: *Construction Noise Limits (NZS6803:1999)*

Time Period	Monday to Friday		Saturdays		Sundays and Public Holidays	
	L_{eq} (dBA)	L_{max} (dBA)	L_{eq} (dBA)	L_{max} (dBA)	L_{eq} (dBA)	L_{max} (dBA)
06:30am to 07:30am	55	75	45	75	45	75
07:30am to 06:00pm	70	85	70	85	55	85
06:00pm to 08:00pm	65	80	45	75	45	75
08:00pm to 06:30am	45	75	45	75	45	75

Where appropriate all items of noise producing plant on site will be equipped with silencers and noise insulation to reduce noise at source to the lowest levels achievable in terms of current low noise equipment design.

Construction activities located near the Silver Stream edge and buffer should be avoided where possible. Where works are required in this zone, plant with a low noise footprint should be selected and works completed as quickly as possible.

On site equipment must be fitted with broadband "squawker" reversing alarms. Tonal reversing alarms will not be permitted on site during the construction phase.

Vibration beyond site boundaries is not anticipated to require any management on site due to the low impact equipment and techniques detailed. No impact pile driving is anticipated. Any complaints shall be investigated and managed on a case-by-case basis in accordance with the accepted standard *British Standard BS 5228-2:2009 "Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration*".

Construction vibration must be measured and assessed in accordance with the provisions of DIN 4150-3:2016 '*Vibrations in buildings – Part 3: Effects of vibration on structures'*. The short-term (transient) vibration limits below apply at building foundations in any axis, and the long-term (continuous) vibration limits below apply at all floor levels.

Table 3: *Construction Vibration Limits*

Building Type	Peak Particle Velocity Vibration Level (mm/s)	
	Short-term (transient)	Long-term (continuous)
Commercial or Industrial	40	10
Residential	15	5
Vibration sensitive	8	2.5

The JV Environmental Manager has the right to audit and order the removal and replacement of plant at no cost, if the Contractor has not complied with this clause and better low-noise or low vibration plant is available.

8.5. Construction Lighting

Minimal construction activities will be undertaken during darkness hours, except for early morning concrete pours. Lighting has the potential to impact birdlife, wildlife and neighbouring properties. To minimise the impacts of construction lighting the following management strategies should be adopted:

- Programme works for daylight hours where possible
- Keep temporary lighting as far as possible away from the Silver Stream edge and buffer zone
- Always direct light inwards (towards) site and provide shields to minimise light spill above or beyond the task
- Ensure lights are turned off when not required (minimise run time)

The JV Environmental Manager will inspect lighting as part of their environmental audit.

8.6. Site Establishment

8.6.1. Site Security

Site security and fencing will be one of the first activities on site and can commence prior to consent being received. The site security is provided to keep public safe and excluded from the site in addition to preventing machine tampering and theft of fuel, equipment and materials. Security fences will meet the requirements of the Maritime Security Act 2004 and be 1800mm high with 3 strands of barb wire.

8.6.2. Noise Control Walls

Noise control walls are proposed for three of the four site boundaries. The noise barriers are intended to minimise noise nuisance beyond the site for both construction activities and long-term operation. As the earthworks phase of works will be reliant on these works, installation is required soon after the site is established. Barriers are either:

- Topsoil bund up to 3m high on eastern boundary
- Type A barrier (3m high solid partition) on northern and southern boundary
- Type B barrier (5m high solid partition) on western corner

As these barriers are permanent, clear separation zones between construction equipment and barriers must be provided during construction activities to lower the risk of damage.

8.6.3. Site Compound including Refuelling Area

The selection of the site compound and refuelling area has been identified at the entry to the site at 270 Dukes Road North. The site has been chosen for its proximity to the site access and separation from watercourses in case of spillage. Further satellite sites will be developed as the works progress with all sites to be assessed by the JV Project Manager for suitability.

8.6.4. Temporary Facilities

Temporary facilities will be required to house project staff and amenities. The existing dwellings at 270 and 274 Dukes Road North will likely be used as a Project Office (offices, meeting rooms) in addition to staff amenities (staff lockers, break room, ablutions etc.) will be used during Stage 1. Car parking will also be provided adjacent to the site offices for office-based staff and visitors.

As the dwellings are to be demolished in Stage 2, temporary Portacom type facilities will be required. These facilities will be maintained and kept in a tidy manner similar to permanent offices with waste collection and management of personnel.

There will be likely be the requirement for further facilities in satellite sites depending on the activities underway at the time. These satellite sites will be installed and operated by Contractors to facilitate their operations and meet the same standard as required by the SLPL team. These facilities will be clear of any flood prone land along the western boundary of the site.

8.6.5. Contractor Laydown and Site Establishment

Several contractor laydown and site establishment sites are expected through the course of the project. These areas will be a hub for the contractor's activity and include laydown and storage yards, parking for plant and equipment, workshops, temporary facilities for offices, smoko rooms and ablutions.

Areas for parking will be hardstand (gravel) to minimise site materials being dragged onto public roads and away from watercourses in case of spills or leaks of oil and fuel. All contractor plant and machinery (excluding heavy tracked machinery) will be returned to the respective site compound at the end of each day. This will enable machines to be checked and maintained in a designated area.

8.6.6. Refuelling Management

Fuel storage and refuelling of machines is a key risk for the project with the focus being on the prevention of spills through best practice procedures. These practices include:

- Storing the absolute minimum amount of fuel required for day-to-day operation of construction plant on site
- Fuel and oil storage to be a minimum of 30m away from any watercourses
- Refueling of machines will be undertaken by trained personnel in a designated and flat refueling location
- Using bunded storage tanks where possible
- Turning off engines and immobilizing all plant before refueling
- Do not overfill tanks

As a precaution, spill kits will be kept on site in sufficient numbers to ensure they are readily accessible in the case of a spill. The following are key requirements:

- Spill kits shall be kept in known locations on site and within 100m of any working machinery;
- Spill kits will contain as a minimum:
    - Sawdust (or equivalent absorbent material)
    - An absorbent boom
    - Absorbent matting
    - Disposable overalls, gloves and boot covers
    - A designated container for the disposal of contaminated equipment and soil
- Spill kits must be checked regularly to ensure they are fully stocked and restocked after use

If a spill to ground occurs:

- The source and nature of the spill must be identified and isolated to prevent any further discharge
- Contain the spill using materials from the spill kit in the first instance and / or other suitable available material
- Clean up and dispose of contaminated material in an approved disposal facility, under no circumstances is this material to be disposed of on site
- A review of refueling procedures and locations will be undertaken and remedial measures implemented

If a spill to water occurs:-

- Immediately contain the spill using the absorbent boom or matting as contained in the spill kit or deployed already
- Identify and isolate the source of the spill
- Clean up and dispose absorbent matting or boom and dispose of in an approved disposal facility. Chemical dispersants are not to be used
- In the case of substantial spills (>50 litres) the Otago Regional Council will be contacted as detailed below
- A review of refueling procedures and locations will be undertaken and remedial measures implemented

Regular plant maintenance as well as operator pre-start inspection of equipment being used should be undertaken to identify any potential areas of risk, ie leaks. Any item requiring attention or remedial action should be undertaken with the highest priority.

8.6.7. Leak or Spill Reporting Management

The Otago Regional Council must be informed within 24 hours of any spill greater than 50 litres with the following information provided:

(i) The date, time, location and estimated volume of spill
(ii) The cause of the spill
(iii) The type of contaminants spilled
(iv) Clean up procedures undertaken
(v) Details of the steps taken to control and remediate the effect of the spill on the receiving environment
(vi) An assessment of the potential effects of the spill
(vii) Measures to be undertaken to prevent a recurrence

Contact details for the Otago Regional Council are as follows:

- 24/7 Pollution Hotline: 0800 800 033 (for immediate or large incidents).
- Email: pollution@orc.govt.nz (checked during business hours).
- Online Form: Available on the Otago Regional Council website.

8.7. Hazardous Materials

Key document: *Practical Guide Working safely with hazardous substances (Worksafe Mahi Haumaru Aotearoa August 2025)*

Contractors will be required to identify and manage all hazardous substances associated with their work site. Contractors will be required to enter any hazardous substances on the project hazardous substances inventory kept in the Main Site Office. As a minimum the following must be recorded:

- The substance's name and UN number (if available)
- The volume of hazardous substances stored on site (and the maximum volume permitted)
- Its location on site where it is stored
- Any specific storage and segregation requirements including non-compatibility with other substances or fluids
- A current safety data sheet (SDS) or a condensed version of the key information from the safety data sheet
- Any hazardous waste generated and requirements for disposal.

All hazardous substances are to be stored in a dedicated secure facility designated on site plans as dangerous goods (DG) sites. All materials within the DG store must be:

- Appropriately labelled with material name, hazard category, and handling precautions
- Incompatible substances are separated
- Lids and caps are kept on containers

Overall responsibility for hazardous material management sits with SLPL as PCBU.

8.7.1. Training and Personal Protective Equipment (PPE)

The contractor will ensure training is provided for all staff accessing, using or disposing of hazardous substances. This training should include:

- How to interpret a safety data sheet (SDS)
- Identifying risks associated with the substances through the SDS review
- Safe handling and storage requirements
- Emergency response
- Minimum Personal Protective Equipment (PPE)
- Disposal requirements

A register of personnel completing the training must be kept and provided to SLPL.

8.8. Site Waste Management

Construction sites generate a large volume of waste material. Prudent management of this waste will be required considering the 3 R's in order: Re-use, Recycle, Reduce. The creation of a Site Waste Management Plan (SWMP) should be considered.

8.8.1. Re-use

Where possible, materials sourced on site will be re-used. This includes ensuring the design maximises use of cut material on-site with an ideal scenario being a cut / fill balance. Re-use of topsoil for site landscaping and screening and selling is also expected as part of the project works.

8.8.2. Recycle

There is not expected to be a large volume of recyclable materials from site other than the material won from building demolition. Materials should be segregated and recycled appropriately:

- Wood: Segregated for recycling in the wider community.
- Concrete/Masonry: Crushed for on-site fill in haul roads or lower levels of engineered fill.
- Metals: Collected for scrap metal recycling
- Green Waste: Chipped or mulched for use on landscaping or public availability.

The use of materials recycled from off-site will also be encouraged over virgin material. This is likely to include asphalt millings, demolition waste (concrete and rubble), recycled concrete, etc. Rubbish separation and recycling (paper, cardboard, organics, cans, glass etc) from the office and smoko areas should also be encouraged.

8.8.3. Reduce (Minimise)

As noted above the cut / fill balance calculation will be significant in reducing the amount of material taken off site. In addition to balancing cut / fill other design smarts can be used to reduce the amount of material bought onto site. These could include:

- Soil Stabilization (Soil Modification): Improving bearing capacity of weaker material by treating it on-site using lime, cement, or other binders.
- Geosynthetics and Geosystems: Using geogrids, mesh, or cell structures to reinforce weak soil reducing the required depth of excavation and the volume of imported granular fill needed.

Operationally, careful planning and sequencing of earthworks will lead to a reduction in fuel usage along with low idling hours for plant. The selection of sustainable building materials, preferably locally sourced, will also be used to lower the carbon footprint of the development.

8.8.4. Secure

For material that cannot be recycled or re-used it is important that it is securely stored until it can be disposed of offsite in an approved landfill. These storage areas should be:

- Clear of boundaries and watercourses
- Bins / skips with secure lids
- In sheltered areas if possible

All personnel on site are expected to minimise waste to landfill through good practice in usage, procurement and separation of waste streams. This is particularly for food scraps where there may become an issue with rodent and pest infestation if not managed.

8.9. Contaminated Land Site Management

Key documents:

Detailed Site Investigation, 270 – 292 Dukes Road North Mosgiel for Southern Link Property Limited, March 2026 (Environmental Consultants Otago 2025 Limited)

Contaminated Site Management Plan: 270-292 Dukes Road North, Mosgiel (EC Otago)

Remedial Action Plan: 270-292 Dukes Road North, Mosgiel (EC Otago)

All works associated with hazards due to contaminated land will be carried out in accordance with the draft Contaminated Site Management Plan (CSMP) and draft Remedial Action Plan (RAP) prepared by Environmental Consultants Otago (2025) Ltd. The CSMP / RAP details a methodology to complete the land remediation and ensure site workers are aware of the hazards and how to deal with them.

The draft CSMP and RAP are attached in Appendix B of this draft Construction Management Plan with CSMP control measures summarised below:

Table 4: *Contaminated Land Control Measures*

Hazard	Control Measures
Dust	• Works must comply with the Good Practice Guide for Assessing and Managing Dust (Ministry for the Environment, 2016) • Stop works if wind speeds exceed 10 m/s (36 km/h), or wind screens are in place or a suppressant/stabiliser is applied • Limit vehicle speeds on excavated surfaces to 10 km/h • Limit exposed surfaces as much as possible • Maintain soil to be excavated in a damp (not wet) condition during excavation and cartage • Use of water sprays to dampen soils must not cause erosion or run-off, or saturated soils • Cover loads during transport
Stockpiles	• If contaminated soil is placed outside of the identified HAIL sites, it must be placed on low permeability material (e.g. Bidim®, polyethylene sheet or paved surface) to avoid cross- contamination • Stockpiles must not be located where run-off can leave the site • Stockpiles must be covered when not actively worked to prevent rainwater ingress, run-off and dust discharges
Groundwater, Storm Water, Silt and Sediment	• Install erosion and sediment controls as per Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region (Auckland Council, 2018) to prevent run-off • Avoid earthworks during rain or when free water is present in excavated areas • Any surface water entering excavations is allowed to soak into the ground • Surface water in contact with exposed earthworks is contained and prevented from entering storm water drains or Silver Stream • If discharge of accumulated water is required, the water shall be contained and treated as contaminated. A temporary trade waste consent is required to discharge to municipal sewer following settling. No discharge is to occur to the storm water network. • Tracking of silt off-site must be prevented • Vehicles entering/exiting the site are to remain on clean aggregate roadways formed to provide all-weather access (stabilised entranceway) • Wheels that contact with site soils shall be swept down or washed in a designated area with silt containment before leaving site

Hazard	Control Measures
Unexpected Contamination	If unexpected, buried material or waste is encountered, works shall stop and the Contaminated Land Consultant contacted. Signs of potential contamination: • Uncontrolled fill • Unusual odours • Discoloured soils, stained water seeps or an oil sheen • Suspected petroleum hydrocarbon contamination • Putrescible or hazardous waste, refuse, or combustion by-products • Intact or broken drums or other containers • Suspected asbestos containing materials or pipes
Health & Safety	Access to the earthworks site is restricted to authorised personnel who have undergone an induction and are aware of the potential hazards relating to contaminated soil at the site. General safety procedures to be followed by all staff entering or working in the immediate area of the earthworks: • Site workers shall avoid unnecessary contact with site soils (especially Areas A – C). • Hands are to be washed in a dedicated area prior to eating, drinking or smoking. • Appropriate personal protection equipment (PPE) and first aid points are in place • All incidents shall be reported to the main contractor's health and safety advisor
PPE	PPE to be available and used as required: • Overalls • Safety boots (steel capped with non-slip durable soles). • Safety glasses. • Disposable gloves or construction gloves • P2 respiratory protection (in case of a breach of dust control)
Records	• Copies of consent to be held on site during works • Location and extent of earthworks to be recorded • Records of reuse of soils within the site, particularly from Areas A - G • Volume of surplus soil removed off-site to be recorded • Soil disposal location • Incidents/unexpected contamination • Complaints are to be recorded and response noted

8.10. Building Demolition Management

There are several farm buildings and ex-residential dwellings to be demolished at various stages of the project. The following describes the proposed management of these demolitions.

8.10.1. Pre-Demolition Asbestos Survey

Prior to any demolition works, SLPL, will engage the services of a SQEP to conduct an asbestos survey and hazardous materials assessment of all buildings. The asbestos survey will identify and locate any asbestos containing material (ACM) within the building footprint. If asbestos or ACM is found, or suspected, an Asbestos Management Plan will be developed detailing how the asbestos will be removed prior to demolition works getting underway. This will be developed by the SQEP.

8.10.2. Building Demolition

Once the building(s) have received asbestos clearance, SLPL will engage the services of a registered demolition contractor to carry out the demolition of the buildings. Works will be managed in accordance with an approved Site-Specific Safety Plan (SSSP) for the demolition phase and will include means to address the risks associated with:

- Ensuring public safety through barriers or hoarding (in accordance with NZBC F5 Construction and Demolition Hazards)
- Falling objects / debris
- Fall from heights including un-barricaded openings
- Uncontrolled demolition through structural collapse
- Airborne contaminants (dust, ACM)
- Utility strikes
- Uneven ground / hidden voids etc

It is expected these risks will be managed by utilising trained personnel and appropriate equipment (long reach excavator) to carry out the demolition in a systematic “top down” manner.

The principles of Section 8.8 Site Waste Management will be applied to the building demolition with emphasis on recycling materials.

8.10.3. Demolition PPE

As a minimum the following PPE will be mandatory for all demolition works:

- Hard hat with chin strap
- Steel-toed boots with puncture-resistant soles
- High-visibility clothing with long sleeves and full-length pants
- Fully sealed safety glasses or googles
- Ear protection
- Durable gloves

Respiratory protection (masks/respirators) will be required for any works associated with ACM or high dust generating activities.

8.11. Erosion and Sediment Control

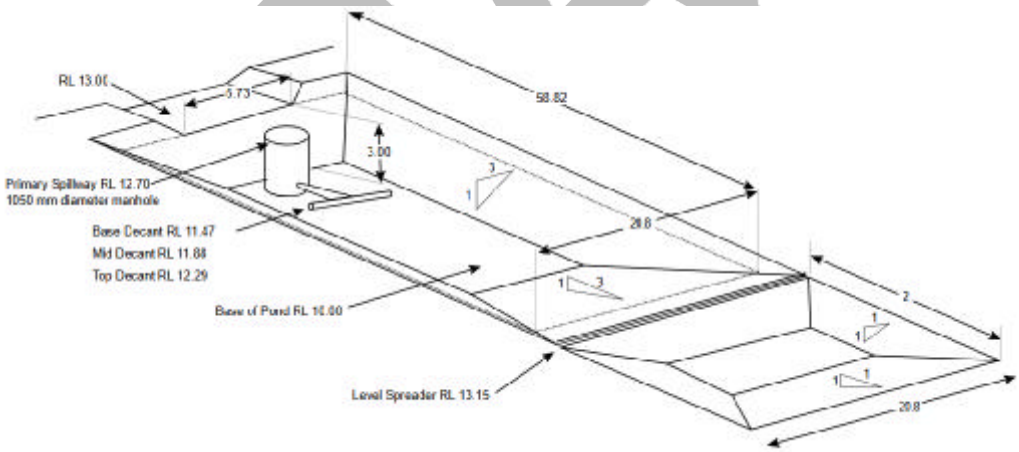
Key document: *Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region June 2016 Guideline Document 2016/005 Incorporating Amendment 3 Reprinted August 2023* (GD05)

A draft Erosion and Sediment Control Plan (ESCP) has been provided with the application and is included in Appendix C of this draft Construction Management Plan. This draft ESCP provides the basic layout of the staging works however earthworks management will be carried out in accordance with GD05 referenced above. The final ESCP will be developed in conjunction with the earthworks contractor and final conditions of consent and be provided to the Otago Regional Council for certification prior to works starting. The ESCP is also a "live" document open to adjustment in accordance with the principles of GD05, with changes to the ESCP requiring recertification from Otago Regional Council.

8.11.1. Sediment Retention Ponds

The key sediment control measure for the site is the installation of staged sediment retention ponds (SRP). The SRPs are designed to allow for sediment to "drop out" of the overland flow before discharging to the Silver Stream or clean water channels.

Typical pond details are included on the draft ESCP drawings with the size to be calculated using tools associated with GD05. The following are typical dimensions for the SLIP site for a 5Ha catchment.



Sediment retention ponds will be built as the site progresses with the following approximate sizing and staging of the SRPs.

Table 5: *Sediment Retention Ponds*

Sediment Retention Pond (SRP)	Approx. Area Served (Ha)	Built	Discharge Point	Approx. Pond Volume (m³)
Stage 1 Main	19.3*	Start Stage 1	Attenuation pond	3,800
Stage 2 Main	10.8*	Start Stage 2	Site SW network	2,160
Stage 2 Secondary	0.9	Start Stage 2	Eastern perimeter drain	180
Stage 1 Stockpile	4.0	Stage 1 prior to stockpiling fill	Western perimeter drain	1,200
Stage 3 Main	5.4	Start Stage 1	Eastern perimeter drain	1,500

Pond sizing and location will be confirmed on detailed design. The catchment area for Stage 1 and 2 Main ponds (*) are larger than recommended so a specific design will be required with the likelihood of several smaller offline ponds or catchments to be included. It is not anticipated that chemical coagulants or flocculants will be required for this project.

Maintenance of SRPs is critical in ensuring an efficient system. The following maintenance activities will be carried out over the life of the ponds:

- SRP's will be inspected daily and before and after heavy rain
- Sediment from the base will be cleaned out when it reaches 20% of the pond volume
- Forebay to be cleaned out after every rainfall event
- Any damage to decant structure or spillways to be repaired immediately

8.11.2. Silver Stream Protection

A dirty water protection bund will be constructed along the alignment of the Silver Stream to direct all overland flow to the SRP. The stormwater attenuation pond is sized for a fully developed site so will be large enough for the smaller volume of construction water run-off. This bund will provide a buffer against direct sheet flow to the stream.

8.11.3. Clean Water Diversions Channels

Clean water overland flows will be collected in diversion channels or bunds on the perimeter of the work site. This will direct any flows away from the bare earth created by the earthworks. These bunds will follow the natural slope of the site on the eastern, northern and western boundaries as shown on the draft ESCP Stage 1 drawings.

Internally there will also be clean water diversion bunds where overland flow is over grassed pasture.

8.11.4. Stabilised Construction Entrances

Areas where there is a risk of earthmoving vehicles dragging material onto internal roads or Dukes Road North, stabilised construction entrances will be installed. If the need arises, wheel washes will be considered for the site construction entrance.

8.11.5. Erosion Control Measures

As the site is relatively flat, ie generally <1%, it is not expected the runoff generated will flow at a high velocity, therefore lowering the volume of material picked up as sediment. Regardless of this, erosion control measures will be implemented as the project progresses with the following to be incorporated into the final ESCP.

- Minimising Open Areas: removing topsoil and exposing underlying fine sediment will be staged in a manner whereby areas are as small as practicable
- Surface Roughening: utilising machine tracks (excavators, dozers, etc) to track against the likely flow path of run-off and roughen the surface to slow run-off and provide seed germination
- Cut off or Contour Drains: Drains cut across the slope or contour to collect and direct run-off to SRP's. Can include check dams to slow velocities and collect sediment.

- Hydroseed or Geotextile Blankets: in order to quickly protect the steep slopes of stockpiles, consider the use of hydroseeding, mulching or geotextile blankets (coconut matting or similar) to promote fast growth of grass to stabilise the slope
- Super Silt Fences: Installed around the edge of the earthworks or site perimeter to slow flows and drop out coarse sediment. This is relevant for areas bounding watercourses and clean water drains

All erosion and sediment control measures must be inspected regularly, particularly around rainfall events. These inspections must be documented with any adjustment or repairs logged.

8.12. Earthworks Management

The following methodology is based on best practice. There may be amendments to the method used based on appointed contractors' plant, equipment and resources.

8.12.1. Site Preparation and Set-out

Contractors will be provided with a digital terrain model (DTM) of the final subgrade level to use with any GPS controlled plant. The same DTM will be installed into GPS rover units to enable quality checks to be carried out on subgrade levels. The generation of a DTM will minimise any over cut or unnecessary earthworks being carried out.

Site clearing of existing fences and vegetation will commence in the SW corner and progress towards Dukes Road North. Fencing materials will be assessed for possible re-use and vegetation will be mulched and stockpiled for use on site as erosion protection or cover on landscaping.

8.12.2. Erosion Control

Erosion and sediment control measures as discussed in the previous section are to be installed prior to commencement of topsoil stripping and bulk earthworks.

8.12.3. Topsoil Removal / Stripping

The site topsoil (assessed as 300mm thick) will be stripped progressively and stockpiled along the eastern boundary in a bund a minimum height of 3m and up to 5.5m high. Bund side slopes are to be a maximum (no steeper than) 2 Horizontal to 1 Vertical and hydroseeded, grassed or covered with geotextile (coconut matting) as soon as possible on achieving final shape.

Topsoil volumes are calculated as follows:

Table 6: *Topsoil Volumes*

Stage	Approx. Area (Ha)	Approx. Topsoil Volume (m^3)
Stage 1	28.43	85,300
Stage 2	12.83	32,000
Stage 3	4.84	8,900
TOTAL	42.30	126,200

The topsoil bund will be surrounded by a super-silt fence to minimise run-off.

8.12.4. Earthworks Volumes

Following stripping of topsoil, bulk earthworks will commence. Bulk earthworks is all works associated with reshaping the site for development including cut to fill, cut to waste and cut to stockpile. An assessment of estimated earthworks volumes after topsoil stripping has been completed (to be confirmed after detailed design) with the volumes calculated for each stage as follows:

Table 7: *Earthworks - Cut / Fill Report*

Stage	Approx. Area (Ha)	Bulk Cut (m^3)	Bulk Fill (m^3)	Stockpile (m^3)	Net (m^3)
Stage 1	28.43	101,600	71,000	22,600 <cut>	8,000 <Waste>
Stage 2	12.83	10,200	32,800	22,600 <fill>	0
Stage 3	4.84	40,600	1,100	0	39,600 <Waste>

8.12.5. Excavation (Cut to Waste)

Material to be excavated will be assessed for suitability for structural fill across the site. Material that has a high clay or silt content, is susceptible to moisture or high in organic content making compaction difficult will be considered unsuitable for structural fill. This material will be stockpiled for removal off site or used in permanent perimeter bunds. The material to be cut to waste has been classified as "clean fill" but no disposal site has been identified at this stage.

Material to be excavated in layers utilizing motor scrappers, bulldozers, excavators or a combination of all three. The final methodology will be contractor driven.

8.12.6. Excavation (Cut to Fill)

Material that is assessed as being suitable as structural fill will be transported to fill sites in either Moxy trucks or motor scrapers with double handling to be avoided. Material to be used as fill will be placed in layers as detailed below.

8.12.7. Excavation (Cut to Stockpile)

There is an imbalance between cut and fill volumes on Stage 1 of the development with an excess of cut. During Stage 2 there is a shortage of fill material so cut material suitable for structural fill from Stage 1 will be stockpiled in the southern area of Stage 2 as shown on the staging plans. This stockpile will contain approximately 22,600m^3, be a maximum of 2m high and cover a footprint of 200m by 60m or similar with side slopes and height confirmed following geotechnical advice.

8.12.8. Stockpile Management

Where stockpiles are required, several aspects need to be managed to ensure effects are minimised. The height and side slopes will be determined by an experienced geotechnical engineer to ensure slope stability under all conditions.

As soon as practicable, and when at the finished height and shape, the stockpiles are to be covered to minimise the risk of sediment release and dust generation. Covering could be with mulch, geotextile, coconut matting, grass seed or hydroseeded to encourage fast growth. The requirement to discourage bird nesting is also a requirement for aviation safety.

While placing material there may need to be a requirement to dampen the material to minimise dust generation and material should be compacted immediately on placing. Erosion and sediment control measures are required as detailed on the ESCP.

8.12.9. Fill Placement and Compaction

Suitable fill material is to be transported by off road Moxy trucks or motor scrappers and placed in horizontal layers typically 300mm thick (to be assessed by Geotechnical Engineers following material testing). The source material will either be directly from cut activities or from stockpiles.

The fill material should be placed as close as possible to its optimum moisture content (OMC) with material to either have water added (too dry) or spread thinly and worked over, or disced / harrowed (too wet) to adjust the moisture content. OMC will be determined by laboratory Proctor compaction tests or other suitable materials laboratory testing. In field testing of moisture content will be undertaken using Nuclear Density Meter (NDM).

8.12.10. Fill Testing

In addition to moisture content, the NDM will measure the density of compacted material. Plateau tests can also be used to determine the number of compactor passes required to achieve compaction requirements.

Following surface shaping and trimming the final subgrade will be tested for bearing capacity using any number of methods. These tests may include:

- Plate load test
- Scala penetrometer (SPT)
- Cone penetration test (CPT)
- Falling Weight Deflectometer (FWD)
- Light Weight Deflectometer (LWD)

These tests will form the bulk of the QA requirement for pavement, rail and building subgrade strengths.

8.12.11. Earthworks Health and Safety

Earthworks by its nature can be a hazardous activity. Risks associated with earthworks include:

- Heavy plant movement
- Person vs. Plant
- Deep excavations
- Unstable slopes
- Uneven surfaces

Managing these risks (through PPE, traffic management, etc) will be addressed in the earthwork's contractors SSSP which will require approval prior to commencement on site.

8.13. Dust and Air Quality Management

Key document: *Good Practice Guide for Assessing and Managing Dust (Ministry for the Environment, 2016)*

Dust generated from the earthworks phase of the development has the potential to impact site workers, effect ecosystems and cause a nuisance to neighbouring landowners. These neighbouring landowners include food grade stores (Fonterra, Lineage, etc), the Taieri Aerodrome and earlier stage stores on site.

A dust management plan (DMP) is not proposed; however, the earthworks contractor will be required to consider the following management measures in planning and carrying out their work.

8.13.1. Minimise Dust Generation

As a starting point, minimising dust generation at its source can be achieved by:

- Water application as a dust suppressant on haul roads and active work areas
- Restricting vehicle speeds during strong winds or dry conditions (10km/hr)
- When loading trucks, material to be dropped from as low a height as practicable
- Ceasing excavation operations during high wind events
- Stockpile management (covering, watering, stabilising)
- Minimise open work areas and stabilise promptly on completion

These measures are standard good practice and are expected to be second nature for competent, experienced operators.

8.13.2. Mitigation Measures

If dust generation cannot be avoided, the following mitigation measures can be applied:

- Stabilising roadways and haul roads with lime or chemical dust suppressant (Vital Bon-Matt or similar)
- Watering open areas of the site if strong winds and / or dry conditions are forecast
- Hydroseeding grassed areas or stockpiles on completion
- Use of sprinklers along the haul road to suppress dust

8.13.3. Complaints

Dust events or complaints are to be recorded on the contractors daily site record and discussed at fortnightly site meetings. The complaints procedure in Section Error! Reference source not found. is to be followed if complaints are received from beyond the site boundaries.

8.13.4. Water supply for dust suppression

Sources of water for dust suppression activities are (in order of precedence):

1. On site sediment retention ponds
2. Onsite consented bores via on site tanks
3. Rainwater collected from roofs (Stage 1)
4. Non-potable water reservoirs (Stage 2 and 3)
5. Supplied from off-site via tanker
6. Dunedin City Council water connection

The JV will be responsible for providing suitable tanks for collection of rainwater and bore water for dust suppression.

8.14. Diversion Swale and Silver Stream Works Management

One of the higher environmental risk activities during construction is the excavation and formation of the perimeter diversion swales and works adjacent to the Silver Stream including on the watercourse banks. The Works adjacent to the Silver Stream includes the excavation and construction of the lined spillway subject to detailed design.

8.14.1. Diversion Swales

These swales are designed to divert overland flow from upstream catchments clear of the development and discharge to the Silver Stream. In general, the following shall apply:

- Erosion and sediment control measures are to be implemented in compliance with the draft ESCP
- Works should be undertaken in dry, stable conditions
- Drains are to be constructed from downstream to upstream
- A Super Silt fence with additional hay bale protection is to be installed across the swale at the top of the riverbank prior to the discharge point
- As soon as practicable following excavation, the swale is to be protected from erosion by installing biodegradable geotextile such as Biomac C or BioCoir, rock weirs, hydroseeding / grassing and planting with *Carex*
- No refuelling is permitted within 30m of the excavation works

8.14.2. Silver Stream Works

There are no works expected to be undertaken in the bed of the Silver Stream, rather adjacent to the flowing water and on the riverbank. Given the importance of the watercourse the following rules are to be applied:

- Avoid works between 1 May and 31 November (if possible)
- No construction plant is permitted in the bed of the watercourse
- No refuelling to be undertaken within 30m of the Silver Stream top bank
- Daily prestart checks of plant are to be completed and recorded with a focus on identifying leaks of oil, fuel or hydraulic fluids
- All machinery must be cleaned before entering the site from other catchments or work sites to prevent the spread of pest organisms
- Spill kits must be kept on site with all operatives trained in their use
- All rubbish, temporary structures and debris to be removed

Consideration should be given to using biodegradable hydraulic fluid in machinery in areas where bunding is not possible and they are working in close proximity to the watercourse.

All mitigation is to be in accordance with the *Southern Link Inland Port Freshwater Ecological Impact Assessment (e3 Scientific March 2026)* report recommendations detailed in section 9.4.

8.14.3. Ongoing Watercourse Management

SLPL will be responsible for ensuring the perimeter swales are maintained beyond the construction period. This maintenance is to ensure flows are not restricted by overgrown or fallen vegetation and to clear out any foreign objects or rubbish that have collected over time.

8.15. Warehouse Construction Management

The most prevalent and likely method of warehouse construction is a "tilt-slab" type construction. This construction method utilises the warehouse floor as a casting bed for the warehouse walls where they are cast and then lifted into place using large cranes. The warehouse foundations are unlikely to be piled given the good ground conditions so piling noise and effects should be minimal if not eliminated.

The warehouse floors will be reinforced to allow for future racking solutions and contain amenity facilities, office space and meeting rooms. All warehouses will likely require fire protection through sprinklers and be connected to the non-potable water supply for firefighting. They will also have sanitary sewer connections, stormwater run-off connections, potable and non-potable water supply and power and communications networks capable of servicing the facility.

The brief methodology for typical warehouse construction is included in earlier sections. The hazards associated with warehouse construction requires strict management and as a result only specialist contractors will be used. A full SSSP will be required including the following as a minimum:

- Crane Lift Plan
- Panel placement methodology
- Concrete pour methodology
- Job Safety Analysis

8.15.1. Crane Lift Plan

In accordance with standard practice a lift plan for the warehouse constriction will be required. The lift plan will include as a minimum:

- Site Plan: Showing each panel or structural steel lift, lift and swing zone, exclusion zones, crane positioning, aerial hazards (aviation limit zones, overhead lines, adjacent structures, etc)
- Site Assessment: Includes ground conditions (bearing capacity and level), presence of underground services or voids, weather and wind forecast and actual, competing or adjacent activities
- Crane Information: Make and type, capacity, boom configuration, operating radius, outrigger deployment (if applicable)
- Load Details: Each lift weight (including load, rigging and hook), lifting points and configuration, dimensions including centre of gravity
- Lifting Gear: Rigging layout detailed, equipment inspected and tagged, SWL checked against load details
- Communication: Details of all personnel (crane operator, dogman, rigger etc), communication method, emergency procedures detailed, pre-lift meeting requirements.

Lift plans will be completed by the crane operator in conjunction with their rigger / dogman. All personnel within the lift zone will be required to sign onto the lift plan before commencement or vacate the site. Unnecessary personnel should be kept clear of the lift zone until the panels are securely braced on site.

8.15.2. Panel Placement

Experienced operators will be responsible for the management of panel placement. Panel placement requires several checks prior to lifting, these include:

- Confirmation of exclusion zones within fall zone of the panel and barricading to ensure these are implemented
- Inspection of panels prior to lift, checking for any casting cracking or defects that may compromise the lift
- Assessment of weather conditions (wind, lightning, vision) prior to and forecast beyond lift
- Bracing set out (numbers, capacity, locations, removal requirements) provided by temporary works designer with all equipment on site and ready for deployment

These items, as a minimum, will be covered by the hazard assessment and / or Job Safety Analysis required for each site. Control measures must be put in place before the operation commences with all personnel signing onto the JSA.

8.15.3. Working at Heights

Key document: *Best Practice Guidelines for Working at Height (Ministry of Business, Innovation and Employment July 2019)*

All works associated with working at heights will be in general accordance with MBIE 's *Best Practice Guidelines for Working at Height in New Zealand* (July 2019).

A Working at Heights Permit system will be in place for all warehouse works. This permit will include a hazard checklist including:

- Assessment of weather conditions (if exposed), particularly wind, rain and lightning
- Requirement for scaffolding and edge protection
- Use of ladders and conditions
- Installation of permanent or temporary guardrails are to be installed
- Use of lanyards for tethering tools and equipment
- Use of fall arrest systems including anchors point identification
- Checking the inspection tag or inspection record prior to use
- Checking of harnesses and/or slings being used for wear and damage
- Confirmation all personnel are trained for working at heights
- Work area is clear of overhead power lines by more than 10m
- Use of elevated work platform (EWP) including training and certification of operators
- Appropriate warning signage/barricading has been erected
- Communication protocols
- Rescue plan known and communicated
- Identification of nearest person trained in first aid

The key requirement for PPE, particularly individually fitted fall arrest system harnesses, must be provided for all trained personnel undertaking working at heights activities.

8.15.4. Concrete Pour Methodology

Key document: *Concrete Pumping Health and Safety Guidelines (Ministry of Business, Innovation and Employment February 2013)*

A significant volume of concrete is to be placed through all stages of the development. Although not an obvious high hazard environment several hazards do exist including:

- Severe chemical / alkaline burns
- Concrete splashback leading to eye irritation and burns
- Heavy lifting from wet concrete and pump hoses / pipes
- Slips, trips and falls
- High pressure pumps and hoses
- High volume of traffic including reversing traffic

Effective management of these hazards can be minimised through appropriate PPE and traffic management plans (TMP).

Environmental impacts of accidental discharge of concrete to groundwater, stormwater or surface water can also be minimised by ensuring no open watercourses are near concrete pours and by providing a clear wash out area for concrete trucks and pumps following the pour. These wash out areas should be bunded, leakproof and designated prior to the pour. Any concrete in these wash out areas can be crushed and re-used on site for fill.

8.15.5. Job Safety Analysis

A Job Safety Analysis (JSA) for all activities or task on site will be required prior to commencement. A standard JSA form will be provided to ensure consistency across all activities and disciplines. As a minimum the JSA will cover:

- Job Sequence: Provides a step-by-step breakdown of the task (what is done)
- Hazard Identification: Identify potential risks for each step (includes physical, chemical, ergonomic, and environmental hazards)
- Risk Assessment: Evaluate the likelihood and severity of potential incidents for each hazard
- Control Measures: Determine and implement measures to eliminate or reduce the risk
- Document and Communicate: Formally document the JSA, ensuring it is signed, accessible, and clearly communicated to all workers involved
- Review and Update: Regularly review and update the JSA to ensure it remains accurate

8.16. Services and Underground Infrastructure Management

The installation of inground services is a key component of the site development. As the site is considered a “greenfield” the risk of striking unknown services is low. However, the trenching and installation of new services requires careful planning and preparation.

8.16.1. Existing Services

Although existing service strike risk is considered low on the main site, excavation works around the entrance and connecting to existing services (power, data, water, foul sewer) in the road corridor will require Dunedin City Council approval.

All works within the DCC road corridor (Dukes Road North, Stedman Road, Odlins Place) require a Corridor Access Request (CAR) to be submitted to the DCC. Once approved the CAR becomes a Works Access Permit with conditions placed on the timing and duration of works. A Traffic Management Plan (TMP) must also be submitted for approval with the CAR.

All CAR applications must include details of existing services which can be found on the Before U Dig website www.beforeudig.co.nz. Before excavation, existing services must be located by Ground Penetrating Radar (GPR), cable avoidance tools (CAT) or cable locator, potholing or hydro-excavation techniques.

Once services are physically located they must be protected and managed to prevent damage, service disruption, and safety risks.

8.16.2. Trenching

Key document: *Good Practice Guidelines for Excavation Safety (WorkSafe July 2016)*

Underground services generally require the excavation of trenches to enable installation. Trenching can be hazardous if safety requirements are not followed with legislation requiring mandatory shoring of trench walls where the depth is greater than 1.5m. This is shown in the *Good Practice Guidelines for Excavation Safety* with key requirements of this guideline include:

- Preventing Collapse: Sides must be supported by shoring, trench shields, or cut back (battering/benching) to a safe angle.
- Depth Regulations: While 1.5m is the threshold for mandatory shoring in regulations, a "competent person" should assess risks for all depths.
- Safe Access/Egress: Trenches deeper than 1.5m must have safe access, such as ladders that extend 900mm above the landing point.
- Edge Protection: Keep excavated material, tools, and plant outside the “zone of influence” for excavation. Generally, this zone is at least the depth of the trench plus 1m on either side.
- Utility Safety: Locate all underground services before digging. Use non-conductive tools and spotters when working near live services.
- Water Management: Trenches must be kept free of water accumulation to prevent instability.
- Barriers: Secure, high-visibility barriers must surround the excavation to prevent personnel or equipment from falling in.

Excavation on site will require the issue of an Excavation Permit for all works.

8.16.3. Service Installation

Ducts and pipes will be installed in accordance with the design drawings in relation to number, alignment and level. Services are generally not installed under pressure however an Isolation Permit will be required for connection to existing services regardless of the nature of the service.

8.16.4. Environmental Management

All excavation works will comply with the principles of the draft Erosion and Sediment Control Plan (ESCP). This is relevant if the excavated material is to be stockpiled for reinstatement in the trench or if the trench line cuts across overland flow paths. Stockpiled material must be covered or grassed to minimise any sediment run off.

In the unlikely event that groundwater is encountered in trenches, resource consent from the Otago Regional Council for dewatering must be obtained. Once pumped out the groundwater should be discharged to sediment retention ponds (SRP) to allow for settlement of any sediment.

8.16.5. As-built Surveys

To ensure any future excavations are managed safely, all buried services must be surveyed for the generation of as-built drawings. As-built surveys must be provided to SLPL in a digital format consistent with the local survey datum.

8.17. Traffic Management

Key document: *Code of Practice for Temporary Traffic Management (CoPTTM) - (NZ Land Transport Agency Waka Kotahi)*

Environmental and safety issues will arise from traffic flow during large scale development projects. The key to managing these issues is ensuring the site is well planned and conflicting traffic flows are separated where possible. All works within the DCC road corridor must be managed by a contractor operating under a current Works Access Permit (following submission of a Corridor Access Request) and appropriate traffic management measures.

8.17.1. Internal Construction Traffic

The conflict for internal construction traffic can largely be resolved by separation and clear definition of traffic routes. Separation between pedestrians, light vehicles, heavy road vehicles and large earthmoving traffic should be provided where possible.

Haul roads for earthmoving plant should be clearly defined with earthmoving plant having right of way. Light vehicles will be required to traverse the site for inspections and testing however pedestrian traffic should be eliminated if possible. Personnel attending site must be transported in light vehicles with hazard beacons, hi-visibility PPE and trained spotters in communication with earthmoving plant included as a control measure.

Key aspects of on site traffic management includes:

- Clear traffic routes and delineation
- Barriers and fencing for high pedestrian volume areas around site compounds
- Speed limits and clear signage
- Driver training
- Minimum PPE and sitewide standards
- Hazard identification including mud, dust and public nuisance

8.17.2. Public Safety

During works associated with the construction of the permanent site access an approved Traffic Management Plan (TMP) from Dunedin City Council is required as part of the Corridor Access Request process. The temporary site access at Stage 1 should also be subject to a TMP as good practice due to the large number of vehicles entering and exiting the site. This TMP should include details around:

- Avoiding peak local traffic times
- Minimising mud and debris dragged off site
- Safely managing access
- Signage and management in accordance with CoPTTM

Public safety is paramount in a successful project so a suitably detailed TMP is required to detail interactions and risk minimisation for all users of the roading network.

8.17.3. Environmental Management of Traffic

The TMP for the site will not be subject to regulatory approval as works are on private property however the internal site TMP is a key tool in minimising the effects of internal traffic through clear rules. These rules will include:

- Speed limits to minimise dust generation and sediment transport beyond site boundaries
- Entry and exit point stabilisation
- Haul road management
- Parking and maintenance area definition
- Restriction of earthworks activities near high value ecosystems

9. Construction Environmental Management

9.1. Introduction

The following sections outline the minimum management requirements for contractors to mitigate the effects of the project construction activities. Each action will either:

1. Comply (Avoid) – these actions must be completed generally before works commence
2. Manage (Minimise) – these actions are offered to manage the effects of the activity
3. Enhance (Remedy) – this action is recommended if effects cannot be avoided or minimised

The following management actions relate only to the construction phase of the project.

9.2. Relevant Consents

As consents have not yet been granted, the following mitigation measures are draft based on recommendations of supporting evidence provided by Suitably Qualified and Experienced Personnel (SQEP). On receipt of consents and associated conditions, these will be listed in this section and the following disciplines amended accordingly to comply.

9.3. Terrestrial Ecology Assessment

Key document: *Southern Link Inland Port Terrestrial Ecological EcIA (e3 Scientific March 2026)*

The following management actions are a summary of the Terrestrial Ecological EcIA (*e3 Scientific March 2026*) as included in the application and are a way of mitigating the effects of the project construction activities.

9.3.1. Avifauna (birds) Management Plan

- *Comply* – Avoid vegetation removal (greater than 1m) between August and March each year, or
- *Manage* - Avifauna survey for nesting birds completed within 5 days of earthworks commencing (between August and March only), and
- *Comply* - If nesting birds are found tree felling must not commence until fledglings have left the nest(s).
- *Comply* – For earthworks between August and February an avifauna survey is required of the pasture within five days of earthworks commencing to identify any nesting birds
- *Manage* – If nesting birds are found earthworks must not commence until fledglings have left the nest or a buffer zone around the nesting site(s) is identified and demarcated by a SQEP
- *Comply* – Vegetation within the Stream Buffer and Stream Edge will be retained
- *Manage* – Large stockpiles of soil/vegetation on site are covered or sufficient deterrent measures in place to prevent birds being attracted.
- *Manage* – All loud construction noise kept as far from the Stream Edge and Buffer as possible
- *Manage* – Any loud construction noise necessary near the Stream Edge and Buffer to be kept to as short a time frame as possible
- *Enhance* - revegetation of Silver Stream Buffer zone, Stream Edge, the site boundary and any other available greenspace with native plant species.

9.3.2. Lizard Management Plan

A Wildlife Permit is being sought outside of the Fast-track process. Due to the presence of *tussock skink* on site the following management measures are proposed:

- *Comply* – Prepare, get approval and implement a Lizard Management Plan (LMP)
- *Comply* – Obtain a Wildlife Permit to enable trapping and relocation of lizards from site footprint as detailed in the LMP
- *Manage* – Create habitat and predator control for relocated lizards as detailed in LMP

The JV will obtain all plans and permits to mitigate effects against lizards. Contractors will complete an induction detailing what to look for and response requirements.

9.4. Freshwater Ecology Assessment

Key document: *Southern Link Inland Port Freshwater Ecological Impact Assessment (e3 Scientific March 2026)*

The following actions are a summary of the Freshwater Ecological Impact Assessment (*e3 Scientific March 2026*) as included in the application and are a way of mitigating the effects of the project construction activities.

- *Manage* – Earthworks should be undertaken primarily during stable weather conditions
- *Manage* – Sediment Retention Pond maintenance shall only be undertaken during stable weather conditions and in accordance with GD05
- *Enhance* – Undertake planting with native species of swale between the attenuation pond outlet and Silver Stream adjacent to rock lined sections
- *Comply* – Avoid in-water works between 1 May and 31 November or
- *Manage* – if works are carried out between 1 May and 31 November a SQEP will undertake fish salvage in accordance with National Work in Water Guidelines (MfE, 2021)
- *Enhance* – Undertake planting in stormwater swales with native shrubs or *Carex*
- *Manage* – Undertake works in accordance with best practice (cleaning regime, chemical storage indoors, vehicles maintained, spill prevention, regular GPT / UPT maintenance etc.)

Several in water monitoring surveys are also recommended to verify the effectiveness of construction management practices. These monitoring activities include:

1. Aquatic habitat and macroinvertebrate surveys upstream and downstream of the site annually in Spring during Stage 1
2. Water quality monitoring within Silver Stream should be taken pre-discharge (at upstream and downstream sites) over 4 sampling events to determine a baseline data set
3. First flush water quality monitoring of the discharge and at upstream and downstream Silver Stream sites should occur quarterly during Stage 1 and Stage 2 of construction, until the attenuation pond has been fully completed, and within 1 week following a large storm event that has resulted in any overland flow from the washpad / truckwash area.
4. Continuous upstream (above Outlet 2) and downstream (below Outlet 1) water temperature monitoring should occur in Silver Stream for the first two summers (1 Dec to 31 March) post stormwater attenuation pond establishment.

All proposed stormwater monitoring parameters and ongoing timeframes should be included in a Stormwater Monitoring Plan (SMP).

9.5. Landscaping Assessment

Key document: *Landscape and Natural Character Effects Assessment (Mike Moore Landscape Architect 11 March 2026)*

Landscape management mitigation measures relate to the planting and revegetation of buffer zones around the site. These are proposed to be included in the conditions of consent.

No management actions relating to construction are recommended other than:

- *Manage* – Minimise any unnecessary removal of vegetation on the site boundaries
- *Comply* – Implementation of the conditions of consent

9.6. Archaeological Assessment

Key documents: *Holmhead Farm Research Strategy (Lignum Lab 2025)*

Southern Inland Port Archaeological Management Plan (AMP) (Lignum Lab October 2025)

The Research Strategy document confirms pre-1900's occupation with the following a guideline for the recording of archaeological features.

9.6.1. Archaeological Authority

- *Comply* – Archaeological authority to be obtained prior to works commencing
- *Manage* – Manage works in accordance with Archaeological Management Plan (AMP)
- *Comply* – Prior to demolition, the pre-1900 building must be recorded in accordance with HNZPT guidelines 2018
- *Manage* – An archaeologist will monitor site clearance in high-risk area
- *Manage* – Archaeological briefing included as requirement of site induction
- *Manage* – Accidental Discovery Clause included within Contract documentation

9.6.2. Accidental Discovery Protocols

In the event that an unidentified archaeological site is located during works, the following protocols shall apply:

a) Work must cease immediately at that place and within 20 metres around the site.
b) All machinery must be shut down, the area must be secured, and the Heritage New Zealand Pouhere Taonga Regional Archaeologist and the Consent Authority must be notified.
c) If the site is of Maori origin, the Consent Holder must also notify the appropriate iwi groups or kaitiaki representative of the discovery and ensure site access to enable appropriate cultural procedures and tikanga to be undertaken, as long as all statutory requirements under legislation are met (Heritage New Zealand Pouhere Taonga Act 2014, Protected Objects Act 1975).
d) If human remains (koiwi tangata) are uncovered the Consent Holder must advise the Heritage New Zealand Pouhere Taonga Regional Archaeologist, NZ Police, the Consent Authority and the appropriate iwi groups or kaitiaki representative and the above process under (c) will

apply. Remains are not to be disturbed or moved until such time as iwi and Heritage New Zealand Pouhere Taonga have responded.

e) Works affecting the archaeological site and any human remains (koiwi tangata) must not resume until Heritage New Zealand Pouhere Taonga gives written approval for work to continue. Further assessment by an archaeologist may be required.
f) Where iwi so request, any information recorded as the result of the find such as a description of location and content, must be provided for their records

Accidental discovery protocols will be offered as a condition of consent.

9.7. Contaminated Land Assessment

Key documents:

Detailed Site Investigation, 270 – 292 Dukes Road North Mosgiel for Southern Link Property Limited, March 2026 (Environmental Consultants Otago 2025 Limited)

Contaminated Site Management Plan: 270-292 Dukes Road North, Mosgiel (EC Otago)

Remedial Action Plan: 270-292 Dukes Road North, Mosgiel (EC Otago)

9.7.1. Contaminated Site Management Plan

The draft CSMP and draft RAP detail the measures required to safely the manage the effects of contaminated land remediation. The draft CSMP is the key document and is included in Appendix B with control measures highlighted in this draft Construction Management Plan, clause 8.9.

9.7.2. Accidental Discovery Protocols

Works on addressing known contaminated soil will be undertaken in accordance with a CSMP and / or RAP as detailed in Section 8.9. The site environmental induction (see Section 4.3) will also address signs of unexpected contamination (e.g., odour, discolouration of soils, asbestos containing materials etc).

If accidental / unexpected contamination is identified during the works within the site or there is an uncontrolled discharge of potentially contaminated soil or water to the environment, the following protocols shall be followed:

1) Earthworks within 10m of unexpected contaminants must cease immediately;
2) All practicable steps must be taken to prevent the contaminated material becoming entrained in stormwater. Immediate steps must include, where practicable:
    i) Diverting any stormwater runoff from surrounding areas away from the contaminated material; and
    ii) Minimising the exposure of the contaminated material, including covering the contaminants with an impervious cover
3) Notification of the Consent Authority within 24 hours of the discovery
4) Earthworks within 10m of the unexpected contaminants must not recommence until a suitably qualified and experienced contaminated land practitioner (SQEP) confirms to the Consent Authority that continuing works does not represent a significant risk to the environment
5) All records and documentation associated with the discovery must be kept and copies must be provided to the Consent Authority on request.

9.8. Noise and Vibration

Key document: *Southern Link Inland Port Noise Assessment (Marshall Day Acoustics February 2026)*

9.8.1. Noise

The noise assessment anticipates the activity will comfortably comply with the Construction Noise Standard NZS 6803 (1999) and 2GP rules as long a 40m setback is maintained from receiving environments. The assessment includes:

- *Manage* – sequence installation of topsoil bunds and noise control walls early in the construction programme
- *Manage* – Construction equipment will be required to be fitted with broadband "squawker" reversing alarms rather than conventional tonal reversing alarms.

There will be the requirement to undertake construction activity at night, specifically concrete pours. This activity requires management:

- *Manage* - notification to affected neighbours regarding construction activities, if there is a specific need to undertake works at night / outside daylight hours
- *Comply* - a construction noise management plan should be developed to ensure that the best practicable option is adopted to reduce noise.

9.8.2. Vibration

The vibration assessment anticipates the activity will also comfortably comply with the 2GP so no specific compliance or management actions are required.

9.9. Lighting

Key document: *Assessment of Environmental Effects – Lighting (Pedersen Road February 2026)*

The majority of construction activity will occur during daylight hours. In the event of winter hours, or early morning activities (predominantly) concrete pours the following applies:

- *Comply* – Detail mitigation measures for construction lighting in the Construction Management Plan to be certified by the Dunedin City Council
- *Comply* – provide the draft Construction Management Plan and the detailed lighting design drawings to the operator of Taieri Aerodrome for their review and feedback
- *Comply* – meet the glare and spill light limits in the 2GP rules 9.3.5 and 16.5.5
- *Manage* - notification to affected neighbours regarding construction activities, if there is a specific need to undertake works at night / outside daylight hours
- *Manage* - Construction contractor undertakes a risk analysis on the lighting requirement for each task

In respect to this draft CMP, the following has been included for review:

- Programme works for daylight hours where possible
- Keep temporary lighting as far as possible away from the Silver Stream edge and buffer zone
- Always direct light inwards towards site and provide shields to minimise light spill beyond the task
- Ensure lights are turned off when not required (minimise run time)
- Use daylight switches or motion sensors on site amenity buildings

9.10. Aviation Assessment

Key document: *Aviation Impact Report for Southern Link Property Limited (Astral Limited March 2026)*

The proximity of the Taieri Aerodrome and the Obstacle Limitation Surface (OLS) over the southern extents of the site has led to several recommendations being proposed in respect to aviation safety.

9.10.1. Construction including Cranes

The use of cranes will be essential for the completion of the project, in particular those relating to warehouse construction during all stages. The following are the requirements of utilising cranes on site during construction:

- *Comply* – Notify relevant aviation bodies (e.g., Civil Aviation Authority, Taieri Aero Club, Helicopters Otago) at least 90 days prior to construction commencing
- *Manage* - prepare and implement a Wildlife Hazard Management Plan which includes provisions for a bird monitoring and mitigation programme
- *Manage* - include construction safety procedures to be implemented throughout construction and operation, land management measures for any infringements of the 1:20 upslope OLS
- *Comply* – Crane booms extending above the OLS to display an obstruction light and remain active at all times
- *Manage* – invite the operator of the Tieri Aerodrome to implement, and attend a SLIP Aviation Safety Consultation Committee that meets regularly to review any aviation safety issues arising out of the construction
- *Comply* – crane operations must only operate during daylight hours

9.10.2. Lighting

A lighting assessment was completed by Pederson Read and endorsed by Astral Limited. Following are those recommendations relating to construction:

- *Manage* –manage site lighting including possible night construction lighting requirements
- *Manage* – construction works associated will be undertaken during standard daytime working hours. Where night works are proposed temporary construction lighting may be used to maintain safe working conditions
- *Manage* – notification to affected neighbours regarding construction activities, if there is a specific need to undertake works at night / outside daylight hours
- *Manage* – temporary construction lighting to utilise shielding to ensure spill light is controlled with no uplighting permitted

9.11. Resource Consent Conditions

To be included on granting.

9.12. Consent Performance Monitoring

The JV Environmental Manager will be responsible for ensuring compliance with any resource conditions imposed. This responsibility includes:

- Collation and communicating consent conditions and environmental legislation
- Ensuring compliance with consent conditions through instruction, monitoring and auditing of site personnel
- Reporting environmental compliance against conditions to PSG and stakeholders
- Providing monitoring results and reports to consenting authorities in accordance with consented timeframes

Knowledge of, and compliance with, consent conditions is the responsibility of all personnel on site. The site induction process, Section 4.3, will be the vehicle for communicating consent conditions and any restrictions.

10. Health and Safety Management

All Contractor's must comply with Health and Safety at Work Act 2015 (HSWA), the Accident Compensation Act 2001 and with any amendments that may be made to the Acts and New Zealand law. The Contractor shall appoint a Health and Safety representative or representatives to perform the functions as defined under the HSWA.

The Contractor shall ensure that all the project safety documentation is fully integrated and compliant with the policies and procedures of SLPL as outlined in the following clauses.

10.1. General

The Contractor will be expected to agree and sign onto all terms and conditions associated SLPL's user commitment to health and safety including the requirement for all Contractor and sub-contractor staff to have undertaken a site-specific health and safety induction. This induction will be provided on site and will take up to one hour. All costs associated with the induction of Contractors employee's or sub-contractors will be borne by the Contractor.

The Contractor acknowledges that the Contractor and its employees, agents and Contractors enter the project premises at their own risk and will:

i. comply with the Contract
ii. comply with SLPL's directions and instructions, all applicable notifications and signage, and all security, health & safety or environmental processes, procedures, plans, policies and requirements notified by the JV Health and Safety Manager from time to time

10.2. Contractor Pre-Qualification

All Contractors undertaking work on this project must have undergone Contractor pre-qualification. Pre-qualification requires documentation to be provided that demonstrates the Contractor is capable of performing work while also managing the health and safety of all those affected in, on and around their site. Information sought includes:

- Company Safety Plan
- Procedures
- Hazard management / Control of Risks
- Training and supervision
- Accident investigation
- Engagement and participation practices
- Emergency plan and procedures
- Sub-contractor management
- Performance

This information will be requested prior to accepting any quote or tender.

10.3. Site Specific Safety Plan

All Contractors must prepare and submit a Site-Specific Safety Plan (SSSP) particular to their Work Package prior to commencement of the Contract Works on the site.

The SSSP must identify how the Contractor will comply with the legislative, project and contract specific requirements while carrying out the Contract Works.

The SSSP must be further developed and updated:

- prior to operations commencing;
- to consider changes in site conditions and work, generally accepted occupational health, safety and rehabilitation practices and changes in law;
- where requested or required by any Government agency or by law.

As a minimum the SSSP shall include the following:

- appointment of a competent and qualified Safety Manager and other specialist personnel to manage the project safety performance to the level required by the SLPL
- procedures for hazard identification and mitigation, including pre-job planning (Hazard assessment, Job Safety Analyses, toolbox meetings, etc)
- carrying out site specific safety inductions for all employees and Contractors working within their site
- keeping records of all licenses
- running regular Project safety meetings
- procedures for emergency management
- procedures for investigation and reporting of incidents, accidents and injuries (including corrective actions)
- all safety reports and recommendations are to be prepared and provided to the JV Health and Safety Manager in a timely manner
- procedures for the safe inspection, maintenance and operation of lifting plant
- provision and use of suitable personal protective equipment (PPE) to all personnel and visitors present on site during the Contract Works

The SSSP shall be further developed and updated prior to operations to take into account changes in site conditions and work, generally accepted occupational health, safety and rehabilitation practices, changes in law, and where required by any government agency.

The JV Project Manager or their agents must have the opportunity to review and approve the SSSP prior to any work commencing.

11. Construction Programme and Quality Management

The construction programme will be driven by several factors, most notably the approvals process.

11.1. Construction Duration

Following are expected development durations aligned with the Project Staging. These timings may change and it is acknowledged that any substantive changes to the design for which resource consent is sought may require a variation.

- Stage 1 is estimated to be completed 1 to 3 years following commencement of the Project and will include clearance of the southern area of the site and construction of the 'Stage 1' container storage concrete pad, rail siding, container service area, warehouses, internal roading, parking and loading, road widening and construction of the new intersection on Dukes Road North, stormwater attenuation pond, Silver Stream stormwater outlets, servicing infrastructure, flood management measures, landscaping, acoustic barriers and eastern bund, and lighting.
- Stage 2 is estimated to be completed 3 to 5 years following commencement of the Project and will include clearance of the northern area of the site and construction of the 'Stage 2' container storage concrete pad, warehouses, ancillary offices, internal roading, parking and loading, emergency egress onto Dukes Road North, expansion of the stormwater attenuation pond, landscaping, extension of the servicing infrastructure and lighting.
- Stage 3 is estimated to be completed 5 to 10 years following commencement of the Project and will include clearance of the eastern area of the site, including the eastern acoustic bund, and construction of the 'Stage 3' warehouses, internal roading, parking and loading, landscaping, extension of the servicing infrastructure and lighting.

11.2. Programme Restrictions

Several "Blackout" or time restricted activities have been recommended and should be considered in developing a construction programme. These include:

1. No in water works in Silver Stream between November and May per annum (fish spawning)
2. No removal of vegetation greater than 1m in height between August to March per annum (avifauna breeding season)

These time restricted activities do have additional management requirements if they cannot be avoided from a construction sequencing perspective.

11.3. Quality Management

11.3.1. Quality Management Plan

The JV requires all contractors to have in place quality assurance systems to ensure that the quality as specified is being achieved during the Contract Works. This is required to minimise the potential for unsafe works practices and maintain sustainable work practices. Any re-work or material rejection will impact both programme and project environmental effects.

To meet these requirements, contractors will be required to prepare and submit a Quality Management Plan (QMP) to identify how they will comply with the Contract's quality requirements. The QMP shall in be accordance with the AS/NZS ISO 9001:2016 quality management system or similar, to be nominated by the Contractor for approval by SLPL.

11.3.2. Contractor Management Responsibilities

The QMP shall detail the controls necessary to ensure the quality of the Contract Works. The QMP must:

- Nominate a Quality Manager who has the defined authority and responsibility for ensuring that the requirements of the quality plan are implemented and maintained;
- Define the responsibility, authority and reporting function of personnel primarily responsible for upholding the quality assurance provisions of the Contract;
- Identify how independent inspection, witnessing, monitoring and reporting must be carried out and obtain all necessary materials certificates; and
- Identify the qualifications, experience and required competencies of personnel who must undertake the duties required in each of the above three items.

11.3.3. Materials Management

The Contractor must submit sources of material for approval. Approval from SLPL shall not be unreasonably withheld and does not absolve the Contractor of its obligation and responsibilities for supplying materials that meet the requirements of the technical specification supplied. The Contractor is fully responsible for the quality of the materials and works and for monitoring the quality of its works are in accordance with this specification.

The effectiveness of the QMP in respect to materials, and the Contractor's compliance with it shall be subject to monitoring and auditing by SLPL and regulatory authorities.

11.3.4. Documents

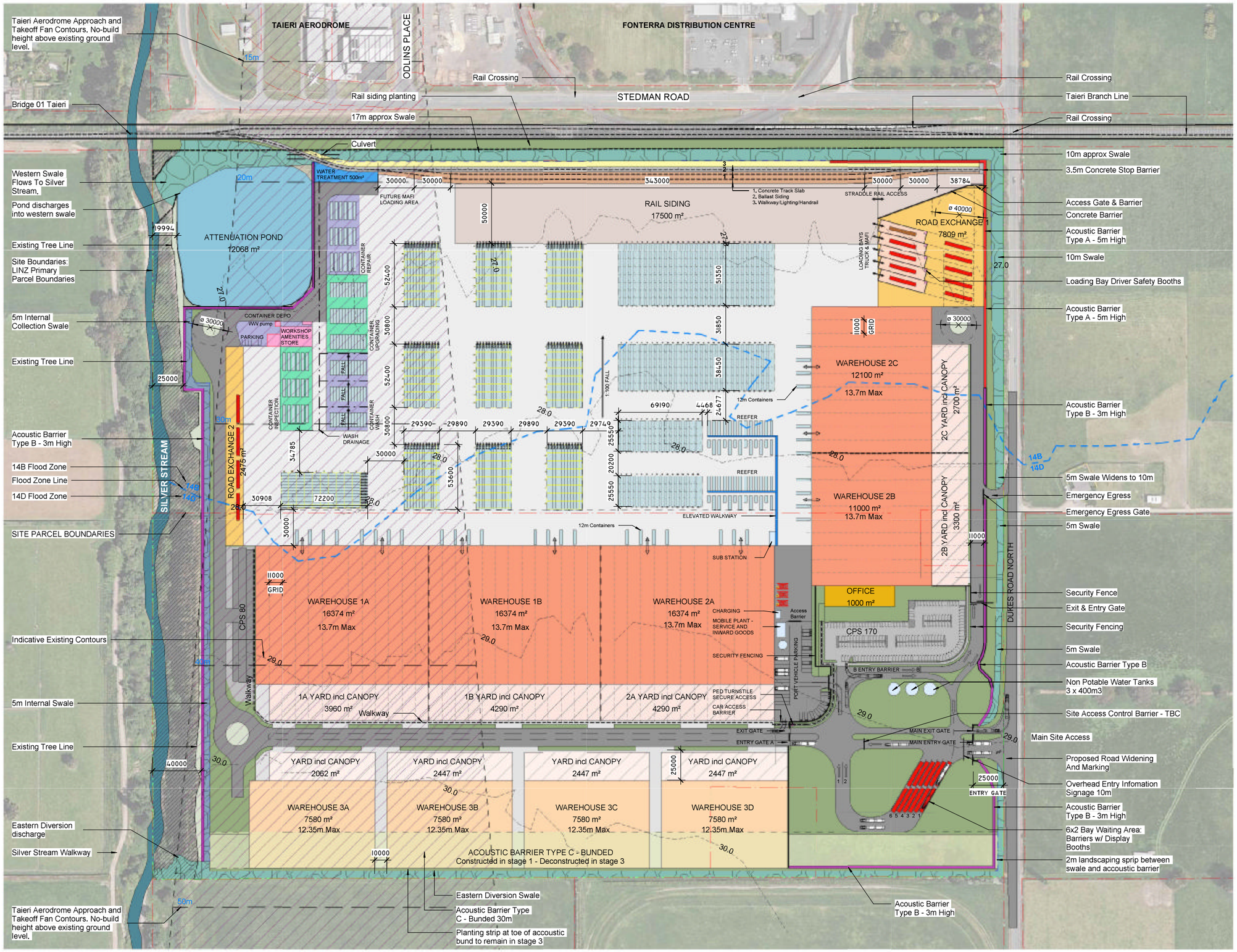
The Contractor must regularly undertake surveillance, audit and review of its QMP and promptly report on all non-conformances to the JV Project Manager.

11.3.5. Audit and Monitoring

The Contractor shall:

- have its compliance with any QMP audited on a monthly basis;
- permit representatives of SLPL to be present during such audits
- deliver copies of each audit report to the Principal within five business days of its completion; and
- permit the Principal to conduct monitoring and testing of any aspect of the Works at any time.

Appendix A – Development Masterplan



SITE FEATURES

- STREAM
- SITE POND
- WATER TREATMENT FACILITY
- SWALE - EXTERNAL STORMWATER COLLECTION
- SWALE INTERNAL - SITE STORMWATER COLLECTION
- SITE LANDSCAPE; RETAIN EXISTING FEATURES
- SITE TREES; RETAIN EXISTING FEATURES
- SITE LANDSCAPING NEW
- ACOUSTIC BARRIER 1
- ACOUSTIC BARRIER 2
- ACOUSTIC BARRIER 3 - BUNDED
- RAIL SIDING
- ROAD EXCHANGE
- CONTAINER PAD
- CONTAINER STACKING
- 23M TRUCK & TRAILER
- MAFI TRUCK & TRAILER
- WAREHOUSE
- OFFICE
- CANOPY/YARD

Lighting structures to be no greater than 30m in height

REV	DATE	REVISION DETAILS
4	24.02.26	INFORMATION
3	20.02.26	INFORMATION
2	13.02.26	INFORMATION
1	12.02.26	INFORMAITON

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CONSULTANTS

CLIENT
Southern Link Logistics Property

PROJECT
Southern Link Logistics Park

ADDRESS
270 Dukes Road North, Mosgiel

PH: 09 9666 999 **www.wa.co.nz**
LEVEL 2, 25 DACRE ST
NEWTON, AUCKLAND 1010

PROJECT LEADER

WILLIAMS

SHEET TITLE
MASTER PLAN - CONCEPT 9.2

PROJECT No. **2309**
PROJECT NAME **Southern Link Logistics Park**
ISSUED FOR **CONCEPT**
0m 0m 0m 0m

C9.002 REV **4**
SCALE @ A1 **1 : 1500**
SCALE @ A3
REV DATE **24.02.26**

Appendix B – Draft Contaminated Site Management Plan and Draft Remedial Action Plan

Contaminated Site Management Plan: 270-292 Dukes Road North, Mosgiel

Management Zones	270-292 Dukes Road North, Mosgiel
Known/ potential contaminants	Heavy metal concentrations were found to be elevated at the five verified HAIL sites (Areas A – E) and two unverified HAIL sites (Areas F & G) identified in Figure 1. Concentrations of arsenic in Areas A - C exceed the *Commercial/Industrial* guidelines and are a risk to workers. Concentrations of arsenic and/or zinc within all 7 areas exceed the environmental guidelines.
General Earthworks Requirements	Dust management and prevention of cross-contamination and silt/sediment discharges to storm water are key. **Within HAIL sites**: Consent is required from Dunedin City Council to disturb a HAIL site. Consent is required from Otago Regional Council to disturb a contaminated site.
Disposal	Soils within Areas A - G cannot be considered clean fill. Contaminated soil removed from the site must be taken to an appropriate landfill for disposal. Soils meet the Burnside Landfill acceptance criteria. Soil from Areas D - G may be kept for reuse onsite. Soils from Areas A - C may be placed within a designated disposal location, subject to consent. All other areas are clean fill.
Records	Maintain records of the following (to be available for council inspection on request): • Consents • All excavations and placement of fill • Any incidents or complaints • Any signs of unexpected contamination • The volume of soil removed for disposal • The disposal location (including on-site location)

Figure 1: The properties at 270-292 Dukes Road North outlined in turquoise showing Areas A – G containing heavy metal contamination (DCC GIS | 2023-2024. Copyright DCC/ORC, CC BY 4.0).

Contamination Risk Assessment

Elevated heavy metals were reported in Areas A – G. Areas to be marked prior to bulk earthworks.

Areas A – C: Concentrations of arsenic surrounding the sheep dip (locations D44, D45, A – G, I and L), within the burn pile (D26) and adjacent to the central sheds (D37) exceed the *Commercial/ Industrial outdoor worker (unpaved)* guidelines indicating that these soils may present a risk to human health during development works and under a commercial/industrial land use.

Concentrations of arsenic reported at Area C are extremely high and pose a particularly high risk. Careful handling and dust management is required.

Areas D – G: Concentrations of arsenic and/or zinc at some locations exceed the environmental guidelines and site soils may present a risk to environmental health. Accidental discharges must be avoided, particularly to surface water / storm water and tracking onto the road.

Site Controls

Dust

Works must comply with the *Good Practice Guide for Assessing and Managing Dust* (Ministry for the Environment, 2016)

- Stop works if wind speeds exceed 10 m/s (36 km/h), or wind screens are in place or a suppressant/stabiliser is applied
- Limit vehicle speeds on excavated surfaces to 10 km/h
- Limit exposed surfaces as much as possible
- Maintain soil to be excavated in a damp (not wet) condition during excavation and cartage
- Use of water sprays to dampen soils must not cause erosion or run-off, or saturated soils
- Cover loads during transport

Stockpiles

- If contaminated soil is placed outside of the identified HAIL sites, it must be placed on low permeability material (e.g. Bidim®, polyethylene sheet or paved surface) to avoid cross-contamination
- Stockpiles must not be located where run-off can leave the site
- Stockpiles must be covered when not actively worked to prevent rainwater ingress, run-off and dust discharges

Groundwater, Storm Water, Silt and Sediment

- Install erosion and sediment controls as per *Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region* (Auckland Council, 2018) to prevent run-off
- Avoid earthworks during rain or when free water is present in excavated areas
- Any surface water entering excavations is allowed to soak into the ground
- Surface water in contact with exposed earthworks is contained and prevented from entering storm water drains or Silver Stream
- If discharge of accumulated water is required, the water shall be contained and treated as contaminated. A temporary trade waste consent is required to discharge to municipal sewer following settling. No discharge is to occur to the storm water network.
- Tracking of silt off-site must be prevented

Silt and Sediment (continued)

- Vehicles entering/exiting the site are to remain on clean aggregate roadways formed to provide all-weather access (stabilised entranceway)
- Wheels that contact with site soils shall be swept down or washed in a designated area with silt containment before leaving site

Unexpected Contamination

If unexpected buried material or waste is encountered, works shall stop and the Contaminated Land Consultant contacted.

Signs of potential contamination:

- Uncontrolled fill
- Unusual odours
- Discoloured soils, stained water seeps or an oil sheen
- Suspected petroleum hydrocarbon contamination
- Putrescible or hazardous waste, refuse, or combustion by-products
- Intact or broken drums or other containers
- Suspected asbestos containing materials or pipes

Health & Safety

Access to the earthworks site is restricted to authorised personnel who have undergone an induction and are aware of the potential hazards relating to contaminated soil at the site.

General safety procedures to be followed by all staff entering or working in the immediate area of the earthworks:

- Site workers shall avoid unnecessary contact with site soils (especially Areas A – C).
- Hands are to be washed in a dedicated area prior to eating, drinking or smoking.
- Appropriate personal protection equipment (PPE) and first aid points are in place
- All incidents shall be reported to the main contractor's health and safety advisor

PPE to be available and used as required:

- Overalls
- Disposable gloves or construction gloves
- P2 respiratory protection (in case of a breach of dust control)

Records

- Copies of consent to be held on site during works
- Location and extent of earthworks to be recorded
- Records of reuse of soils within the site, particularly from Areas A - G
- Volume of surplus soil removed off-site to be recorded
- Soil disposal location
- Incidents/unexpected contamination
- Complaints are to be recorded and response noted

Additional Consulting

The Contaminated Land Consultant shall be advised of any unexpected signs of contamination and undertake additional sampling as required

If discharge of water from site is required, water sampling will be undertaken to determine a suitable disposal location

Contaminated Site Management Plan

Site Contact Details

Address	270-292 Dukes Road North, Mosgiel	
Site Owner	Name	
	Phone	
	Email	
Contractor	Company	
	Name	
	Phone	
	Email	
Site Manager	Name	
	Phone	
	Email	
Health & Safety Officer	Name	
	Phone	
	Email	
Environmental H&S Officer (if different from above)	Name	
	Phone	
	Email	
Contaminated Land Advisor	Name	Berni Chapman / Aleasha King
	Phone	[redacted] / [redacted]
	Email	[redacted] / [redacted]
Emergency/After Hours Contact	Name	
	Phone	

ECOtago

Environmental Consultants Otago 2025 Limited

Remedial Action Plan

270 – 292 Dukes Road North
Mosgiel

for
Southern Link Property Limited

February 2026

Task	Responsibility	Signature
Prepared By:	Aleasha King, MSc	
Reviewed By:	Bernice Chapman, CEnvP, PhD	

Prepared By:
Environmental Consultants Otago 2025 Limited
www.ecotago.co.nz

Client:	Southern Link Property Limited
Reference:	E-062 270-292 Dukes Road N
Date:	17 February 2026

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APPENDIX B – CONTAMINATED SITE MANAGEMENT PLAN **18**

Abbreviations

CSMP	Contaminated Site Management Plan
DCC	Dunedin City Council
DSI	Detailed Site Investigation
Eco-SGV	Ecological Soil Guideline Values
HAIL	Hazardous Activities and Industries List
NESCS	Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011
ORC	Otago Regional Council
OSMP	Ongoing Site Management Plan
RAP	Remedial Action Plan
SCS	Soil Contaminant Standards
SGV	Soil Guideline Values
SLIP	Southern Link Inland Port
SVR	Site Validation Report
XRF	X-Ray Fluorescence Analyser

1 Introduction

1.1 Background

The properties at 270 – 292 Dukes Road North, Mosgiel, comprising a total of approximately 42.492 ha, is defined as the Site for the purposes of this report. The Site is currently used for a combination of residential, commercial, and farming activities, and is proposed to be redeveloped into the Southern Link Inland Port (SLIP). The properties have a long and varied history of occupation, including 'Holmhead Farm' which was established on 292 Dukes Road North prior to 1901, and the Royal New Zealand Air Force (RNZAF) barracks which were constructed on 270 Dukes Road North in 1939.

The properties are not currently listed on the Otago Regional Council (ORC) Selected Land Use Sites Database[1]. However, a Detailed Site Investigation (DSI)[2] has found that Hazardous Activities and Industries List (HAIL) activities have occurred on parts of the property, including:

- Category A8 (*Livestock dip or spray race operations*) – very high levels of arsenic contamination were reported in the area surrounding a sheep dip in the northern end of the Site. Concentrations of arsenic were reported that present a risk to both human and environmental health under the proposed commercial/industrial land use and during development works.
- Category I (*Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment*) – accidental release of contaminants appears to have occurred surrounding the existing dwellings and sheds where contaminants such as lead from lead paint, arsenic from treated timber or accidental spillages and zinc from building materials has been released to site soils. Additionally, heavy metal contamination has been released to site soils in the location of a burn pile.

As a result of the contamination reported, five separate HAIL sites, and two possible HAIL sites, were confirmed to be present on the Site, and the *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011* (NESCS) applies to those parts of the Site.

Consent is required from the Dunedin City Council (DCC) under the NESCS if earthworks in these areas exceed the permitted activity criteria of the NESCS (disturbance of greater than 25 m^3 per 500 m^2 or off-site disposal of greater than 5 m^3 per 500 m^2 per year). Consent will also be required from the ORC for soil disturbance of a contaminated site in areas where contamination was found to exceed the guidelines protective of human health or the environment.

As a result of contamination that exceeds the guidelines protective of human health, Environmental Consultants Otago 2025 Limited (EC Otago) were engaged to prepare this Remedial Action Plan (RAP) for the Site. This RAP and associated Contaminated Site Management Plan (CSMP)[3] have been developed to set out responsibilities for soil handling, management and disposal procedures, and controls to minimise or mitigate the effects of earthworks, in accordance with any consent

[1] https://experience.arcgis.com/experience/7f3719181fba451a8d256ffad11edb10

[2] Environmental Consultants Otago 2025 Limited, 2026. *Detailed Site Investigation – 270-292 Dukes Road North, Mosgiel v2.*

[3] Environmental Consultants Otago 2025 Limited, 2026. *Contaminated Site Management Plan – 270-292 Dukes Road North, Mosgiel*.

conditions that will be imposed by the DCC and ORC, and to address the requirements of the NESCS. A statement of EC Otago's experience is attached as Appendix A.

1.2 Site Description

The general location is shown in Figure 1, and the relevant property details are summarised in Table 1. The site extent comprises 42.492 ha across 270 – 292 Dukes Road North, as outlined in Figure 2.

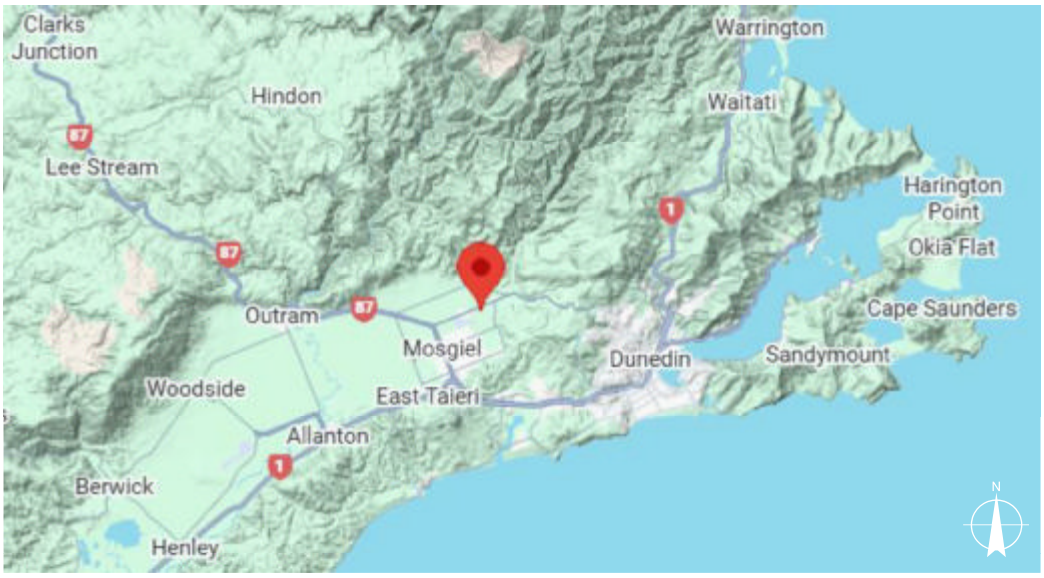


Figure 1: General location of the Site, shown with a red tag (Map Data ©2026; Google Terrain).

Table 1: Summary of relevant property details

Address	270 Dukes Road North	274 Dukes Road North	292 Dukes Road North	292A Dukes Road North
Legal Description	PT SEC 10 BLK V SO 63 EAST TAIERI SD	DP 5579 EAST TAIERI SD	PT SEC 9 BLK V SO 63 EAST TAIERI SD	PT SEC 9 BLK V SO 63 EAST TAIERI SD
Certificate of Title	3C/897	304/127	3C/899	329/233
Total Area	21.2324 ha	0.3068 ha	20.3053 ha	0.6475 ha
District Plan/Zoning	Section 16: Rural (Taieri Plain)			

Figure 2: The site extent at 270 – 292 Dukes Road North outlined in turquoise (DCC GIS | 2023-2024. Copyright DCC/ORC, CC BY 4.0).

1.3 Proposed Development

The property is proposed to be redeveloped into an inland port over three stages, as shown in Figures 3 and 4. Topsoil is proposed to be stripped from the majority of the Site, with an estimated total of 126,090 m^3 of topsoil removed. Figure 5 shows the current estimates of soil to be removed over the three stages of the development.

The following description of the proposed development has been provided by the client:

"*The development will occur as described in the Project Description of SLPL [Southern Link Property Limited]'s Substantive Fast-track Application which should be referred to for a complete description of the Inland Port development. In summary, the Inland Port will include:*

- *A new rail siding off the Taieri Branch Line to enable loading, unloading and operation of a rail freight shuttle service to Port Chalmers and the wider rail network;*
- *Approximately 155,000 m^2 of high stud warehousing (chilled and ambient) and associated yard and canopy areas;*
- *Two road exchange areas for the loading and unloading of container trucks;*
- *A container depot facility enabling the inspection, cleaning, upgrading and repair of containers including for food grade repacking;*
- *Approximately 9 ha of container terminal for storage and movement of empty and full containers including refrigerated containers;*

- *Approximately 1000 m^2 of onsite offices ancillary to the Inland Port;*
- *Road widening and construction of a new intersection onto Dukes Road North;*
- *24/7 operation with flood and road lighting for nighttime operation;*
- *Ancillary activities to support the above including vehicle parking, truck waiting areas, onsite road network, three waters and power infrastructure, flood mitigation, landscaping, security measures, acoustic barriers and lighting; and*
- *Ongoing management and monitoring activities including ensuring establishment of landscaping, stream health monitoring, wildlife management and effects management.*

Construction of the Inland Port is anticipated to be undertaken in three stages however the timing of the delivery of each stage, and discrete works within each stage, may change in response to demand for logistics capacity at the Inland Port. Each stage of works will involve site clearance, earthworks, construction of buildings, hardstanding and access, installation of infrastructure, landscaping and works and management activities necessary to manage environmental effects during construction including erosion and sediment controls and construction management activities:

- *Stage 1 is estimated to be completed 1 to 3 years following approval of the Project and will include clearance of the southern area of the site and construction of the 'Stage 1' container storage concrete pad, rail siding, container service area, warehouses, internal roading, parking and loading, road widening and construction of the new intersection on Dukes Road North, stormwater attenuation pond, Silver Stream stormwater outlets, servicing infrastructure, flood management measures, landscaping, acoustic barriers and eastern bund, and lighting.*
- *Stage 2 is estimated to be completed 3 to 5 years following approval of the Project and will include clearance of the northern area of the site and construction of the 'Stage 2' container storage concrete pad, warehouses, ancillary offices, internal roading, parking and loading, emergency egress onto Dukes Road North, expansion of the stormwater attenuation pond, landscaping, extension of the servicing infrastructure and lighting.*
- *Stage 3 is estimated to be completed 5 to 10 years following approval of the Project and will include clearance of the eastern area of the site, including the eastern acoustic bund, and construction of the 'Stage 3' warehouses, internal roading, parking and loading, landscaping, extension of the servicing infrastructure and lighting*."

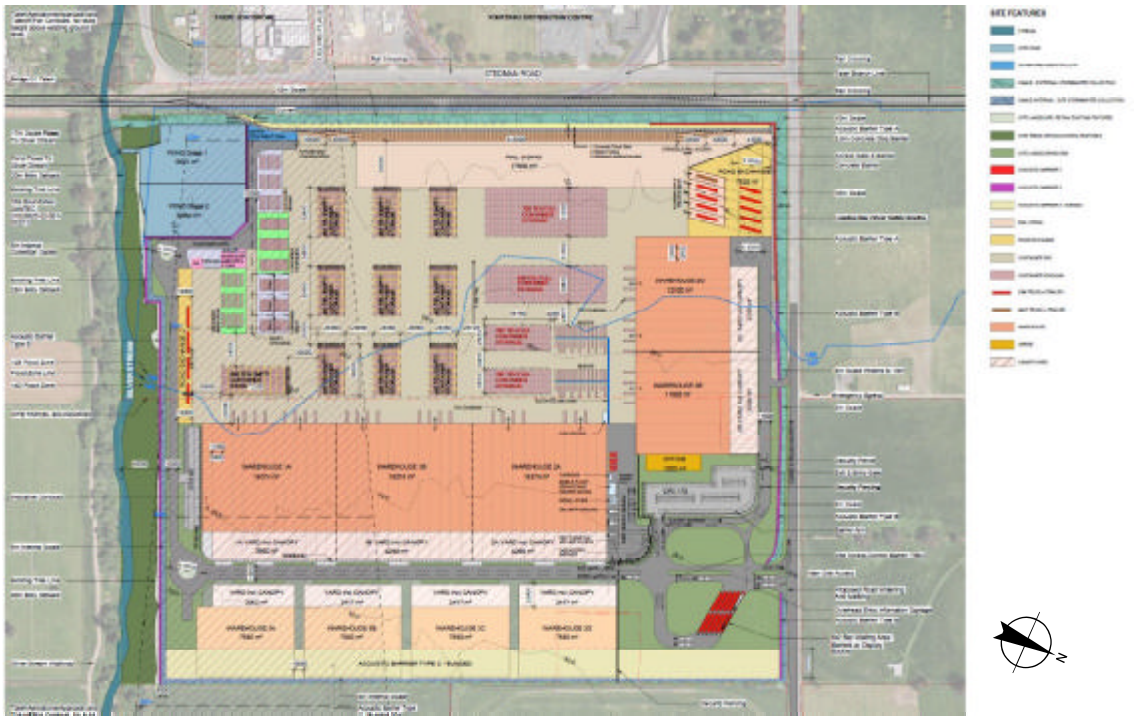


Figure 3: Concept plan of the proposed development (Williams Architects Limited, Master Plan Concept 9.2, dated 1 December 2025).

Figure 4: Proposed stages of the development (Williams Architects Limited, Staging Master Plan, dated 1 December 2025).

Staged Earthworks – Cut / Fill Report				
Stage	**Area (m^2)**	**Cut (m^3)**	**Fill (m^3)**	**Net (m^3)**
Stage 1	262,400	101,600	71,000	30,700 <Cut>
Stage 2	126,800	10,200	32,800	22,600 <Fill>
Stage 3	48,400	40,600	1,100	39,600 <Cut>
Final	420,300	123,000	78,100	45,000 <Cut>

Topsoil / Surface Strip – Cut / Fill Report				
Stage	**Area (m^2)**	**Cut (m^3)**	**Fill (m^3)**	**Net (m^3)**
Stage 1	262,400	78,720	0	78,720 <Cut>
Stage 2	126,800	38,040	0	38,040 <Cut>
Stage 3 (Not Including Bund Area)	48,400	14,520	0	14,520 <Cut>
Final	420,300	126,090	0	126,090 <Cut>

Combined Earthworks Quantities (Incl. Topsoil) – Cut / Fill Report				
Stage	**Area (m^2)**	**Staged Earthworks Net (m^3)**	**Topsoil / Surface Strip Net (m^3)**	**Combined Earthworks Quantities Net (m^3)**
Stage 1	262,400	30,700 <Cut>	78,720 <Cut>	**109,420 <Cut>**
Stage 2	126,800	22,600 <Fill>	38,040 <Cut>	**15,440 <Cut>**
Stage 3 (Not Including Bund Area)	48,400	39,600 <Cut>	14,520 <Cut>	**54,120 <Cut>**
Final	420,300	45,000 <Cut>	126,090 <Cut>	**171,090 <Cut>**

Figure 5: Estimated volumes of earthworks for the entire development over three stages (image provided by client in an email dated 3 February 2026).

1.4 Contamination Summary

The DSI found heavy metal contamination to be present across parts of the Site, identifying five verified HAIL sites, and two unverified (possible) HAIL sites, designated below as Areas A - G. Contaminant concentrations across the remainder of the Site were found to be consistent with predicted background concentrations based on the underlying geology.

These results indicate that HAIL activities have occurred across various parts of the Site. The results from the DSI are highlighted in Figures 6, 7 and 8, where locations reporting exceedances of the *Commercial/Industrial* Soil Contaminant Standards (SCS)/Soil Guidelines Values (SGV) are denoted in red, and locations reporting elevations above the predicted background level but below the *Commercial/Industrial* SCS/SGV are denoted in orange. Locations found to be consistent with predicted background levels are coloured green. Verified HAIL sites are outlined in red, and unverified HAIL sites outlined in orange. A conceptual site model is included in the DSI.

Whilst no asbestos was detected in any of the 15 soil samples analysed from across the Site, note that DCC records indicate that asbestos-containing materials may have been used on parts of the dwellings or sheds on the Site, and an asbestos survey is advised to be conducted prior to the demolition of any buildings. Additional soil sampling and analysis for asbestos may be recommended (potentially post-demolition) depending on the results of the asbestos survey.

1.4.1 Area A

The Central Woolshed/Workshop has been identified as a verified HAIL site under HAIL Category I (*Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment*). Concentrations of heavy metals adjacent to the former woolshed/current workshop in the centre of the Site were found to be elevated above predicted background levels. The concentration of arsenic at one location was found to exceed the *Commercial/Industrial outdoor worker (unpaved)* SCS, and these soils may present a risk to human health under the proposed commercial/industrial land use and during development works.

The average concentrations of zinc surrounding the central woolshed/workshop was found to exceed the Ecological Soil Guideline Values (Eco-SGV)[4] protective of environmental health. The soils may present a risk to environmental health and during development works unless appropriately managed.

This area requires remediation or management.

1.4.2 Area B

The burn pile at location D26 has been identified as a verified HAIL site under HAIL Category I. The concentration of arsenic was reported to exceed the *Commercial/Industrial outdoor worker (unpaved)* SCS, and these soils may present a risk to human health under the proposed commercial/industrial land use and during development works.

The arsenic concentration also exceeds the Eco-SGV, and the soils may present a risk to environmental health during development works.

This area requires remediation or management.

1.4.3 Area C

The sheep dip and yards have been identified as a verified HAIL site under Category A8 (*Livestock dip or spray race operations*). Concentrations of arsenic reported surrounding the sheep dip and yards (locations D44, D45, A – G, I and L) were found to exceed the *Commercial/Industrial outdoor worker (unpaved)* SCS, indicating that this part of the Site presents a risk to human health under the proposed commercial/industrial land use and during development works.

The arsenic and zinc concentrations surrounding the sheep dip and yards were found to exceed the Eco-SGV, and the soils may present a risk to environmental health during development works.

This area requires remediation or management.

1.4.4 Area D and Area E

The dwellings at 274 Dukes Road North (Area D) and 292 Dukes Road North (Area E) have been identified as a verified HAIL sites under HAIL Category I. Concentrations of heavy metals surrounding the dwellings and associated sheds/garages at 274 and 292 Dukes Road North were found to be elevated above predicted background levels. Whilst heavy metal concentrations in these areas were found to be below the *Commercial/Industrial* SCS/SGV, note that concentrations of arsenic and/or lead exceed the *Rural Residential* SCS in some locations (samples D23, D24 and D39), and therefore these soils present a risk to human health under the current land use.

[4] Manaaki Whenua – Landcare Research, 2023. *An implementation framework for ecological soil guideline values.*

The average concentration of zinc surrounding the dwellings exceeds the Eco-SGV, and the soils may present a risk to environmental health during development works.

This area does not require remediation, but appropriate management of the soils is required to avoid accidental cross-contamination of clean soils.

1.4.5 Area F

Location D8 has been identified as an unverified (possible) HAIL site under HAIL Category I. Elevated concentrations of zinc were reported at location D8, which exceed the Eco-SGV, but is well below human health guidelines. This area is highly unlikely to present a risk to human health, however the soils may present a risk to environmental health during development works.

This area does not require remediation, but appropriate management of the soils is required to avoid accidental cross-contamination of clean soils.

1.4.6 Area G

The northern sheds have been identified as an unverified (possible) HAIL site under HAIL Category I. Heavy metal concentrations in soils surrounding the northern sheds were found to be elevated above predicted background concentrations. However, no contaminant concentrations in this area were reported to exceed the *Commercial/Industrial* SCS/SGV, indicating that this part of the Site is unlikely to present a risk to human health under the proposed commercial/industrial land use or during development works.

The average concentration of zinc surrounding the northern sheds is below the Eco-SGV, however the zinc concentration in one location exceeds the Eco-SGV, and the soils may present a risk to environmental health during development works.

This area does not require remediation, but appropriate management of the soils is required to avoid accidental cross-contamination of clean soils.

Figure 6: Sampling locations from the DSI. Red indicates samples that exceed the Commercial/Industrial SCS/SGV, and orange indicates samples above background but below the Commercial/Industrial SCS/SGV. Green indicates samples consistent with predicted background. Areas outlined in red indicate verified HAIL sites and areas outlined in orange indicate unverified HAIL sites (Google Earth, Image © 2025 Airbus).

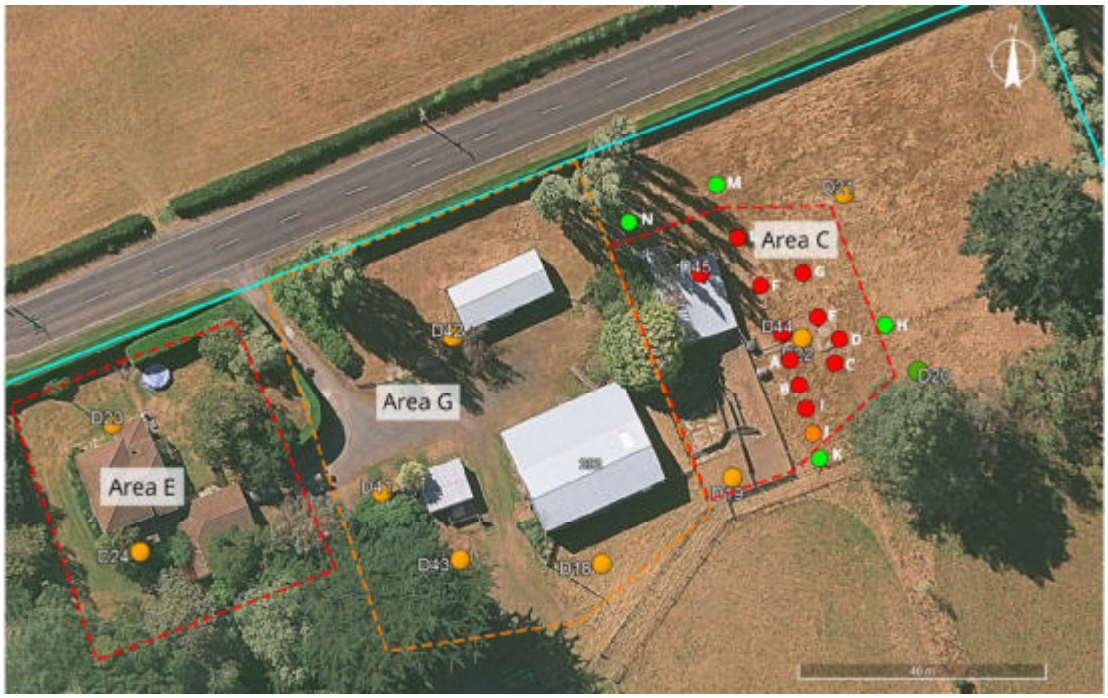


Figure 7: Sampling locations across the northeastern end of the Site. Red indicates samples that exceed the Commercial/Industrial SCS/SGV, and orange indicates samples above background but below the Commercial/Industrial SCS/SGV. Green indicates samples consistent with predicted background. Areas outlined in red indicate verified HAIL sites and areas outlined in orange indicate unverified HAIL sites (Google Earth, Image © 2025 Airbus).

Figure 8: Sampling locations across the northern end of the Site. Red indicatse samples that exceed the Commercial/Industrial SCS/SGV, and orange indicates samples above background but below the Commercial/Industrial SCS/SGV. Green indicates samples consistent with predicted background. Areas outlined in red indicate verified HAIL sites, and areas outlined in orange indicate unverified HAIL sites (Google Earth, Image © 2025 Airbus).

2 Remedial Actions

2.1 Remediation Goal

Based on the results of sampling presented in the DSI and the proposed commercial/industrial land use of the Site, remediation is required at three of the identified HAIL sites (Areas A, B and C). These three locations are highlighted in Figure 9, overlaid on the development plans for the Site. Whilst several additional HAIL sites were identified on the property, contaminant concentrations were only found to exceed the commercial/industrial human health guidelines at the three locations shown in Figure 9, and remediation is not required under a commercial/industrial land use for the remaining HAIL sites. However, soils in the remaining HAIL sites will need to be appropriately managed to segregate clean fill and soils impacted by heavy metal contamination.

The goal of the remedial earthworks is to prevent exposure of future site occupants to contamination that presents a risk to human health (i.e. to prevent contact with, ingestion of, or inhalation of soil containing contaminants that exceed the applicable human health guidelines).

The remediation options include:

- Excavate soil with disposal off-site at a suitable landfill.
- Excavate soil with disposal on-site with appropriate capping/encapsulation.
- Capping/containment of in-situ soil to prevent direct contact and run-off.

Bulk earthworks will be required for the development, with topsoil stripped from the majority of the Site. The remediation strategy will primarily depend on the earthworks required for development

purposes, with excavation for removal where excavation is required for development and capping/containment where filling is required. Validation sampling will be undertaken to confirm that contamination which exceeds the guidelines protective of human health has been removed, where appropriate, and presented in a Site Validation Report (SVR).

An Ongoing Site Management Plan (OSMP) will be prepared for applicable areas if contamination that exceeds the applicable human health guidelines remains on Site.

2.2 Remediation Methodology

Prior to earthworks commencing, the areas affected by contamination, as shown in Figures 6 – 8, will be clearly marked, and the extent of the contamination will be confirmed via additional sampling where required. This is to ensure that no accidental cross-contamination occurs between clean and contaminated soils. The remediation works may be undertaken in stages concurrent with the staged development of the inland port, however areas of contaminated soils must be protected from disturbance if adjacent to access routes for other stages of the development.

Where excavation and/or topsoil stripping is required within the areas requiring remediation, the earthworks within the affected areas should be undertaken prior to bulk earthworks if possible. Where contaminated soils are to be removed off-site, these will be transported to a suitably consented landfill for disposal. Subject to appropriate consent, soils may also be placed within a designated disposal area on-site which shall be subject to appropriate capping/encapsulation.

It is anticipated that contamination in most of the areas affects only the surface soils, based on the nature of the contaminating activity. In contrast, Area C is known to contain contamination that exceeds the guidelines protective of human health to a depth of at least 0.6 m directly adjacent to the sheep dip. Therefore, capping rather than removal is likely to be most suitable for Area C. Removal of contaminated topsoil is likely to be the most suitable approach for all other areas.

Where excavation is undertaken, additional sampling and analysis is proposed across the cut surface after the initial excavations to determine the contamination status of the remaining soils. If the sampling indicates that no exceedances of the *Commercial/Industrial* SCS/SGV remain in the applicable areas, no capping or ongoing site management will be required for that area.

Where contamination exceeding the applicable human health guidelines remains, additional soils may be excavated and removed to landfill, or to an on-site disposal location, or may be remediated by being capped in permanent hard surfaces such as roading, pavements and building footprints, or capped with a permeable soft cap for landscaped areas.

For each area, the remediation method may differ depending on the specific development plan and the stage of development works. The current development plan shown in Figure 9 indicates that hard surfaces are likely in Areas A and B, which will form permanent hard capping if required, whilst soft capping may be implemented for Area C as the area will be landscaped. Figures 10 and 11 show the Cut/Fill plans for proposed Stages 1 and 2, which encompass Areas A – G.

Where soft capping is implemented, the soft cap will generally consist of a permeable geotextile layer (such as Bidim®) to separate the contaminated soil from the capping material. The capping material may consist of clean fill (reused or imported clean soil, mulch, clean washed aggregate, river stone, etc), or may consist of site-won lightly contaminated soils that do not contain exceedances of the applicable human health or environmental guidelines. Soils from Areas D – G are suitable for reuse in this manner, and soils from Areas A and B may be suitable if remediated on-site as part of the works by dilution and mixing with clean soils. Alternatively soils from Areas A and B may be placed in the parts of Area C that require filling, and capped (subject to appropriate

consent). The required depth of soil for capping will depend on the proposed landscaping. A minimum depth of 300 mm is recommended given the high levels of arsenic present in Area C, and is suitable to maintain a grass lawn and small shrubs. However, the thickness of the capping may need to be increased if plants with larger root systems are intended, to ensure that the roots do not penetrate the geotextile barrier layer. If edible plants or fruit trees are proposed, contamination levels in the capping soils should be below the *Residential* SCS/SGV to ensure any edible produce is unlikely to present a risk via consumption.

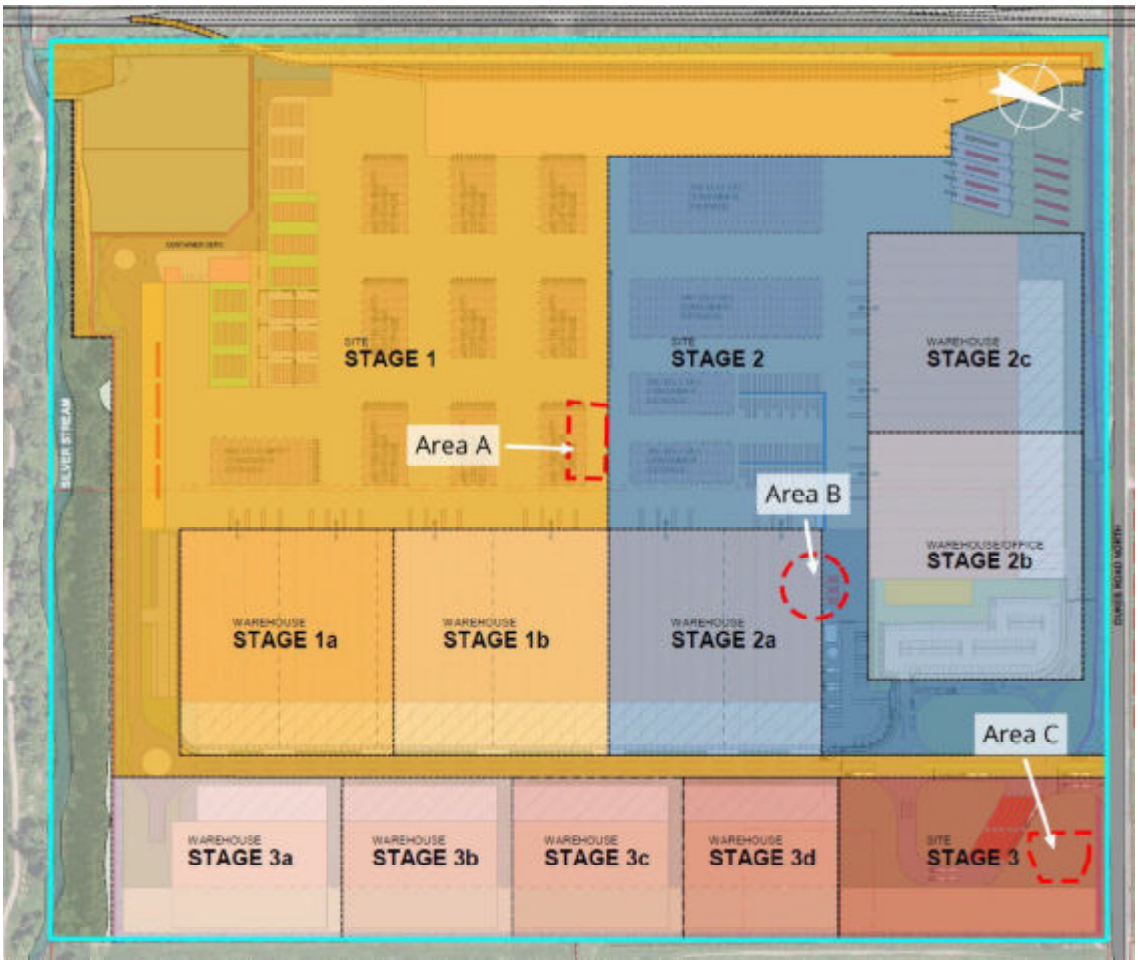


Figure 9: The proposed development plan overlain with the three areas which require remediation (Williams Architects Ltd, Staging - Master Plan, dated 1 December 2025).

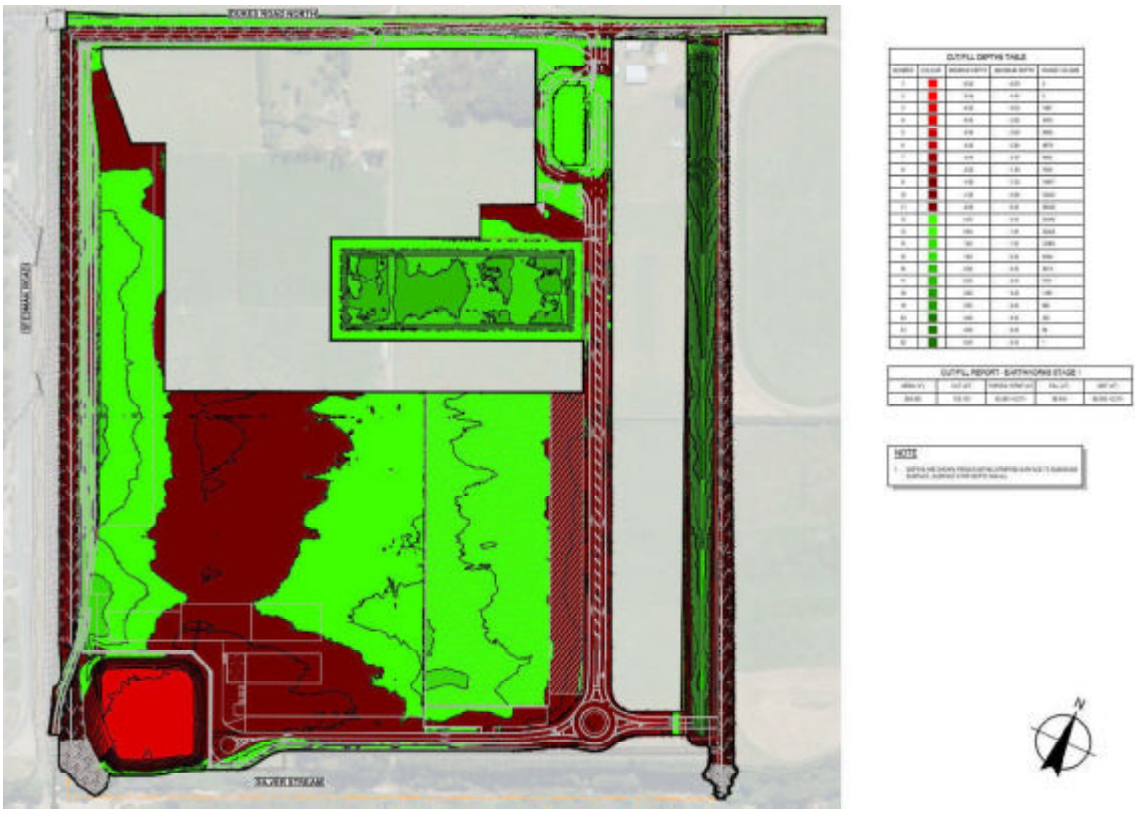


Figure 10: Earthworks Plan Stage 1 (Stantec, dated 5 February 2026).

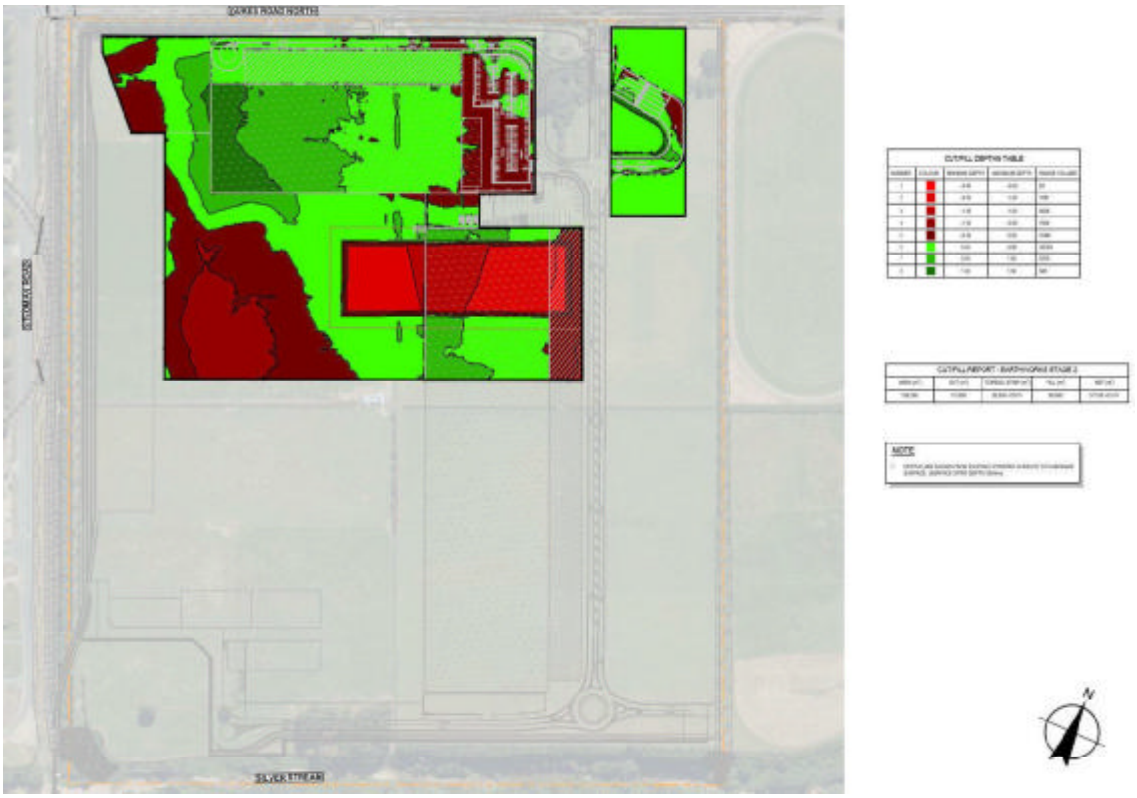


Figure 11: Earthworks Plan Stage 2 (Stantec, dated 5 February 2026).

2.3 Disposal

Where contaminated soils are removed for off-site disposal, they shall be excavated and loaded directly on to a truck for transport, if possible. If stockpiling is required, the excavated material will be subject to the stockpiling procedures detailed in the CSMP (attached as Appendix B).

Soils removed from the Site must be sent to an appropriately consented disposal location for the levels of contamination reported. The results of sampling and analysis indicate that the material is suitable to be disposed to the Burnside Landfill.

Alternatively, excavated materials may be retained on Site in a designated disposal location (subject to appropriate consent), or remediated by dilution and mixing with clean soils to be suitable for re-use on the Site. Note that a consent for disposal to land is only required for soils that present a risk to human health or the environment, and therefore reuse of soils from Areas D – G does not require consent, however the location should be recorded if placed outside of Areas A – G as these soils are not considered clean fill.

2.4 General

The Site Manager shall maintain records to demonstrate that any imported material is obtained from a quarry or other certified source. Any material not meeting this criterion shall be demonstrated to be acceptable to the client and relevant regulatory authorities subsequent to high-density sampling and analysis by a Suitably Qualified and Experienced Practitioner in contaminated land management. The results of sampling and analysis contained within the DSI have shown that contaminant concentrations in the majority of site soils including Areas D – G are below the commercial/industrial human health guidelines, and these soils may be reused on the Site as capping material. Soils from Areas A and B may be suitable for reuse if remediated and subject to additional sampling. If any unexpected contamination is encountered during earthworks, the Contaminated Land Advisor should be consulted.

2.5 Site Management Plan

All works will be undertaken in accordance with the CSMP attached as Appendix B.

2.6 Validation Testing and Reporting

Validation sampling, if undertaken, may consist of analysis via handheld X-ray fluorescence analyser (XRF) to determine the heavy metal concentrations in remaining soils. Systematic (grid) sampling with analysis at 2 - 5 m spacings should be undertaken in the applicable areas. If XRF analysis is undertaken, a physical sample should be collected on average at every 10th location scanned by XRF for validation of the heavy metal results by laboratory analysis. Alternatively, samples shall be collected across the applicable areas for laboratory analysis of heavy metals, at a sufficient density as determined by the Contaminated Land Advisor. Validation sampling must be undertaken prior to the importation of clean soil/fill.

An SVR will be prepared at the completion of the works to confirm the details of the works undertaken, including the remediation strategy applied and details of any capping (if applicable) for each area, the volume of soil removed from Site, the destination landfill, any on-site disposal, the volume and source of clean fill materials imported, incidences and/or complaints that occurred during the earthworks, and report on any additional sampling undertaken during the works. If imported clean fill materials were not obtained from a quarry or other certified source, the SVR will also report on the sampling and analysis conducted to confirm that the imported material meets the applicable human health guidelines. If contamination exceeding the applicable human health guidelines remains on Site and has been capped, OSMPs for the applicable areas will be provided as part of the SVR.

2.7 Regulatory Requirements and Procedures

Given that the NESCS applies to the Site, consent is required from the DCC as a Restricted Discretionary activity for the proposed change of use and if the proposed earthworks within the verified HAIL sites exceed the disturbance of more than 25 m^3 per 500 m^2 or disposal off-site of more than 5 m^3 per 500 m^2 per year.

As contaminant concentrations were reported to exceed the applicable human and/or environmental health guidelines within Areas A - G, consent is required from the ORC under the Regional Plan: Waste for Otago for a Discretionary activity for the disturbance of a contaminated site within these areas. If on-site disposal of contaminated soil is planned, consent for disposal to land will also be required.

Prior to off-site disposal, the contractor shall obtain approval from the chosen landfill for disposal based on the soil composition.

Prior to disturbance of the contaminated soils, a pre-earthworks site meeting will be held and attended by staff involved with the earthworks to discuss the risks associated with the works, the RAP and CSMP, the safe handling of contaminated soils, and the Health and Safety Plan requirements.

Load registers and weigh bridge dockets must be maintained for all soil disposed of at the landfill, together with details of imported clean fill materials.

2.8 Roles and Responsibilities

The following responsibilities shall be assigned at the start of the project:

Site Manager

> The appointed earthworks contractor will assign a Site Manager to the project, who will be responsible for the implementation of the RAP and CSMP on the Site and for notifying the Contaminated Land Advisor of any contamination-related complications that may arise during site works.

Contaminated Land Advisor

> A Suitably Qualified and Experienced Practitioner in the area of contaminated land management (Contaminated Land Advisor) will be appointed to provide advice to the contractor on contaminated land issues encountered. The advisor will also be responsible for soil sampling, disposal recommendations, and validation reporting.

3 Limitations

Services for this project have been performed in accordance with current professional standards for environmental site assessments. No guarantees are either expressed or implied. This report meets the requirements of the NESCS as it has been undertaken in accordance with the *Contaminated Land Management Guidelines (No. 1 and No. 5)* and is certified by a suitably qualified and experienced practitioner. A statement of EC Otago's experience is attached as Appendix A. This report does not attempt to fulfil the requirements of legal due diligence.

There is no investigation that is thorough enough to preclude the presence of materials at the Site that presently, or in the future, may be considered hazardous. As regulatory criteria are subject to change, a status with respect to contamination that is presently considered to be acceptable may, in the future, become subject to different regulatory standards that cause the Site to become unacceptable for existing or proposed land use activities. Any recommendations, opinions or findings stated in this report are based on circumstances, facts and assessment criteria as they

existed at the time that we performed the work and on data obtained from the investigations and site observations as detailed in this report.

Opinions and judgments expressed in this report, which are based on an understanding and interpretation of assessment standards should not be construed as legal opinions. This report, and the information it contains have been prepared solely for the use of Southern Link Property Limited. Any reliance on this report by other parties shall be at such party's own risk without prior agreement to the contrary.

4 References

Environmental Consultants Otago 2025 Limited, 2026. *Detailed Site Investigation – 270-292 Dukes Road North, Mosgiel v2.* Reference E-062.

Environmental Consultants Otago 2025 Limited, 2026. *Contaminated Site Management Plan – 270-292 Dukes Road North, Mosgiel*.

Manaaki Whenua – Landcare Research, 2023. *An implementation framework for ecological soil guideline values.*

Appendix A - EC Otago Statement of Experience

Environmental Consultants Otago Limited (EC Otago) was originally established in Dunedin in 2014 when the principal, Ciaran Keogh, recognized the need for a dedicated environmental consultancy in the region. Following Ciaran's retirement in 2025, the company continues to operate as Environmental Consultants Otago 2025 Limited. The company is particularly focused on contaminated land issues, with more than 400 site investigations completed. EC Otago undertakes the preparation of Preliminary and Detailed Site Investigation Reports, Assessments of Environmental Effects, Site Remedial Action Plans, Soil Disposition Reports and Site Validation Reports, working together with other environmental consultancies when a broader range of experience is required.

Bernice Chapman - Senior Contaminated Land Consultant

CEnvP, PhD in Biochemistry.

Berni is a Certified Environmental Practitioner (Certification Number 1376) who has worked in consultancy firms for over 20 years in the waste management, waste-to-energy and contaminated land sectors, with a focus on contaminated land management with EC Otago since 2017. She has a strong ethos of waste minimisation, containment and management, the effective operation of existing resources with beneficial reuse where possible, protection of the environment and overall sustainability coupled with a pragmatic approach from direct involvement in day-to-day operations. Her experience includes preliminary and detailed site investigations, sampling and analysis, site remediation, feasibility studies, problem solving and process design. This work includes the management of a range of environmentally polluting industrial effluents, contaminated land investigations and site remediation.

Berni has previously worked as Laboratory Manager for Waste Solutions Ltd, an Associate for CPG New Zealand Ltd, and a Wastewater Treatment Specialist for ADI Systems.

Aleasha King – Contaminated Land Consultant

Graduate diploma in Geology, Master in Geophysics.

Aleasha is a Contaminated Land Consultant with a background in geology and geophysics and a strong commitment to the environment. Her experience includes contaminated land investigations with EC Otago from 2021 undertaking preliminary and detailed site investigations, sampling, data analysis and site remediation.

Aleasha has previously worked in Engineering Geology with experience in site soils investigations and bearing capacity assessments. For her master's degree, she studied the structure of the Alpine Fault at a formerly unmapped location on the West Coast of New Zealand.

Appendix B – Contaminated Site Management Plan

Contaminated Site Management Plan: 270-292 Dukes Road North, Mosgiel

Management Zones	270-292 Dukes Road North, Mosgiel
Known/ potential contaminants	Heavy metal concentrations were found to be elevated at the five verified HAIL sites (Areas A – E) and two unverified HAIL sites (Areas F & G) identified in Figure 1. Concentrations of arsenic in Areas A - C exceed the *Commercial/Industrial* guidelines and are a risk to workers. Concentrations of arsenic and/or zinc within all 7 areas exceed the environmental guidelines.
General Earthworks Requirements	Dust management and prevention of cross-contamination and silt/sediment discharges to storm water are key. **Within HAIL sites**: Consent is required from Dunedin City Council to disturb a HAIL site. Consent is required from Otago Regional Council to disturb a contaminated site.
Disposal	Soils within Areas A - G cannot be considered clean fill. Contaminated soil removed from the site must be taken to an appropriate landfill for disposal. Soils meet the Burnside Landfill acceptance criteria. Soil from Areas D - G may be kept for reuse onsite. Soils from Areas A - C may be placed within a designated disposal location, subject to consent. All other areas are clean fill.
Records	Maintain records of the following (to be available for council inspection on request): • Consents • All excavations and placement of fill • Any incidents or complaints • Any signs of unexpected contamination • The volume of soil removed for disposal • The disposal location (including on-site location)

Figure 1: The properties at 270-292 Dukes Road North outlined in turquoise showing Areas A – G containing heavy metal contamination (DCC GIS | 2023-2024. Copyright DCC/ORC, CC BY 4.0).

Contamination Risk Assessment

Elevated heavy metals were reported in Areas A – G. Areas to be marked prior to bulk earthworks.

Areas A – C: Concentrations of arsenic surrounding the sheep dip (locations D44, D45, A – G, I and L), within the burn pile (D26) and adjacent to the central sheds (D37) exceed the *Commercial/ Industrial outdoor worker (unpaved)* guidelines indicating that these soils may present a risk to human health during development works and under a commercial/industrial land use.

Concentrations of arsenic reported at Area C are extremely high and pose a particularly high risk. Careful handling and dust management is required.

Areas D – G: Concentrations of arsenic and/or zinc at some locations exceed the environmental guidelines and site soils may present a risk to environmental health. Accidental discharges must be avoided, particularly to surface water / storm water and tracking onto the road.

Site Controls

Dust

Works must comply with the *Good Practice Guide for Assessing and Managing Dust* (Ministry for the Environment, 2016)

- Stop works if wind speeds exceed 10 m/s (36 km/h), or wind screens are in place or a suppressant/stabiliser is applied
- Limit vehicle speeds on excavated surfaces to 10 km/h
- Limit exposed surfaces as much as possible
- Maintain soil to be excavated in a damp (not wet) condition during excavation and cartage
- Use of water sprays to dampen soils must not cause erosion or run-off, or saturated soils
- Cover loads during transport

Stockpiles

- If contaminated soil is placed outside of the identified HAIL sites, it must be placed on low permeability material (e.g. Bidim®, polyethylene sheet or paved surface) to avoid cross-contamination
- Stockpiles must not be located where run-off can leave the site
- Stockpiles must be covered when not actively worked to prevent rainwater ingress, run-off and dust discharges

Groundwater, Storm Water, Silt and Sediment

- Install erosion and sediment controls as per *Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region* (Auckland Council, 2018) to prevent run-off
- Avoid earthworks during rain or when free water is present in excavated areas
- Any surface water entering excavations is allowed to soak into the ground
- Surface water in contact with exposed earthworks is contained and prevented from entering storm water drains or Silver Stream
- If discharge of accumulated water is required, the water shall be contained and treated as contaminated. A temporary trade waste consent is required to discharge to municipal sewer following settling. No discharge is to occur to the storm water network.
- Tracking of silt off-site must be prevented

Silt and Sediment (continued)

- Vehicles entering/exiting the site are to remain on clean aggregate roadways formed to provide all-weather access (stabilised entranceway)
- Wheels that contact with site soils shall be swept down or washed in a designated area with silt containment before leaving site

Unexpected Contamination

If unexpected buried material or waste is encountered, works shall stop and the Contaminated Land Consultant contacted.

Signs of potential contamination:

- Uncontrolled fill
- Unusual odours
- Discoloured soils, stained water seeps or an oil sheen
- Suspected petroleum hydrocarbon contamination
- Putrescible or hazardous waste, refuse, or combustion by-products
- Intact or broken drums or other containers
- Suspected asbestos containing materials or pipes

Health & Safety

Access to the earthworks site is restricted to authorised personnel who have undergone an induction and are aware of the potential hazards relating to contaminated soil at the site.

General safety procedures to be followed by all staff entering or working in the immediate area of the earthworks:

- Site workers shall avoid unnecessary contact with site soils (especially Areas A – C).
- Hands are to be washed in a dedicated area prior to eating, drinking or smoking.
- Appropriate personal protection equipment (PPE) and first aid points are in place
- All incidents shall be reported to the main contractor's health and safety advisor

PPE to be available and used as required:

- Overalls
- Disposable gloves or construction gloves
- P2 respiratory protection (in case of a breach of dust control)

Records

- Copies of consent to be held on site during works
- Location and extent of earthworks to be recorded
- Records of reuse of soils within the site, particularly from Areas A - G
- Volume of surplus soil removed off-site to be recorded
- Soil disposal location
- Incidents/unexpected contamination
- Complaints are to be recorded and response noted

Additional Consulting

The Contaminated Land Consultant shall be advised of any unexpected signs of contamination and undertake additional sampling as required

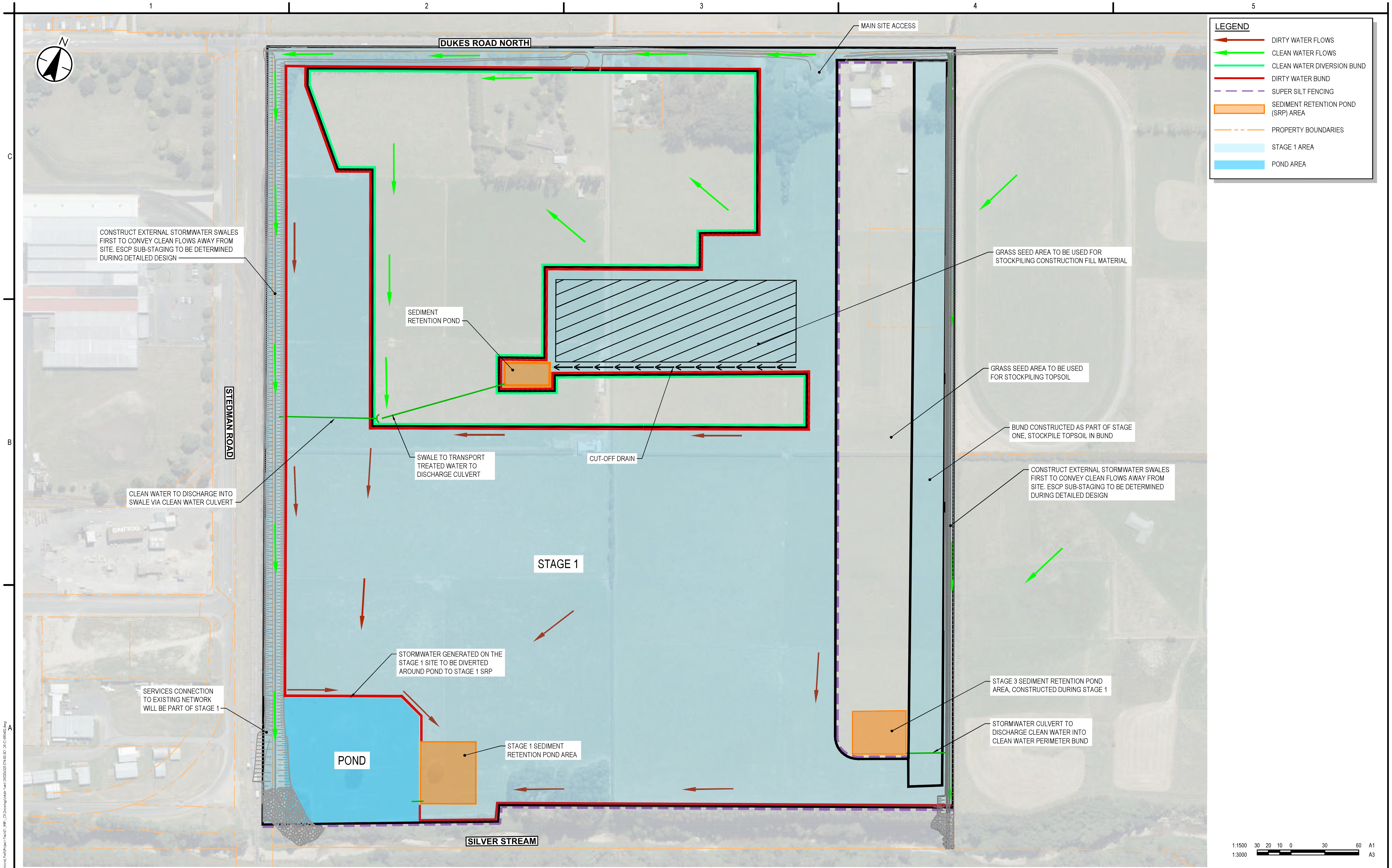
If discharge of water from site is required, water sampling will be undertaken to determine a suitable disposal location

Contaminated Site Management Plan

Site Contact Details

Address	270-292 Dukes Road North, Mosgiel	
Site Owner	Name	
	Phone	
	Email	
Contractor	Company	
	Name	
	Phone	
	Email	
Site Manager	Name	
	Phone	
	Email	
Health & Safety Officer	Name	
	Phone	
	Email	
Environmental H&S Officer (if different from above)	Name	
	Phone	
	Email	
Contaminated Land Advisor	Name	Berni Chapman / Aleasha King
	Phone	[redacted] / [redacted]
	Email	[redacted] / [redacted]
Emergency/After Hours Contact	Name	
	Phone	

Appendix C – Draft Erosion and Sediment Control Plan



Rev	Issued/Revision	By	Appd	YYYY.MM.DD
C	ISSUED FOR CONSENT	BG	SL	26.02.20
B	ISSUED FOR CONCEPT DESIGN	BG	SL	26.02.05
A	ISSUED FOR CONCEPT DESIGN	MS	FZ	25.12.19

Issue Status
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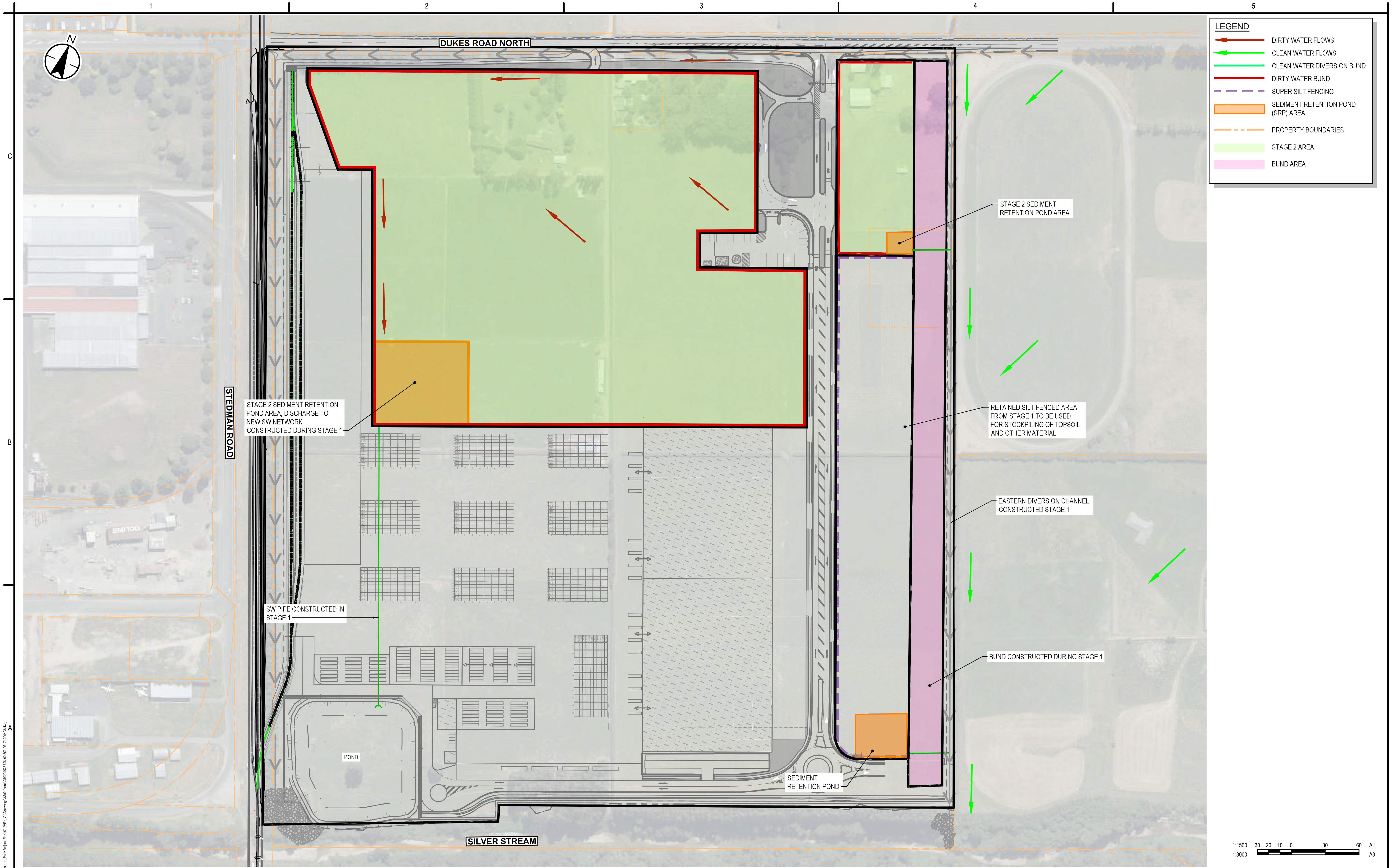
Drawn	Designed	Reviewed	Approved	YYYY.MM.DD

Title
EROSION & SEDIMENTATION CONTROL PLAN STAGE 1

Project No. 310206525
Scale at A1 1:1500
Revision C
Drawing No. **310206525-STN-00-501-DR-CI-090402**



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B ISSUED FOR CONCEPT DESIGN	BG	SL	26.02.05
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Drawn	Designed	Reviewed	Approved	YYYY.MM.DD

Title EROSION & SEDIMENTATION CONTROL PLAN STAGE 2

Project No. 310206525
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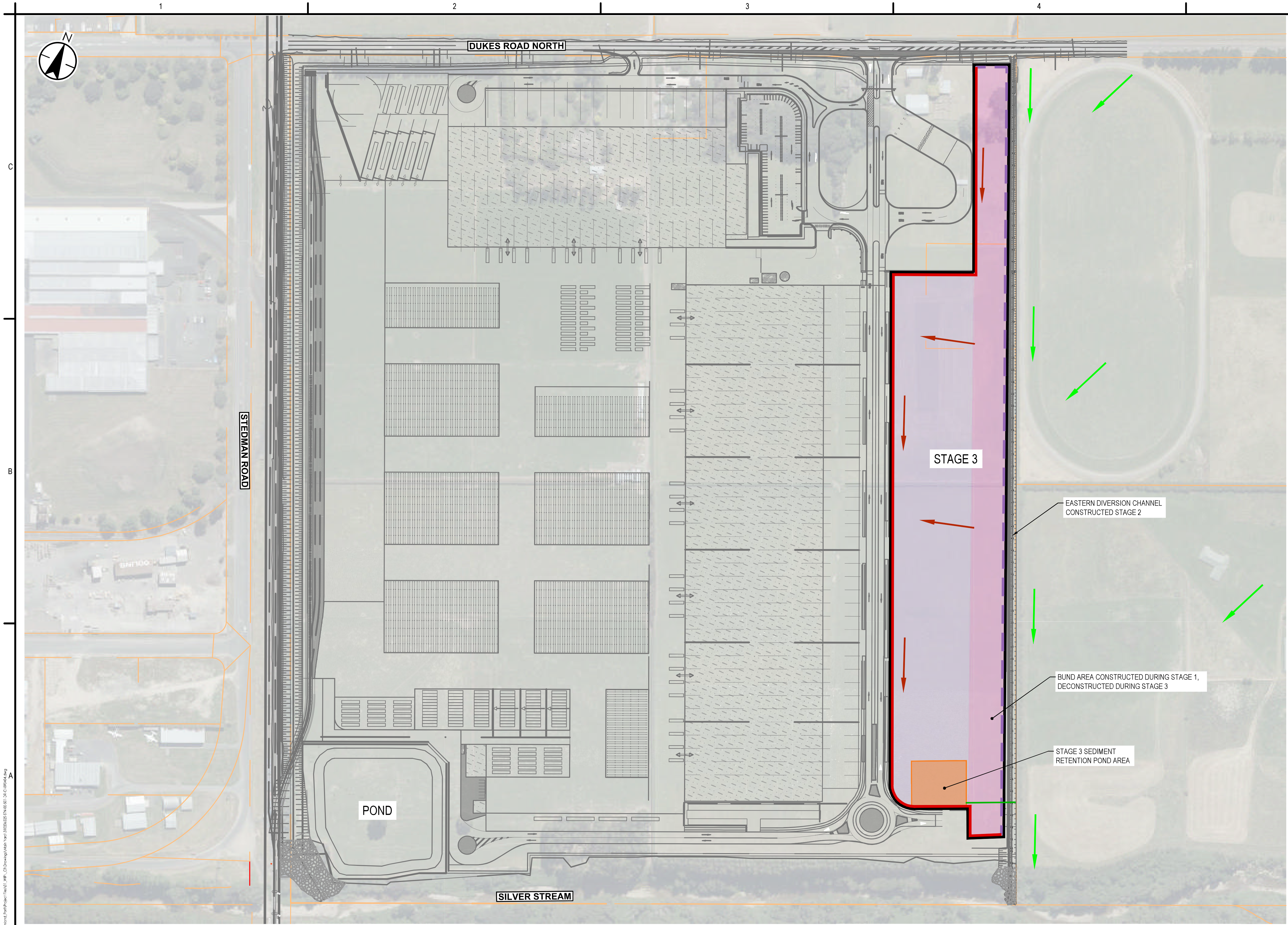
Revision C
Drawing No. 310206525-STN-00-501-DR-CI-090403



LEGEND

- DIRTY WATER FLOWS
- CLEAN WATER FLOWS
- CLEAN WATER DIVERSION BUND
- DIRTY WATER BUND
- SUPER SILT FENCING
- SEDIMENT RETENTION POND (SRP) AREA
- PROPERTY BOUNDARIES
- STAGE 3 AREA
- BUND AREA

1:1500 30 20 10 0 30 60 A1
1:3000 A3

Rev	Issued/Revision	By	Appd	YYYY.MM.DD
C	ISSUED FOR CONSENT	BG	SL	26.02.20
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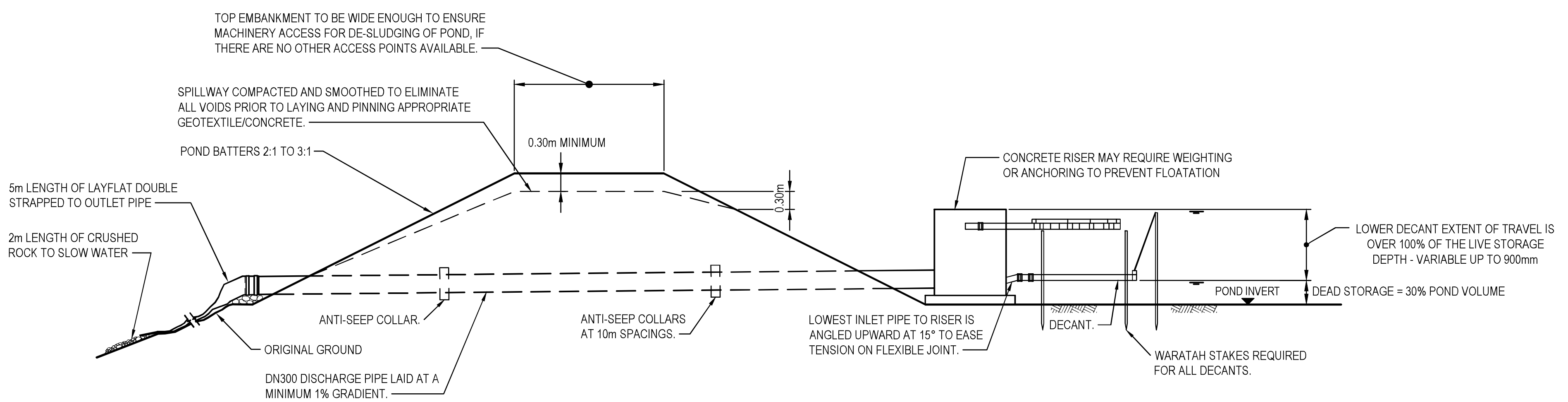
Title
EROSION & SEDIMENTATION CONTROL PLAN STAGE 3

Project No. 310206525
Scale at A1 1:1500
Revision C
Drawing No. 310206525-STN-00-501-DR-CI-090404

NOTES
1. DIMENSIONS TO BE CONFIRMED AT DETAILED DESIGN STAGE



TYPICAL POND OUTLET DETAIL
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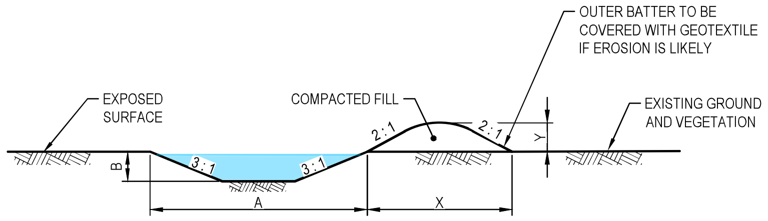

DIRTY WATER CHANNEL
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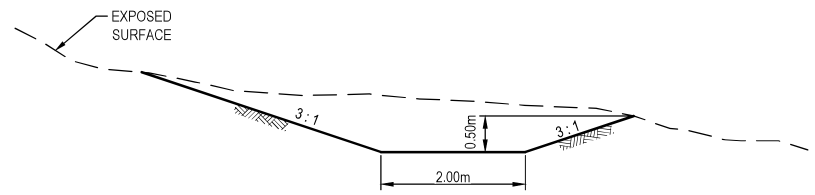

TYPICAL CUT-OFF DRAIN
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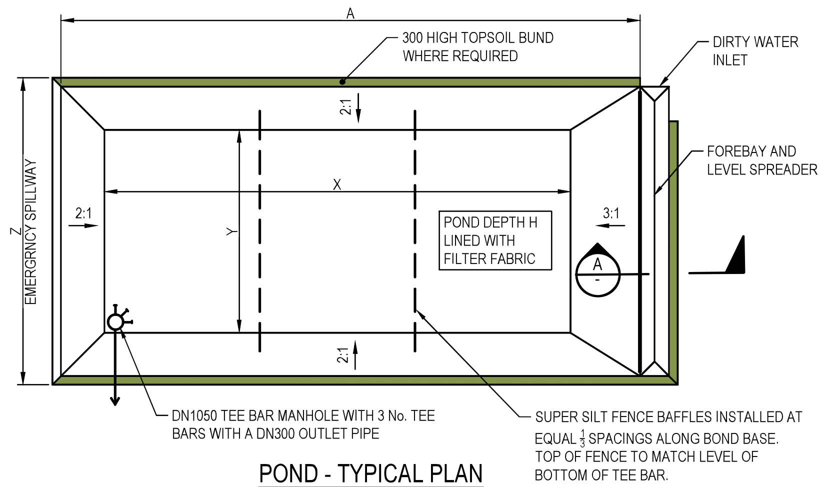
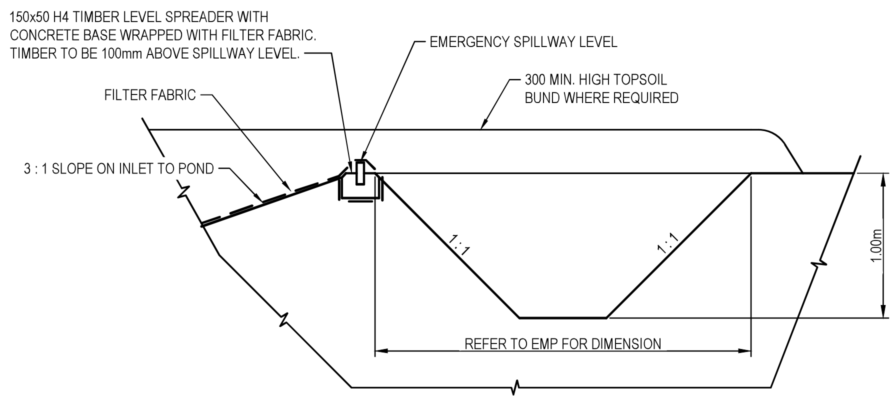
LONGITUDINAL FALL GREATER THAN 2% REQUIRES GEOTEXTILE LINING



POND - TYPICAL PLAN
SCALE 1 : 250



SECTION A
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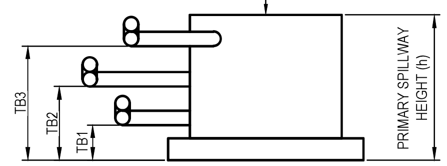

POND TEE BAR HEIGHTS
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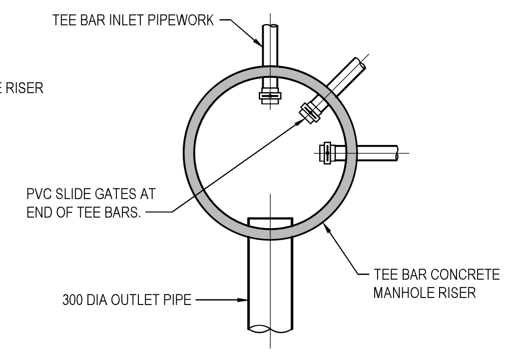

TEE BAR MANHOLE - PLAN
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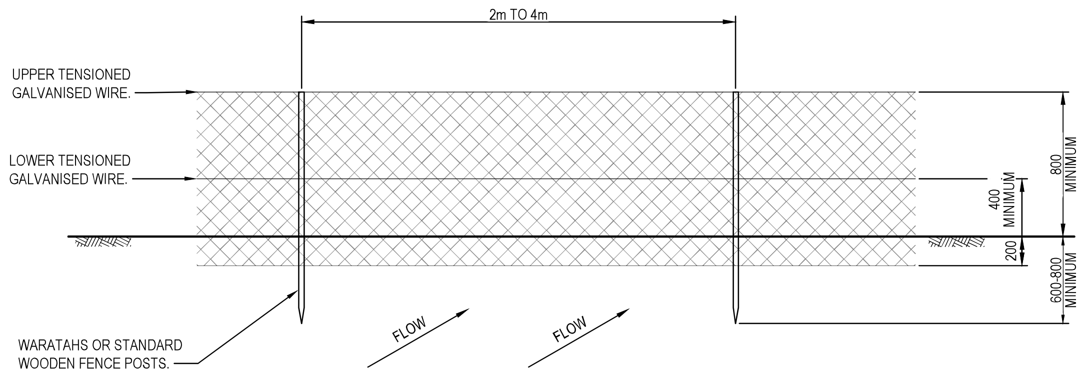
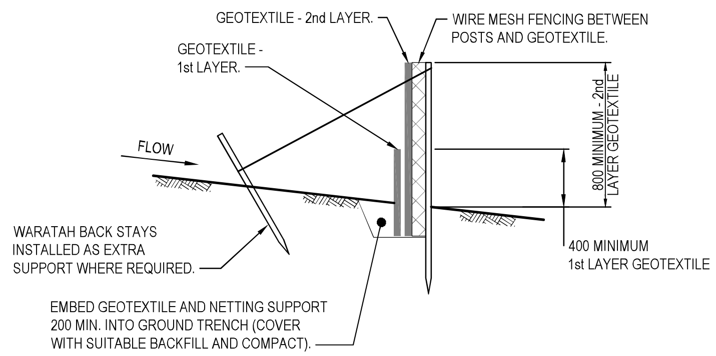


SUPER SILT FENCE - ELEVATION
SCALE 1 : 25



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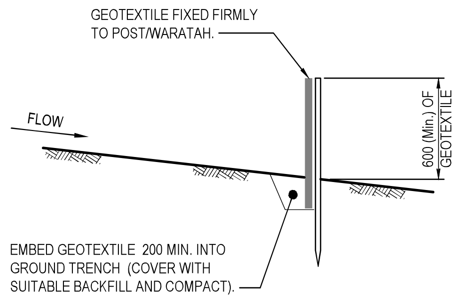

STANDARD SILT FENCE - SECTION
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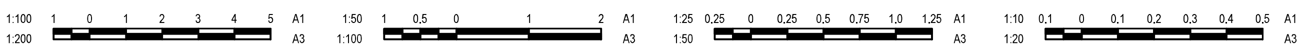

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Title
EROSION & SEDIMENTATION CONTROL PLAN
TYPICAL DETAILS

Project No. 310206525
Scale at A1 AS SHOWN
Revision C
Drawing No. 310206525-STN-00-501-DR-CI-090405

ORIGINAL SHEET - ISO A1