Operations and Management Manual
SJ Allen Holdings Ltd
Land Application and Disposal
Consent RM25.407.01

Document Controller: Operations Manager

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Operations and Management Manual

SJ Allen Holdings Limited

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1 MANUAL PURPOSE

This Operations and Management Manual (OMM) has been developed to comply with Otago Regional Council (ORC) Consent RM25.407.01, Condition 11.

This document provides the OMM being used for ensuring that the land discharge of waste activated sludge (WAS) and industrial wastewater from commercial activities including grease trap waste, mud tank/sump waste and winery wastewater will be undertaken in accordance with industry best management practices and in full compliance with the resource consent conditions at all times.

The objective of this OMM is to minimise the risks to public health and to the environment, through the provision of operational and management guidelines.

The purpose of this OMM is to describe the components of the discharge system, and how the site is to be operated and managed.

The following Operations and Management Manual is the guiding document for the land treatment, disposal and management of the waste streams. It outlines the following:

- Site location and activities – a description of the treatment and disposal system, including a site map that shows the location of the discharge locations and sampling sites.
- Operations and Maintenance - Key operational matters including weekly, monthly and annual maintenance checks.
- Recording, Monitoring and Reporting requirements and procedures – identifying the records that need to be kept for the operation, the monitoring and the reporting to ORC.
- Contingency Plans - response plan in the event of system malfunctions or breakdowns.
- Compliance verification – meeting the legal requirements of the Resource Management Act 1991 (RMA) and in accordance with the Regional Plan and in accordance with current consents.
- Complaints – the means of receiving and dealing with any complaints including recording and reporting.
- Key personnel and contact details and emergency phone numbers.

2 BACKGROUND

SJ Allen Holdings Limited (SJA) is a commercial waste disposal firm that services wastewater treatment plants, grease traps, mud tanks/sumps, winery wastewater, portaloos and septic tanks throughout Central Otago area and has been in operation since the 1st of April 2000. The waste is generally collected using a vacuum tanker (sucker truck). SJA also manages waste-activated sludge (WAS) from QLDC & CODC communities WWTPs and may extend its services to the wider Otago Region in the future.

To discharge WAS, grease trap waste, mud sump waste and winery wastewater to land (owned by S.J. Allen Properties Limited, SJA holds resource consent (RM25.407.01) from the Otago Regional Council. The consent authorises the discharge of contaminants to land for the purpose of disposing of waste from around Central Otago and Queenstown-Lakes Districts. A condition of the consent requires the submission of an OMM to the Consent Authority.

The consent expires on 28 January 2041.

3 SITE LOCATION AND ACTIVITIES

3.1 Location

S.J. Allen Properties Limited (NZBN 9429049134391) is the legal owner of the site identified in Table 3.1.

Table 3.1: Site Location and Details

Site Address:	Lauder, approximately 1 kilometre northeast from the intersection of Muddy Creek Road and Brown Road
Map Reference:	NZTM2000: E1336545 N5011220
Legal Description:	Section 25 and Section 47 Block V Lauder Survey District, Section 20 Block V Lauder Survey District

Surrounding land use is predominantly sheep and beef farming, with some dairy and dairy support. The nearest residential dwelling is located on [redacted] the adjacent property to the south of the site, legal description [redacted].

3.2 Operation

3.2.1 Discharge Activities

The activities involve the discharge of waste activated sludge, grease trap waste, mud tank/sump waste, and winery wastewater, onto the area shown in Appendix A attached to the consent.

3.2.2 Waste Streams

Waste Activated Sludge from Community WWTP

The consent authorises the discharge of waste activated sludge (WAS) from community wastewater treatment plants (WWTPs) within the Otago Region.

The Alexandra WWTP & Project Pure WWTP are anticipated to be the primary source of WAS. The WAS produced is primarily of domestic origin, with minimal to no input from industrial trade waste. It is derived from the processing of domestic wastewater, and comprises predominantly organic matter, being the remains of the micro-organisms that have digested the wastewater.

The WAS includes no recognisable items of sewage or gross solids, as these are screened or broken down and/or removed at the treatment plant. The WAS is thickened using a polyacrylamide flocculent and dewatered by centrifuge to an approximately 18 - 20% dry solid content.

Grease Trap Waste

The material from grease traps is collected from small takeaway and fast-food outlets and comprises of mostly fats, oils and other waste liquids originating from kitchens similar to domestic households, albeit on a larger scale.

Mud Sump Waste

Mud sump waste is collected from light industrial activities including garages, mechanics and roading contractors. There are no heavy or moderate industrial activities whose mud sumps are collected, and most of the liquid waste (two-third) is wash down water or stormwater from grated sumps.

Winery Waste

Winery wastewater is untreated and usually comprises of 90% wash water and 10% raw winery wastes. The raw winery waste is passed through basket screens or sieves prior to collection, and the levels are considered to be low.

Other Waste

The consent also allows the disposal of other similar types of waste as detailed in Condition 1, provided the other similar materials that when applied do not exceed Soil Eco-Guidelines Soil Limit, mg/kg (dry weight) as per Condition 7.

3.2.3 Land Application Areas

The total available Land Application Area (LAA) is 178.57 ha.

- 170.75 ha allocated for WAS (shown in orange), and
- 7.82 ha allocated for grease trap waste, mud tank/sump waste, and winery wastewater.

Figure 3.1 shows the authorised Land Application Area.

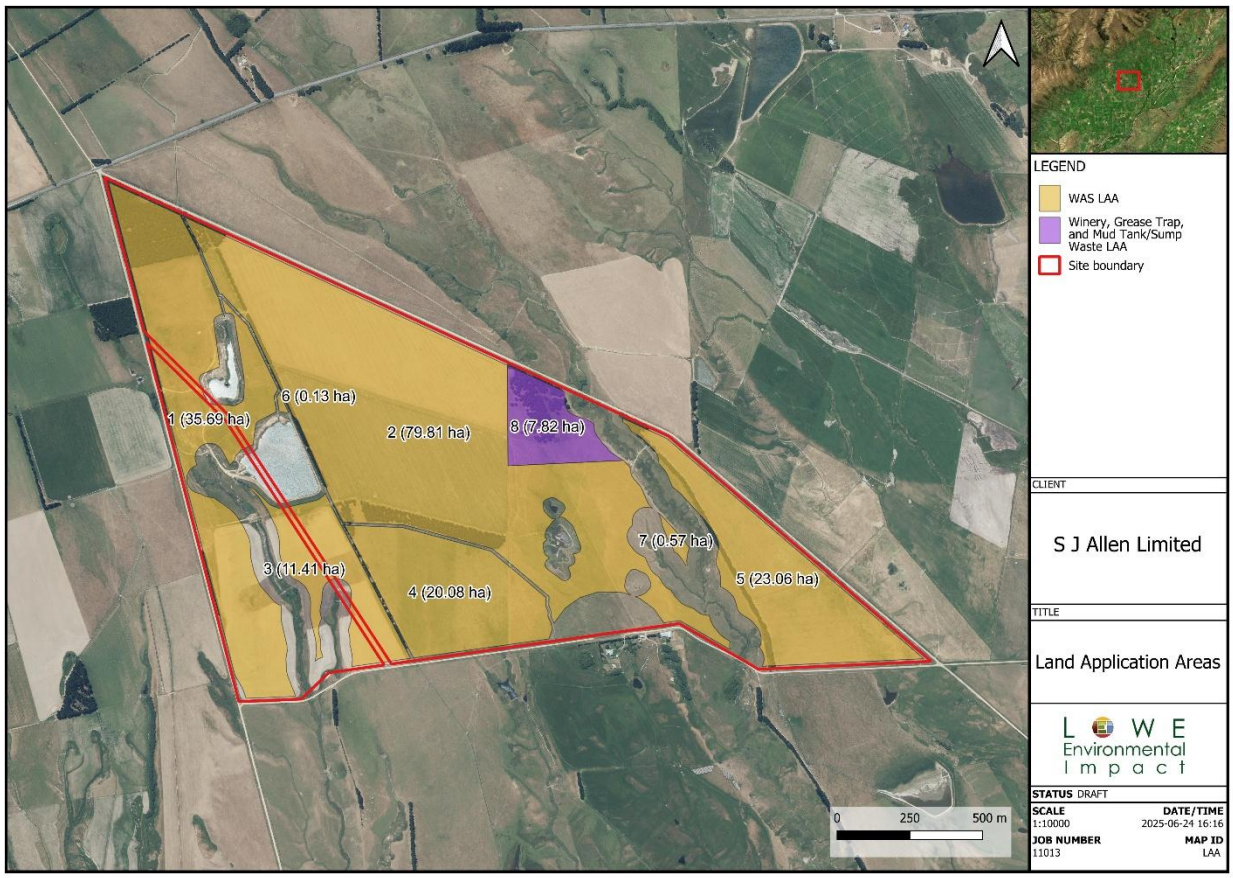


Figure 3.1: Land Application Areas

No discharge may occur within:

- 10 metres of any property boundary;
- 20 metres of any formed public roads;
- 20 metres of ephemeral wetlands;
- 50 metres of any other natural surface watercourses;
- 20 metres of any water storage ponds;
- 5 metres of any irrigation races; and

- 200 m from any residential dwelling

3.2.4 Consented discharge limits

Table 3.2 below summarises the authorised discharge limits for each waste stream. The discharge of waste activated sludge (WAS) to land is nitrogen loading based, while the other waste streams are managed based on discharge volume limits.

Table 3.2: Discharge Volume and Application Limits

Waste Stream	Daily Volume Limit	Annual Volume Limit	3- Year Volume Limit	Nitrogen Loading	Per Application Limit	Consent Condition/s
Waste Activated Sludge (WAS)	N/A	Equivalent to **34.2 tonnes N/year**	Equivalent to **102.5 tonnes of N in a 3-year return period.**	200 kg N/ha/year (loading rate equivalent)	600 kg N/ha in any one application (Condition 3)	Condition 2(a)
Grease Trap Waste	20 cubic metres/ day	1,200 cubic metres/year	N/A			Condition 2(b), 2(e)
Mud Tank/Sump Waste	20 cubic metres/ day	1,200 cubic metres/year				Condition 2(c), 2(f)
Winery Waste	20 cubic metres/ day	1,200 cubic metres/year				Condition 2(d), 2(g)

3.2.5 Post Consent Granting Additional Mitigations

Post-consent granting, consultation and feedback from neighbours to the consent holder through ORC has been received. This feedback identified a surface water take used for drinking water purposes, understood to be spring-fed, located on adjacent land to the south of the site. No resource consent is associated with this water take, and it is not identified on ORC maps. The consent holder is not aware from discussions with the previous landowner of any water quality issues or concerns with the water quality. Previously, upgradient land use included winter grazing of cattle on forage crops.

It's the consent holder's position that the identification of a domestic water supply take downgradient of the land application area does not alter the conclusion that adverse effects on groundwater and surface water are less than minor. The land application area (LAA) is underlain by fine-grained silts and clays to at least 15 m depth. Groundwater was encountered at approximately 2.8 m below ground level during groundwater bore sampling undertaken in May 2026. These aquifer materials are characterised by low permeability, limited hydraulic conductivity, and a high capacity for contaminant attenuation, such that subsurface transport is expected to be slow and subject to significant filtration. In addition, the proposed application regime (approximately 4.5 mm depth, once every three years, at ~20% solids) represents a low hydraulic loading, resulting in minimal potential for leaching from the WAS beyond the root zone under appropriate management conditions.

While the spring is located downslope at the head of a gully, it is expected to represent a low-energy groundwater discharge point fed by slow-moving shallow subsurface flow rather than a rapid preferential pathway. There is no evidence of permeable strata or preferential flow paths (e.g. gravels) that would enable rapid contaminant migration to the spring. Accordingly, the presence of the spring does not indicate an increased risk relative to what has already been assessed, and does not warrant additional setback or mitigation measures beyond those

proposed. Based on the site-specific hydrogeological conditions and application methodology, the potential for adverse effects on the identified drinking water source remains less than minor.

The following mitigations have been included and integrated into this OMM in response to this feedback, to address the neighbours concerns:

- A permanent 50 m exclusion setback from the water take will be maintained, within which no WAS application will occur as per existing conditions for surface water setbacks.
- A 200 m setback zone from the water take will be implemented for the first 5 years following commencement of WAS application.
- WAS applied after 5 years within 200 m of the water take shall only be applied when there is a soil moisture deficit in the top 50 mm of soil as assessed by feel and appearance method, i.e. the soil is not wet. (Appendix B).
- WAS shall not be applied after 5 years within 200 m in the months of May to August.
- WAS discharge will commence at a location greater than 400 m from the surface water take and will remain beyond this distance for the first year of application.
- Land use within the 200 m water take setback zone will be cut and carry only or sheep grazed.
- A piezometer (groundwater monitoring bore BH-002) has been installed upstream of the surface water take.
- Quarterly monitoring of BH-002 will be undertaken to assess groundwater quality.

3.2.6 Method of Discharge

Waste Activated Sludge (WAS)

Table 3.3 provides a summary of the consent conditions relating to the discharge of WAS and land management. The conditions are further described in the sections below.

Table 3.3: Consent Conditions Relating to WAS Discharge and Land Management

Consent Condition	Requirement
Condition 4	*The Consent Holder must ensure that WAS is incorporated into the soil to a depth of at least 50 mm, within 24 hours of the application being discharged to the land application area.*
Condition 5	*The Consent Holder must ensure that 12 months following WAS being discharged to an area of the land application area, no human edible crops are harvested.*
Condition 19 a. i.	*For the first twelve months after the first exercise of this consent: The discharge of waste activated sludge (WAS) must be limited to a maximum area of 50 hectares (total); and*

Discharge Method:
The discharge method for WAS is to the land surface using a muck spreader or similar.

Figure 3.2 outlines the proposed spreading area used over a three-year period. A hardstand area is to be established, and an access road is planned to run through the centre of the site. The resulting total WAS land application area of approximately 165 ha. This area has been divided across the three years, resulting in an annual spreading area of approximately 55 ha per year. Each year is further divided into 12 management blocks of approximately 4.6 ha, which indicate the proposed order of spreading to ensure a three-year return period. The central block of trees may be removed in the future to provide an addition spreading area.

For the first 12 months after the first exercise of the consent, the discharge of WAS is limited to a maximum total area of 50 ha, in accordance with Condition 19 of the resource consent. Accordingly, the proposed application area is up to 50 ha for Year 1. The land area will progressively receive WAS at a rate of 600 kg N/ha/yr. The area and mass of nitrogen that can be applied, allowing for an even three-year rotation, means approximately 4.5 ha receives WAS in a month.

Water Take Setback Zone
There is a surface water take located on adjacent land to the south of the site. The location of the water take is shown in Figure 3.2 below.

A permanent exclusion setback of 50 m will be maintained from the water take. No WAS application will occur within this setback.

In addition, a 200 m water take zone will be implemented for the first 5 years following the commencement of WAS application. Within this zone, no WAS shall be applied during this period.

The 50 m setback and 200 m zone from the is intended to address neighbours' concerns regarding the water take. The exclusion setback and zone has been clearly identified on Figure 3.2 below and will be communicated to all operators.

Site Access for Land Application:
Access to the spreading areas will be provided via internal access routes across the site. The 10 m setback between the property boundary and the discharge areas will be used as an accessway, enabling spreading equipment to travel around the perimeter of the site when undertaking land application. Access will also be maintained along the irrigation races, with a 5 m setback on either side of the races retained to allow vehicle movement and operational access. An additional accessway may be established along the western boundary of the grease trap waste, mud tank/sump waste and winery wastewater spreading area, running north-south through the site, as shown in Figure 3.2 below. As far as practicable, the tractor and spreading wagon will utilise these internal routes to avoid sludge being deposited off the property or onto any roads.

Three-Year Block Rotation and Order of Application:
The order of application and block rotation will be established by the first three years of operation. Application of WAS is proposed to begin in June 2026. The indicative spreading areas, application sequence, and location of the hardstand area are shown in Figure 3.2 below.

Figure 3.2 also illustrates the indicative sequence of WAS application across Years 1, 2, and 3. The figure is structured by month, with each month showing the relevant management block (e.g. B1, B2, B3, etc.) scheduled for application at that time. The block identifiers represent the planned order of application across the site to ensure a three-year rotational return period.

The sequence shown is indicative and may be adjusted in response to site conditions and seasonal factors such as winter ground conditions and the volume of material available over the year.

All WAS application areas will be recorded and tracked throughout each operational year to ensure compliance with the 600 kg N/ha with a three-year return. Records of application will be maintained so that operators can clearly identify areas that have previously received WAS and the date the area is next available to receive an application. These records will be reviewed and updated annually and will be incorporated into subsequent versions of this OMM to ensure ongoing accuracy of the application sequencing, nitrogen loading and site management controls.

The block rotation has also been designed so that the 200 m surface water take setback zone is avoided within the first three-year rotation cycle. Based on the planned sequencing, application

within this zone is expected to occur no earlier than approximately Year 5, once the rotation returns to those blocks.

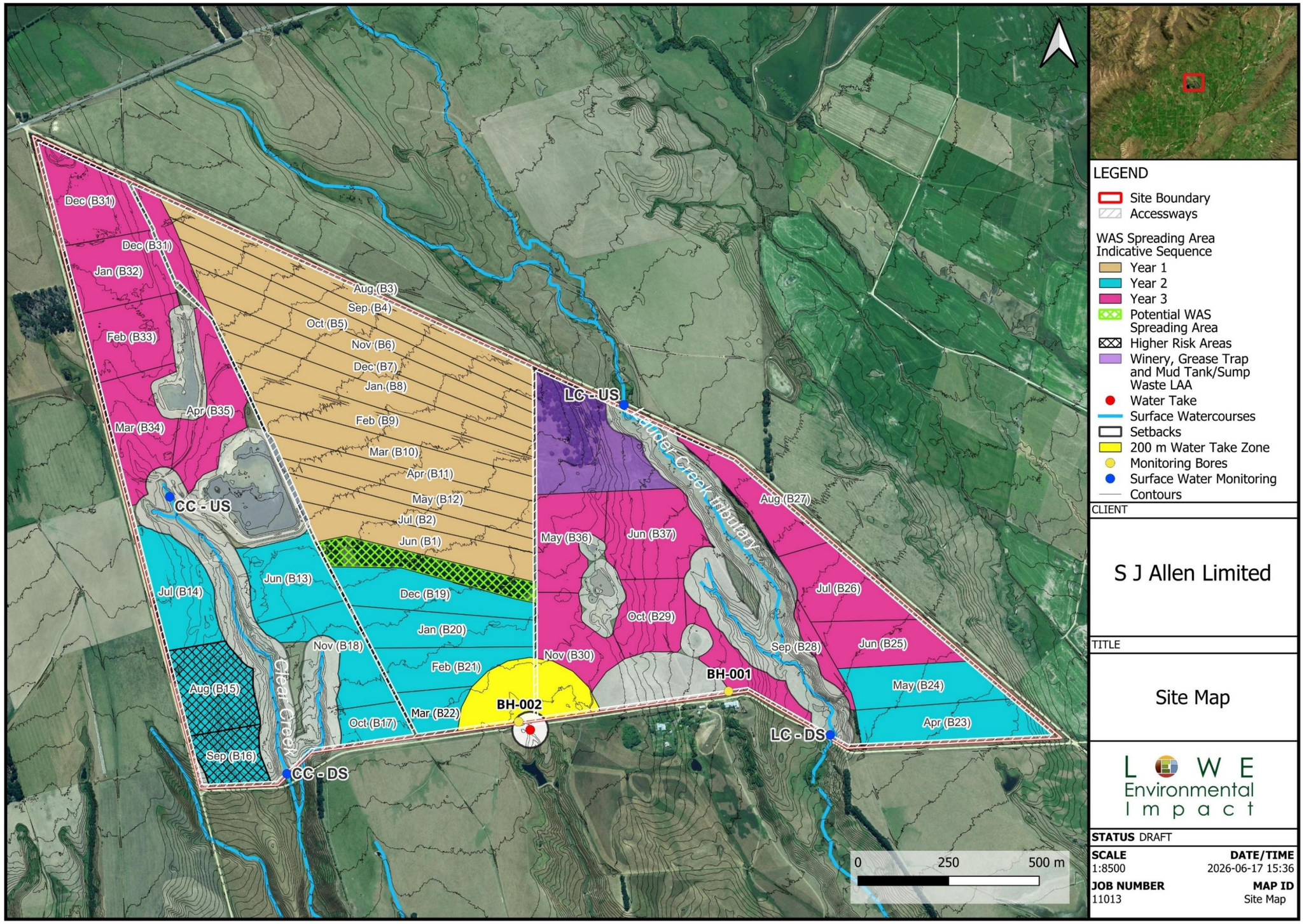


Figure 3.2: Indicative Waste Activated Sludge (WAS) Spreading Areas Sequence Over a Three-Year Operational Period

Incorporation Requirements:
WAS must be incorporated into the soil to a depth of at least 50 mm, within 24 hours of the application being discharged to the land application area, in accordance with Condition 4 of the resource consent.

Cropping and Land Management Regime:
Following WAS application, the land application area shall be managed under the following regime:

- A catch crop shall be sown as soon as practicable following application of WAS (generally within 1 month of the WAS application except during winter or peak summer dry conditions when the land would remain cultivated but fallow until spring or autumn planting).
- Suitable crops like Oats, Ryecorn or Triticale, given these crops can generally be sown in Autumn, Spring and Summer.

In accordance with Condition 5 of the resource consent, the Consent Holder must ensure that 12 months following WAS being discharged to an area of the land application area, no human edible crops are harvested.

Rotation Management:
Each yearly rotation land block shall be managed under a three-year rotation system to minimise environmental effects.

- **Year 1:** WAS application and catch cropping (generally within 1 month of application).
- **Years 2-3:** Rotational grass with grazing by sheep and/or silage made.
- **Year 4:** Area becomes suitable to receive WAS again

Grease Trap and Mud Sump Waste

The consented volume of grease trap waste and mud tank/sump waste is 1,200 m^3 per year for each waste stream, with the total daily volume of grease trap waste not exceeding 20 m^3 for each waste stream.

Discharge Method:
The discharge method for grease trap and mud sump waste is into land through soakage trenches.

Trenches must be constructed within the 7.82 ha land application area shown in Figure 3.1 above.

Trenches will be constructed using an excavator, with topsoils separated, stockpiled and covered for the reinstatement of completed trenches. Excavated material will be stockpiled on the upgradient side of the trench.

The dimensions of trenches will be in the order of 1 – 2 m wide, 1.5 - 2 m deep and up to 150 m long.

The general order of waste application will be grease trap waste on the trench bottom, with mud sump waste put over it. Once the trench reaches 200 mm from the original ground level it is to be capped with the original material removed from the trench and GPS located.

Should odour from the grease trap waste be observed and considered a nuisance, (this is not considered likely as it will not be disturbed), then some excavated material will be put over the grease trap waste following discharge.

Winery Waste

The bulk of the winery waste is discharged over a period of 6 - 8 weeks from approximately March – April, although the seasons change from year to year depending on weather and growing conditions. Winery waste discharge can occur a few days per month, in any month of the year, following barrel washing and other winery activities. The consented amount of winery waste to be discharged to land is 1,200 m^3 per year with a daily maximum of 20 m^3.

The application of winery wastewater must occur within the 7.82 ha land application area shown in Figure 3.1 above.

Discharge Method:
The discharge of winery wastewater will occur directly from the vacuum tanker truck. The truck has a 2.4 m length spreader bar that has a 25 mm continuous slot, 300 mm above the ground which sprays at a rate of approximately 15 litres per second to the soil surface. The wastewater would be applied in runs that are 2.4 m width strips until the designated land application area is completely covered, then the next set of applications occurs adjacent to the earlier zone. The truck drives along the strip, spraying the waste until the truck's tank is empty. For each disposal event, a separate strip is used, and the truck's GPS system ensures this occurs. The spreader system for each truck will be calibrated with catch cans to set a minimum travel speed.

3.2.7 Associated Risks with the Operation

Activities undertaken have potential to pose some level of risk to the environment. The following provides a summary of the different risks associated with the operation:

i. Delivery and storage of wastewater at the site:
Risk of spill. If not contained appropriately or if the pipes/hoses used for their transfer are not maintained appropriately, pollutant spills off-site pose a risk to both land and water contamination;

ii. Delivery and storage of WAS at the site:
WAS would be transported from a WWTP in self-levelling, covered bins containing 20% dry solids. There will not be any uncovered storage on-site, but the covered bins could sometimes remain on-site for a week if conditions aren't suitable for discharge. Accidental spillage off-site poses a risk to both land and water contamination;

iii. Vehicle movements and vehicle itself:
Tracking sediment, oil leaks from vehicles if not maintained appropriately, etc., poses the risk of pollutants entering the environment.

iv. High Risk Areas
Areas of the site identified as higher risk due to steeper slopes are located in the southwestern portion of the WAS LAA, as shown by the hashed areas (Blocks 15 and 16) in Figure 3.2.
These areas are marked on the figure and will be communicated to all operators prior to land application activities.
Additional care will be taken when applying WAS within these areas to minimise risk of contaminate transport. Application within these areas will remain flexible and will be dependent on site conditions at the time of spreading.

4 CONTACT INFORMATION

4.1 Contact Information

Relevant contact information is provided in Table 4.1.

Table 4.1: Contact Information

ORGANISATION	POSITION	WORK CONTACT	AFTER HOURS CONTACT
Emergency Support Team	Site Manager [redacted] Managing Director [redacted]	[redacted] [redacted]	
	Office/Health & Safety Manager [redacted]	[redacted]	[redacted]
EMERGENCY SERVICES (including spillages)	Police / Fire / Ambulance	111	111
	National Poisons Centre	03 479 7248 0800 764 766 (urgent)	03 479 7248 0800 764 766 (urgent)
REGULATORY			
Central Otago District Council	1 Dunorling St, Alexandra 9340	03-440 0056	03-440 0056
Otago Regional Council	1 Dunorling St, Alexandra 9320	0800 474 082	Pollution Hot Line 0800 800 033
SERVICES			
24-hour spill response team	S.J Allen Holdings Ltd		
Vacuum Tanker	S.J Allen Holdings Ltd	[redacted]	[redacted]
Mechanical	Saunders Mechanical	[redacted]	[redacted]
Plumbing & Drainage	Flowmac Ltd	[redacted]	[redacted]

5 RESPONSIBILITIES AND STAFF TRAINING

5.1 Responsibilities & Authorities

Every staff member has a role or responsibility to ensure this OMM is effective at preventing pollution. Table 5.1 summarises these roles and responsibilities to aid both staff and contractors in understanding what is required both on and off-site.

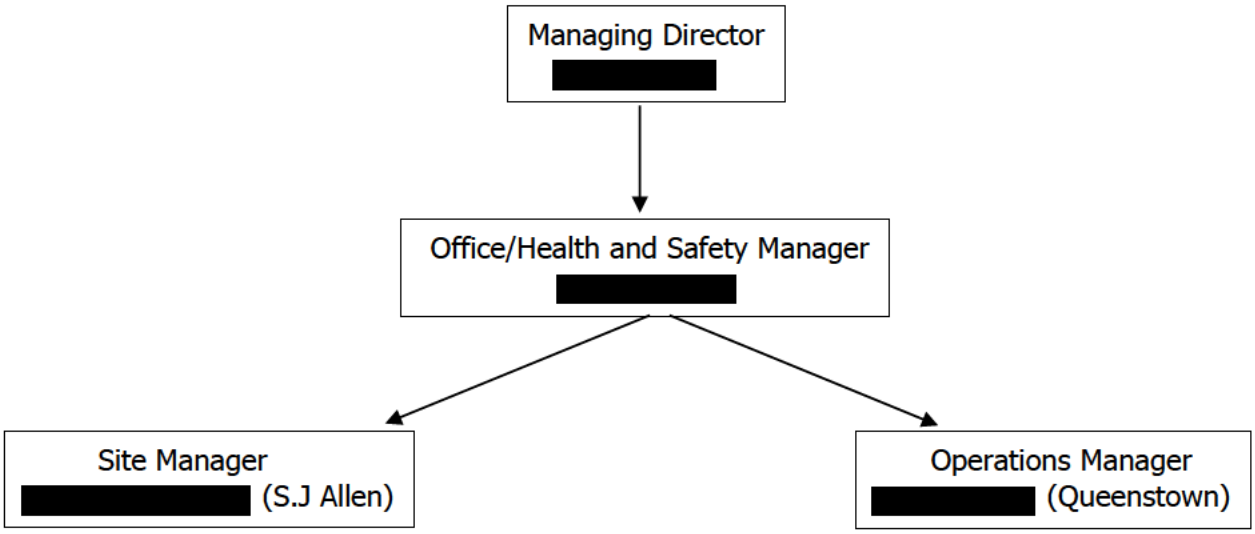
Table 5.1: Responsibilities & Authorities

Position	Responsibility	Authority
Office/Health and Site Manager	All site operations • Health & Safety Manager/Representative. • In conjunction with the Site Manager, ensure all staff are trained and signed off as competent. • Maintaining awareness of staff to wastewater management issues. • Ensuring new staff are trained in their responsibilities with respect to wastewater discharge. • Fleet Management – ▪ EROAD ▪ Registration Purchasing ▪ RUC Purchasing ▪ COF Bookings ▪ Vehicle Check Sheets • Co-ordination of staff safety meetings and follow-up of issues raised and processes implemented. • Ensure all work mentioned below is recorded in the Office diary, i.e. maintenance of truck, valves, pumps and engines, recording of incidents, recording of trade waste discharges. • Ensures scheduled checks are completed for pumps, drains & sumps. • Ensure in conjunction with Site Manager that all Consent conditions are adhered to, especially but not limited to the Operations & Management Manual around record keeping and reporting as required. • Be the first point of contact for all ORC correspondence and redirect it accordingly. • Ensure any contact from the ORC is followed up on promptly.	• Activate contingency plan. • Authorises contractor assistance if necessary. • Determines level of emergency. • Decides when the emergency is over. • To discontinue emergency operations if safety is compromised.
Operations Manager	• Ensuring all works are carried out safely and to an acceptable standard as per our Health & Safety policy. • In conjunction with Health & Safety Manager ensuring all Health & Safety procedures are implemented and followed by staff.	

Position	Responsibility	Authority
	• Report to Health & Safety Officer any incidents or accidents immediately and assist with reporting and investigations where required. • In conjunction with Site Manager oversee training and competency with new and existing staff where required. • To be the immediate point of contact for Office Manager in relation to any correspondence from the ORC and to respond and remedy as required. • Notifies Emergency Support Team – if unavailable makes mandatory Notifications. • Complete a daily walkover of the site.	
All staff	• To ensure that no waste spills during transport outside the site, to drains, kerbs, channels or anywhere that it may find its way into the water system. • To implement the appropriate spill response as and when required.	
Managing Director	• Overall responsibility to ensure this management manual is used, maintained, and staff are suitably trained in its contents.	
Emergency Support Team • **Office/Health & Safety Manager** • **Managing Director**	• Support and provide resources required to respond to and effectively recover from the emergency. • Handle legal and public affairs matters. • Contact insurance assessors. • Incident review, lessons learned and policy review if required.	• Make policy decisions. • Financial support for response/ recovery operations.

5.1.1 Management Structure

The management structure is provided below.



5.2 Training Requirements

All the staff hold current Dangerous Goods Licence Endorsements under the Land Transport Act and are required to transport the waste materials in accordance with these guidelines.

Training records set out which staff have undergone which training and when.

Training includes but is not limited to:

- General introduction of O&M (operation and maintenance) practices for the site;
- All staff are taken through Health & Safety Procedures when they commence employment with S.J Allen Holdings;
- Competency training and sign off to operate vacuum tankers;
- Compliance with consent conditions;
- General environmental awareness and education;
- Spill response training;
- Safety and contingency procedures; and
- Reporting.

Operator training programmes will be run in-house to achieve a complete understanding of the operational requirements. The training programme will also include an understanding of this Operation Management Manual. All new operators will undergo a complete course of instruction.

Training in the monitoring protocols may include (in addition to requirements listed above):

- Site location and equipment installation;
- Data processing; and
- Reporting.

5.3 Health and Safety - Training, Awareness & Competence

All employees are required to be aware of their responsibilities in all areas, including the environment.

Key elements of environmental training and risk management include:

- Environmental awareness training for all employees;
- Spill and emergency response training for all the operators; and
- Hazard identification as per health and safety checklists and controls.

All operators must undergo a comprehensive induction programme that includes a general company induction. The key focus is on health, safety, and the environment, including a holistic approach to any aspect of good practice.

S.J Allen Holdings also has regular Health & Safety meetings where the discharge of waste to land is discussed as part of the agenda and any feedback passed on.

6 CONTINGENCY PLANS

Note: 24hr POLLUTION HOTLINE: 0800 474 082 or 0800 800 033
The following outlines contingency plans in case of an incident.

6.1 In Case of Fuel and Toxic Spill

i. Any spills outside the designated disposal area will be contained and removed immediately and the ORC and landowner notified;
ii. **FOR MAJOR SPILLS, CALL FIRE SERVICE 111. SAFETY FIRST!;**
iii. Once this has been done a second vacuum tanker truck is to be notified and is to attend site immediately to remove any contamination;
iv. If the spill is on the access road it is to be contained, vacuumed up and grit spread;
v. Prevent spill from reaching any drains that lead off site, including waterways;
vi. Provide Material Safety Data Sheets to emergency services if requested;
vii. Clean-up spill taking necessary precautions; and
viii. Ensure disposal of any spilt material is done in an approved manner.

6.2 Spill Response Plan

i. If an incident occurs, notify the Managing Director;
ii. The Managing Director determines whether an incident is an emergency. Notifies Office Manager and appropriate member(s) of the Emergency Support Team;
iii. The Managing Director directs response operations. Notifies neighbours if necessary and makes mandatory notifications;
iv. The Office Manager responds to the emergency as per emergency procedures;
v. The Managing Director & Site Manager determines that the emergency is over and that normal operations can resume. Notifies neighbours that the emergency is over. If additional recovery operations are required, these are overseen/managed by the Office Manager prior to normal operations resuming;
vi. Any spill of Environmentally Hazardous Substances that has entered the stormwater system, a water-body or has contacted the unsealed ground, must be reported immediately to the **Otago Regional Councils' Pollution Hotline (0800 800 033);**
vii. Emergency debrief at the site chaired by the Managing Director with the Office Manager & Site Manager in attendance.
viii. An incident review is then circulated to all staff by the Office Manager.
ix. The incident and response are reviewed by Emergency Support Team. Procedural/policy or OMP review if required.

6.3 Incidents and Non-Compliance

Where an incident has occurred, a formal pathway is required to be completed, including:

- Identification of an incident;
- Immediate onsite remedial actions;
- Reporting; and
- Follow up – Corrective or Preventative Actions.

Incidents include (but are not limited to): spillages, complaints, breakdowns/malfunctions and need to be scaled as: incident, near miss or consent non-compliance.

Once the immediate onsite remedial actions have been completed, an Incident Form must be completed, seen in Appendix C.

Each Incident Form is required to be submitted to the Office Manager for follow-up. Follow-up actions require corrective or preventative action to be established, including identifying the person responsible for the action and a date for the action to be completed. Where appropriate, ORC will be contacted in accordance with the requirements of the activity. The Office Manager will also give the Incident Form an identification number based on its category of incident or complaint and record them in the appropriate management logs.

Templates of the Maintenance, Adverse Event and Complaint Logs are included in Appendix D.

7 MANAGEMENT PLAN

7.1 Land Application Area (LAA) Marking

In accordance with consent condition 8, prior to commissioning the treatment and land disposal system, the land disposal area must be marked out by any means that ensures the extent is identifiable on the ground surface and must remain marked out for the duration of the consent. The land disposal areas must not be used:

a) For roading whether sealed or unsealed;
b) As a hardstanding area other than for an area to receive and transfer the material to the spreading equipment;
c) For erecting buildings or any non-effluent systems structures;
d) For activities that require intensively managed grass surfaces (e.g. grass tennis courts or bowling greens or golf tees and greens).

7.2 Waste Activated Sludge

1) The WAS would be transported from a WWTP in self-levelling, covered bins containing approximately 20% dry solids.
2) There will not be any uncovered storage on-site, but the covered bins could sometimes remain on-site for a week if conditions aren't suitable for discharge.
3) Spreading vehicles/equipment will use internal access routes, including the 10 m boundary setback and 5 m irrigation race accessways, to stay off public roads and prevent off-site discharge.
4) Land application areas (LAAs) will be clearly marked at the road and setback boundaries.
5) The daily spreading area will be either identified on the ground with a 'LAST PASS' sign or via the tractor GPS guidance system. The guidance will show the spreading area available and the area that has previously received WAS. The spreading wagon will create an overlap of sludge from one pass to the next so that the 600 kg N/ha is cumulatively applied.
6) Annual application areas and management blocks will be used as planned before application are made. Year 1 will be limited to 50 ha.
7) Block rotation will follow the three-year schedule.
8) A permanent 50 m exclusion setback from the surface water take (located on adjacent land to the south of the site) will be maintained, within which no WAS application will occur.
9) A 200 m water take setback zone will be implemented for the first 5 years following commencement of WAS application, within which no WAS application will occur during this period.
10) Drivers will notify the Site Manager when entering the site to commence spreading.
11) An on-site written or digital log will be completed by the driver before spreading each day, recording previous disposal volumes and dates; logs are removed monthly for record-keeping and reporting.
12) A shared online spreadsheet or digital equivalent will be maintained by the Office Manager, visible to relevant personnel, to track WAS disposal volumes and areas.
13) Site maps of spreading areas will be kept in the site container. If a manual system is used, drivers highlight the blocks they have spread and date them, allowing the next driver to continue in the correct sequence, or the tractor GPS guidance will record the area previously spread and the next available area.
14) WAS will be discharged to the land surface using a muck spreader, ensuring maximum allowable application rates are not exceeded.
15) Following application within 24 hr the WAS is incorporated by discing or similar into the soil to a depth of at least 50 mm.

16) The driver consults the site map and spreads according to the 'LAST PASS' sign or tractor GPS.
17) A catch crop shall be sown as soon as practicable following application of WAS (generally within 1 month of the WAS application except during the peak of summer or winter when the land would remain cultivated but fallow until spring or autumn planting as applicable).
18) No human edible crops will be harvested from a land application area for 12 months following the discharge of WAS.
19) Spreading is restricted during unsuitable conditions; no WAS shall be applied during heavy and persistent rainfall. Stored WAS will remain in bins or disposed on in landfill if required.
20) The Site Manager is responsible for all truck movements, monitoring spreading, updating logs, and ensuring compliance with resource consent requirements.
21) Duty staff will inspect the spreading areas weekly and document any issues, forming part of reporting to the Consenting Authority.

7.3 Winery Wastewater Management

1) The wine waste LAA will be clearly marked with signage and located a minimum of 10 m away from the disposal trenches for mud sump waste & grease trap waste. A 'LAST PASS' sign will be positioned at the start of the last disposal strip. The next disposal event will occur adjacent to this strip, and the 'LAST PASS' sign will be moved accordingly. This will clearly show the next driver where the last disposal strip ended, to avoid over spreading;
2) Drivers text the Site Manager when they enter the site for approval to dispose;
3) There will be either a manual on-site written log or electronic app that will be filled out by drivers before disposal. This log will indicate the previous disposal volumes for that day, and will be removed monthly for record keeping & reporting;
4) The Site Manager will also keep a shared online Excel spreadsheet which is live & visible to the Queenstown Operations Manager & S.J Allen Office Manager. This will form the basis of the required reporting;
5) S.J Allen will implement a site map plotting system for the discharge areas, which will be kept in the site container. The driver will highlight the area they spread on and date it. The site maps will stay on site for reference by the next driver;
6) Where practical a left to right application system is being used, where the next driver checks the previous site map information by date and spreads to the left of the 'LAST PASS' sign, which will be moved as an onsite indication of the last spread area;
7) Drivers will attach the 4" spreader bar (2.4 m in length) to the rear outlet valve of the vacuum tanker. They will then spread the wine waste under pressure through 25 mm continuous slots at a rate of 15 litres per second, for a distance of 150 m in the area adjacent to the 'LAST PASS' sign;
8) Once the LAA has been passed over once, the next pass over will occur where practical at an angle to the previous pass over of the LAA;
9) In the event of rainfall occurring, which prohibits the disposal of winery waste, the winery waste is held within the tanker. Additionally, winery waste clients are informed that SJA cannot spread, so wastewater can be managed and held at the source until the waste is collected. The written log will reflect any rain events and the ensuing disposal in the following days;
10) No wine waste will be spread in excessively high winds;
11) The Site Manager will be solely in charge of all truck movements, the disposal log and subsequent spreading of stored wine waste; and
12) The Site Manager will further be responsible for site inspections of the LAA on a regular basis and any necessary reporting from these inspections as part of our reporting requirements to the Consenting Authority.

7.4 Grease Trap and Mud Sump Wastewater Management

1) The grease trap and mud sump disposal trenches will be clearly sign posted and located a minimum distance of 10 m from the LAA for wine waste;
2) The dimensions of the grease trap and mud sump waste disposal trenches will generally be in the order of 1 – 2 m wide, 1.5 – 2 m deep and extend for a distance of up to 150 m;
3) There will be a manual on-site written log or electronic app that will be filled out by drivers before disposal. This log will indicate the previous disposal volumes for that day, and will be removed monthly for record keeping & reporting;
4) Drivers will also text the S.J Allen Site Manager before disposal for approval as a fail-safe measure for the written log;
5) The Site Manager will also keep an electronic shared online Excel spreadsheet which is a live & visible document to the Queenstown Operations Manager & S.J Allen Office Manager. This will form the basis of the required reporting;
6) The general order of waste application into trenches will be grease trap waste on the trench bottom, with mud sump waste put over it;
7) Drivers will attach the 4" spreader bar to the rear outlet valve of the vacuum tanker. The spreader bar will have a right angle, which will have an open-ended vertical spigot, and spread the grease trap and mud sump waste under low pressure directly into the bottom of the trenches. This method will avoid any lateral discharge and dispose of waste directly into the trench bottom;
8) The truck will drive slowly along the length of the trench until empty;
9) As required, the grease trap and mud sump waste trenches will have fill deposited to cap any dried material and to manage any odour;
10) Once the trench reaches 200 mm from the original ground level, it will be capped with the original topsoil and planted to complete the reinstatement and act as a dust mitigation measure. The reinstated trench must be GPS located;
11) The Site Manager will be solely in charge of all truck movements and the disposal log for grease trap and mud sump waste; and
12) The Site Manager will further be responsible for site inspections of the grease trap and mud sump waste trenches on a daily basis and any necessary reporting from these inspections as part of our reporting requirements to the Consenting Authority.

7.5 Trench Management

The Site Manager will regularly inspect the trenches and stockpile areas, adapting management as required to mitigate effects. This management will include:

1) Checking the water level of each trench to ensure it is not flooded, every time during or after rain events, and maintaining records of these checks;
2) To control sediment runoff or erosion; excavated material is to be stockpiled on the upgradient side of the trench, so any erosion is captured by the downgradient trench. The material is very free draining, so empty trenches are not expected to fill with water and will drain rapidly following storm events.
3) Managing vegetation around the trench to assist in silt capture;
4) Covering the stockpiled material with geotextile if necessary;
5) Assessing the odour and deciding to cap the trench if required;
6) No disposal occurs in excessively high winds.

7.6 Operations Management Location

All vehicles carry Emergency Operating Procedures folders that contain national and local emergency contact details and action priority plans for all potential accidents, including vehicle accidents, fuel & toxic spills, electric shock, and trench collapse.

All the emergencies are managed from the office by the Office Manager. In the event ORC needs to be informed, then emergency operations are managed from the offices by Office Manager.

7.7 Pollution Controls

To manage the pollution risks discussed in Section 3.2.7, pollution controls have been put in place.

7.7.1 Activities and Associated Control Procedural:

The following is a list related to the pollution risks identified in 3.2.7 for onsite activities and procedural controls which are currently exercised on site.

Delivery and Storage of Waste

To mitigate any spillages/surface runoff:
Appropriate hose fittings on the disposal truck minimises the potential for any spillages whilst transferring grease trap waste, mud sump waste, and winery wastewater from the industries to the site. WAS will be transported from a WWTP in self-levelling, covered bins containing 20% dry solids. There will not be any uncovered storage on-site, but the covered bins could sometimes remain on-site for a week if conditions aren't suitable for discharge

Prior to discharge, staff check the land activities occurring and the land disposal area to ensure the land is not waterlogged and disposal can occur.

WAS spreading vehicles/equipment will use internal access routes, including the 10 m boundary setback and 5 m irrigation race accessways, to stay off public roads and prevent off-site discharge.

All trucks carry spill kits in case of emergency. A laminated copy of the O&M Manual is also available in each vehicle at all times.

Staff and operators are trained in general environmental awareness, hazard identification and spill response procedures (refer to Section 5).

Vehicle Movements and Vehicle Itself

To maintain safe access to the site:
There are designated site entrances and exits for operators to access the discharge area.

To maintain vehicle condition:
The disposal vehicles are regularly maintained by S.J Allen Holdings Ltd to a very high standard minimising the potential for oil leaks, etc. The maintenance includes the mechanical operation of the truck and running gear including valves, pumps & engines. Maintenance checks are undertaken weekly by all drivers. All vehicles have current COF's and all drivers hold the correct license's to operate the vehicle.

All outflow valves on the vacuum tankers are fitted with dust caps to prevent any potential discharges due to the failure of a valve.

To manage cross contamination:
Potential cross contamination from septic tank trucks also used for applying wastes to the LAA and disposal trenches will be mitigated by the use of bleach when flushing the tankers before disposal events.

Discharge to meet Consent Limits

To maintain the discharge limit:

Each driver is required to fill the logbook (manual or digital) prior to discharge and every driver sends a text to the Site Manager after finishing work and states the amount of discharge and the time of discharge. If the total volume reaches 20 m^3/day, then the next driver arrives, will check the logbook and will not discharge if the consent limit has already been reached and inform the same Site Manager. The Site Manager further sends text to other drivers not to discharge as they have reached the consent limit for the day.

For mud sump and grease trap waste, in any case when the volume reaches the maximum permissible limit, it is stored in the truck.

To maintain the Nitrogen Load:

WAS samples are to be taken every 500 m^3 of discharge and have it analysed for parameters specified by condition 12, including Total Nitrogen. This sample analysis will form the basis for calculating nitrogen loads and ensuring that the consent limits are complied with, including a maximum of 34.2 tonnes of N per year (102.5 tonnes of N over a three-year return period), 200 kg N/ha/year, or 600 kg N/ha in any single application with a three year return period.

8 MONITORING AND RECORD KEEPING

8.1 Monitoring/Testing Requirements and Procedures

The Site Manager will complete a regular site walkover of the active area to ascertain any significant changes to the site in relation to saturation levels of the LAA, ponding or the presence of any odours relating to the previous day's activities or weather events that may change the operation of the site for that day's intended disposal.

Regular contact with neighbours via phone or personal visits will be offered to ascertain any negative impacts to the operation of the site and include any improvements as part of the annual report.

The following sections provide an overview of the performance monitoring and reporting requirements for Resource Consent RM25.407.01, including:

- Waste Stream Discharge Sampling and Testing Requirements;
- Environmental Monitoring - Soil, Groundwater and Nitrogen Mass Balance; and
- First 12-month Monitoring Programme.

All sampling techniques employed in respect of the conditions of this consent must be acceptable to the Consent Authority. All analyses undertaken in connection with this consent must be performed by an IANZ registered laboratory or otherwise as specifically approved by the Consent Authority.

8.1.1 Waste Stream Discharge Sampling and Testing Requirements

Table 8.1 summarises the waste stream discharge sampling and testing requirements.

Table 8.1: Waste Stream Discharge Sampling and Testing Requirements

Parameter	Frequency	Sampling Location	Resource Consent Trigger Level	Consent Condition/ s	Reporting Frequency
Waste Activated Sludge (WAS)					
Total Nitrogen Total Phosphorus Total Potassium Total Arsenic Total Cadmium Total Chromium Total Copper Total Lead Total Nickel Total Zinc	Every 500 m^3 of discharge	WAS storage / discharge point	34.2 t N/year applied across the site at up to 600 kg N/ha 200 kg N/ha/year (loading rate equivalent)	Condition 12	Sample results must be provided to Consent Authority within 2 weeks of being received, included in the annual report (Condition 23) and results forwarded to the Consent Authority on request.
Winery Waste					
Total Suspended Solids (TSS) $cBOD_5$ Total Calcium Total magnesium Total Sodium Total Nitrogen Dissolved Reactive Phosphorus Total Potassium Sodium Absorption Ratio pH	Every 100 m^3 of discharge	Winery wastewater samples are to be taken from the collection point.	N/A	Condition 14	Sample results must be provided to Consent Authority within 2 weeks of being received, included in the annual report (Condition 23) and results forwarded to the Consent Authority on request.
Grease Trap and Mud Tank/Sump Waste					
Total Arsenic Total Cadmium Total Chromium Total Copper Total Lead Total Nickel Total Zinc pH Total Petroleum Hydrocarbons	Every 200 m^3 of discharge	Grease trap and mud sump wastewater samples are to be taken from the truck outlet valve or from the waste stream in the trench.	N/A	Condition 15	Sample results must be provided to Consent Authority within 2 weeks of being received, included in the annual report (Condition 23) and results forwarded to the Consent Authority on request.

8.1.2 Environmental Monitoring – Soil, Groundwater and Nitrogen Mass Balance

Table 8.2 summarises the ongoing environmental performance monitoring for soil and groundwater.

Table 8.2: Soil and Groundwater Sampling and Testing Requirements

Parameter	Frequency	Sampling Location	Resource Consent Trigger Level	Consent Condition/s	Reporting Frequency
Disposal Trench Base Soil Sampling					
Total Arsenic Total Cadmium Total Chromium Total Copper Total Lead Total Nickel Total Zinc pH Total Petroleum Hydrocarbons	Every 150 metres of disposal trench length.	From the base of the grease trap and mud sump trench (1.5 – 2 m bgl).	N/A	Condition 13	Sample results must be provided to Consent Authority within 2 weeks of being received, included in the annual report (Condition 23) and results forwarded to the Consent Authority on request.
Nitrogen Mass Balance Monitoring via Crops and Supplementary Feed					
Harvested crop dry matter and total nitrogen content	Composite crop sample from WAS application area (10 subsamples per composite sample)	During each harvest event; one composite sample per harvest for every 5 ha harvested	Used to calculate kg N/ha removed via cut and carry system	Condition 11 c.	Sampling results must be included in the annual report required by Condition 23.
WAS and Winery Waste Land Application Area Soil Sampling					
Total Arsenic	Every 5 years (Following first exercise of consent)	8 to 10 composite transect samples collected across the WAS LAA to a depth of 200 mm. 1 composite transect sample collected across the winery waste LAA to a depth of 200 mm.	17 mg/kg (dry weight)	Condition 7	Sampling results must be included in the annual report required by Condition 23.
Total Cadmium			0.8 mg/kg (dry weight)		
Total Chromium			200 mg/kg (dry weight)		
Total Copper			95 mg/kg (dry weight)		
Total Lead			160 mg/kg (dry weight)		
Total Mercury			1 mg/kg (dry weight)		
Total Nickel			60 mg/kg (dry weight)		
Total Zinc			180 mg/kg (dry weight)		
WAS Land Application Area Soil Sampling					
Total Nitrogen Total Phosphorus Olsen P Potassium Sulphate Calcium	Every 5 years (Following first exercise of consent)	8 to 10 composite transect samples collected across the WAS LAA to a depth of 200 mm. &	N/A	N/A	Sampling results will be included in the annual report.

Parameter	Frequency	Sampling Location	Resource Consent Trigger Level	Consent Condition/s	Reporting Frequency
Magnesium Sodium pH CEC Total Carbon C:N Ratio		Control transect within 200 m dwelling buffer (no WAS applied).			
Winery Waste Land Application Area – Additional Soil Sampling Parameters					
Total Sodium Sodium Absorption Ratio (SAR)	As above	As above	Trend Monitoring SAR of 13	Condition 11	Sampling results to be included in the annual report
Baseline Groundwater Sampling					
pH Chloride Electrical conductivity Escherichia coli (E.coli) Total nitrate+nitrite nitrogen (NNN) Total ammoniacal nitrogen (NH3-N) Dissolved reactive phosphorous (DRP)	Two samples prior to first exercise of consent (baseline sampling)	Samples must be taken from the piezometer (BH-001) installed in accordance with Condition 20. All samples must be collected in accordance with AS/NZS 5667.11:1998, with groundwater level in the piezometer recorded at the time of sampling.	N/A	Condition 21	The baseline parameters must be noted in the annual report and provided to the Consent Authority no later than one month after the samples have been collected.
Ongoing Groundwater Sampling					
pH Chloride Electrical conductivity Escherichia coli (E.coli) Total nitrate+nitrite nitrogen (NNN) Total ammoniacal nitrogen (NH3-N) Dissolved reactive phosphorous (DRP)	Quarterly for the first two years following first exercise of consent, then annually thereafter (between March and April each year).	Samples must be taken from the piezometer installed in accordance with Condition 20. Samples must be taken or overseen by a suitably trained and skilled individual. All samples must be collected in accordance with AS/NZS 5667.11:1998, with groundwater level in the piezometer recorded at the time of sampling.	Samples must be compared to the baseline groundwater samples. Should the samples exceed the baseline concentrations an assessment for any parameter and show an increasing trend for three consecutive samples, groundwater sampling must be undertaken to determine whether the exceedance(s) are attributable to the discharge authorised by this consent and	Condition 21	The Consent Authority must be notified within 5 working days of the exceedance being identified and must be provide a copy of the assessment within 30 working days.

Parameter	Frequency	Sampling Location	Resource Consent Trigger Level	Consent Condition/s	Reporting Frequency
			identify any potential adverse effects on groundwater quality associated with the exceedances.		
Surface Water Sampling					
pH Chloride Electrical conductivity Escherichia coli (E.coli) Total nitrate+nitrite nitrogen (NNN) Total ammoniacal nitrogen (NH3-N) Dissolved reactive phosphorous (DRP) Total Phosphorus (TP) Biochemical Oxygen Demand (BOD) Total Suspended Solids (TSS)	Quarterly for the first five years following first exercise of consent.	Upstream and downstream samples will be collected from Clear Creek and the Lauder Creek tributary at the approximate locations shown in Figure 8.1. If the sampling locations are dry at the time of sampling, samples will be collected from the nearest location where surface water is present, provided the alternative sampling location remains within the property boundary. The sampling locations used will be recorded and documented.	N/A	N/A	N/A

Installation of Monitoring Bore (Condition 20)

In accordance with Condition 20, a groundwater monitoring piezometer has been installed within the area identified on the map attached to the consent (Appendix A). An additional bore has also been installed and will be monitored as part of the first 12-month monitoring programme, as further explained in 8.1.3 below. The locations of the monitoring piezometer required Condition20 (BH-001) and the additional monitoring bore (BH-002) are shown in Figure 8.2 below.



Figure 8.2: Monitoring Bore Location Plan

Baseline Groundwater Sampling (Condition 21)

Baseline groundwater sampling required under Condition 21 and will be completed prior to the exercise of consent. The sampling will be undertaken from monitoring piezometer BH-001 and will establish baseline concentrations for the parameters specified in the consent and will be undertaken in accordance with AS/NZS 5667.11:1998. The results will be recorded in the annual report and provided to the Consent Authority within one month of sampling.

Following baseline establishment, ongoing monitoring will be undertaken in accordance with Condition 21, comprising quarterly sampling for the first two years of consent, and annually thereafter between March and April.

Ongoing Groundwater Quality Monitoring (Condition 21 and 22):

Groundwater monitoring results will be compared against the established baseline concentrations. For any exceedances or increasing trends for three consecutive samples, an assessment will be undertaken to determine whether the exceedance is attributable to the authorised discharge and to identify any potential adverse effects on groundwater quality (Condition 21). The assessment will also identify any immediate or longer-term remedial actions required.

The Consent Authority must be notified within 5 working days of the exceedance being identified and must be provide a copy of the assessment within 30 working days.

In accordance with Condition 22, if the assessment confirms that the exceedance is attributable to the discharge and adverse effects are occurring, written confirmation must be provided to the Consent Authority within 5 working days that the remedial actions set out in the report will be undertaken provided they are within scope of the consent.

Surface Water Monitoring

Surface water samples will be collected upstream and downstream in Clear Creek and the Lauder Creek tributary at the approximate locations shown in Figure 8.3.

Samples will be collected quarterly for the first five years following first exercise of consent.

If the sampling locations are dry at the time of sampling, samples will be collected from the nearest location where surface water is present, provided the alternative sampling location remains within the property boundary. The sampling locations used will be recorded and documented.



Figure 8.3: Surface Water Quality Location Plan

Nitrogen Mass Balance Monitoring via Crops and Supplementary Feed

During each harvest event of the WAS application area, the consent holder shall obtain a composite sample from ten samples of harvested crop (forage and pasture) and analyse the sample for dry matter content and total nitrogen content. One composite sample shall be taken

from each harvest and repeated for every 5 hectares of the harvested crop. The weight of harvested material in kilograms of dry matter shall be recorded.

The kilograms of nitrogen per hectare exported from the sludge application area via the cut and carry system is the mass of dry matter exported multiplied by the nitrogen content. The results of this analysis shall be presented in the Annual Report, required under Condition 23 of this consent.

Three-Yearly Nutrient Budget (Overseer or Equivalent)

Every three years, the consent holder shall prepare a nutrient budget for the WAS application area using Overseer or an equivalent nutrient budgeting tool. This budget will incorporate measured nitrogen inputs, including WAS application, and outputs (including crop harvest, grazing, and any losses), and provide an assessment of nutrient balances.

Appendix E includes an Overseer data collection template. This data template shall be completed annually.

Monitoring the Application Area for Ponding and Odour

The application area will be routinely monitored for signs of surface ponding and the presence of odour. Monitoring will be undertaken by site personnel during and following application events. Any evidence of ponding or odour will be recorded, and appropriate management actions will be implemented as required.

8.1.3 First 12-Month Monitoring Programme (Condition 19)

a) i. *All discharges authorised by this consent must be subject to a monitoring programme which enables effects on soil health and water quality to be observed. The monitoring programme, including monitoring locations and frequencies, must be set out within the OMM required by Condition 11.*

b) On the first anniversary of exercise, the Consent Holder must, within 20 working days, prepare and submit a Monitoring Summary Report to the Consent Authority and Aukaha. Details of what must be included in the report as required by Condition 11 is outlined in Section 10.2.1 of this OMM.

Table 8.3 below summarises the first 12-month monitoring programme to monitor effects on soil health and water quality, including monitoring locations, frequencies, and parameters in accordance with consent conditions.

Table 8.3: First 12-Month Monitoring Programme

Parameter	Frequency	Sampling Location	Resource Consent Trigger Level	Consent Condition/s	Reporting Frequency
Disposal Trench Base Soil Sampling					
Total Arsenic Total Cadmium Total Chromium Total Copper Total Lead Total Nickel Total Zinc pH	Every 150 metres of disposal trench length.	From the base of the grease trap and mud sump trench (1.5 – 2 m bgl).	N/A	Condition 13	Sample results must be provided to Consent Authority within 2 weeks of being received, included in the annual report (Condition

Parameter	Frequency	Sampling Location	Resource Consent Trigger Level	Consent Condition/s	Reporting Frequency
Total Petroleum Hydrocarbons					23) and results forwarded to the Consent Authority on request.
WAS and Winery Waste Land Application Area Soil Sampling					
Total Arsenic	After 12 months	Two representative composite transect samples across the Year 1 LAA to a depth of 200 mm	17 mg/kg (dry weight)	Condition 7 (adapted to be the same)	Sampling results must be included in the annual report required by Condition 23.
Total Cadmium			0.8 mg/kg (dry weight)		
Total Chromium			200 mg/kg (dry weight)		
Total Copper			95 mg/kg (dry weight)		
Total Lead			160 mg/kg (dry weight)		
Total Mercury			1 mg/kg (dry weight)		
Total Nickel			60 mg/kg (dry weight)		
Total Zinc			180 mg/kg (dry weight)		
WAS Land Application Area Soil Sampling					
Total Nitrogen	After 12 months	Two representative composite transect samples across the Year 1 LAA to a depth of 200 mm. & Control transect within 200 m dwelling buffer (no WAS applied).	N/A	N/A	Sampling results will be included in the annual report.
Total Phosphorus					
Olsen P					
Potassium					
Sulphate					
Calcium					
Magnesium					
Sodium					
pH					
CEC					
Total Carbon					
C:N Ratio					
Groundwater Sampling					
pH	Quarterly	Monitoring bores BH-001 and BH-002. Samples must be taken or overseen by a suitably trained and skilled individual. All samples must be collected in accordance with AS/NZS 5667.11:1998, with groundwater level in the piezometer recorded at the time of sampling.	Samples must be compared to the baseline groundwater samples. Should the samples exceed the baseline concentrations, an assessment for any parameter and show an increasing trend for three consecutive samples, groundwater sampling must be undertaken to	Condition 21	The Consent Authority must be notified within 5 working days of the exceedance being identified and must be provide a copy of the assessment within 30 working days.
Chloride					
Electrical conductivity					
Escherichia coli (E.coli)					
Total nitrate+nitrite nitrogen (NNN)					
Total ammoniacal nitrogen (NH3-N)					
Dissolved reactive phosphorous (DRP)					

Parameter	Frequency	Sampling Location	Resource Consent Trigger Level	Consent Condition/s	Reporting Frequency
			determine whether the exceedance(s) are attributable to the discharge authorised by this consent and identify any potential adverse effects on groundwater quality associated with the exceedances.		
Surface Water Sampling					
pH Chloride Electrical conductivity Escherichia coli (E.coli) Total nitrate+nitrite nitrogen (NNN) Total ammoniacal nitrogen (NH3-N) Dissolved reactive phosphorous (DRP) Total Phosphorus (TP) Biochemical Oxygen Demand (BOD) Total Suspended Solids (TSS)	Quarterly	Upstream and downstream samples must be collected from Clear Creek and the Lauder Creek tributary at the approximate locations shown in Figure 8.4. If the sampling locations are dry at the time of sampling, samples must be collected from the nearest location where surface water is present, provided the alternative sampling location remains within the property boundary. The sampling locations used must be recorded and documented.	N/A	Condition 19	N/A
Nitrogen Mass Balance Monitoring via Crops and Supplementary Feed					
Dry Matter of Crop & Feeds Total Nitrogen	At each harvest event; one composite sample from 10 subsamples, repeated for every 5 ha harvested	WAS application area (harvested crop)	N/A	Condition 19	The results of this analysis shall be presented in the Annual Report, required under Condition 23 of this consent.

Groundwater Monitoring

For the first 12-month performance monitoring plan, groundwater samples will be collected from monitoring bores BH-001 and BH-002, shown in Figure 8.2 above.

Samples must be taken or overseen by a suitably trained and skilled individual. All samples must be collected in accordance with AS/NZS 5667.11:1998, with groundwater level in the piezometer recorded at the time of sampling.

Samples must be compared to the baseline groundwater samples. Should the samples exceed the baseline concentrations an assessment for any parameter and show an increasing trend for three consecutive samples, groundwater sampling must be undertaken to determine whether the exceedance(s) are attributable to the discharge authorised by this consent and identify any potential adverse effects on groundwater quality associated with the exceedances. The Consent Authority must be notified within 5 working days of the exceedance being identified and must be provide a copy of the assessment within 30 working days.

Surface Water Monitoring

Surface water samples will be collected upstream and downstream of the site in Clear Creek and the Lauder Creek tributary at the approximate locations shown in Figure 8.3.

If the sampling locations are dry at the time of sampling, samples must be collected from the nearest location where surface water is present, provided the alternative sampling location remains within the property boundary. The sampling locations used must be recorded and documented.

8.1.4 Soil Sodium Monitoring and Control

The risk of sodium accumulation in the soil is associated with the discharge of winery wastewater to land. To minimise the risk of sodium build-up in soils within the winery waste LAA, the following measures will be implemented:

- As required by Condition 14, the consent holder must collect a sample of winery waste for every 100 m³ of discharge each year and analyse it for the parameters specified in the consent, including total sodium and sodium absorption ratio (SAR). This data will be used to quantify the mass of sodium applied to the LAA.
- As part of the first 12 month monitoring programme, soil samples from the winery waste LAA shall also be sampled for total sodium and SAR. These parameters shall also be monitored every five years as part of the ongoing soil monitoring programme to assess long-term trends.
- If monitoring indicates an excessive sodium accumulation in the soil, appropriate corrective actions shall be implemented. This may include the application of soil amendments such as gypsum to displace exchangeable sodium with calcium and improve soil structure.
- As a guideline value, soils with a SAR greater than 13 shall require remedial action such as gypsum application.

8.1.5 Additional Soil Health Monitoring

In addition to heavy metals, a broader suite of soil parameters will be analysed as part of the soil monitoring programme to assess soil health and nutrient status within the Year 1 WAS application area, and then every 5 years. Two representative composite transect samples will be collected across the Year 1 LAA to a depth of 200 mm and analysed for the additional parameters outlined in Table 8.3 above.

The exact location of the transects will be determined following WAS application and will be selected to be representative of the area where WAS has been applied. A control transect will also be established within the 200 m buffer from the dwelling to provide a comparison.

Baseline soil data was also collected as part of the consent application will be used for comparison.

These parameters do not have specific consent trigger levels but will be assessed for trends over time.

8.2 Sampling Equipment and Handling Procedures

8.2.1 Guidelines for Sample Containers and Transportation

Prior to sample collection, sample containers and chilly bins for transporting samples should be obtained from the analysing laboratory. Note that the containers supplied may contain preservatives, so they should not be washed prior to use. Each sample bottle should be filled as close to the top as possible to exclude air.

In addition, care should be taken in the handling of sample containers since hazardous chemicals may be present.

8.2.2 Laboratory Details

All sampling techniques employed in respect of the conditions of this consent must be acceptable to the Consent Authority. All analyses undertaken in connection with this consent, must be performed by an IANZ registered laboratory or otherwise as specifically approved by the Consent Authority (Condition 16).

8.3 Record Keeping and Reporting Requirements

8.3.1 Waste Discharges Records (Consent Condition 17):

The Consent Holder must maintain written records of the dates, types and volumes of waste discharged to the land area and this is to be included in the annual report.

8.3.2 Discharge Volume Recording Procedures:

As previously mentioned in Section 8 of this report, an application log will be filled out by drivers before disposal of materials and for the WAS, a GPS-mapped application area will be logged. These logs will indicate the previous disposal volumes for that day and will be collected monthly for record keeping and reporting.

To ensure accurate record keeping, the Site Manager will also keep an electronic spreadsheet which is live and visible to the Queenstown Operations Manager & S.J Allen Office Manager, which will form the basis of the reporting required.

The spreadsheet details key information related to each waste discharge event including:

- Date – the date of the waste discharge.
- Origin Location – the location the waste originated.
- Volume (L) – the volume of the waste type discharged.
- Staff – the staff member responsible for the discharge event.
- Weather – weather conditions at the time of discharge.
- Truck Registration – the registration number of the truck used for the discharge.

- Breakdowns – any breakdowns that occurred during the discharge.
- Discharge malfunctions – any malfunctions or issues with the discharge.
- Complaints – any complaints received related to the discharge event.
- Sample taken – whether a sample of the waste was taken for analysis.

8.3.3 Vehicle Maintenance Records

For vehicle maintenance records, the shared excel spreadsheet will include a worksheet titled 'Maintenance Log,' where the annual servicing of on-site disposal vehicles will be documented (refer to Appendix D). The first four columns of the maintenance log will be completed, including the date, time, vehicle registration and service details.

In the event of a discharge malfunction or vehicle breakdown, these incidents will be recorded in the maintenance log, along with details of any corrective actions taken.

A summary of all service and maintenance records, including any malfunctions or breakdowns and the corrective actions taken, will be included in the annual report.

8.3.4 WAS Land Application and Nutrient Monitoring Records

In addition to waste discharge records, records of WAS land application, crop management, and nutrient monitoring will be maintained to support nitrogen mass balance assessments and nutrient budgeting.

Records will include:

- Spatial (GPS mapped) records of WAS application areas and management blocks;
- Dates of WAS application and cultivation activities;
- Crop types sown within each management block and timing of establishment;
- Harvest dates, methods (e.g. cut and carry), and areas harvested;
- Dry matter yields (kg DM) for each harvested area and corresponding nitrogen content (laboratory analysed); and
- Any supplementary feed inputs or removals relevant to the nutrient balance.
- Block grazing and pasture management post-cropping.

These records will be used to support nitrogen mass balance calculations and annual reporting requirements and for the preparation of the three-yearly nutrient budget (Overseer or equivalent).

An Overseer data collection template is provided in Appendix E.

9 COMPLIANCE VERIFICATION

9.1 Adverse Event and Complaint Log

9.1.1 Discharge Compliance Requirements

As part of the requirements for consent compliance, the following condition must be adhered to regarding the discharge activities:

Condition 28:

The discharge must not result in:

a) Ponding or surface run-off of waste or wastewater within or adjacent to the land disposal area;
b) Channelling of wastewater that results in overland runoff of wastewater beyond the land disposal area;
c) Surface seepage (breakout) of wastewater beyond the land disposal area;
d) Odour emission resulting from the treatment and disposal system that is offensive or objectionable to such an extent that it has an adverse effect on the environment beyond the boundary of the property on which the consent is exercised; and
e) Discharge of sludge or grease to water.

9.1.2 Complaint Recording Requirements (Condition 26)

The Consent Holder must maintain a record of any complaints, using the 'Complaints Log Form' in Appendix D and kept in a complaints log filing system. As a minimum, the following details are required to be recorded:

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

A record of the complaints must be submitted to the Consent Authority by 15 August each year and made available for inspection at other times upon request.

The Site Manager must be notified of water overflow complaints within 2 hours of receipt. The Operation Manager must be notified of any other complaints within 24 hours of the complaint being received.

The Operations Manager and Office Manager must also be notified within 24 hours of any adverse events and their aftereffects, as mentioned in Section 6.

9.2 Compliance Reporting Requirements

9.2.1 Monitoring Summary Report (Consent Condition 19 (b) – (d))

On the first anniversary of exercise, the Consent Holder must, within 20 working days, prepare and submit a Monitoring Summary Report to the Consent Authority and Aukaha.

i. The Report must include:
    1. A summary of monitoring results from the monitoring programme set out in the OMM;
    2. A nitrogen mass balance detailing applied and exported nitrogen mass;

3. An analysis of the monitoring results and an assessment of any effects
4. If the analysis of the monitoring results shows an unanticipated adverse effect, or potential unanticipated adverse effect, on any receiving environment, an assessment of changes proposed to mitigate or remove those effects.
5. An assessment of any other changes proposed to the discharge methods and site management.

ii. The Consent Holder must provide reasonable opportunity for kā Rūnaka and the Consent Authority to review the Monitoring Summary Report and provide their feedback on any proposed changes.

Within three months of the submission of the Monitoring Summary Report, the Consent Holder must provide the following to the Consent Authority and Aukaha:

i. A summary of any responses received; and
ii. An updated OMM including any refinements to discharge methodologies, the monitoring programme, or site management.

If the Monitoring Summary Report shows potential adverse effect, the application of WAS will be restricted to a maximum additional area of 50 hectares of the site over the following twelve months.

9.2.2 Annual Monitoring Report (Consent Condition 23)

By the 15 August each year a monitoring report must be prepared relating to the activities authorised by this consent over the preceding period of 1 June to 31 May. This report must be prepared by a suitably qualified person and must include, but not be limited to:

a) Maintenance service records and malfunctions or breakdowns and the corrective action taken;
b) All sampling and analysis results required under conditions of this Consent, including identification of any effects, trends and any remediation/mitigation measures implemented by the Consent Holder;
c) Discharge sampling and analysis;
d) Details regarding discharge waste stream types, volumes and loading rates for each type of waste to:
    i. Land application areas; and
    ii. Disposal trenches and/or soil injection areas.
e) Copies of all analytical sample results collected under the Conditions of this consent;
f) All monitoring requirements undertaken by the consent holder as stipulated in the most up to date version of the OMM accepted by the Consent Authority;
g) Details of any updates or changes to the OMM as required by the Consent Authority;
h) Maintenance service report and recommendations for improvements in the system;
i) Overview of compliance with all conditions of this consent including the OMM; and
j) A summary of any complaints received.

The report required by Condition 23 must identify if there is a need to implement additional methods or improvements to the treatment and disposal system. All recommendations specified in the report and within scope of the consent must be implemented.

10 INTERNAL ANNUAL REVIEW

10.1 OMM Review

This OMM shall be reviewed annually by the Managing Director, Operations Manager and Office Manager together before the site audit, which will cover issues such as:

- Any significant changes to site activities, facilities, or pollution controls;
- Key changes to the company (restructuring etc.);
- Any improvements to the operation of the site from feedback provided by neighbouring property visits;
- Changes in legal requirements, Council or industry requirements;
- Changes in best practice standards or recommended pollution controls;
- Results of Inspection and Maintenance Programmes, logs of incidents, corrective actions, internal/external assessments etc;
- All maintenance checks undertaken on all plant as outlined in the maintenance table in Appendix D;
- Public complaints; and
- The granting of new permits/consents and the maintenance and monitoring programmes required for compliance.

A more frequent review or update will be required as a result of events such as the following:

- Incidents such as a spill highlighting a major gap in pollution controls, training etc.;
- Inspections may highlight an on-going problem that requires a significant change to stop it from re-occurring; and
- Monitoring data may show that the wastewater discharge may not be managed or operating as efficiently as was intended.

Any changes made must be reflected in the information contained within the OMM about the site, pollution controls and programmes/systems, and therefore, each of these must be updated. If large parts of the OMM change, it will need to be re-submitted to the Council, and site staff/drivers advised or re-trained if necessary.

11APPENDICES

Appendix A Resource Consent RM25.407.01
Appendix B Soil Moisture Assessment Method
Appendix C Incident Form
Appendix D Maintenance, Adverse Event and Complaint Logs
Appendix E Overseer Data Collection Template

APPENDIX A

Resource Consent RM25.407.01

APPENDIX B

Soil Moisture Assessment Method

APPENDIX C

Incident Form

APPENDIX D

Maintenance, Adverse Event and Complaint

APPENDIX E

Overseer Data Collection Template


SJ Allen
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