



Environmental Management Plan

Delmore Wastewater Treatment Plant

PROJECT NUMBER: 241104

Revision 1
5 June 2025

Principal	Delmore
Site Address	
Project Number	
Revision	1
Date	5 June 2025
File Location	

REVISION HISTORY

Revision	Date	Purpose	Author	Reviewed
1	17/03/2025	Outline Document		

DISTRIBUTION LIST

Date	Name	Title/Role	Organization

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Date:

Lead Compliance Officer – Northern Region

Licensing and Regulatory Compliance

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AUCKLAND CENTRAL

Industrial and Trade Activities Environmental Management Plan

1. INTRODUCTION

Consents have been granted to Delmore for Industrial or Trade Activities related to the operation of wastewater infrastructure at ADDRESS. This includes the storage and handling of volumes of chemicals utilised in the treatment processes which fall above the permitted activity threshold limits required by the Auckland Unitary Plan.

This letter and the associated Environmental Management Plan appended has been prepared to fulfil Condition XX of consent BUNXXXXXXXXX.

2. ENVIRONMENTAL MANAGEMENT

Site Overview

The Delmore Wastewater Treatment Compound and its associated equipment and infrastructure can be seen in **Figure 1**, below. The main items related to the storage or handling of Hazardous Substances related to the Industrial or Trade Activities consent have been highlighted in red.

Figure 1 – Delmore Wastewater Treatment Compound

Description of Site Activities

The development of the Delmore Wastewater Treatment Plant has been driven by the need to provide wastewater treatment infrastructure to the Delmore community. This compound contains plants for wastewater treatment and discharge which utilise a number of chemicals and hazardous substances within their unit processes.

WASTEWATER TREATMENT

The core unit processes that comprise the wastewater treatment plant are:

- Raw sewage screening
- Anoxic Stage 1 Treatment and Flow Balancing
- Aerobic Treatment
- Anoxic Stage 2 Treatment
- Membrane filtration
- Ultraviolet Light Disinfection
- Sodium Hypochlorite Disinfection
- Permeate Storage
- Permeate Discharge
- Waste Activated Sludge Storage
- Waste Activated Sludge Dewatering

ANCILLARY INFRASTRUCTURE

Ancillary infrastructure services both treatment plants and comprise of the following:

- 1% Sodium hypochlorite Generation
- Centralised Plant Control
- Bulk chemical load out
- Bulk Chemical Storage – 1% Sodium hypochlorite solution
- Bulk Chemical Storage – 30% Sodium hydroxide solution
- Bulk Chemical Storage – 49% Acetic acid
- Back-up Generator (Diesel driven)

Site Specific Activities

HAZARDOUS SUBSTANCES

The hazardous substances utilised within the treatment processes can be seen in **Table 2.1** below. Refer to Appendix A to respective SDS.

Table 2.1 Hazardous substances volumes and classifications

Substance	HSNO Classification	Classification Definition	State	Volume	Location

**- The dewatered waste activated sludge isn't well characterised, but may contain BOD levels above 10,000mg/L*

HAZARD IDENTIFICATION

Table 2.2 below outlines the mechanism for hazardous substances stored or handled on the Delmore site entering the local environment.

Table 2.2: Risks and contaminants of the Industrial and Trade Activity

Activity	Pollution Risk	Contaminants

Management of Environmental Risks

The basis of design of the treatment plant compound has considered the storage of hazardous substances on the site as a central element of the design process. In addition to the design elements, operational controls are in place to ensure the likelihood of spillages and mishandling is minimised.

GENERAL OPERATIONAL CONTROLS

Numerous general operation controls are in place to aid in the effective and safe operational of the treatment plants. These controls pertain to the handling and storage of hazardous substances or anything that may be contaminated with a hazardous substance. Further information on these can be found with the site's overall Standard Operating Procedures, which include but are not limited to:

- Standard Operating Procedure – The Use of and Application of Chemical Spill kits
- Standard Operating Procedure - Secondary containment rainwater testing and discharge.
- Standard Operating Procedure – Removal and Replacement of Bins for Dewatered Waste Activated Sludge
- Standard Operating Procedure – Handling and Storage of Packaged Chemicals
- Standard Operating Procedure – Bulk Chemical Handling (provided by Ixom)

BULK CHEMICAL STORAGE

Each bulk chemical storage tank sits within a chemical bund which has been designed to conform with the requirement of the Hazardous Substances and New Organisms Act, this includes:

- Bulk tank secondary containment capable of containing in excess of 110% of the volume of the largest tank.
- Separation of incompatible substances
- Redundancy in the tank level instrumentation with automatic fail over with high and high-high level alarming
- Tank overfill protections, see the Bulk Load out section below.
- HSNO compliant labelling
- Bulk secondary containment bund dimensions to account for tank dimensions and crest locus of the bulk chemical storage can be seen in **Figures 2 and 3** below.

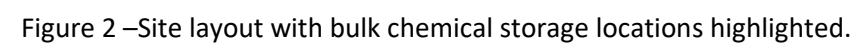


Figure 2 –Site layout with bulk chemical storage locations highlighted.



Figure 3 –Bulk chemical storage locations

PACKAGED CHEMICAL STORAGE

Packaged chemicals are utilised through the two treatment processes for conditioning of water or waste streams. The conditioning of wastewater is typically carried out to aid the treatment processes, or to ensure the wastewater meets any compliance requirements.

The packaged chemicals utilised on the Delmore site are as follows:

- Sodium hypochlorite
- Aluminium Sulphate

A conservative approach to the storage of packaged chemicals has been taken to ensure that there is sufficient space available to allow for volumes of storage that will provide for prolonged periods of treatment without a requirement to re-stock regularly.

Each packaged chemical sits within or on a dedicated containment bund or spill collection bund. Where applicable HSNO requirements exist, these have been adhered to, or otherwise an engineered *off the shelf* storage solution has been procured for storing packaged chemical products, these include:

- 20l Carboys – Drip trays or containment bunds
- 200L Drums – Drip trays or containment bunds
- 1000L Intermediate Bulk Containers – Drip trays or containment bunds

The configuration of the location of packaged chemical storage can be seen in **Figures 4 and 5** below.




Figure 5 – Packaged chemical storage in the wastewater treatment plant.

BULK AND PACKAGED CHEMICAL DELIVERIES AND HANDLING

The delivery of bulk chemicals and packaged chemicals represents the activity with the highest risk of spillage. Bulk chemical deliveries are made directly from tankers which pump their products into the corresponding bulk storage tank. The delivery of packaged chemical products is carried out by approved dangerous goods transportation companies which are offloaded by site operational staff and stored in the corresponding packaged chemical storage locations identified in **Figures 4 and 5** above.

Bulk Chemical Deliveries

Bulk chemical deliveries will be carried out by Ixom Chemicals Limited. They are specialist producers and suppliers of chemicals into the water treatment industry of New Zealand and own a fleet of chemical tankers whose operators are specifically trained in the handling and unloading of hazardous chemicals. The bulk unloading infrastructure has been designed in coordination with Ixom to ensure their high standards are met and that all HSNO and other relevant legislative requirements are adhered to.

All bulk deliveries are to be made on the dedicated load out pad. This load out pad contains the following controls to ensure any spillages are appropriately contained:

- Dedicated and separate drainage
- Capacity to contain a volume greater than the largest compartment of the delivery tanker
- Dedicated load in point for each chemical
- Dedicated digital display for each bulk storage tank, with current volume and safe fill volumes displayed.
- Dedicated overfill flashing light and siren for each bulk chemical storage tank.

The dedicated bulk chemical load out pad can be seen in **Figure 6** below.

Figure 6 – Bulk chemical delivery load out pad

Packaged Chemical Deliveries

Packaged chemical deliveries will be carried out by an approved chemical supply company. These companies hold the certifications for transporting hazardous substances in volumes greater than typically allowed by other standard delivery organisations.

Once the delivery vehicle has arrived on site, the unloading process will be handled by the site's operation staff. This will either be by hand for smaller packages, or forklift for larger volumes.

All packaged chemicals shall be unloaded onto the chemical load out pad before being transported to their respective storage locations.

The delivery vehicle shall park adjacent the load out pad and the forklift shall operate on the load out pad to remove the packages and place them onto the contained area, before relocating these to their final positions.

The dedicated packaged chemical load out pad can be seen in **Figure 7** below.

Figure 7 – Packaged chemicals load out pad

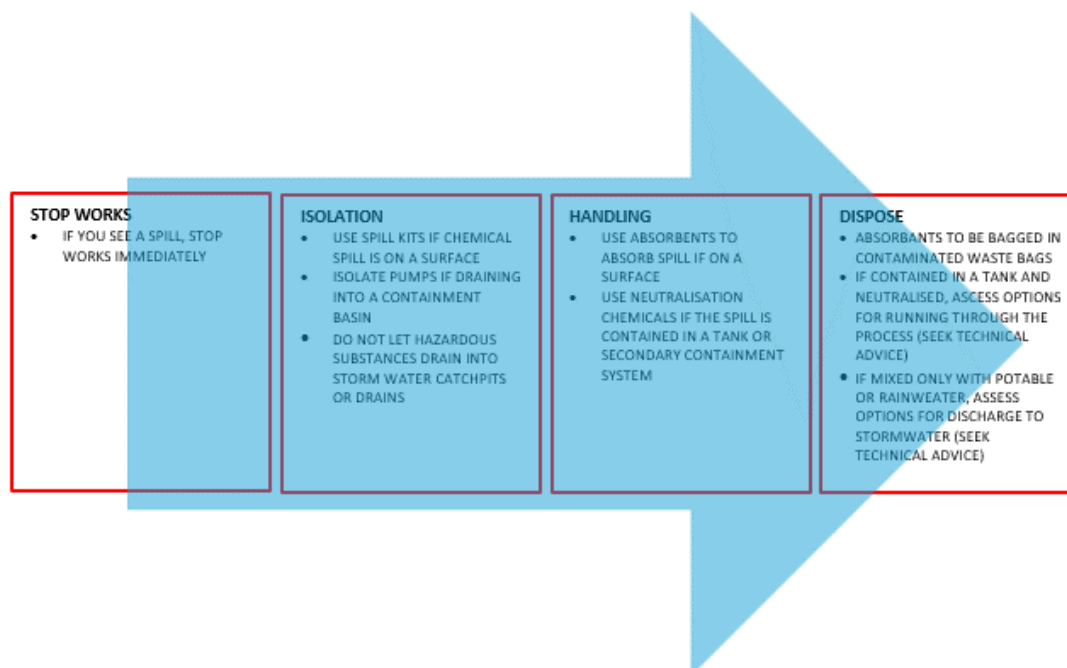
Handling

The handling and movement of chemicals on site presents the high risk of chemical exposure to personnel and any sensitive environments.

All individuals handling or relocating chemicals shall be appropriately trained and competent in both the handling of chemicals and the operation of supporting plant or equipment.

A training register is maintained by Apex Water which contains records of training and any certifications held by staff. This is managed by the company's Health and Safety personnel and is updated to ensure training and certification remains up to date.

Spill Response Plan



If a spill is identified and safe to do so, it must be prevented spreading into protected places. It must be confined to the immediate area. If safe to do so, barriers must be put in place or drain covers installed to block access to stormwater catchpits.

Notify people in the immediate area of the hazard and send someone to report this to Site Management immediately after it has been contained. If the substance is known, ensure its location and an idea of the volume is reported.

Using the site's Material Safety Datasheet (MSDS) register, identify the substance spilled and identify the precautions that must be taken (is it flammable, is there a risk of explosion, gassing off, is it corrosive, is there a risk of it combining with an incompatible material etc.)

Using the Personal Protective Equipment stipulated on the MSDS as a minimum and anything else identified as necessary commence the tidy up of the spilled substance.

For minor spills that can be controlled and safely cleaned up, place the contaminated material into Hazardous Waste bags and have these stored and disposed of appropriately.

DO NOT WASH DOWN THE AREA

For large spills or hazardous spills that are either too large or dangerous to clean up, contact the Fire Brigade on 111 and follow emergency procedures.

A major spill is:

- Any amount of flammable, very toxic substance
- Anything with a product label says EXTREMELY FLAMMABLE, TOXIC, OXIDISER or CORROSIVE
- More than 200L of any substance

A minor spill is:

- A spill involving 200L or less any other substances or fuel

Immediately report the spill to the Auckland Council's 24-Hour Pollution Hotline **09 377 3107** if:

- a) Spill is over 20 litres.
- b) Environmentally Hazardous substances (see pictogram in SDS and below) has entered the stormwater system.
- c) Environmentally Hazardous substances (see pictogram in SDS and below) has entered a waterbody.
- d) Environmentally Hazardous substances (see pictogram in SDS and below) has contacted unsealed ground.



Any incidents resulting in the discharge of hazardous substances to the environment shall be reported to the Council of within 24 hours of incident occurring.

Site Drainage Plan

Refer to Appendix B of this document for site drainage plan which identifies catchpits, channel drains, treatment devices and discharge points.

Chemical Inventory

The chemical inventory is a live document which is updated if any new chemicals are delivered to site, regardless of the volume held. A general inventory can be found in Appendix C of this documents, however this contains the maximum volumes allowable under the Industrial and Trade Activity consent and does not include incidental chemical that may also be found on site, such as cleaning chemicals, oils for motors and gear boxes, chemicals used in the maintenance and repair of plastic pipework, paints, cedar oil etc.

Risk Register

A qualitative risk assessment of the identified hazards/failure modes has been undertaken in **Table 2.6** for all of the scenarios identified in **Table 2.2** where there are potential for offsite effects. The qualitative risk assessment has been carried out to assess the associated risks with chemical storage and handling. The risk assessment has been carried out by applying a qualitative rating to the frequency (likelihood) of the failure occurring and the consequence (severity) of impacts if the event were to occur. The likelihood and consequence ratings take into account the controls (mitigation and management measures) that will be in place.

The qualitative likelihood and effects ratings are described in **Table 2.3** and **Table 2.4**, respectively.

Table 2.3: Qualitative rating of likelihood

Frequency rating	Descriptor	Explanation
A	Almost certain	The event is expected to occur in most circumstances
B	Likely	The event will probably occur in most circumstances
C	Moderate	The event should occur at some time
D	Unlikely	The event could occur at some time
E	Rare	The event may occur only in exceptional circumstances

Table 2.4: Qualitative rating of consequence

Effects rating	Descriptor	Explanation
1	Insignificant	No injuries, negligible environmental damage
2	Minor	First aid treatment required, on-site release contained, minor damage to property
3	Moderate	First aid treatment required, minor environmental damage, damage to off-site property
4	Major	Extensive injuries, major environmental damage to immediate environment, moderate damage to off-site property
5	Catastrophic	Fatalities both on and off-site, major and widespread environmental damage, exposure to toxic release by numerous people.

The likelihood and consequence ratings are then combined to qualitatively assess the overall level of risk associated with each hazard. The risk assessment matrix is shown in **Table 2.5**.

Table 2.5: Risk matrix

Consequence Likelihood	Severity				
	Insignificant	Minor	Moderate	Major	Catastrophic
	(1)	(2)	(3)	(4)	(5)
Almost certain (A)	Significant	Significant	High	High	High
Likely (B)	Moderate	Significant	Significant	High	High
Moderate (C)	Low	Moderate	Significant	High	High
Unlikely (D)	Low	Low	Moderate	Significant	High
Rare (E)	Low	Low	Moderate	Significant	Significant

Table 2.6: Risk management

		Residual risk		
Event	Controls (Mitigation/ Management Measures)	Likelihood	Consequence	Risk

Inspection and Maintenance Requirement

The Operational and Maintenance manuals for the treatment plant includes provision for the ongoing maintenance and inspection of systems storing or handling hazardous substances.

Please refer to the Operational and Maintenance manuals for the plant and the overall site for specific inspection and maintenance activities, these include but are not limited to:

- Daily visual inspections of all chemical dosing lines, pumps, and cabinets for the leaks.
- Daily visual inspections of all chemical tanks and bunds for accumulated rainwater, leaks, or signs of damage.
- Daily visual inspections of all Waste Activated sludge tanks, pipelines, and associated equipment.
- Daily visual inspections of all stored packaged chemicals.

An example of a daily inspection sheet can be found in Appendix D.

Auditing Programme

The site shall be subjected to monthly management audits to ensure it is adhering to the requirements of this Environmental Management Plan. Apex Water as the operator of the treatment plant does not stipulate the external auditing requirements, however it is expected that the owner of the plants shall be carrying out regular audits to ensure conformance to this plan.

Staff Training

All staff and subcontractors working or regularly visiting the Delmore Wastewater Treatment compound shall be inducted prior to commencing activities on site. Within this induction, the requirements of the site's environmental management shall be outlined.

If a change in this document occurs, these changes shall be distributed and re-briefed to all staff.

Apex Water holds a training register that is managed by the company's health and safety personnel. This register identifies training requirements, stores certifications and provides automated notifications when training needs to be updates.

Appendix A

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Appendix B

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Appendix C

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Appendix D

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