



Hazardous substances provisions

Blue Sky Meats private plan change

Prepared for
Blue Sky Meats (N.Z.) Limited

Prepared by
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1 Introduction

Blue Sky Meats (BSM) seek to rezone its site at 729 Woodlands Morton Mains Road, Morton-Mains, from the General Rural Zone to General Industrial Zone to enable ongoing operation and future expansion of its meat processing facility. The site has a long-established use as a meat processing plant and ancillary activities. Paddocks surrounding the existing site buildings are used for land-based disposal of treated wastewater from the plant and is occasionally grazed.

BSM wishes to set site-specific hazardous substances quantity thresholds within Table 28 of the Southland District Plan (SDP), consistent with the approach applied to the Alliance industrial meat processing sites (Lorneville and former Makarewa locations) currently provided for within the SDP.

This report seeks to propose suitable permitted activity quantity limits for the BSM site, consistent with the existing SDP approach. BSM's current and proposed inventory is compared with current limits within the SDP, which are adopted where possible. In cases where BSM exceeds these, new permitted activity limits are proposed, with consideration of the nature of the hazard, the controls that apply under other hazardous substances legislation, and the sensitivity of the surrounding environment. Permitted activity standards are also proposed to provide additional management of the hazard where appropriate.

2 Regulatory framework

The key legislation in New Zealand for management of hazardous substances includes:

- Health and Safety at Work (Hazardous Substances) Regulations 2017 (HSW-HS), which is administered by WorkSafe and sets rules for the storage and use of hazardous substances in the workplace, including risks to workers;
- Health and Safety at Work (Major Hazard Facilities) 2016 Regulations (HSW-MHF) which is also administered by WorkSafe and mandates specific duties relating to process safety that apply to facilities that exceed specified volumes of hazardous substances. These regulations apply to large volumes of hazardous substances and are not triggered by the volumes associated with the BSM site;
- Hazardous Substances and New Organisms (HSNO) Act and Regulations, which set minimum controls under the Environmental Protection Authority's Hazardous Property Controls Notice 2017 (EPA Notice) to manage the hazards and risks related to all hazardous substances use within domestic environments and from ecotoxic substances in both workplaces and domestic settings; and
- Resource Management Act (RMA), under which District Councils are responsible for the control of actual or potential effects of the use, development, or protection of land.

The Resource Legislation Amendment Act 2017 (RLAA) removed the explicit function of regional and territorial authorities under section 30 and 31 to control the adverse effects of the storage, use, disposal and transportation of hazardous substances to ensure that RMA controls do not duplicate controls in the HSNO Act and Health and Safety at Work Act.

The controls under the HSNO Act and HSW Act provide the minimum protection standards for both onsite and offsite people and environments from the potential adverse effects. However, we note that the controls do not take into account any site-specific contexts such as the proximity to sensitive waterways or density of nearby residential developments.

A summary of applicable regulations and design standards relevant to the management of hazardous substances at the BSM site are summarised in **Table 2.1** below.

Table 2.1: Summary of applicable regulations and standards

Standard or regulations	Controls
Health and safety at Work (Hazardous Substances) 2017 regulations (HSW-HS)	<p>The HSW-HS regulations specify requirements for the safe management of hazardous substances. These include structural and management controls for hazardous substances required for the protection of workers at the site and to minimise impacts beyond the site boundary.</p> <p>Specific controls that apply to BSM's site include the requirement to segregate incompatible substances, provide secondary containment for pooling substances, compliance certification for hazardous substances storage locations, emergency response planning and staff training.</p>
Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations (PECPR Regulations)	<p>The PECPR Regulations define the function of inspection bodies, design verifiers, equipment inspectors and the agencies issuing qualifications applicable to pressure vessel used for gases.</p> <p>Equipment covered by the PECPR Regulations must be verified as designed and manufactured to a recognised standard, inspected during manufacture, periodically inspected in service by an accredited inspection body. Equipment shall be and maintained in a safe condition and may not be operated without a current certificate of inspection issued by a recognised accredited inspection body.</p> <p>Accordingly, pressure vessels are subject to annual inspection and certification of all pressure equipment and routine servicing of the system by a competent service provider which includes regular equipment inspections and leak testing. Five-yearly testing and servicing of relief valves are also required under PECPR Regulations.</p>
ASNZS 5149 Refrigerating systems and heat pumps - Safety and environmental requirements	<p>The AS/NZS 5149 series includes:</p> <ul style="list-style-type: none"> • Part 1: Definitions, classification and selection criteria; • Part 2: Design, construction, testing marking and documentation; • Part 3: Installation site; and • Part 4: Operation, maintenance, repair and recovery. <p>Refrigeration systems at the site will be designed, commissioned and operated in accordance with these standards.</p>

3 Environmental setting

Different land uses and receiving environments have a varying level of sensitivity to the effects associated with hazardous substances. Activities which require consideration when considering the potential effects of hazardous substances are listed below in order of reducing sensitivity (i.e. starting with the most sensitive):

- School, child-care facilities and aged care facilities.
- Residential areas including rural dwellings and activities involving places of continuous occupation such as motels.
- Commercial developments including activities such as offices, retail centres and restaurants.
- Sporting complexes and activity open spaces.
- Light and heavy industrial facilities.

The site is currently located in the General Rural Zone, surrounded by pastoral land. The nearest township is Woodlands approximately 7 km west of the site, and Edendale approximately 10 km northeast of the site. Edendale is also the location of the nearest fire station. The nearest rural dwelling is located approximately 50 m southeast of the site boundary across Woodlands-Morton Mains Road as shown on **Figure 3.1**.

In line with the approach adopted for the Alliance Lorneville site, a 50 m buffer to the site boundary is proposed, within which storage of hazardous substances is not a permitted activity. This ensures that hazardous substances are segregated from any off-site activities (either sensitive in nature or permitted rural activities that may pose a cumulative risk, such as fertiliser storage).

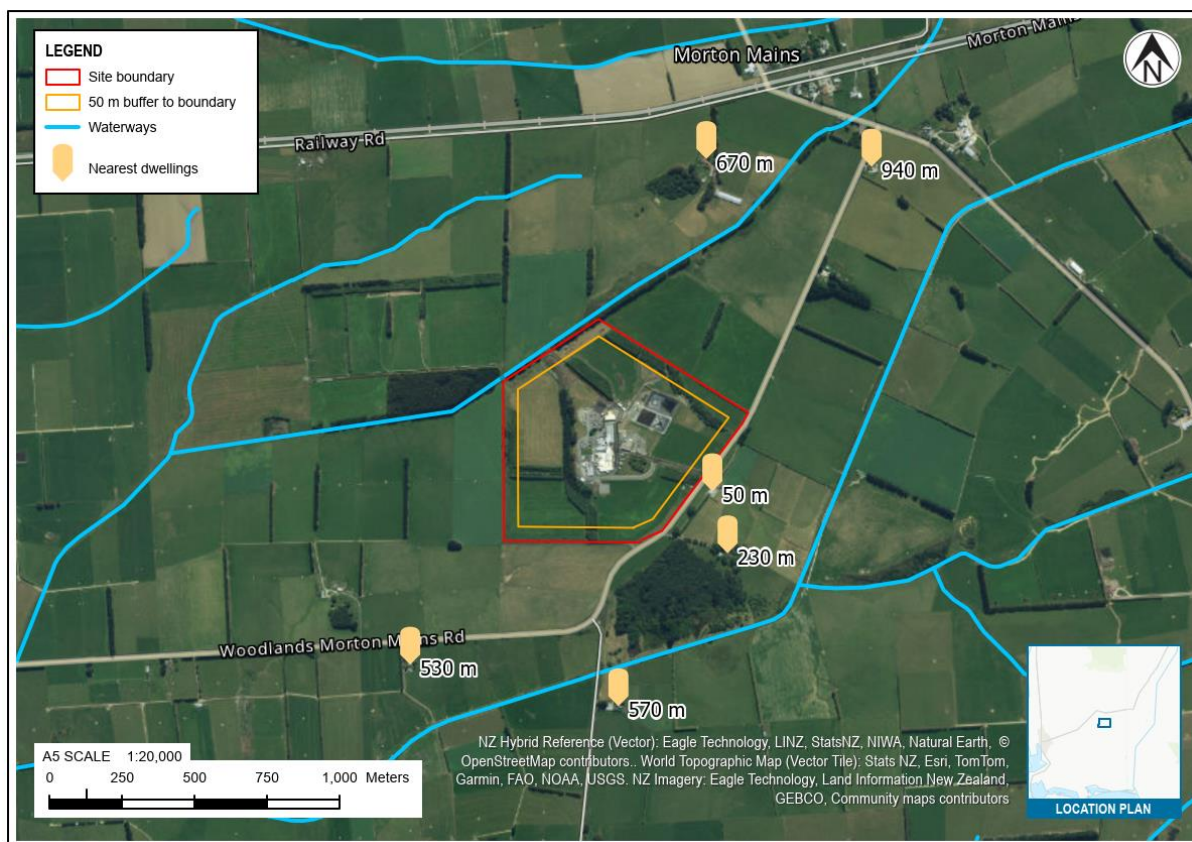


Figure 3.1: Blue Sky Meats site location

Two areas of native bush vegetation are located vicinity of the site - one to the southeast and one to the north east which is covenanted. A tributary of the Waihōpai River runs east to west alongside the north-western site boundary, to which site stormwater is discharged in accordance with a discharge consent from Environment Southland (AUTH-20181937-03). Land, Air Water Aotearoa identifies the Waihōpai River as a significantly modified river catchment, however efforts to improve river health undertaken by the regulatory bodies and community were recognised through the Supreme Award for Most Improved River at the New Zealand River Awards in 2019.

Overall, the surrounding area has a low sensitivity to effects on people or property and is sensitive to effects on ecosystems.

The proposed ongoing use of the site will continue to encompass activities both rural (pastoral grazing) and industrial (meat processing) in nature.

4 Hazardous substances inventory

BSM wishes to set site-specific quantity thresholds to provide for expansion of activities associated with its existing operation at the site. We understand that as a starting point, it seeks to enable double the storage of its existing inventory of cleaning products, maintenance products and fuels, and seeks to increase the quantity of anhydrous ammonia used in refrigeration systems from 1,200 kg to 10,000 kg.

An overview of the inventory is presented in **Table 4.1**. The future inventory quantities are indicative only.

A number of transformers are located around the site. The storage and use of transformer cooling oils in electricity transformers is a permitted activity under Rule HAZS-R1 7 of the SDP, and transformer oil has not been included on the inventory below.

Table 4.1: Inventory summary

Activity	Substance	Hazard classifications	Current maximum quantity	Indicative future quantity
Acid room	Ethaneperoxoic acid, < 5% in acetic acid and hydrogen peroxide	3.1D 5.1.1B 6.1D 6.9A 8.1A 8.2B 8.3A 9.1A 9.3C	20 L	40 L
Cleaning products	Various (not all classifications apply to all products) A	6.1D-6.1E 8.1A 8.2B-8.2C 8.3A 9.1B-9.1D 9.3C	5,280 L	10,000 L-
	HC Acid 311 (with 6.9 hazards)	6.1E 6.9B 8.2B 8.3A 9.1D	80 L	
Refrigeration	Ammonia, anhydrous	2.1.1B 6.1C 8.2B 8.3A 9.1A	1,200 L	10,000 L
	Non flammable non-hazardous compressed refrigerant gases (R134A and R115)	NH – Liquefied gas under pressure	52 m ³	< 200 m ³
Maintenance	Flammable products (degreaser, lubricants, solvent cleaners) A	3.1C 6.1D-6.1E 6.3A 6.4A 9.1B 9.3C	500 L	1,000 L
	Brake cleaner (with 6.6 – 6.9 hazards)	3.1B 6.1E 6.3A 6.4A 6.6B 6.9A-6.9B 9.1B	100 L	200 L
	Degreaser (with 6.8 – 6.9 hazards)	3.1B 6.1D 6.3A 6.4A 6.8B 6.9B 9.1B 9.3C	205 L	410 L
	Argon gas for welding	NH – Compressed gas under pressure	10.2 m ³	20.4 m ³
Rendering	Liquid Caustic 48%	6.1D 8.1A 8.2B 8.3A 9.1D	4,000 L	8,000 L
Water treatment	Sodium hypochlorite,	8.2C 8.3A 9.1B	1,000 L	2,000 L
	Sodium hypochlorite	8.2C 8.3A 9.1B	1,000 L	2,000 L
Fuels	Diesel	3.1D 6.1E 6.3B ^B 6.7B 9.1B	4,840	10,000 L
	LPG (liquified petroleum gas)	2.1.1A	270 kg	540 kg

Note:

A The above table shows the highest individual hazard classifications for the range of cleaning or maintenance substances.

B In 2021, New Zealand adopted the Globally Harmonised System (seventh revised edition) in 2021. Class 6.3B (mild skin irritation Category 3) is not adopted into the GHS.

BSM hold hazardous substances location compliance certification for a number of the existing activities at the site, as shown in **Table 4.2**.

Table 4.2: Location compliance certificates held by BSM^A

Location	Hazard classifications	Certified quantity
LPG cage	Class 2.1.1A – Flammable gas	270 kg
Engineers Store – Meat Rail Lubricant	Class 3.1B&C – Flammable liquid	500 L
Engineering AS1940 Cabinet – Brake Cleaner	Class 3.1B&C – Flammable liquid	100 L
Rendering – Sodium Hydroxide 48%	Class 8.2B – Corrosive liquids	4,000 L
Main Chemical Store – Sanitising Chemicals	Class 8.2B – Corrosive liquids	2,500 L

A. Issued in accordance with regulation 6.23 and regulation 10.34 & 13.38 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Location compliance certification is provided by a compliance certifier authorised by WorkSafe to verify that the storage areas meet the HSW-HS requirements. Certification is renewed annually to confirm that the applicable requirements are met. These include requirements for:

- Signage
- Fire extinguishers
- Security and access restriction
- Worker instruction and training in the safe use, handling, manufacture, storage, and disposal of the hazardous substances
- Ignition controls (relevant to flammable gas and flammable liquid storage only)
- Segregation of incompatible materials
- Emergency management planning including provision of suitable personal protective gear, clean up materials and equipment
- Secondary containment
- Separation distances to protected and public places

As noted in Section 2, these minimum standards for controls provide a level of protection for both onsite and offsite people and environments from the potential adverse effects that may arise from the storage and use of hazardous substances.

5 Southland District Plan

5.1 Overview and approach to proposed permitted quantity limits

The SDP was made fully operative on 22 January 2018. It includes Chapter HAZS which sets out the provisions for storage, use and management of hazardous substances within the district. Under Rule HAZS R1.3, the storage, use and management of hazardous substances not exceeding the quantity limits and other requirements stipulated in *Table 28 – Hazardous Substances Table* (contained in SCHED6) is a permitted activity.

Table 28 provides site-specific hazardous substances quantity limits for similar large scale industrial sites (including meat processing at the Alliance Group’s Lorneville Plant and former Makarewa Plant), provided the substances are located over 50 m from the site boundary. It also includes substance-specific limits for particular activities, such as for Class 5.1.1.A-C oxidising liquids or Class 8 corrosive substances for the Fonterra Edendale clean-in-place (CIP) systems. The SDP does not include any thresholds for ecotoxic substances.

We have proposed permitted quantity limits for the BSM site for all classes and substances provided for in Table 28.

The approach to developing these quantity limits is as follows:

- Adopt the Industrial Zone quantity limits as the starting point to be consistent with the SDP approach for industrial sites
- Maintain Rural Zone limits where these are higher than the Industrial Zone limits in the SDP, to enable continued rural activities on the undeveloped areas of the site.
- Establish thresholds for classes and substances where the limits for the General Industrial and General Rural zones are lower than would allow for BSMs current and future operations following the approach applied to the existing Alliance and Fonterra sites.

Appendix A Table 2 provides a comparison of BSM’s proposed future inventory with proposed limits and notes how these proposed thresholds compare with those that apply in the SDP. For ease of reference, a colour coded system has been applied as shown in **Appendix A Table 1**.

The key proposed changes to quantity limits are discussed in Section 5.3.

5.2 Existing sites with specific limits

The SDP currently has specific limits for a number of named sites, in particular the Alliance Group sites at Lorneville and Makarewa. As the proposal seeks to apply the same approach to the BSM site, we have reviewed the sensitivity of the Alliance sites to review whether the sensitivity of the surrounding landuse and nature of the activities are consistent.

Alliance Group operates a meat processing facility in Lorneville, approximately 3 km northeast of Invercargill. It previously operated a similar facility at Makarewa, though this has been decommissioned. These sites are located in General Industrial Zone land surrounded by General Rural Zone land.

The nearest townships to the Lorneville site are Wallacetown approximately 1 km northwest of the site boundary and Lorneville approximately 1.5 km east of the site boundary. The nearest rural residences are located approximately 100 m north of the site entrance in the small suburb of Underwood.

The Makarewa River flows along the western border of the Alliance site, next to its water treatment ponds. Environment Southland monitor the river quality at Wallacetown, at a point approximately

1.5 km north of the Alliance site and note that it is highly impacted by pastoral farming in its catchment.

The SDP has provided site-specific hazardous substances quantity limits for the Alliance sites. The local environment of the Alliance Lorneville site (which has the higher permitted quantity limits of the two Alliance sites) is comparable or more sensitive than the BSM site, with rural dwellings located at similar proximity to the boundary in higher density, and therefore adoption of quantity limits permitted at the Alliance site is considered consistent with the existing SDP rule framework.

5.3 Key proposed changes

5.3.1 Overview

For many of the hazardous substances in Table 28, no change is proposed to the permitted quantity because the same thresholds apply to the Rural and Industrial zones and are appropriate for the activities at the site.

In some cases, the Industrial Zone or Alliance site limit is proposed to be adopted at the BSM site. No comment is provided for this scenario, as the limits are consistent with the SDP approach to managing hazardous substances on industrial sites, and there are no particularly sensitive surroundings identified for the BSM site. Similarly, in the instances where a Rural Zone limit is retained, this is considered consistent with existing SDP approach for areas with rural character.

Where new specific limits are proposed, following the approach applied to the Alliance and Fonterra sites, the proposed limits and implications are discussed below.

5.3.2 Class 3.1D tanks

Class 3.1D is the lowest flammability classification for liquids. Class 3.1D substances have a flashpoint above 60°C and are considered combustible liquids, unlike the higher flammability ratings (3.1A – 3.1C), and therefore the hazard to people or property from a fire associated with this storage is low.

The site currently operates one diesel tank (4,800 L) and anticipates increasing this in the future. Diesel is a low hazard flammable liquid (3.1D), low toxicity by aspiration of aerosol droplets (6.1E), suspected carcinogen (6.7B), and has high chronic toxicity to aquatic ecosystems (9.1B).

The key risk to the environment from diesel storage arises from its high chronic ecotoxicity (9.1B) which poses a hazard to aquatic ecosystems in the event of a spill. Double skinned tanks provide leak protection and will alert the user if a leak is detected in the interstitial space between the two tank walls. If an incident occurs during operations that results in a spill, staff are required to be trained in spill response procedures to retain and clean up any spilt material.

Normal operation of outdoor refuelling areas may result in discharge of residual contamination in stormwater that can impact aquatic ecosystems. This effect is managed by Rule 15 of the Southland Land and Water Plan, which requires that discharges from industrial or trade premises prevent hazardous substances from entering stormwater system or have an interceptor in place.

In the SDP, the Rural Zone currently permits 30,000 L in a super vault tank constructed to SwRI standards. These tanks are designed to withstand extremely high temperatures with a fire resistance rating of 240/240/240. They are typically specified for petrol (3.1A) or highly flammable solvents (3.1B). Tanks designed to this standard are expensive and do not significantly reduce the risk to people or property from a diesel fire, given its inherently low flammability.

Tanks larger than 5,000 L require Stationary Container Compliance Certification under the HSW-HS to verify that they are designed and constructed to minimise the risk of leaks and fire, which include requirements for:

- Tank design
- Tank construction
- Tank installation
- Pressure management
- Emergency pressure management
- Level indicators
- Lightning and stray current protection
- Separation to protected and public places and other tanks
- Fire fighting equipment and facilities
- Marking
- Site plans
- Secondary containment

Provided that leak prevention in the form of bunding or double skinned protection is provided and stationary container compliance certification for larger tanks is adhered to as required, the risk to offsite people, property and ecosystems from the proposed limits for Class 3.1D flammable liquids is considered acceptable.

Table 28 - Proposed BSM Limits:

The following permitted limits are proposed for Class 3.1D flammable liquids in containers >450 L:

- Bunded single skin tanks: 5,000 litres
- Certified double skin tanks: 30,000 litres

5.3.3 Ammonia in refrigeration systems (Class 2.1.1B and Class 6.1C)

Anhydrous ammonia is a compressed liquefiable gas, which is a liquid while maintained under pressure but will evaporate once it is released. Ammonia gas is toxic via inhalation (6.1C) and therefore it poses a risk to workers and, potentially, people offsite in the event of release. Ammonia has a pungent odour at low concentrations and therefore leaks are readily detectable by site staff.

Ammonia gas is not flammable at concentrations in air less than 15% by volume, however, ammonia gas forms an explosive mixture when it is mixed with air in the range 15 to 28% by volume, and it is therefore classified as a flammable gas category 2 (2.1.1B). By comparison with hydrocarbon refrigerants, ammonia burns much more slowly and requires a stronger ignition source to initiate combustion.

Existing thresholds in the SDP restrict anhydrous ammonia to 140 kg and provides for 5,000 kg at the Makarewa site and 10,000 kg at the Lorneville site in the 2.1.1B Flammable gas section of Table 28. However, no higher allowance than 140 kg is specified for anhydrous ammonia in the Class 6.1C toxicant section for these sites.

Additionally, the allowance for 5,000 kg and 10,000 kg anhydrous ammonia at the respective Alliance sites includes the provision that it be stored in HSNO 'type' stores. These stores are not specified in the HSW-HS but are required for Class 3.1A-3.1C flammable liquids and are therefore not suitable for ammonia as a 2.1.1B flammable gas.

Under regulation 10.10 of the HSW-HS, refrigeration systems containing flammable gas must comply with *ASNZS 5149 Refrigerating systems and heat pumps – Safety and environmental requirements* or a relevant safe work instrument.

The AS/NZS 5149 series includes:

- Part 1: Definitions, classification and selection criteria;
- Part 2: Design, construction, testing marking and documentation;
- Part 3: Installation site; and
- Part 4: Operation, maintenance, repair and recovery.

The existing refrigeration plant and any future refrigeration plant are required to be designed, commissioned and operated in accordance with these standards.

An operations and maintenance manual¹ for the existing 1,200 kg anhydrous ammonia refrigeration system at the site has been provided by BSM. It notes that the site has an automatic ammonia leak detection system installed, which analyses the air for the presence of ammonia and will trigger warning lights, sound external alarms, initiate controlled shutdown of the plant room equipment, stop the ammonia pumps, and activate the ventilation at set detection levels.

In the event of an ammonia leak, the key control for protection of off-site people is the implementation of an emergency response plan with the local Fire Service to coordinate the most effective response procedures for evacuations in the event of any major leaks or fires at the site. Emergency response planning is required under the HSW-HS for more than 100 kg of ammonia in a refrigeration system. Fire and emergency New Zealand may review and advise amendments to a site's emergency response plan, but it is not a requirement that the review occur.

Notwithstanding this, we propose that emergency response planning and coordination with the fire service be included as part of a permitted activity standard for use of ammonia gas in refrigeration systems at the site.

Table 28 - Proposed BSM Limit:

The proposed permitted quantity in **Appendix A Table 2** is 10,000 kg for ammonia in refrigeration systems compliant with AS/NZS 5149:2016.

This is the same quantity as permitted at the Alliance Lorneville site, but with reference to standards for safe storage of ammonia, instead of Class 3 liquids storage ("HSNO Type stores").

Proposed permitted activity standard:

- 1 The site must have an Emergency Response Plan in place, including:
 - assigned roles and responsibility of response personnel who are trained to detect low concentrations of ammonia;
 - procedures for trained staff to respond to an ammonia leak; and
 - procedures for site and wider community evacuation.
- 2 The Emergency response plan must be developed and tested in consultation with the local fire service.

Provided that ammonia is stored and used in refrigeration systems designed, installed, operated and maintained in accordance with AS/NZS 5149.1:2016, and emergency response plans are in place to evacuate the surrounding area in the event of an unintended release, the effect of increased refrigeration at the site is considered acceptable.

5.3.4 Chlorine

Chlorine is a highly hazardous oxidising (5.1.2A), toxic (6.1A, 6.9A), corrosive (8.2A, 8.3A) and ecotoxic (9.1A, 9.1B) gas. While the BSM site does not currently use chlorine gas, it is commonly used in water treatment processes and could conceivably be required at the site in future.

¹ Blue Sky Meats, Invercargill – Operations and Maintenance Manual NH3 System. Reftech Limited. Date unspecified.

Existing thresholds in the SDP restrict chlorine to 0 kg in all zones, while providing for 210 kg at the Makarewa site and 4,310 kg at the Lorneville site under the 5.1.2A oxidising gas section of Table 28. Similar to ammonia, no higher allowance than 0 kg is currently specified for chlorine in the chlorine-specific row within the in the Class 6.1 toxicant section for these sites.

Under the HSW-HS, chlorine must be under the control of a certified handler trained in the safe handling and use of the substance at all times and otherwise be secured from unauthorised access. Other controls include segregation from incompatible substances, separation from protected and public places, provision of at least two fire extinguishers, an emergency response plan and signage.

The proposed permitted quantity limit for chlorine at the site under the Class 6.1A hazard classification has been selected to match the quantity assigned for the Makarewa site (210 kg) under the Class 5.1.2A gases hazard classification.

Given the controls required under the HSW-HS, proposed internal separation of 50 m to the site boundary, and comparable low occupation density of the rural environment, the effect on offsite people, property and the environment from the proposed permitted quantity limit is considered acceptable.

Table 28 - Proposed BSM Limit:

The proposed permitted quantity in **Appendix A Table 2** is 210 kg for chlorine, under the 5.1.2A gases and 6.1A-C Acutely toxic – moderate to high hazard categories.

5.3.5 Class 6 toxicants

Low hazard acutely toxic substances and chronic exposure human health hazards apply to a number of products used by BSM, including diesel, degreaser, brake cleaner, caustic solution and a subset of the cleaning products used on site.

The proposed changes to quantity limits for Class 6 hazard classifications are set out in **Table 5.1** below, where the current thresholds are the same for all other relevant zones in the SDP.

Class 6.1D and 6.1E hazards are low level hazards that require direct contact (by skin, inhalation or ingestion). Class 6.3A and 6.3B substances are irritating to the skin, and likewise require direct contact. The Class 6.3B sub-classification “mildly irritating to the skin” applies to diesel, though we note that when New Zealand adopted the GHS7 classification system in 2021, skin irritation Category 3 (the equivalent of the old HSNO 6.3B) was not adopted by the Environmental Protection Authority². This is no longer considered a hazardous property of diesel but has been provided for in this report for consistency with the existing plan framework.

The Class 6.8 and 6.7 hazardous substances used at the BSM site, the greatest quantity of which is diesel, are all category 2 ‘suspected’ rather than category 1 ‘known’ carcinogens or reproductive toxicants, meaning evidence of the hazard is not sufficiently convincing to place the substance in category 1. For the hazard to impact a person, repeated direct exposure would have to occur, which is only a risk to workers on the site, and presents a negligible hazard to offsite people.

The Class 6.9 target organ toxicants at the site include some class 6.9A (ethaneperoxoic acid < 5% and degreaser) and some Class 6.9B (brake cleaner and one of the food grade cleaning products). Ethaneperoxoic acid < 5% damages the lungs via repeated inhalation. This substance is a liquid stored and used in 20 L packages within a building and is used for cleaning the equipment used for hanging carcasses. Similar to the other Class 6 hazards described above, repeated direct contact with the 6.9 substances is required for the substance to have any effect.

² <https://www.epa.govt.nz/hazardous-substances/rules-notice-and-how-to-comply/epa-notice-rules-you-must-follow/hazard-classification-notice/>

Secondary containment is required under the HSW-HS for more than 1,000 L of Class 6.1D and 6.7A liquids and more than 10,000 L for Class 6.7B, 6.8A, 6.9A substances. In theory, smaller quantities of these substances (or any quantity of Class 6.9B) could be stored without containment, however these substances typically have other classifications that trigger the requirements for containment at lower thresholds. An example of this is diesel which must be banded at quantities above 10,000 L for its Class 6.7B hazards, but requires banding at 1,000 L for its Class 9.1B ecotoxicity.

Conservatively, we recommend a permitted activity standard that requires secondary containment to be provided for all storage of Class 6 toxicants.

Table 5.1: Table 28 – Proposed BSM Limit for Class 6 substances

Hazard classifications	Current permitted quantity limits ^A	Proposed limit
6.1D and 6.1E acute toxicity low hazard	200 L	30,000 L
6.3A&B skin irritant	2,000 kg	30,000 L
6.7 A & B Carcinogens	200 kg	30,000 L
6.8 A-C Human reproductive or developmental toxicants	0	2,000 L
6.9 A & B Substances affecting human target organs or system	0	2,000 L

Note:

A. The limits for these classes do not vary between the Rural, Industrial and Alliance-specific permitted quantities.

Proposed permitted activity standards:

- All Class 6 hazardous liquids must be stored in areas provided with secondary containment:
 - For packages including drums: minimum 25% of the total pooling potential; and
 - For tanks: double skinned construction or in a bund with capacity for at least 110% of the tank volume.

Given the application of a 50 m buffer at the site perimeter to offsite locations and storage within secondary containment, the proposed permitted quantities of substances with low level acute and chronic toxicity hazards can be managed such that effects on offsite people are acceptable.

5.3.6 Class 8 corrosives

Corrosive liquids used at the site include the caustic solution used in the rendering plant, sodium hydroxide used in water treatment, the small quantity of ethaneperoxoic acid < 5% in the acid room, and a number of the site's cleaning products.

Corrosive substances can cause burns to skin and eyes if direct exposure occurs. In addition, if discharged to water bodies and streams, can result in changes in pH levels which can result in acute impacts on aquatic species.

The use of secondary containment should avoid potential off-site discharge from the storage of use of corrosive substances where the minimum required containment volumes are met. We note that the minimum volume triggering the requirements for secondary containment is 100 L for Class 8.2A corrosives, 1,000 L for Class 8.2B and 10,000 L for Class 8.2C and 8.3A. However, these often also have ecotoxic classifications that trigger secondary containment at lower volumes.

Additionally, under the HSW-HS, storage of more than 50 L of Class 8.2A and more than 250 L of Class 8.2B corrosive liquids requires a location compliance certificate (and a stationary container

compliance certificate in scenarios where tanks are used) from a certifier authorised by Worksafe. Matters certified include signage, separation distances to sensitive activities, volumes of secondary containment, segregation from incompatible materials, worker training and emergency management planning.

Similar to the Class 6 substances, use of Class 8 corrosive liquids can be managed within the site in accordance with existing legal requirements.

Conservatively, we recommend a permitted activity standard that requires secondary containment to be provided for all storage of Class 8 corrosive liquids.

Table 28 - Proposed BSM Limits:The following permitted limits are proposed for Class 8 corrosive substances:

- 8.2A-C Substances corrosive to skin: 35,000 litres
- 8.3A Substances corrosive to the eye: 35,000 litres

Proposed permitted activity standards:

- 1 All Class 8 corrosive liquids must be stored in areas provided with secondary containment:
 - For packages including drums: minimum 25% of the total pooling potential; and
 - For tanks: double skinned construction or in a bund with capacity for at least 110% of the tank volume.

Given the application of a 50 m buffer at the site perimeter to offsite locations and storage within secondary containment, the proposed permitted quantities of substances with low level acute and chronic toxicity hazards can be managed such that effects on offsite people are acceptable.

5.3.7 Summary

Table 5.2 provides a summary of the changes to the hazardous substances permitted quantities proposed to be applied to the BSM site in the SDP.

Table 5.2: Summary of proposed changes to permitted quantity limits within SCHED6 Table 28 – Hazardous Substances Table of the SDP for the BSM site

Status	Hazard and substance
The following substance classifications exceed the relevant permitted quantity limits for the General Industrial Zones and Alliance specific limits, but would comply with the threshold applicable to the Rural Zone, which are proposed to be maintained as part of the proposed plan change.	<ul style="list-style-type: none"> • 3.1 Flammable liquids: in containers with individual capacity ≤ 450 L – All 3.1A plus 3.1B • Class 6.1D and 6.1E toxic – Calcium hypochlorite • 6.4A Eye irritant – Calcium chloride
The following substance classifications exceed the relevant permitted quantity limits for the General Rural zone, but would comply with the threshold applicable to the General Industrial Zone, which are proposed to be adopted as part of the proposed plan change.	<ul style="list-style-type: none"> • 1.3 C, F-L Fire and minor blast hazard – Smokeless ammunition reloading powder • 1.4 B-G, S No significant hazard – Safety ammunition and marine flares • 5.1.2A gases – Oxygen, nitrous oxide and chlorine • 5.2 A-G Organic Peroxide: Types A-G • 6.4A Eye irritant, 6.5 A and B Respiratory and contact sensitisers and 8.2A-C Substances corrosive to skin – Cement, Hydrated Lime and Burnt Lime

Status	Hazard and substance
The following substance classifications exceed the relevant permitted quantity limits for the Rural and Industrial zones, but would comply with the threshold applicable to an Alliance site, which is proposed to be adopted as part of the proposed plan change.	<ul style="list-style-type: none"> • Class 2.1.1A gas – LPG in cylinders • Class 2.1.1B gas – Anhydrous ammonia refrigerant gas (up to 10 tonnes of ammonia permitted at Alliance’s site under the 2.1.1B threshold) • 3.1 Flammable liquids: in containers with individual capacity ≤450 L – 3.1D • 5.1.1 A-C Liquids and solids • Class 8.1A corrosive to metals
The proposed quantity of product with the following classifications exceed permitted quantity limits for all zones and sites currently provided for in the SDP and new limits are suggested as part of the proposed plan change.	<ul style="list-style-type: none"> • Class 3.1D diesel in a double skinned tank (see section 5.3.2) • 6.1A-C Acutely toxic – Anhydrous ammonia refrigerant gas (see section 5.3.3) • 6.1A-C Acutely toxic – Chlorine (see section 5.3.4) • Class 6.1D and 6.1E toxic – harmful substances (see section 5.3.5) • 6.3A and 6.3B skin irritants (see section 5.3.5) • Class 6.7A and 6.7B carcinogens (see section 5.3.5) • Class 6.8 A – 6.8C Human reproductive or developmental toxicants (see section 5.3.5) • Class 6.9A and 6.9B Substances affecting human target organs or systems (see section 5.3.5) • Class 8.2A – C Substances corrosive to skin (see section 5.3.6) • Class 8.3A Substances corrosive to the eye (see section 5.3.6)

Anhydrous ammonia is a corrosive, toxic and ecotoxic refrigerant gas. Detailed standards for its safe use in refrigeration systems are provided in AS/NZS 51. Refrigeration systems are required to adhere to these standards under the HSW-HS. The key risk to offsite people is from a leak of ammonia from the refrigeration systems. Ammonia detection, alarming and automated shutdown processes are in place at the site, and an emergency response plan

Where a higher permitted threshold is proposed for Class 6 and 8 substances, these hazards can be readily managed without presenting unacceptable risk to offsite people. These hazards apply to diesel (Class 6.7B suspected carcinogen and 6.3B mild skin irritant), sodium hydroxide solution used in the rendering plant (Class 6.1D by ingestion), cleaning products (laundry powder, ethanoic acid, food-grade disinfectants) and maintenance products (brake clean, degreaser). The hazards require a direct pathway to the receptor (ingestion, skin contact or inhalation) and often repeat or chronic exposure in order to affect human health. The use of these substances in bunded storage (including double skinned tanks) on site and presents a negligible risk to off-site people.

The higher threshold for diesel in a double skinned tank is proposed due to the low risk of fire due to diesels inherently low flammability, and suitable management of the key hazard (ecotoxicity, minimised by use of double skinned containment).

Chlorine is not currently used by BSM, and a permitted limit consistent with that applicable to the Alliance Makarewa site is proposed (which is lower than provided for at the Lorneville site).

The proposed permitted activity standards proposed include:

- 1 The site must have an Emergency Response Plan in place, including:

- assigned roles and responsibility of response personnel who are trained to detect low concentrations of ammonia;
- procedures for trained staff to respond to an ammonia leak; and
- procedures for site and wider community evacuation.

The Emergency response plan must be developed and tested in consultation with the local fire service.

2 All Class 6 and 8 hazardous liquids must be stored in areas provided with secondary containment:

- For packages (including drums): minimum 25% of the total pooling potential; and
- For intermediate bulk containers (IBC) or tanks: double skinned construction or in a bund with capacity for at least 110% of the tank volume.

6 Conclusion

Overall, the BSM site is expected to be very similar in terms of hazard profile to the Alliance Lorneville site, due to the nature of the activity (meat processing). We note that the BSM site is located in a more sparsely populated area with greater separation to the nearest township.

The proposed changes include use of a 50 m buffer to the site boundary, within which hazardous substances storage will not be a permitted activity and have proposed implementation of permitted activity standards to cover secondary containment and emergency response planning in consultation with the fire service.

The change in zoning or adoption of the proposed changes to the permitted thresholds are not expected to result in unacceptable change in effects on people, property or ecosystems due to the storage and use of hazardous substances.

7 Applicability

This report has been prepared for the exclusive use of our client Blue Sky Meats (N.Z.) Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report as part of an application for a private plan change and that Southland District Council as the consenting authority will use this report for the purpose of assessing that application.

This work has been undertaken in accordance with our letter of engagement dated 19 June 2024 (T+T ref: 1094909.0000) for Blue Sky Meats (N.Z.) Limited.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:

Authorised for Tonkin & Taylor Ltd by:



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Rob Van de Munckhof
Project Director

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Appendix A Proposed quantity limits

Appendix A Table 1 : Key to proposed permitted quantity limits at BSM site

Colour	Meaning
	No change to thresholds that currently apply to the site with Rural zoning (typically because the threshold applies to all zones).
	Proposing to adopt a threshold consistent with that applicable to the Industrial Zone or Alliance site.
	Maintaining threshold applicable to the Rural Zone (where a lower threshold applies to the Alliance or Industrial zones).
	New threshold proposed.

Appendix A Table 2 : Proposed adopted quantity limits

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
1.1 A-G, J, L Mass explosion hazard	Gunpowder and black powder	0	15 kg	15 kg	15 kg	15 kg	No change proposed.
	Display fireworks		0	0	0	0	
	Industrial explosives (e.g. TNT) and all other 1.1		25 kg	25 kg	25 kg	25 kg	
1.2 B-L Projection hazard	All	0	No threshold	No threshold	No threshold	No threshold applies	No change proposed.
1.3 C, F-L Fire and minor blast hazard	Smokeless ammunition reloading powder	0	15 kg	50 kg	50 kg	50 kg	Propose to adopt the Industrial Zone limit.
1.3 C, F-L Fire and minor blast hazard	Fireworks and other 1.3	0	No threshold	No threshold	No threshold	No threshold applies	No change proposed.
1.4 B-G, S No significant hazard	Safety ammunition and marine flares	0	25 kg + 15 kg	50 kg + 50 kg	50 kg + 50 kg	50 kg + 50 kg	Propose to adopt the Industrial Zone limit.
1.4 B-G, S No significant hazard	Retail fireworks	0	No threshold	No threshold	No threshold	No threshold	No change proposed.
	Sodium azide	0	0 – (excl airbags in vehicles)	0 – (excl airbags in vehicles)	0 – (excl airbags in vehicles)	0 – (excl airbags in vehicles)	

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
	All other 1.4	0	No threshold	No threshold	No threshold	No threshold	
1.5 D Very insensitive, with mass explosion hazard	All	0	No threshold	No threshold	No threshold	No threshold	No change proposed.
1.6 N Extremely insensitive, no mass explosion hazard	All	0	No threshold	No threshold	No threshold	No threshold	No change proposed.
2 NH (Non-Hazardous)	All	< 200 m ³	200 m ³	200 m ³	200 m ³	200 m ³	No change proposed.
2.1.1 A High-hazard flammable gas	LPG in cylinders See table below with regard to indoor storage of LPG	530 kg	450 kg outdoor storage	450 kg outdoor storage	Lorneville: 530 kg Makarewa: 450 kg Outdoor storage in both cases	530 kg outdoor storage	Propose to adopt the limit applicable to the Alliance Lorneville site. LPG is stored in a well-ventilated outdoor area and the site holds a location compliance certificate for the current storage.
2.1.1 A High-hazard flammable gas	LPG propane based refrigerant in commercial refrigeration receivers or cylinders	NA	50 kg	50 kg	50 kg	50 kg	No change proposed.

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
2.1.1 A High-hazard flammable gas	Acetylene	0	30 m ³	30 m ³	Lorneville: 150 m ³ Makarewa: 30 m ³	30 m ³	A higher permitted quantity applies to the Lorneville site, however, this is not anticipated to be required. No change proposed.
2.1.1 A High-hazard flammable gas	Hydrogen, methane and all other permanent gases	0	30 m ³	30 m ³	30 m ³	30 m ³	No change proposed.
2.1.1 B Medium hazard flammable gases	Anhydrous ammonia refrigerant	10,000 kg	140 kg	140 kg	Lorneville: 10 tonnes Makarewa: 5 tonnes Both cases in approved HSNO 'type' stores	10,000 kg in refrigeration system compliant with AS/NZS 5149. 2016	Propose to adopt the limit applicable to the Alliance Lorneville site. However, we note that the refrigeration system design standard should be referred to, rather than HSNO requirements for flammable liquid storage. HSNO "type" storage applies to storage of flammable <i>liquids</i> and is therefore not suitable for flammable <i>gas</i> refrigeration systems. Discussion provided in Section 5.3.2
2.1.1 B Medium hazard flammable gases	All other 2.1.1 B	0	No thresholds	No thresholds	No thresholds	No thresholds	No change proposed.
2.1.2 A Flammable aerosol	All	< 450 L	450 L	450 L	450 L	450 L	No change proposed.

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
3.1 Flammable liquids: in containers with individual capacity ≤450 L	3.1A Petrol	0	50 litres (any storage except metal drums) 250 litres in Dangerous Goods cabinet approved to AS 1940 450 litres in approved HSNO 'Type' stores	50 litres (any storage except metal drums) 250 litres in Dangerous Goods cabinet approved to AS 1940 450 litres in approved HSNO 'Type' stores	Lorneville: 1,950 litres in approved HSNO 'Type' stores Makarewa: 50 litres (any storage except metal drums) 250 litres in Dangerous Goods cabinet approved to AS 1940 450 litres in approved HSNO 'Type' stores	50 litres (any storage except metal drums) 250 litres in Dangerous Goods cabinet approved to AS 1940 450 litres in approved HSNO 'Type' stores	No change proposed. Higher limit consistent with Alliance Lorneville site (1,950 L) not warranted for Class 3.1A.
	3.1A Other	0	50 L	50 L	50 L	50 L	
	All 3.1B	610 L	50 litres (any storage) 250 litres in Dangerous Goods cabinet approved to AS 1940 450 litres in approved HSNO 'Type' stores.	50 litres (any storage) 250 litres in Dangerous Goods cabinet approved to AS 1940 450 litres in approved HSNO 'Type' stores.	50 litres (any storage) 250 litres in Dangerous Goods cabinet approved to AS 1940 450 litres in approved HSNO 'Type' stores.	50 litres (any storage) 250 litres in Dangerous Goods cabinet approved to AS 1940 450 litres in approved HSNO 'Type' stores.	No change proposed.

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
	All 3.1A plus 3.1B	610 L	2,000 litres in total in: Drums 60 and 209L in Approved HSNO stores 250L Max per each DG Cabinet	50 litres (any storage except metal drums) 250 litres in Dangerous Goods cabinet approved to AS 1940 450 litres in approved HSNO 'Type' stores	50 litres (any storage except metal drums) 250 litres in Dangerous Goods cabinet approved to AS 1940 450 litres in approved HSNO 'Type' stores	2,000 litres (any storage except metal drums) 250 litres in Dangerous Goods cabinet approved to AS 1940 450 litres in approved HSNO 'Type' stores	Propose to maintain Rural threshold quantity. Quantities of flammable liquids described in this standard would require compliance certification from WorkSafe to confirm all required controls are in place, including fire rated construction, secondary containment, exclusion of ignition sources and separation distances.
	All 3.1C	1,000	2,000 litres in total in: Drums 60 and 209L in Approved HSNO stores 250L Max per each DG Cabinet	2,000 litres in total in: Drums 60 and 209L in Approved HSNO stores 250L Max per each DG Cabinet	2,000 litres in total in: Drums 60 and 209L in Approved HSNO stores 250L Max per each DG Cabinet	2,000 litres in total in: Drums 60 and 209L in Approved HSNO stores 250L Max per each DG Cabinet	No change proposed.
	All 3.1D	120	2,000 litres in total in: Drums 60 and 209L in Approved HSNO stores 250L Max per each DG Cabinet	2,000 litres in total in: Drums 60 and 209L in Approved HSNO stores 250L Max per each DG Cabinet	Lorneville: 11,000 litres in approved HSNO stores Makarewa: 10,000 litres in approved HSNO stores	11,000 litres in approved HSNO stores 250L Max per each DG Cabinet	Limits for this Class are the same for the Industrial zone and the Rural Zone threshold. Higher limit consistent with Alliance Lorneville (11,000 L) site is proposed.

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
3.1 Flammable liquids: Above ground tanks or large packages for flammable liquids (>450 L)	Petrol	0	Certified single-skin tanks: 0 Certified double skin tanks: 2,000 litres (petrol only)	Certified single-skin tanks: 0 Certified double skin tanks: 2,000 litres (petrol only)	Certified single-skin tanks: 0 Certified double skin tanks: 2,000 litres (petrol only)	Certified single-skin tanks: 0 Certified double skin tanks: 2,000 litres (petrol only)	No change proposed.
	All other 3.1A	0	0	0	0	0	No change proposed.
	All 3.1B	0	Certified single-skin tanks: 0 Certified double skin tanks: 600 litres	Certified single-skin tanks: 0 Certified double skin tanks: 600 litres	Certified single-skin tanks: 0 Certified double skin tanks: 600 litres	Certified single-skin tanks: 0 Certified double skin tanks: 600 litres	No change proposed.
	All 3.1C	0	Certified single skin tanks: 450 litres Certified double skin tanks: 2,000 litres Certified super vault tanks constructed to SWRI standards: 10,000 litres	Certified single skin tanks: 450 litres Certified double skin tanks: 2,000 litres Certified super vault tanks constructed to SWRI standards: 10,000 litres	Certified single skin tanks: 450 litres Certified double skin tanks: 2,000 litres Certified super vault tanks constructed to SWRI standards: 10,000 litres	Certified single skin tanks: 450 litres Certified double skin tanks: 2,000 litres Certified super vault tanks constructed to SWRI standards: 10,000 litres	No change proposed.

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
	All 3.1D	9,600	<p>Certified single skin tanks: 450 litres</p> <p>Bunded single skin tanks: 5,000 litres</p> <p>Certified double skin tanks: 5,000 litres</p> <p>Certified super vault tanks constructed to SwRI standards: 30,000 litres</p>	<p>Certified single skin tanks: 450 litres</p> <p>Certified double skin tanks: 2,000 litres</p> <p>Certified super vault tanks constructed to SwRI standards: 10,000 litres</p>	<p>Certified single skin tanks: 450 litres</p> <p>Certified double skin tanks: 2,000 litres</p> <p>Certified super vault tanks constructed to SwRI standards: 10,000 litres</p>	<p>Certified single skin tanks: 450 litres</p> <p>Bunded single skin tanks: 5,000 litres</p> <p>Certified double skin tanks: 30,000 litres</p>	<p>Propose to retain the thresholds applicable to the Rural zone. Class 3.1D liquids (including diesel) are low flammability and do not have flammable vapour that could cause an explosion. The key risk off site locations is from a spill (diesel is a Class 9.1B highly ecotoxic liquid). Secondary containment is therefore the key measure required to minimise the risk of tank failure. See discussion in section 5.3.2.</p>
Not classified by HSNO: Waste oil containers > 450 L	Waste oil	0	"As above"	"As above"	"As above"	"As above" referring to the thresholds for Class 3.1D flammable liquids in containers larger than 450 L	No change proposed.
3.1 Flammable liquids (stored below ground)	All (3.1A – 3.1D)	0	-	-	-	See comment	In all zones, the storage of HSNO sub-class 3.1A-D requires consent as a Controlled Activity - Please refer to HAZS-R2 — Controlled Activities. No change proposed.

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
3.2 A, 3.2 B and 3.2 C Liquid desensitised explosive: High, medium and low hazard	All 3.2	0	0	0	0	0	No change proposed.
4.1.1 A Readily combustible solids and solids that may cause fire through friction: Medium hazard	All 4.1.1A	0	50 kg	50 kg	50 kg	50 kg	No change proposed.
4.1.1 B Readily combustible solids and solids that may cause fire through friction: Low hazard	All 4.1.1B	0	500 kg	500 kg	500 kg	500 kg	No change proposed.
4.1.2 A & B Self-reactive: Types A & B	All 4.1.2 A & B	0	50 kg	50 kg	50 kg	50 kg	No change proposed.
4.1.2 C-G Self-reactive: Types C-G	All 4.1.2 C-G	0	500 kg	500 kg	500 kg	500 kg	No change proposed.

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
4.1.3 A-C Solid desensitised explosives	All 4.1.3 A-C	0	0	0	0	0	No change proposed.
4.2 A & B Spontaneously combustible - Pyrophoric substances: High hazard and self-heating substances: Medium hazard	All 4.2 A & B	0	50 kg	50 kg	50 kg	50 kg	No change proposed.
4.2 C Spontaneously combustible - self-heating substances: Low hazard	All 4.2 C	0	500 kg	500 kg	500 kg	500 kg	No change proposed.
4.3 A & B Solids that emit flammable gas when wet: High and medium hazard	All 4.3 A & B	0	50 kg	50 kg	50 kg	50 kg	No change proposed.

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
4.3 C Solids that emit flammable gas when wet: Low hazard	All 4.3 C	0	500 kg	500 kg	500 kg	500 kg	No change proposed.
5.1.1 A-C Liquids and solids	All 5.1.1 A-C	40	No threshold	200 L or kg	240 L or kg	240 L or kg	There no threshold set for the Rural zone, enabling unlimited oxidiser storage. These are very reactive substances. Applying a threshold ensures that cumulative effects with other industrial storage of hazardous substances are managed. The proposed limit (240 L) would match that for Alliance.
5.1.2A gases	Oxygen (Except as stored and used in accordance with HSNO requirements within medical facilities)	0	200 m ³	1,000 m ³	1,000 m ³	1,000 m ³	This permitted quantity applies to Industrial and Alliance sites. Controls set under the HSW-HS for separation of hazardous gases from protected and public places and requirements for tank design under the Health and Safety in Employment (pressure equipment, cranes and passenger ropeways) Regulations 1999 (PECPR) are expected to appropriately manage the hazard.

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
	Nitrous oxide (Except as stored and used in accordance with HSNO requirements within medical facilities)	0	0	30 x 8-gram nitrous oxide cartridges for catering purposes only	30 x 8-gram nitrous oxide cartridges for catering purposes only	30 x 8-gram nitrous oxide cartridges for catering purposes only	Propose to adopt limit for the Alliance and Industrial sites.
	Chlorine	0	0	0	Lorneville: 4,310 kg Makarewa: 210 kg	210 kg	Chlorine is commonly used in industrial water treatment. It is a highly toxic (6.1A) gas. Propose to adopt the limit assigned to the former Alliance Makarewa plant.
5.2 A-G Organic Peroxide: Types A-G	All e.g. MEKP Polyester resin catalyst	0	4 L	16 L	16 L	16 L	Propose to adopt Industrial limits. Certification threshold under the HSW-HS is are lower than 16 L for Class 5.1A-D, and is 25 kg for Class 5.2E and 5.2F.
6.1A-C Acutely toxic – moderate to high hazard	Anhydrous ammonia refrigerant	10,000 kg	140 kg	140 kg	140 kg	10,000 kg in refrigeration systems compliant with AS/NZS 5149.(1-4)-2016	A threshold of 140 kg is applied to the existing zones for anhydrous ammonia, including the Alliance sites. This is inconsistent with the permitted threshold of 5,000 kg to 10,000 kg of anhydrous ammonia enabled under the 2.1.1B hazard for Lorneville and Makarewa respectively. Discussion of proposed limit is provided in Section 5.3.2.

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
	Chlorine	0	0	0	0	210 kg	As noted under 5.1.2A gases, a threshold of 210 kg has been provided for at the Makarewa site, which is proposed to be adopted for the BSM site.
	All other substances	0	20 litres if liquid, 20 kg if solid	20 litres if liquid, 20 kg if solid	20 litres if liquid, 20 kg if solid	20 litres if liquid, 20 kg if solid	No change proposed.
6.1D&E acutely toxic – low hazard	All 6.1D	9,170 L					The limits set for these classifications are inconsistent with other permitted quantities for diesel. Discussion of the proposed threshold is provided in Section 5.3.5. Low hazard liquids pose a negligible risk to off site people.
	All 6.1E	9,820 L	1,000 kg	200 kg	200 kg	20,000 L	
	Calcium Hypochlorite (HTH)	0	1,000 kg (food and dairy industry disinfectant)	200 kg	200 kg	1,000 kg (food and dairy industry disinfectant)	Propose to maintain the limit that applies to the Rural zone. We note that 240 L technically applies as a 5.1.1C substance.
6.3A&B skin irritant	All 6.3A	450 L					The limits set for these classifications are inconsistent with other permitted quantities for diesel. Discussion of the proposed threshold is provided in Section 5.3.5. Low hazard liquids pose a negligible risk to off site people.
	All 6.3B	9,780	2,000 kg	2,000 kg	2,000 kg	30,000 kg	

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
6.4A Eye irritant	Cement, Hydrated Lime and Burnt Lime	0	30 tonnes	50 tonnes	50 tonnes	50 tonnes	Propose to adopt threshold that applies to Industrial and Alliance sites.
	Calcium Chloride	0	1,000 kg	200 kg	200 kg	1,000 kg	A higher limit for this substance applies at Rural locations. It is commonly used as a feed supplement. Calcium chloride is a powder with low hazards for ingestion, skin and eye irritation. Effects at off site locations are considered negligible.
	All 6.4A	490 L	2,000 kg	2,000 kg	2,000 kg	2,000 kg	No change proposed.
6.5 A & B Respiratory and contact sensitisers	Cement, Hydrated Lime and Burnt Lime	0	30 tonnes	50 tonnes	50 tonnes	50 tonnes	Propose to adopt threshold that applies to Industrial and Alliance sites.
	All 6.5A-B	0	2,000 kg	2,000 kg	2,000 kg	2,000	No change proposed.
6.6 A & B Human mutagens	All 6.6A	0	2,000 kg	2,000 kg	2,000 kg	2,000	No change proposed.
	All 6.6B	100 L					
6.7 A & B Carcinogens	All 6.7A	0	200 kg	200 kg	200 kg	30,000 L	A limit of 200 kg applies to all zones, but would then not allow for the diesel storage (Class 6.7B) as a permitted activity. See discussion in Section 5.3.5.
	All 6.7B	9,680 L					
6.8 A-C Human reproductive or	6.8A	0	0	0	0	2,000 L	Propose new limit to enable storage and use of degreaser and for consistency with other chronic exposure health hazards.
	6.8B	410 L					

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
developmental toxicants							See discussion in Section 5.3.5.
6.9 A & B Substances affecting human target organs or systems	6.9A	80 L					Propose new limit to enable storage and use of degreaser and for consistency with other chronic exposure health hazards. See discussion in Section 5.3.5.
	6.9B	610	0	0	0	2,000 L	
8.1A Substances corrosive to metals	All 8.1A	13,040	1,000 L	1,000 L	Lorneville: 15,000 L Makarewa: 1,000 L	15,000 L	15,000 litres is the maximum combined total of 8.1 A, 8.2 A-C and 8.3 A corrosives for the Alliance Lorneville site, excluding the cement hydrated lime and burnt lime which is provided for separately in the table.
8.2A-C Substances corrosive to skin	Cement, Hydrated Lime and Burnt Lime	0	30 tonnes	50 tonnes	50 tonnes	50 tonnes	Propose to adopt the Industrial zone limit.
	All 8.2A	0					New limit proposed to enable expanded cleaning product and water treatment facilities. Discussed in section 5.3.6.
	All 8.2B	16,120					
	All 8.2C	8,880	1,000 L	1,000 L	15,000 L *	35,000 L	
8.3A Substances	Cement, Hydrated Lime and Burnt Lime	0	30 tonnes	50 tonnes	50 tonnes	50 tonnes	Propose to adopt the Industrial Zone limit.

Hazard	Substance	Proposed future aggregate	General Rural Zone	General Industrial Zone	Alliance sites	Proposed precinct permitted threshold	Comment
corrosive to the eye	All 8.3A	32,480	1,000 L	1,000 L	15,000 L *	35,000 L	New limit proposed to enable expanded cleaning product and water treatment facilities. Discussed in section 5.3.6.
9.1 A-D Aquatic ecotoxics and 9.2 A-D Soil ecotoxics	All 9.1 and 9.2	42,450 L	See base Class thresholds NB: Where a substance requires resource consent and also has an ecotoxic class, the ecotoxicity shall be taken into consideration as part of Assessment Matters			No change proposed.	
9.3 A-C Terrestrial vertebrate ecotoxics	All 9.3	585 L	See base Class thresholds NB: Where a substance requires resource consent and also has an ecotoxic class, the ecotoxicity shall be taken into consideration as part of Assessment Matters			No change proposed.	
9.4 A-C Terrestrial invertebrate ecotoxics	All 9.4	0 L	See base Class thresholds NB: Where a substance requires resource consent and also has an ecotoxic class, the ecotoxicity shall be taken into consideration as part of Assessment Matters			No change proposed.	

Note:

* 15,000 litres is the maximum combined total of 8.1 A, 8.2 A-C and 8.3 A corrosives for the Alliance Lorneville site, excluding the cement hydrated lime and burnt lime which is provided for separately in the table.

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