PUBLIC NOTICE DETAILS

PLANNING APPLICATION DETAILS

Application Number:	DA 2026/44
Application Type:	Discretionary Development Application
Property Location:	1561 Dennistoun Road, Bothwell (CT's 41698/1, 41700/1, 41703/1, 41704/1, 41699/1, 41702/1, 41701/1, 119006/1 & 119006/2)
Proposal:	Land Spreading (Land Application of Liquid Waste)
Advertising Commencement Date:	25 August 2026
Representation Period Closing Date:	08 September 2026
Responsible Officer:	Louisa Brown, Senior Planning Officer

The relevant documents may be viewed at Council's website www.centralhighlands.tas.gov.au or at Council's Offices 19 Alexander Street, Bothwell & 6 Tarleton Street, Hamilton during normal business hours.

Enquiries regarding this Application can be made by contacting Central Highlands Council on (03) 6259 5503 or by emailing development@centralhighlands.tas.gov.au. Please quote the "Application Number" when making your enquiry.

Representations on this application may be made to the General Manager in writing either by:

Post: 19 Alexander Street, Bothwell TAS 7030
Email: development@centralhighlands.tas.gov.au

All representations must include the authors full name, contact number and postal address and be received by 5.00pm on the representation period closing date.

20 percent steep no go zones

CFEV_Rivers_Integrated_Conservation_Value Buffers

- Integrated Conservation Value (ICV)
- Low - 10m buffer
- Medium - 20m Buffer
- High - 30m Buffer
- Very High - 100m Buffer

- TSFM_DR_Peak_Flood_Extents
- TSFM Riverine Flooding Peak Flood Extents - SES
- Threatened Native Vegetation Communities with 10m Buffer
- Property Boundary 50m Buffer
- Occupied Dwelling Buffer
- CFEV_Rivers_Integrated_Conservation_Values
- Attenuation buffer - 500m

Dennistoun Rd

N
W
E
S

Published by Luke Taylor - AgAssist
30 Red Chapel Avenue
Sandy Bay, TAS, 7005
ltaylor@agassist.net.au
0409 963 201

700 0 700 1,400 2,100 2,800 m

AgAssist

The Quoin

Scaled for printing in A3

Data Source: Google, ESRI, Tas Networks, The List and Mineral Resources Tasmania

Date Printed:
7-8-2026
GDA94 / MGA zone 55

Planner

From:
Sent: Tuesday, 11 August 2026 1:34 PM
To: Planner
Subject: Re: RFI DA2026/44 1561 Dennistoun Road
Attachments: EMP - The Quoin (Liquid Waste).pdf; Spectran Group Landspreading Policy.pdf; The Quoin - Application-for-Planning-Approval (Updated).pdf; Spectran Group SOP Landspreading Particle Size Sampling.pdf; The Quoin Map - 7-8-2026.pdf

Hi Central Highlands Council,

Please see comments below and attachments in regards to the DA2026/44 1561 Dennistoun Road.

1) The EMP provided with the application includes Stillage/Pot Ale and winery Sludge, but these are not listed on the application form. Please clarify and update form if necessary. - updated, attached.

2) As a property adjacent to the application area includes an existing sensitive use, please provide a written response to the attenuation Code, C9.5.1 P1.

Advice
Council considers that the definition of the proposed activity is like the attenuation distance requirements of liquid waste spray primary treated and organic waste treatment. Both of which require an attenuation distance of 500m from the boundary of the property where the activity is taking place.

- section 5.12 buffer distances within the attached EMP has been updated and a 500m attenuation distance has been applied to the updated map (attached).

3) Please provide an indication on a site plan of where on the property the 10 holding tanks will be located. - storage tanks location attached.

4) Please provide a copy of Spectran SOP: land spreading particle size sampling guide as referred to in the EMP. Council cannot locate these documents online - attached.

5) Please provide a copy of Spectran Environmental Land spreading Policy September 2025 as referred to in the EMP. Council cannot locate these documents online - attached.

6) Please explain the meaning of the sentence on page 24, 5.15 Odour and give examples of when this would occur " Should nuisance odours occur there is an option to immediately stop odour generation by mechanical incorporation into the soil".

- this statement means that if any unpleasant odour is noticed during landspreading, the applied material can be quickly mixed into the soil using cultivation equipment to greatly reduce or stop the odour. In practice, this could occur if weather conditions change, wind carries odour towards nearby sensitive receptors (houses), or a complaint is received from a neighbour. By incorporating the fish fertiliser into the top layer of soil, the material is no longer exposed to the air, which significantly reduces odour emissions and helps protect the amenity of surrounding properties.

Kind regards,

Samson Marsh
Group Environmental Specialist

SPECTRAN Environmental

Environmental Management Plan

The Quoin

Spectran Group
6 Birdwood Avenue, Moonah TAS 7009

Document control

Version	Date	Author/s	Reviewed by
V1	29/05/2026	Sam Marsh	Jarrod Rufus
V2	11/08/2026	Sam Marsh	Jarrod Rufus

Contents

1. Introduction 5
1.1 Regulatory Context 5
2. Permit Status and Property Details 6
3. Activity Location and Application Methodology 8
3.1 Land Area Description 8
3.2 Rainfall and wind 9
3.3 Delivery of wastes to site 9
3.4 Application Method 10
3.4.1 Application Rate Control 10
3.5 Alternatives 12
3.5.1 Localised reuse 12
3.5.2 Trade waste discharge 12
3.5.3 Dewatering 12
3.5.4 Composting 12
3.5.5 Rendering 12
3.5.6 Emerging options 12
4. Waste Information 13
4.1 Hatchery sludges 13
4.2 Brewing Sludges 13
4.2.1 Yeast Sludge 13
4.2.2 Stillage / Pot Ale 13
4.2.3 Winery Sludge 13
4.3 Salmon Viscera 13
4.4 DAF Sludge 13
4.5 Salmon Silage (Macerated Morts) 14
4.6 Netwash 14
4.7 Blood Water 14
4.8 Stickwater 14
4.9 Hydrolysate 14
4.10 Cadbury USAB Effluent 14
5. Application Rates and Management Controls 15
5.1 Soil Testing 15
5.2 Particle Size Testing 15
5.3 Weather Conditions for Spreading 16
5.4 Pasture Burn and Soil pH 16
5.5 Hydraulic Limiting Application Rate 17

5.6 Mineralisation Rate for Application Rate Calculations 17
5.7 Nitrogen Limiting Application Rate (NLAR) 17
5.8 Phosphorous Limiting Application Rate (PLAR) 17
5.9 Repeat Applications 18
5.10 Prevention of Soil Salinity and Sodicity 18
5.11 Prevention and Correction of Soil Acidity 18
5.12 Buffer Distances 20
5.13 Proof Of Placement 22
5.14 Unloading Area Management 23
5.15 Odour 24
5.16 Grazing Withholding 25
5.17 Prevention of Vermin 25
5.18 Vehicle and Equipment Hygiene 25
5.18.1 Landspreading equipment 26
5.18.2 Delivery vehicles 26
5.19 Complaints Management 26
5.20 Signage 27
5.21 Emergency Response 28
5.21.1 Reporting 28
5.21.2 Relevant Contacts 28
5.21.3 Spill Response 29
5.22 Handling of Complaints 32
5.23 Training 32
5.24 Landowner Consent 33
5.25 Record Keeping 33
5.26 Environmental Management Plan – Record of Training 34

1. Introduction

Spectran Environmental Management (Spectran) manage several landspreading sites distributed throughout Tasmania to allow the localised reuse of organic wastes. Operations move regularly from one property to the next depending on the ground availability.

This Management Plan has been developed to support the beneficial reuse of fish morts and other organic waste at The Quoin. This report has been written to assess and qualify organic waste that is proposed to be spread at the property, determine appropriate application rates and other controls to prevent environmental harm and to ultimately provide sustainable, beneficial outcomes to the property and the wider community.

The application of the wastes offsets requirements for significant quantities of synthetic fertiliser and increases soil carbon, promotes soil biology and improves soil water holding capacity.

Note: This document must be read in conjunction with Spectra Group's Land Spreading Policy and Land Spreading Information for Farmers documents. Compliance with all requirements outlined within these documents is mandatory to ensure environmental protection, regulatory adherence, and safe land application practices.

1.1 Regulatory Context

The application of organic wastes to land presents a risk to the environment and communities if not managed appropriately. Mismanagement of organic waste reuse activities have the potential to contravene the *Environmental Management and Pollution Control (Waste Management) Regulations 2010* (The Regulations).

This EMP is intended to detail the controls to be used to ensure compliance with The Regulations and ensure compliance with Section 23A; General Environmental Duty of the *Environmental Management and Pollution Control Act 1994 (EMPCA).*

Activities shall also consider controls to ensure compliance the Biosecurity Act 2019 and the Land Use Planning and Approvals Act 1993 (LUPAA).

Land Application of organic wastes to benefit agricultural activities is generally considered a Level 1 activity. To ensure compliance with the General Environmental Duty the land application of the liquid wastes described in this EMP shall be regulated by the issuing of an Environmental Protection Notice (EPN) under section 44 of The Act. A Council Officer may issue an EPN under The Act.

The EPN shall detail all the required conduct of the activity so as to assist in the effective management, reduction and/or mitigation of any environmental harm that the activity may cause.

Table 1: Relevant legislation and regulating authorities

Legislation	Regulating Authority	Regulatory Documentation
EMPCA	EPA or Council as a delegate	Environmental Protection Notice[1]
LUPAA	Council	To be determined by Local Government Planning Representative
Biosecurity Act	Biosecurity Tasmania	TBC[2] Macquarie Harbour Movement Permit[3]

[1]*Mandatory*

[2]*Not mandatory however is recommended to demonstrate regulator review and compliance*

[3]*Mandatory when reusing wastes originating from salmon farmed in Macquarie Harbour, to be issued individually to the respective salmon farming companies*

2. Permit Status and Property Details

Address: 1561 DENNISTOUN ROAD, BOTHWELL, TAS, AUSTRALIA, 7030

Property Identification Code: MEBT0020

PID/Lease Number: 5010304

Certificate of Title References: 41703/1, 41702/1, 41701/1, 41700/1, 119006/1, 119006/2, 41699/1, 41704/1, 41698/1

Municipality: Central Highlands Council

Planning Scheme: Tasmanian Planning Scheme – Central Highlands

Zoning: Agriculture Zone (21) and Rural Zone (20)

Use Class: Resource Development

Overlays: Priority Vegetation Area, Waterway and Coastal Protection Area, Bushfire-Prone Area, Medium and Low Landslip Hazard Bands

Permit Status: NPR as per Clause 6.6 Tasmanian Planning Scheme

The subject property is located within the Central Highlands municipality and is zoned Agriculture and Rural under the Tasmanian Planning Scheme. The proposed activity involves the landspreading of liquid waste (e.g., food industry by-products, milk waste, or similar biodegradable materials) for the purpose of soil conditioning and agricultural benefit.

Under Clauses 21.2 and 20.2 of the State Planning Provisions, Resource Development is a No Permit Required use in both the Agriculture and Rural Zones, provided the activity does not damage the soil profile, and preclude future agricultural use. The proposed landspreading activity is considered a form of Resource Development, as it involves the application of biodegradable liquid waste to improve soil fertility and support agricultural production.

The activity will comply with EPA Tasmania guidelines, including the Guide to Land Spreading of Food Industry Waste (2019), Guide to Land Spreading of Milk and Milk By-products (2020), and Environmental Management and Pollution Control (Waste Management) Regulations 2020. Key requirements include site selection, application rates based on soil type and crop needs, exclusion zones from waterways and dwellings, and a documented management plan outlining waste sources, transport, storage, application methods, and risk mitigation.

The property is affected by overlays including Bushfire-Prone Area, Waterway and Coastal Protection Area, Priority Vegetation Area and Landslip Hazard Bands. These overlays do not prohibit landspreading but require site-specific risk assessments and management measures to ensure environmental protection.

The proposed landspreading activity aligns with the No Permit Required provisions of the Tasmanian Planning Scheme, supports the agricultural use of the land, and will be conducted in accordance with EPA Tasmania guidelines and best practice environmental management.

In addition, This EMP will fully comply with the requirements of the C9.0 Attenuation Code under the Tasmanian Planning Scheme. In accordance with C9.1.1 and C9.1.2, the development and associated activities will be managed to:

• Minimise adverse impacts on the health, safety, and amenity of sensitive uses from activities that have the potential to cause emissions.

• Reduce the likelihood of conflict or constraint between sensitive uses and activities that generate emissions, ensuring that both can coexist without interference.

All planning and operational measures will be implemented to achieve these objectives, including adherence to attenuation distances and any relevant provisions outlined in Tables C9.1 and C9.2. This EMP will incorporate best practice environmental management systems to ensure compliance with the State Planning Provisions and maintain the integrity of surrounding land uses.

3. Activity Location and Application Methodology

3.1 Land Area Description

The property 'The Quoin' is located at 1561 Dennistoun Road, Bothwell. The boundary, including the total area of the property and the proposed spreading areas is shown in Appendix A.

The Quoin is a relatively large landholding for the area and is considered suitable for receiving liquid fish morts and other organic waste for the following reasons:

- With a combined area of approximately 3000 ha the properties provided significant scale and is in a sparsely populated region, with long distances from sensitive receptors.
- The property is gently undulating on stable soil types, allowing for the safe trafficking of delivery trucks and spreading equipment for most of the year.
- Contingency, all-weather unloading areas exist at a number of locations across the property.
- Existing, well designed road infrastructure allows for safe access by trucks to spread areas internal to the property.
- Paddocks are of an ideal size relative to the scale of the property, reducing the impact of required liquid waste withholding periods on grazing rotations. Including an allowance for discing organic waste across multiple paddocks on site.
- Multiple areas exist that will benefit from the addition of organic-based inputs to improve soil structure, nutrient levels and water-holding capacity.

The property is predominantly lamb and cattle grazing with areas of pivot irrigation.

Figure 1 Image showing The Quoin typical terrain and internal farm roading conditions.

3.2 Rainfall and wind

Table 2: Monthly rainfall of the nearby Bothwell and Oatlands weather stations. Data from other sites included for comparison.

Average monthly rainfall (accessed via BOM)

Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Bothwell	37	37	37	45	43	43	45	49	46	51	50	50	538
Oatlands	43	38	39	45	43	48	43	45	43	51	51	54	547

The area is relatively moderate in rainfall with rainfall generally spread evenly throughout the year. Wind is predominately from the North and West.

3.3 Delivery of wastes to site

Spectran tankers collect the wastes and transport them to the property. On arrival, the tanker will transfer the material to storage tanks in a hardened accessible area. The storage tanks allow for consolidation of spreading operations and allow flexibility for timing of applications around rainfall, wind, ground conditions etc. At time of writing Spectran has 10 x 24,000 litre tanks available for storage. This volume of storage allows for spreading to cease 2 days before a rain event and 3 days following the rain event with normal delivered volumes.

Figure 2: Delivery area at "Strathburn" Oatlands 2025.

3.4 Application Method

A tractor-towed liquid spreader will be utilised to spread the wastes accurately across terrain. The spreader is equipped with a vacuum pump to allow creation of either a vacuum or pressure in the spreading tank; this allows for 'clearing out' of transfer hoses at the loading area preventing mess on transfer. The vacuum transfer system protects for spills; any leaks in hoses or fittings allow air ingress rather than waste egress. A link to a video of the spreading equipment in operation can be found here.

3.4.1 Application Rate Control

Application rates are managed by adjusting tractor speed. Calibrations are to be performed on any new equipment and need to account for variable product flowability.

Spread areas must be recorded using an appropriate proof of placement system (Section 5.13). The persons responsible for managing the activity are to regularly validate that total spread areas as recorded on the proof of placement system are consistent with spread area expectations calculated from the tonnages delivered to site over a given period.

The speed required for a given application rate is calculated with the following formula:

$$V = 0.06\left(\left(\frac{\left(\frac{1}{AR}\right) * 10000}{SW}\right) / \left(\frac{1000}{Q}\right)\right)$$

Where:

V = Travel speed required in km/h

AR = Target Application Rate in tonnes/ha

SW = Spread Width of spreading implement in meters

Q = Discharge flow rate of material in litres per minute

Table 3: Data used to calibrate travel speed to obtain target application rates on Pichon TCI2700 liquid spreader shown in Figure 4.

Product viscosity	Applicator type	Discharge duration (min)	Discharge rate (litres/min)	Spread Width
Thick	12m Dribble Bar	13	1592	12
Normal		6.8	3044	12
Water		4.5	4600	12
Thick	Splashplate	12.5	1656	5
Normal		6.5	3185	8
Water		4.6	4500	9

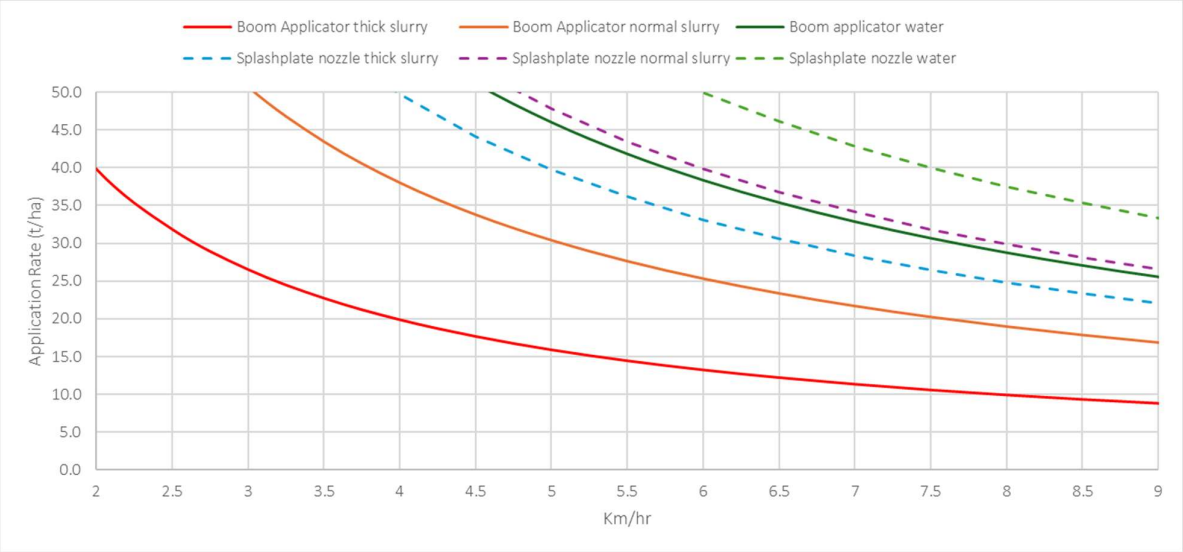


Figure 3: Calibration curves for Pichon TCI 20700 liquid spreader

Figure 4: Typical spreader arrangement. Photo shows a Pichon 20700 litre vacuum spreader and 335hp 4WD tractor, taken at St Peters Pass Oatlands 2021

3.5 Alternatives

3.5.1 Localised reuse

Where there is suitable land adjacent or close to a site producing liquid wastes, reuse on these areas is the most efficient approach. Even at sites where there is access to land nearby there may be insufficient scale to warrant investment in irrigation infrastructure or spreading equipment or there may be sustainability concerns with reliance on a single area for reuse.

3.5.2 Trade waste discharge

TasWater operate STP's to treat sewage and some STP's have capacity to accept trade waste inputs. In many cases however wastes can exceed acceptance criteria such as BOD, COD and conductivity and also exceed the hydraulic input allowances. With a focus on improving the performance and reliability of STP's there are increasing restrictions on industrial inputs.

3.5.3 Dewatering

Due to the inefficiencies of transporting water and the limited options for storage, reuse and disposal of liquids in Tasmania, dewatering of waste is the preferred approach. Dewatering plants however are expensive to establish, require skilled personnel to operate, require expensive consumables and once solids are dewatered the liquid component still has to be managed onsite, either through further wastewater treatment or localised irrigation which is often not possible.

3.5.4 Composting

Composting is the most predominant means of processing organic wastes and producing a stable, storable and saleable product, however in Tasmania the composting capacity is insufficient to meet the needs of industry especially where there is seasonal peaks. Additionally, high liquid inputs can be detrimental to the composting process and increase leachate production which when combined with rainfall inputs at unroofed sites can upset the water balance and lead to compliance issues.

3.5.5 Rendering

Certain liquid wastes are of sufficient protein and oil content to warrant rendering to separate the various fractions into high value products. Tassal operate a rendering plant for Salmon mortalities, processing trimmings, head and frames and Viscera at their site at Triabunna however it has capacity restrictions, and the liquid component (Stickwater) still requires reuse via landspreading. The site also shuts down for planned maintenance and upgrades from time to time.

3.5.6 Emerging options

A biogas facility is proposed at Westbury. As this facility is designed to recover carbon to create a natural gas substitute, wastes with a high moisture content or a high protein to carbon ratio may not be suitable. As the facility recovers gas only, the remaining liquid "digestate" requires landspreading, so it cannot be considered a replacement for landspreading. The distance required to deliver to the site is cost prohibitive for many waste streams with low calorific value.

Pyrolysis or waste-to-energy plants are generally not considered suitable for liquid wastes due to the significant energy imbalance resulting from the need to forcefully dry the material prior to combustion.

4. Waste Information

4.1 Hatchery sludges

Salmon Hatcheries have an effluent filtration system where fish excreta and uneaten food is captured and filtered out. Conditioning tanks settle the sludges and regular collections are undertaken. The sludge contains valuable nutrients and low amounts of salts. The digested, settled nature of the wastes generates an unremarkable, organic odour.

The sludges can be applied directly to pasture and can be treated in the same way as manures, wastewater or biosolids.

4.2 Brewing Sludges

4.2.1 Yeast Sludge

As part of the beer and cider brewing process various strains of the yeast Saccharomyces cerevisiae digest carbohydrates in barley, apples, pears etcetera and in doing so produce alcohol and an amount of yeast biomass. The biomass is allowed to settle, and this sludge is retained for collection. The analysis is similar to the aquaculture hatchery sludges and as such can be managed for reuse in the same way. There are no specific hazard characteristics, implications for stock or biosecurity concerns.

4.2.2 Stillage / Pot Ale

The recently completed Greenbanks Distillery in Bridgewater runs a whisky distilling operation that utilises a continuous process where the grains remain in the liquid to be distilled; With the ethanol and other volatile components distilled and recovered, the remaining material is called “stillage” and is consistent with the analysis of the yeast sludge recovered from Cascade Brewery (Section 4.2.1). This is a different process to distilleries which recover the grains prior to distilling; the liquid component left over after the distilling process is termed Pot Ale, which has been land spread by Spectran in 2022 for Callington Mill Distillery in Oatlands. Stillage and Pot Ale is included in this EMP for contingency purposes.

4.2.3 Winery Sludge

Tas Vintners operate a winery at Cambridge and produce wine on contract for several vineyards and wine brands. They operate a wastewater treatment plant that retains activated sludge. The treatment plant processes mainly washdown water and grape residues left in the bottom of vats at the end of the brewing process.

4.3 Salmon Viscera

Approximately 13% of harvested Salmon is viscera. The viscera is mechanically removed and pressured water is used to wash out the gut cavity. The mix of water and viscera is recovered via a vacuum system and sent to a storage tank where it is further macerated, agitated and ensiled via the addition of acid to break down solids and prevent biological degradation. Viscera is prioritised for rendering and an expansion of Tassal’s rendering plant in early 2025 is expected to see the requirement for land application reduce significantly. The properties described in this EMP will be utilised for contingency purposes.

4.4 DAF Sludge

Huon’s Paramatta Creek processing facility has a Dissolved Air Flotation (DAF) plant that recovers suspended solids from processing room washdown water prior to the water proceeding to a Wastewater Treatment Plant. This low volume product is typically collected with a full load of viscera on occasion.

JBS operate an Abattoir and run a large DAF plant and associated dewatering plant which converts their DAF sludge into a cake. The DAF is produced from wastewater from the killing room floor and holding pens. On occasion the dewatering plant requires maintenance and in these instances the collection of the DAF as a liquid is required.

4.5 Salmon Silage (Macerated Morts)

Marine farming sites are progressively investing in processing capacity onshore to improve the management of Salmon Mortalities. Salmon "morts" are macerated, agitated and pH reduced with the addition of an organic acid to break down all solids into a stable, low-odour and storable product that can be reused directly via land application. The material contains high levels of useful nutrients and is a valuable source of phosphorous. Its appearance is that of a pink smoothie. Mortalities are typically seasonal and most of the delivered volumes are during the warmer summer months.

4.6 Netwash

Salmon pens are regularly brought to shore and washed in a large tumble-washer in fresh water and this wash water is retained. Nets are handled by crane. Algae and seaweed, high in organic matter and nutrients, is filtered and the water recirculated.

The analysis of the product shows nutrient levels at lower concentrations than other waste streams. Historically, the netwash has had high levels of copper from biofouling paints and elevated levels of lead from lead weights. With industry changes these contaminants have been removed.

4.7 Blood Water

All salmon that are harvested are bled out and the blood retained. At Strahan the blood water is retained separately. Whilst containing valuable nutrients it is not as nutrient dense as other waste streams and is best suited for 'shandying' with other wastes.

4.8 Stickwater

Stickwater is the liquid component recovered from the rendering process of Salmon waste at Tassal's Triabunna rendering plant. The Stickwater contains valuable nutrients and is sometimes sold as a liquid fertiliser in other parts of the world. The installation of a waste heat evaporator at the rendering plant in 2025 is expected to see a significant reduction in the requirement for land applications.

4.9 Hydrolysate

Hydrolysate is produced via Alkaline Hydrolysis, a commonly used process for breaking down organics. Alkaline Hydrolysis is used in Water Cremations, with approximately 1000 litres of Hydrolysate produced per process. The hydrolysate contains valuable nutrients and has the appearance of weak, black tea. It is suitable to be used as a liquid fertiliser. Whist common in the US and Europe, the first Water Crematorium in Australia was opened in Hobart in 2024.

4.10 Cadbury USAB Effluent

Mondelez International operate a chocolate factory in Hobart. Water that is recovered during the manufacturing process is put through an onsite wastewater treatment plant to reduce the concentration of residual sugars prior to it being discharged into the sewer network. When this effluent exceeds allowable sugar concentrations for TasWater trade waste acceptance it requires reuse via land application.

5. Application Rates and Management Controls

Accurate calculations of waste application rates and adherence to management controls are essential to obtain the most beneficial outcomes whilst preventing environmental harm.

At an application rate of 49 tonnes per hectare, the planned landspreading program at The Quoin will utilise approximately 73,500 tonnes of organic material across 1500 hectares. The material will predominantly consist of salmon silage (45%), complemented by a blend of nutrient-rich by-products including viscera hatchery waste (15%), dissolved air flotation (DAF) sludge (6%), brewing sludges (5%), netwash residues (2%), bloodwater (2%), stickwater (15%), hydrolysate (1%), and Cadbury USAB effluent (9%). This integrated approach supports sustainable waste management by recycling diverse organic streams into soil amendments, improving fertility and organic matter content while reducing reliance on synthetic inputs and supporting a circular economical approach.

5.1 Soil Testing

Prior to application, we will conduct a full assessment of the implications of spreading multiple waste streams on single spread areas. This will include nutrient balance analysis, potential contaminant risks, and soil health impacts. Where sampling has not yet been undertaken, a detailed plan with timeframes will be provided to Council, including laboratory testing protocols and reporting schedules.

All proposed spread areas are to be soil tested within 12 months preceding the spreading activity. Agronomic advice shall be used to confirm that tested areas are suitable to receive wastes; any areas deemed unsuitable shall be avoided.

Soil tests are to be taken within six months of completion of the spreading activity to monitor changes in nutrient analysis and guide subsequent land use or follow up applications of other fertilisers or soil amendments such as lime.

All results will be tested by a NATA and ASPAC approved laboratory, accompanied by commentary from a suitably qualified environmental specialist at Ag Assist. The soil results will be submitted to Council based on monitoring frequency (Pre and post testing) to maintain transparency and compliance with section 5.7. All soil tests shall be retained in a register and used to demonstrate benefit to receiving areas to property owners, regulators and other stakeholders.

5.2 Particle Size Testing

All fish waste will be processed to meet particle size requirements as specified in Spectrans SOP: landspreading particle size sampling guide. A 90% passing rate through a 4-5mm sieve is required to ensure this requirement is met. Landspreading operators will verify compliance on-site before spreading commences.

5.3 Weather Conditions for Spreading

Spreading will only occur under suitable weather conditions, defined as:

- **Wind speed:** below 15 km/h
- **Wind direction:** In the opposite direction (away) from sensitive receptors
- **Rainfall:** no spreading during rainfall or when heavy rain is forecast within 24 hours
  These measures will minimise odour and runoff risks (section 5.13).

5.4 Pasture Burn and Soil pH

Most of the wastes detailed in this EMP cause foliar burn. The wastes should only be spread on ground prior cultivation or resowing, or in pasture where the short-lived leaf burn is acceptable.

Several of the wastes are acidic and, in many cases, this is intentional and an important step in making the material suitable for reuse. Low pH wastes can contribute to foliar damage especially when the spread material contains salts, protein or oils. Salmon Viscera contains oils which when exposed to oxygen sets into a crumbly crust. Whilst this amplifies the slow-release qualities of this waste and can act as a stabiliser for wind-blown soils, the “drying oil” smothers leaf surfaces and causes osmotic stress to foliage, causing it to yellow off in a couple of days.

The addition of low pH liquids to soils has not been observed to influence soil pH in other landspreading operations that reuse low pH wastes. This is likely due to applied liquids only affecting the pH of the liquid portion of the soil which becomes significantly diluted once applied and diluted further following irrigation or rainfall. Additionally, soils are generally highly buffered and resist pH change, especially soils of high clay content.

A dribble-bar or trailing shoe applicator can be used to spread the waste in strips to allow for the inter-row foliage to remain healthy; these implements add complexity to operations and may not be suitable on all terrain types but should be considered for use depending on the situation.

5.5 Hydraulic Limiting Application Rate

Liquids can flow across the landscape before they are absorbed into the soil surface. As such, the maximum application rate is limited to the hydraulic holding capacity of the ground where it is being applied and the slope of terrain.

No single application shall exceed 50t/ha. 50t/ha is equivalent to an instantaneous 5mm rainfall event.

Application rates above this risk physical movement downslope, especially where soil is compacted and without vegetation cover. Spreading rates shall be reduced further if surface movement of the waste is observed.

5.6 Mineralisation Rate for Application Rate Calculations

As the wastes are organic, nutrients are held tightly in proteins until they are released in plant available forms via biological degradation. The rate of this microbial-driven process is dependent on the availability of moisture and the temperature; thus the release of nutrients typically aligns with the growth rates (and nutrient demand) of plants. This is one of the more elegant aspects of waste reuse; the slow-release qualities allow for the supply of nutrients in synchrony with the seasons, and farms can expect to see the benefit of the applications for several years following applications.

The rate of conversion of organic forms of nutrients into the mobile, plant available forms is termed "Mineralisation Rate" and for application rate calculations is assumed to be 20%, which is consistent with the mineralisation rate of biosolids.

5.7 Nitrogen Limiting Application Rate (NLAR)

Nitrogen is a critical input to agricultural operations however over-application of mobile forms can have negative impacts on plant quality and aquatic health. Nitrogen release from inputs from both organic and synthetic inputs shall never exceed the removal rates of the land where it is applied.

NLAR is calculated with the following formula:

$$NLAR = \frac{CNR}{ABN}$$

Where:

CNR = Crop Nutrient Requirement (kg/ha) - A CNR of 100kgN/ha/year is assumed; this is typical for moderately well-managed, dryland pastures. Cropping areas under irrigation will have a higher CNR.

ABN = Available Biosolids Nitrogen (ABN) and is calculated as with the following formula:

> ABN (kg/t) = (Ammonium N (mg/kg) + N as Nitrate and Nitrite (mg/kg) + ((Total Kjeldahl Nitrogen – Ammonium N) x (Mineralisation Rate % /100)))/1000

5.8 Phosphorous Limiting Application Rate (PLAR)

Phosphorous is less mobile than Nitrogen in soils and is taken up luxuriantly by plants so there are less environmental and plant health risk associated with the over-application of P. Additionally, building up background phosphorous levels takes several years and significant financial investment, so it is rare to see high P levels in most dryland Tasmanian soils. However, if Phosphorous is over-applied this can lead to leaching to waterways, especially where soils have a low Phosphorous Buffering Capacity. A crop removal rate of 50kgP/ha/year is used.

Management of NLAR typically manages PLAR, however the maximum PLAR is shown in Table.

5.9 Repeat Applications

Repeat applications are permissible in the same year if the total nutrient limiting application rate is not exceeded and applications are spread evenly throughout the year. Once the maximum application rate is applied no further applications shall occur in the same area for three years unless soil tests demonstrate further applications are warranted. Table 5 details limitations on repeat applications for each waste type.

5.10 Prevention of Soil Salinity and Sodicity

Soils can become saline and/or sodic if excessive salts applied to the surface through irrigation water, rainfall, rising of water table or through addition of inputs such as synthetic or organic fertilisers. The addition of excessive sodium salts can degrade soil structure. Whilst not critical for plant growth for most pasture species, sodium is essential for animal health and considered applications of sodium is warranted in grazing situations.

Many areas in Australia irrigate with saline irrigation water and a careful balance is required to ensure applied salts are leached from the soil profile during winter rains to allow further irrigation the following season. As the application of wastes is a one-off event preceding pasture renovation, any applied salts present a short-lived impact to soil salinity before being leached via rainfall through the following weeks and months.

In addition to this, the EC of the combined liquid waste and rainfall volume shall not exceed 8000µS/cm to keep the collective water inputs consistent with irrigating with Class 2 irrigation water.

5.11 Prevention and Correction of Soil Acidity

Soils may be naturally acidic or gradually decrease in pH through modern agricultural practices such as cultivation and addition of fertilisers that promote biologically driven reactions creating acid in soils. A lower than optimal soil pH reduces the nutrient availability to plants and crops. Agricultural operations regularly soil test for pH and correct as required by the addition of lime.

The addition of low pH liquids to soils has not been observed to influence soil pH in other landspreading operations that reuse low pH wastes. This is likely due to applied liquids only affecting the pH of the liquid portion of the soil which becomes significantly diluted once applied and diluted further following irrigation or rainfall. Additionally, soils are generally highly buffered and resist pH change, especially soils of high clay content.

pH correction of the liquid wastes detailed in Section 4 prior to land application is not considered warranted or beneficial.

The soil testing post application will inform if any soil pH adjustments are required through the addition of lime.

Table 4: Summarised analysis of waste types

Waste Type	pH	Ammonia (mg/l)	Nitrate and Nitrite (mg/l)	Total Kjeldahl Nitrogen (mg/l)	Potassium, Total (mg/L)	Total Phosphorous (mg/l)	EC (µS/cm)	Available Nitrogen (ABN) (kg/t)	Available Phosphorous (kg/t)
Salmon Silage	4.3	1380	0.26	14400	1682	1536	23733	2.88	0.31
Viscera	4.5	618	1.17	3867	387	327	7104	0.77	0.07
Stickwater	7.1	3238	0.21	13800	2268	1026	46850	2.76	0.21
Yeast Sludge	5.1	1360		2640	295	438	17060	0.53	0.09
Hatchery Sludge	5.4	984	1.74	5804	209	2584	8488	1.16	0.52
DAF Sludge	4.7	242.25	0.60	3285	86	305	2397	0.66	0.06
Netwash	6.9	968	0.02	2443	458	372	15150	0.49	0.07
Blood Water	7.2	164	0.02	224		19.45	7780	0.04	0.00
Hydrolysate	10	150		470		50	7000	0.09	0.01
Pot Ale	4.2			2415	998	223	4320	0.48	0.04
Winery Sludge	4.4			580	1250	84	947	0.12	0.02
Cadbury UASB effluent	7.1	0.12	0.02	22.8		5.54	6500	0.005	0.001

Table 5: Application rate summary.

Waste Type	Forecast annual tonnes (2025)	Max application rate (Net EC <8000µS/cm)	Nitrogen Limiting Application Rate (t/ha)	Phosphorous Limiting Application Rate (t/ha)	Maximum total application rate (t/ha)	Maximum single pass application rate (t/ha)	Maximum number of passes	Total area required per year (ha)	Area required per year under cultivation (ha)
Salmon Silage	5000	184	35	326	35	35	1	144	144
Viscera	1000	616	129	1529	129	50	3	8	8
Stickwater	2000	93	36	487	36	36	1	55	
Yeast Sludge	900	257	189	1142	189	50	4	5	
Hatchery Sludge	4000	516	86	193	86	50	2	47	
DAF Sludge	100	1826	152	1639	152	50	3	1	1
Netwash	600	289	205	1344	205	50	4	3	
Blood Water	700	562	2231	25707	562	50	11	1	
Hydrolysate	60	625	1064	10000	625	50	13	0	
Pot Ale	Contingency	1013	207	2242	207	50	4		
Winery Sludge	Contingency	4621	862	5952	862	50	17		
Cadbury UASB effluent	Contingency	673	21834	90253	673	50	13		
					Total Area Required (ha)			**263**	**153**

5.12 Buffer Distances

Buffer zones are to be adhered to reduce the risk of movement of the applied waste into sensitive areas (Tables 6-8). These default buffer zones have been adopted in accordance with Spectran Environmental Landspreading Policy, dated September 2025.

Table 6: Default buffer distances

Occupied dwellings (on-farm)	100m	To prevent odour nuisance
Occupied dwellings (off-farm)	1000m	
Public roads	10m-100m	Apply extra buffer for high use roads or with clear line-of-sight, low buffer on low use roads acceptable to prevent off-site nuisance.
Native forests and significant vegetation	10m	
Property access roads	5m	To reduce risk of material drifting on to roads and being trafficked off-site

Waterway buffer distances are derived in accordance with Integrated Conservation Value (ICV) ratings, as mandated under the Conservation of Freshwater Ecosystem Values (CFEV) framework. These requirements are established by the Department of Natural Resources and Environment Tasmania to ensure compliance with statutory provisions for riparian zone management and freshwater ecosystem protection.

Table 7: Watercourse and Waterbody Buffer Distances

Watercourse / Waterbody Type	Classification / Description	Minimum Buffer Distance
Watercourses (CFEV / ICV classification)	Very High	50 m
Watercourses (CFEV / ICV classification)	High	30 m
Watercourses (CFEV / ICV classification)	Medium	20 m
Watercourses (CFEV / ICV classification)	Low	10 m
Farm drains	-	5 m
Ramsar wetlands and lakes	-	100 m
Farm dams	-	15 m
Town water supply offtakes (upstream)	-	3000 m
Drinking water bore	-	250 m

This EMP will also comply with the attenuation requirements specified in Table C9.1 of the C9.0 Attenuation Code under the Tasmanian Planning Scheme. All sensitive uses will be located outside the prescribed attenuation distances for activities listed in Table C9.1, measured as the shortest distance from the boundary of the site on which the activity occurs. Where an attenuation area overlay applies, the greater distance between the overlay and Table C9.1 has been adopted to ensure full compliance.

The operational layout of the development has been assessed against these distances to prevent adverse impacts on health, safety, and amenity, and to minimise potential conflict between sensitive uses (residential buildings) and activities that generate emissions (tractors). This approach aligns with the objectives of C9.1.1 and C9.1.2, ensuring that attenuation buffers are maintained in accordance with State Planning Provisions.

Based on the property location of The Quoin, no activities in relation to Table C9.1 have been identified within attenuation distance, specifically in relation to Level 1 and 2 activities.

Furthermore, the EMP will also comply with Clause C9.5.1 of the Tasmanian Planning Scheme Attenuation Code. A minimum separation distance of 500 metres will be maintained between the activity area and any sensitive use, ensuring the intent and requirements of the Attenuation Code are met.

5.13 Proof Of Placement

All spreading vehicles are to have a system installed that displays permitted spread areas to the operator, tracks vehicle position and records areas where waste has been applied. Operators are to be effectively trained on the operation of this system.

Data is to be retained and is to be used on an as-needs basis to demonstrate:

(a) That buffer zones in the proximity of spread areas have been mapped and avoided by spreading equipment
(b) The total spread area covered over a given period reconciles with the waste volumes delivered to site during that period and the appropriate application rate for that waste type
(c) Timing and locations of spreading operations

Figure 5: Example proof of placement report showing an area spread with liquids at "Strathburn", Bowhill Road Oatlands, May-June 2025.

5.14 Unloading Area Management

Areas where wastes are transferred from delivery vehicles to storage tanks (Figure) and where spreading equipment collects wastes to be spread present a high risk for waste spillages. The following rules are to apply when establishing and maintaining these areas:

- Unloading areas are to be located as far as practical from public roads, residences, waterways and other sensitive areas, well more than the minimum buffer distances show in Table 6-8
- Fencing shall be erected around the unloading areas to exclude stock entry
- Drains, berms and sediment traps shall be installed where warranted to prevent excessive downslope movement of spilled wastes and/or to prevent waste movement outside fenced area
- All rubbish, including broken hoses, fittings, and similar items, must be disposed of immediately in designated, contained bins. Any rubbish observed during operations should be promptly placed in these bins and secured to prevent dispersal in adverse weather conditions.
- A stockpile of sawdust shall be available to absorb minor spills
- Large spills shall be allowed to dry (if practical), collected with appropriate machinery and applied to spread areas
- Equipment, tanks and fittings are to be cleaned regularly
- Fuels and oils are to be kept in appropriate bunded storage either onsite or offsite
- All vehicles including tractors are to have a hydrocarbon spill kit onboard
- The site shall be remediated to an acceptable condition on completion of the activity and assessed for visible RAM (Section 5.16)

Storage tanks are only on site when spreading is operational. Material deliveries are planned to occur only when weather and ground conditions are suitable for spreading. If trucks arrive and conditions become unsuitable, material will be temporarily contained in storage tanks to prevent runoff, odours and any other environmental impacts. Holding times will be kept as short as possible with spreading only occurring once conditions improve. If unsuitable conditions persist, deliveries will be delayed or redirected to another property for spreading.

5.15 Odour

The activity is required to manage multiple odorous waste streams. The primary driver of the selection of this and similar properties for the reuse of the wastes detailed in Section 4 is to allow for significant distance from sensitive receptors and prevent offsite odour impacts.

Waste producing sites are required to undertake effective pre-processing of the waste to prevent degradation and allow for safe storage and transport, including the prevention of nuisance odour in transit. Products like viscera and macerated morts are ensiled to meet this requirement and remain low odour as long as this processing is done effectively. Where wastes are collected that exhibit signs of degradation (e.g. froth generation), this is to be reported to the customer for corrective action.

Forecast weather conditions shall be constantly monitored. Should the weather be considered unsuitable for spreading, the wastes will either be stored onsite until conditions improve or are taken to alternative disposal sites.

When spreading odour is most noticeable at the spread area but typically disperses with distance. Additionally, the odour generation falls after application as the wastes infiltrate the soil and rapidly desiccate on the soil surface. Increased temperature can increase odour generation however this also correlates to a much faster drying of the waste on the surface and as such can be self-managing.

If waste is broadcast applied to standing vegetation (e.g. bracken or rank pasture) this can promote generation of aerosols through increased exposure to air. Should nuisance odours occur there is the option to immediately stop odour generation by mechanical incorporation into the soil. Many odour issues are avoided when wastes are applied via low-emission applicators rather than through a broadcast nozzle.

Forecast weather conditions shall be constantly monitored. Should the weather be considered unsuitable for spreading, the wastes should either be stored onsite until conditions improve or are taken to alternative disposal sites.

Higher-odour materials will be managed by applying them in suitable weather (e.g. avoiding hot and/or windy conditions) and rapid incorporation/dilution in storage tanks by mixing with other materials, such as yeast sludge and salmon silage in formic acid to significantly reduce odours.

5.16 Grazing Withholding

Many of the wastes to be reused are classified as Restricted Animal Material (RAM) due to the potential for the presence of animal-derived products. Animal products have the potential to contain prions which can cause Transmissible Spongiform Encephalopathy (TSE) if ingested. TSE type diseases are ultimately fatal and follow a degeneration of the nervous system. Mad Cow disease and Scrapie in sheep are the two main TSE's affecting Ruminants.

Prions that cause TSE are resistant to decay from normal processing and disinfection practices. Animals that eat animal products such as humans, chickens and farmed salmon can contain and excrete RAM. For this reason, common organic fertilisers such as compost, chicken litter and biosolids are also categorised as RAM. The only viable control methods are through control of transmission and through complete destruction of stock that are found to be infected.

Section 9(1) of the *Biosecurity Regulations 2022* (The Regulations) prohibits a person from feeding RAM to ruminant animals. Feeding is considered to have been prevented when access has been prevented. In practice, when RAM is visible on the soil surface from eye level this is considered to be accessible to stock and if stock is found to be (or have been) in these areas this would be in contravention to The Regulations.

Biosecurity Tasmania, as the regulator, have powers to issue directives to land managers and stock owners and this may include prohibiting landowners from grazing spread areas or preventing sale of stock to certain abattoirs or export markets when they have been found to access RAM.

Prioritising spreading of wastes on land intended for cultivation shall occur, with wastes derived from the processing of raw animal products spread exclusively on ground intended for cultivation (Table 5).

For wastes such as hatchery sludges, stickwater and bloodwater, spreading onto pasture not intended for cultivation is permissible however material must no longer be visible when stock are reintroduced to the spread area. The time it takes for RAM to break down and become incorporated into the soil will vary depending on numerous variables however a minimum withholding period (WHP) of 30 days shall be observed, noting that the minimum requirement under the legislation is 21 days. A 30-day WHP audit will be conducted on site to ensure all material has been incorporated into the soil and once notified compliant, livestock can safely return to site.

Reintroduction of stock must be preceded by an inspection by a suitably qualified person. The suitably qualified person must be trained in the contents of this EMP and an associated procedure for identification of RAM.

Regular inspections of fencing and ensuring all gates are closed are required to prevent unintentional access to the unloading and spread areas by stock.

5.17 Prevention of Vermin

An ongoing assessment will be conducted to determine whether flies, birds etc are becoming a nuisance or if they have the potential to move the waste from the spread area. Should vermin issues be identified mitigation measures shall be investigated.

Vermin activity will be assessed weekly during active spreading periods using visual inspections and bait station monitoring. Results will be documented and corrective actions implemented where necessary.

The proliferation of vermin such as feral cats and crows may be indicative of improperly processed putrescible wastes being reused and this is to be investigated and rectified. Section 12(1) of the Regulations prohibits the unhygienic management of animal carcasses.

5.18 Vehicle and Equipment Hygiene

The movement of equipment and vehicles has the potential to transfer weeds and pathogens between sites. In the case of Aquaculture based wastes poor hygiene with regards to transport vehicles, boots, gloves, hoses and fittings can increase the risk of disease transfer between aquaculture sites.

All washdown areas must be fenced to exclude stock and assessed for visible RAM prior to demobilising from the site (Section 5.16).

5.18.1 Landspreading equipment

Landspreading equipment shall be cleaned periodically as required. As much as practically possible, landspreading equipment shall avoid driving over spread areas to prevent transfer of material out of spread areas and onto hardened roads and areas not intended for spreading.

Loading ports on spreading equipment where hoses are connected must be cleaned daily.

When spreading equipment is moved to a new location a full clean and disinfection shall occur. All organic material is to be removed using a pressure washer and appropriate cleaning products. Virkon S 1% disinfectant shall be used as per manufacturer's instructions.

5.18.2 Delivery vehicles

All trucks transporting wastes to site must remain on hardened roads. Following transfer of wastes into the storage tanks on site, organic material shall be removed from hoses, fittings and wheels using appropriate cleaning equipment. Virkon S 1% disinfectant shall be used as per manufacturer's instructions before the vehicle leaves site.

5.19 Complaints Management

All complaints received will be logged and forwarded to Council within 24 hours of receipt, along with details of any corrective actions taken.

5.20 Signage

The following signs are to be in place on the property:

Table 8: Specific signage requirements

Sign Description	Number, size and frequency of signs	Minimum Sign Detail
Permanent signage at main entrance to property and fencelines of organic waste applied paddocks internal to the property	Single weatherproof sign 20m – 50m into the main entrance to the property and on each gateway accessing the paddock. 900mm^2. Signage to remain until withholding period expires.	WARNING LANDSPREADING APPLICATION AREA Unauthorised entry of persons or stock prohibited.
On fencelines of organic waste applied paddocks alongside public roads or other areas visible or accessible by the public (eg walking tracks, public use areas)	A4 sized weatherproof sign every 500m along the fenceline bordering public roads and other areas frequented by the public.	LANDSPREADING APPLICATION AREA Unauthorised entry of persons or stock prohibited. Planned application start date _____ Planned application end date _____ Withholding period ends _____

x15
300 x 450mm
Colorbond Signs
With Whiteboard Laminate

x15
600 x 450mm
Colorbond Signs

Figure 6: Organic waste signage

5.21 Emergency Response

5.21.1 Reporting

All hazards and incidents, including near misses, shall be reported as per Spectrans incident response process (Figure 7).

5.21.2 Relevant Contacts

Table 9: Relevant contacts in case of emergency

Contact	Phone Number	Name
Emergency Services	000	
Environmental Scientist	0409 395 715	Sam Marsh
Site Operator	0400 486 884	Peter Tomlison
Senior Manager	0408 371 631	Andrew Younger
EPA Incident Hotline	1800 005 171	
Property Owner	0417 591 118	Charles Downey

5.21.3 Spill Response

Events such as equipment failure, operator error or accident may result in a spill of waste which may enter or concentrate into sensitive areas. The following approach shall be followed:

1. MAKE AREA SAFE

Once the spill is identified, personnel should be prevented from accessing the area. If safe to do so, stop the source of the spill. This may include turning off a valve or closing a hatch. Emergency services may be required to manage traffic, treat injuries etc.

Where wastes likely contain Restricted Animal Material (RAM), grazing animals shall not be allowed access to the material. Where safe to do so, attempt to exclude grazing animals from the area.

2. IDENTIFY THE EXTENT OF THE SPILL

Assess the spill and what implications this may have on the safety of yourself, others, to animals and the environment. For example, is the spill confined to a concrete bunded area? Is the spill flowing down a drainage line into a river? Is the product lying on the road and potentially endangering others? Anything other than a minor spill that can be safely cleaned up at the time by personnel should be considered an emergency.

3. REPORT THE SPILL

Spectran Management shall be contacted and advises of the situation as soon as safe to do so. If required, contact Emergency Services first. Do not leave the site unattended. Depending on the spill Spectran Management will need to report the event to the EPA, DPIPWE and/or other stakeholders.

4. PLAN HOW TO CONTAIN AND CLEAN UP THE SPILL

Assess what resources are required to contain and clean up the spill. Depending on the size of the spill this may need to be undertaken in consultation with Spectran Management, Emergency Services, and the EPA. For spills larger than a minor spill, Spectran Management will assume control of the incident.

Consider the requirements for disposing of the cleaned-up material (e.g. covered skip bin, 1000 litre tote bin etc). Spectran Management will assist with resourcing the activity.

Larger spills may require resources such as:

- Containment curtains, booms, socks, hay bales etc in drainage lines
- Material to block or bund drainage lines or spill area
- Sawdust for soaking up organic liquids
- Earthmoving equipment to move and load absorbed material
- Tracked machines to travel on soft or uneven terrain
- Wash-down equipment for site clean-up.

Traffic management may be required to ensure a safe clean-up operation.

Liaison with landowners, council, parks and wildlife, DPIPWE etc may be required and are to be addressed on a case-by-case basis.

The organic medium used to soak up and stabilise spilled material should be chosen to have a low moisture content and high surface area to volume ratio. For example, pine bark or soft-fall has been shown to be ineffective at stabilising liquids, whereas dry sawdust is much more suitable.

5. OBTAIN APPROPRIATE EQUIPMENT, PERSONNEL AND PPE

Depending on the situation, varying types of equipment may be required. For example, a vacuum truck may be required to remove excess liquid from an area. All required PPE, SWMS etc associated with this equipment and the activity should be sourced. A crane may be required to right overturned equipment and qualified operators, dogmen etc need to be used for this activity. A skid-steer loader may be required to collect spilled material and load into a replacement skip bin, and a washdown trailer (with water contained to a bunded area) may be required for a final clean-up.

6. CLEAN UP THE SPILL

Depending on the situation, this may be as simple as a Spectran employee shovelling a small amount of material into a garbage bag or could be a multi-entity effort utilising Traffic Management, Environmental Services, Transport and Equipment Contractors and Equipment. Spectran Management will need to ensure all works are undertaken safely and are covered by relevant Safe Work Procedures. The clean-up methodology may need to be approved by authorities before proceeding. Detailed records of the spill and clean-up activities should be kept, including taking notes and photos.

7. DISPOSE OF MATERIAL APPROPRIATELY

The material must be sent to an approved facility that is approved for the waste type. Depending on the situation, specific approvals and consent may be required to allow disposal of the cleaned-up material. Vehicles transporting cleaned-up material need to comply with all controlled waste transporter requirements.

8. REPORT THE INCIDENT AND REVIEW

Any spill event that results in environmental harm needs to be reported to the EPA. All spills should be logged in lucidity as an incident. The spill shall be reviewed through the same process as other incidents and corrective actions implemented.

INCIDENT RESPONSE PROCESS

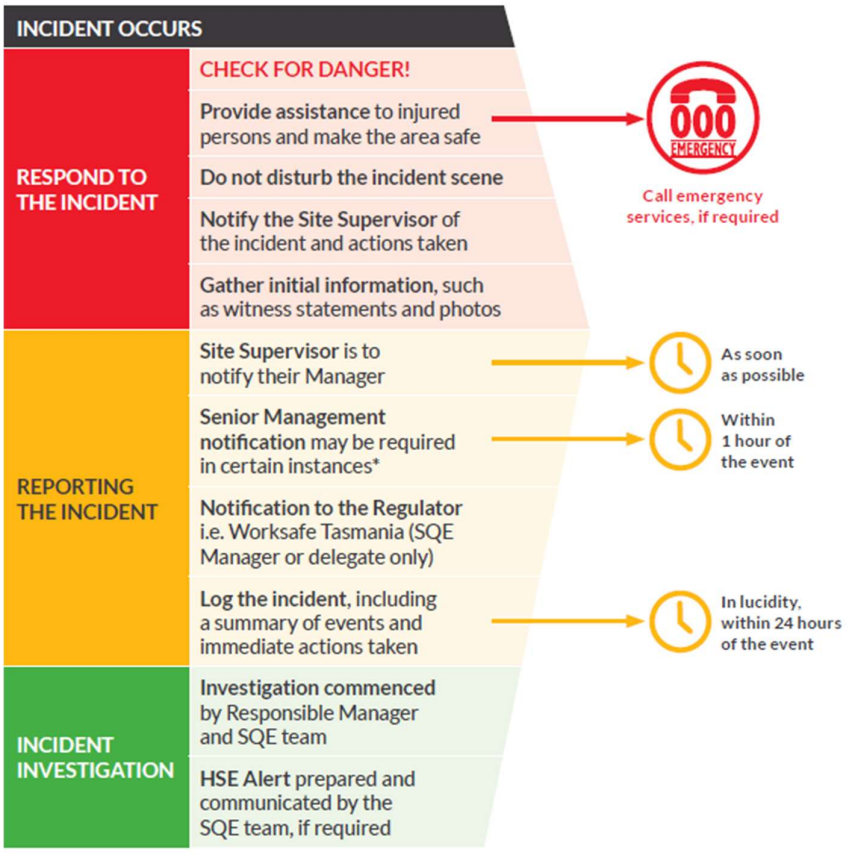


Figure 7: Incident Response Process

5.22 Handling of Complaints

All complaints are to be investigated immediately and recorded in Spectran's incident recording system. All investigations shall address the following questions at a minimum:

- What is the nature of the complaint
  - Odour, noise, environmental, visual?
- What are the times and duration of the activity causing concern
  - Is it a one off or has it been constant?
- Have there been environmental or weather conditions that may be contributing?
  - Hot/cold weather, wind direction, rainfall
- Are there any non-compliance events that may be contributing?
  - Have buffer zones been observed?
  - Are all biosolids delivered to site verified as Grade B?
  - Is stock being excluded from spread areas?
  - Are delivery vehicles being operated safely?
- Is the complaint potentially vexatious or are there vested interests at play?
- Has the complainant been consulted previously?
  - Do they understand the activity, the duration, location, management measures?
- Are others affected?
  - If so what is their experience?
- What mitigation measures can be employed?
  - Cultivation of spread areas
  - Cease spreading in a particular area
  - Dust suppression on access roads
- What corrective actions were performed?
- Have the corrective actions been effective?
  - Is the original complainant satisfied with the outcomes?
  - Have internal inspections and audits indicated the situation is resolved?
- Do management methods need changing to prevent a recurrence?

5.23 Training

The person(s) responsible for this activity must ensure that all persons who are responsible for undertaking work in relation to this activity, including contractors and sub-contractors, are familiar with these requirements to the extent relevant to their work.

The training shall include as a minimum:

- Safe Operating Procedures for spreading equipment
- Use of the Proof of Placement system
- Familiarisation of property, boundaries, and access points
- identification of key points of environmental value on site including matters of national environmental significance
- Detailing requirements of this environmental management plan and the individual's role in the plan.
- Detailing the conditions of the associated permit
- Environmental incident emergency response procedures
- Relevant legislation relating to the activity
- The potential consequences of not meeting environmental responsibilities.

5.24 Landowner Consent

Landowners are to be provided a copy of this EMP and be briefed on the risks associated with this activity and their responsibilities. Focus is required with regards to Biosecurity and the potential for enforcement activities that may be taken against the landowner and the landowners activity from non-compliance to the Biosecurity Act and the General Biosecurity Duty. A signed document shall be retained that demonstrates that the landowner is aware of the risks and their responsibilities.

5.25 Record Keeping

The following records shall be kept as a minimum and supplied to the regulating authority upon request:

- Delivery records
  - Date
  - Volume
  - Product
  - Driver
  - Truck/Tanker ID
- Spread records
  - Date
  - Time
  - Spread Area
  - Product Type
  - Application rate
- Complaints and corrective actions
- Training records
  - The person receiving the training
  - The date the training was received
  - The name of the person conducting the training
  - A summary of the training

A training record template specific for this type of activity is shown on Page 29.

5.26 Environmental Management Plan – Record of Training

Operator Name	**Operator Signature**
Trainer Name	**Trainer Signature**
Training Date	**Training Location**
Environmental Management Plan Title	
Applicable Property Name(s)	
Version of Management Plan	
Date of Management Plan	

Required Additional Training	On File	N/A	Trainer Comments
Waste Reuse – Environmental Responsibilities Training			
Tractor / Spreader VOC			
Excavator VOC			
Telehandler VOC			
SWMS RA035 Liquid Spreading			
SWMS RA035 Biosolids Spreading			
Tabula Work Instruction			
K100 / K130 Spill Response Procedure			
Other (specify)			

Topic Covered	Yes	N/A	Trainer Comments
Property boundaries			
Paddock ID names and paddock plan			
Intended spread areas			
Property access			
Site contacts			
Sensitive receptors			
Sensitive environments			
Buffer distances			
Unloading area management			
RAM management			
Application rates / travel speeds			
Emergency Response Procedure			
Permit conditions			

SPECTRAN Group

North Tas
23 Merino Street,
Kings Meadows TAS 7249

Headquarters
6 Birdwood Avenue,
Moonah TAS 7009

ReProcess Tas
42 Scotts Road,
Risdon Vale TAS 7016

spectrangroup.com.au

SPECTRAN Environmental

Landspreading Policy

Spectran Environmental Management Pty Ltd
July 2026

Executive Summary

Each year Spectran landspreads approximately 55,000 tonnes of organic waste. Around 25,000 tonnes of this material is biosolids spread on behalf of TasWater, with the other 30,000 tonnes being an assortment of liquid wastes originating predominantly from the aquaculture industry. Smaller volumes are received from industries such as distilleries, breweries, abattoirs and food processors.

Whilst the landspreading of biosolids is performed under an established framework informed by the Tasmanian Biosolid Reuse Guidelines the other wastes managed by Spectran do not have such luxury. This policy document has been created to fill that gap and provide stakeholders with confidence that the management of liquid wastes by Spectran is done so under a well-considered and transparent science-based policy framework.

Contents

Executive Summary ii

1 What is landspreading? 1
1.1 How valuable is the waste? 3

2 Landspreading planning flows 4

3 Regulatory context 5
3.1 Regulatory requirements 5
3.2 Required documentation 5
3.3 Guideline documents 5

4 Waste suitability assessment 6
4.1 Initial screening 6
4.2 Waste characterisation 7
4.2.1 Waste sampling 7
4.2.2 Waste Analysis 8
4.2.3 Agronomic suitability 9
4.2.4 Product Specification 9

5 Site selection for land spreading 9

6 Landspreading management controls 11
6.1 Environmental management plan 11
6.2 Landowner interest and engagement 11
6.3 Sensitive receptors 12
6.4 Terrain and topography 12
6.5 Existing landuse 13
6.6 Quality assurance scehemes 13
6.7 Zoning and protected environments 13
6.8 Managing different wastes holistically 13
6.9 Application rate calculations 14
6.10 Soil assessments 15
6.11 Protecting soils from pH changes 16
6.12 Waterway buffer zones 17
6.13 Equipment specifications 18
6.13.1 Application rate control 18
6.13.2 Application rate calibration 19
6.14 Animal health 19
6.14.1 Restricted Animal Material 19
6.14.2 Disease 21

7 Monitoring and record keeping 23

Appendix 1 Risk assessment 26
1.1.1 Consequence Categories 26
1.1.2 Likelihood Categories 26

TABLES INDEX

Table 1 Typical reuse approaches for organic wastes in Tasmania 2
Table 2 Regulating entities 5
Table 3 Major guideline documents 5
Table 4 General waste characterisation steps 7
Table 5 Typical analytes requiring analysis 8
Table 6 Site selection assessment criteria 10
Table 7 Minimum buffer distances from residences 12
Table 8 Example management controls for spreading on moderately sloping terrain 13
Table 9 Typical application rate limiting factors 14
Table 10 Minimum soil test analysis 15
Table 11 Various fertilisers and their relative contribution to soil acidity 16
Table 12 Default waterway buffer distances 17
Table 13 Other default waterbody buffer distances 17
Table 14 Equipment specifications 18
Table 15 Options for application rate control 18
Table 16 Management methods to prevent RAM ingestion by stock 20
Table 17 Record keeping requirements 23

FIGURES INDEX

Figure 1 categories of wastes spread by Spectran 1
Figure 2 Spreader for spreading solid wastes 2
Figure 3 Annual NPK value of liquid wastes landspread by Spectran 3
Figure 4 Landspreading planning flow diagram 4
Figure 5 Example calibration chart 19
Figure 6 Risk matrix showing determination of risk ratings 26

APPENDICES

Appendix 1 Risk Assessment 26

1 What is landspreading?

Tasmania produces over 800,000 tonnes of organic waste each year[1]. Landspreading facilitates the beneficial agricultural reuse of 260,000 tonnes of this waste, providing a critical service to the community, industry and end users.

The wastes landspread come from a variety of industries and production processes. While they are varied, suitable wastes generally provide nutrients and/or organic matter, providing an inherent benefit to agriculture. The risks of any landspreading approach need to be well understood to determine an acceptable method that controls the risks and allows the realisation of the benefits.

First and foremost, wastes must be well understood and properly characterised; requiring physical and chemical analysis together with an appreciation of process inputs, odour, contamination and variability. A maximum application rate and site constraints can then be determined and a decision made as to whether it is an appropriate waste for managing within this framework.

Spectran landspreads approximately 55,000 tonnes of organic waste annually (21% of statewide total), 25,000 tonnes of which is biosolids spread on behalf of TasWater. The remainder is an assortment of liquid wastes originating predominantly from the aquaculture industry with small volumes spread from industries such as distilleries, breweries, abattoirs and food processors (Figure 1).

To the benefit of liquid waste producers the wastes across the different industries share remarkably similar characteristics. The wastes are predominantly water with a proportion of organic-based solids that contain valuable nutrients. Spectran provides a holistic solution for multiple waste producers including transport where wastes are similar or complementary and can be managed under a similar management protocol.

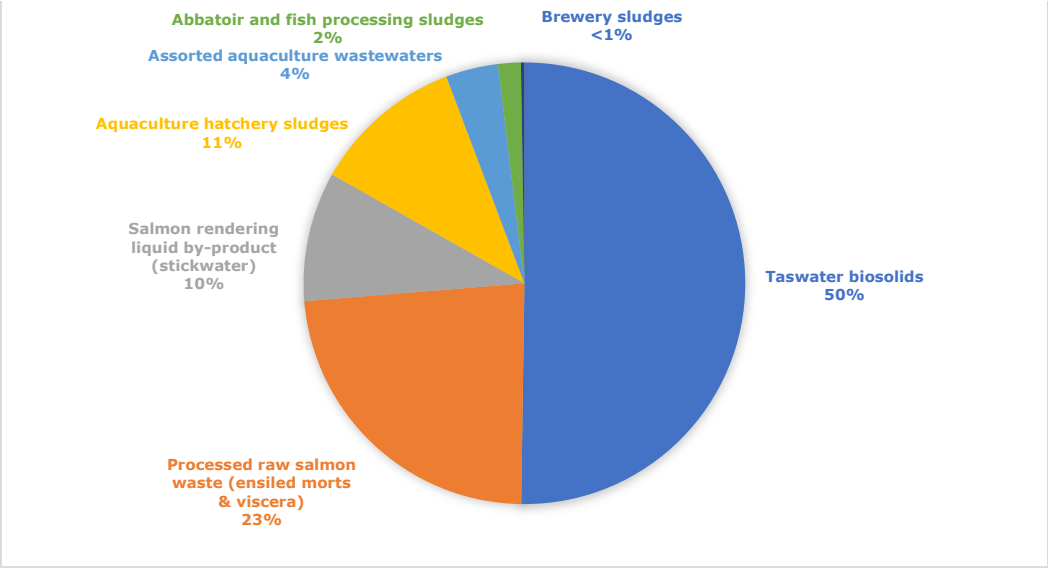


Figure 1 categories of wastes spread by Spectran[2]

Organic wastes are applied to agricultural land via a spreading vehicle, typically a tractor with either a liquid “slurry” spreader (Cover page) or a solids “muck” spreader (Figure 2).

[1] Tas Org Res Report (Final)_RMCG_220407 update
[2] Data provided by Spectran, totals for FY22-24

Figure 2: Spreader for spreading solid wastes (Spectran, 2025)

Table 1 shows the typical reuse approaches for main categories of organic wastes in Tasmania, demonstrating the importance of landspreading to many waste categories, providing valuable contingency options when other reuse approaches are constrained.

Table 1: Typical reuse approaches for organic wastes in Tasmania

Waste category example	Typical reuse approaches
Wastewater or effluent – low solids, low nutrients	• Irrigated via reticulated wastewater irrigation schemes • Landspread where irrigation infrastructure does not exist or cannot be used
Wastewater or effluent – elevated solids, elevated nutrients (e.g. pot ale)	• Landspread
Sludges and biosolids - liquid	• Landspread
Sludges and biosolids – dewatered	• Composted or • Landspread
Milk by-products	• Stock feed • Landspread
Vegetable trimmings, draff, brewery screenings	• Stock feed • Landspread
Meat and fish trimmings, meat carcasses	• Protein recovery via rendering
Salmon mortalities, viscera	• Protein/oil recovery via rendering • Composted • Processed (ensiled) and landspread
Paunch	• Compost • Pit storage • Burial
Green waste, kerbside food and garden organics	• Compost

1.1 HOW VALUABLE IS THE WASTE?

An analysis was performed in 2025 that looked at the total volumes of liquid waste landspread in a typical year and assigned a dollar value per tonne depending on the waste nutrient concentration and the comparable cost of purchasing these macronutrients via synthetic fertilisers. Receiving properties can expect to offset $655,000 in synthetic fertiliser costs (Figure 3).

Individual farming businesses need to evaluate the inherent value of the wastes against the costs of facilitating the activity, managing stock withholding and other restrictions and decide if it is a suitable activity for their operation. Spectran will ensure all potential waste recipients understands the broader picture of benefits, costs and risk of receiving organic wastes for reuse (Section 6.2)

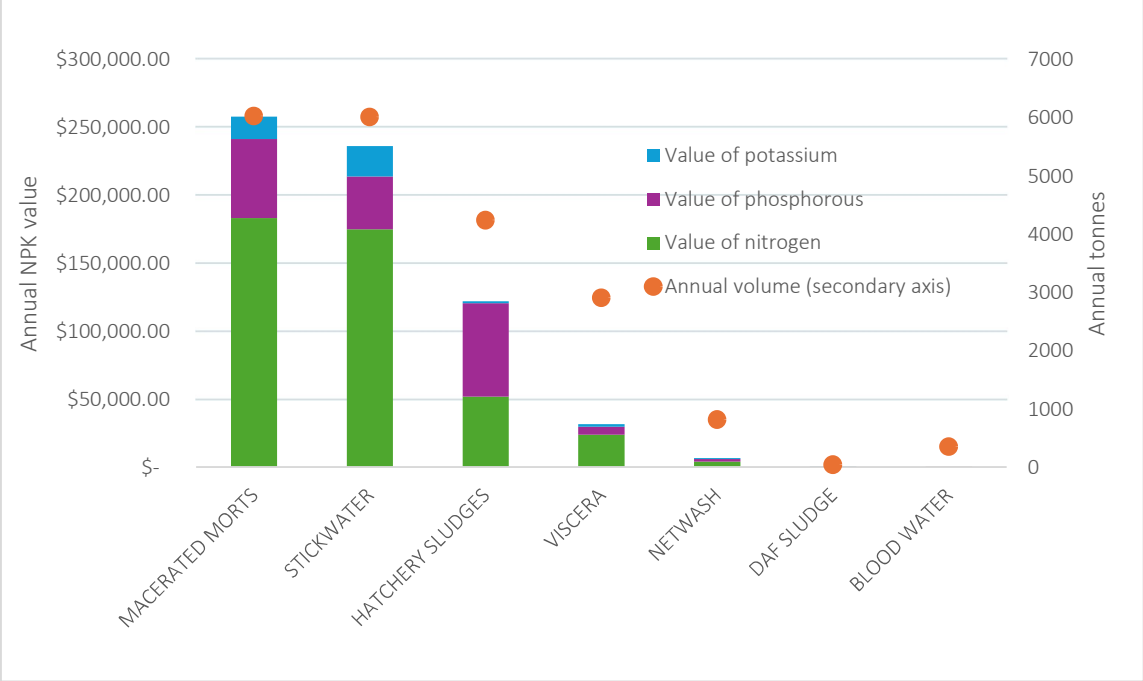


Figure 3 Annual NPK value of liquid wastes landspread by Spectran (typical volumes as per 2024-25)

2 Landspreading planning flows

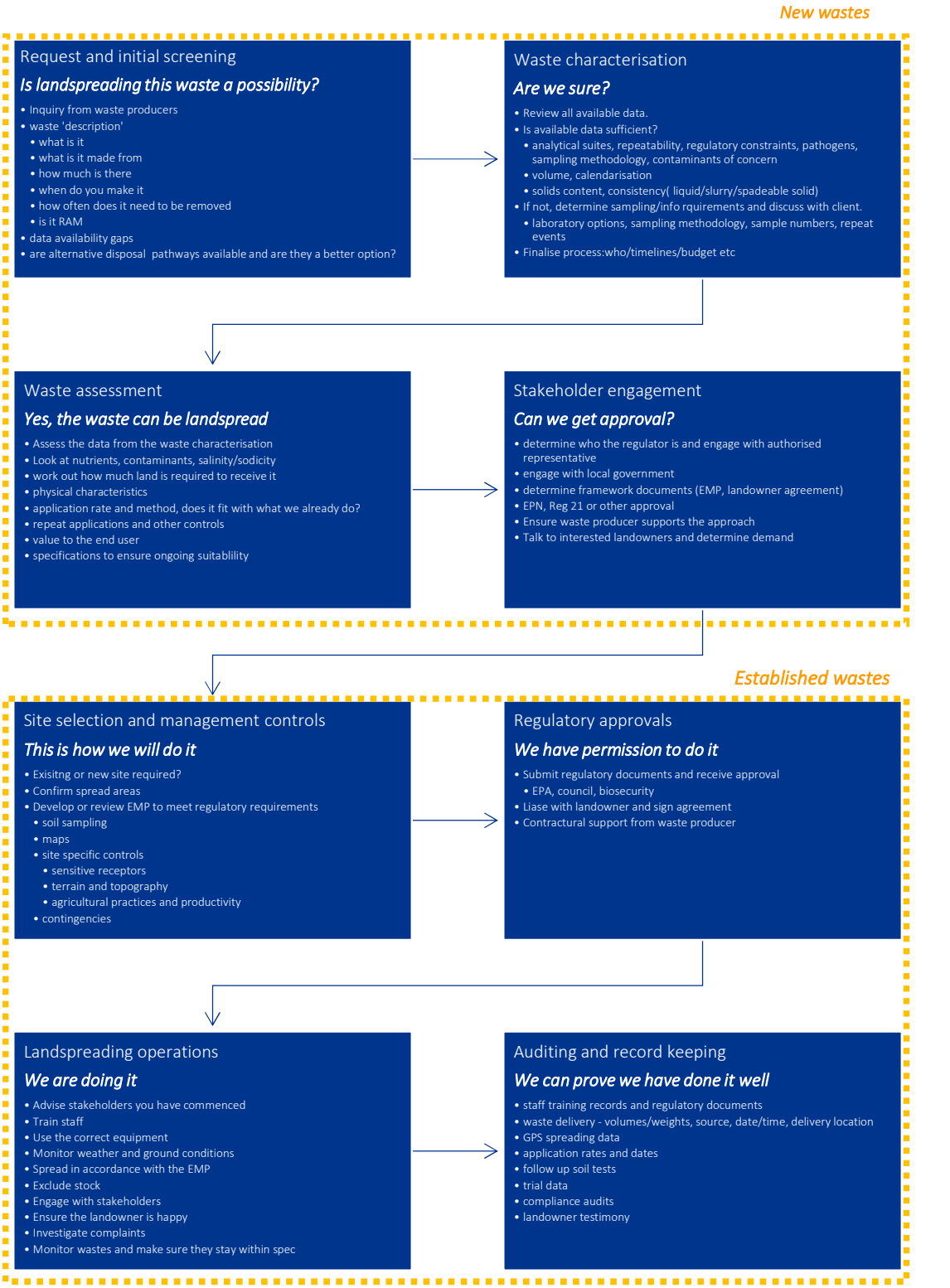


Figure 4: Landspreading planning flow diagram

3 Regulatory context

3.1 REGULATORY REQUIREMENTS

Most landspread wastes managed by Spectran are considered under the Environment Management and Pollution Control Act (EMPCA) to be controlled wastes. By law, movement and reuse/disposal of controlled wastes must only occur by way of a relevant authority administered under the act. Spectran will obtain and maintain the relevant authority to transport and reuse controlled wastes.

In addition to compliance with EMPCA, landspreading operations will consider other relevant legislation. When in doubt, proactive engagement will occur.

Engagement with regulating entities shown in Table 2 will occur, as a minimum. For new wastes, engagement with regulators will occur to confirm that a regulatory pathway is likely to exist.

Table 2 Regulating entities

Regulating authority	Relevance
Environmental Protection Authority	• Regulates the handling and disposal of controlled wastes
Local government	• Regulates the Land Use Planning and Approvals Act • Acts as a delegate authority to EPA for Level 1 environmentally relevant activities
Biosecurity Tasmania	• Enforces the Biosecurity Act • Undertakes compliance activities for the nationwide Ruminant Feed Ban • Provides permits for movement of wastes from restriction areas (e.g. salmon wastes from Macquarie Harbour)

3.2 REQUIRED DOCUMENTATION

In order to receive regulatory approval and sufficiently inform staff performing the landspreading activity a sufficiently detailed and documented plan is a requirement. Section 6.1 describes the requirements of an Environmental Management Plan (EMP) in further detail. Spectran will prepare sufficiently detailed EMP's to support its landspreading activities.

3.3 GUIDELINE DOCUMENTS

Various guideline documents are available to assist with the landspreading of wastes in Tasmania and complement this policy document. Those shown in Table 3 are the most relevant to Spectran activities. This list is not exhaustive and expert agronomic advice shall use additional input from relevant literature, other guideline documents, case studies and established scientific principles.

Table 3 Major guideline documents

Document	Authority
Tasmanian Biosolid Reuse Guidelines 2020 (TBRG)[3]	EPA Tasmania

[3] Tasmanian Biosolids Reuse Guidelines June 2020

Guide to Land Spreading of Food Industry Waste (2019)[4]	EPA Tasmania
Environmental guidelines for the use of recycled water in Tasmania (2002)[5]	NRE Tas (DPIPWE)
Australian ruminant feed ban national uniform guidelines (2019-20)[6]	Animal Health Australia
PFAS National Environmental Management Plan 3.0 (2024)[7]	Heads of EPA Australia and New Zealand
Information Bulletin No. 105 (IB105) – Classification and management of soil for disposal (2018)[8]	EPA Tasmania

4 Waste suitability assessment

Many wastes are unsuitable for reuse via landspreading or are suitable but with pre-processing or application of management controls that are unfeasible. These wastes are to be identified and avoided.

4.1 INITIAL SCREENING

When a query is made by a waste producer wanting an organic waste managed, an initial screening will occur to determine if landspreading the waste is a possibility. To make an informed determination, the following information will be requested:

- Description of the waste material
  - what is it? How is it generated?
- Location
  - where do we need to get it from?
  - how far do we need to transport it to a landspreading site?
- Volumes
  - how much and how often and does this vary through the year?
  - Is it financially viable to Landspread the material?
- Water content/state
  - is it a solid or a liquid?
- Available analytical data
  - what is available and where are the gaps?
- Variability
  - can we expect it to always be this way?
- Similarity to other wastes Spectran manage
  - will it dovetail into our existing operations?
  - do our existing permits cover it?
- Alternatives
  - what options are there?

[4] Guide to Land Spreading of Food Industry Waste - January 2019
[5] use_of_recycled_water_december_2002.pdf
[6] Australian Ruminant Feed Ban - Animal Health Australia
[7] PFAS National Environmental Management Plan 3.0 - DCCEEW
[8] Information Bulletin 105 - Classification of Contaminated Soils (IB105) V3_2018.pdf

4.2 WASTE CHARACTERISATION

When the initial screening indicates that a waste may be suitable for landspreading, there are usually information gaps to confirm suitability. Once it is considered likely that a waste can be landspread further investigation will be undertaken following agreement with the waste producer.

Table 4 summarises the key essential steps to be followed.

Table 4 General waste characterisation steps

Step #	Description	Example scenarios preventing landspreading
1	Determine volumes and seasonal spikes	• There is too much volume when landspreading capacity is low
2	Determine if waste can be physically handled and spread evenly with existing method	• The waste is too thick to pump and spread as a liquid and not solid enough to spread as a solid
3	Assess if the waste is better suited to alternatives especially with value adding potential	• Product can be used as stock feed
4	Understand potential contaminants and contamination sources.	• Waste is a dried sludge stockpile that contains plastics and concrete rubble • Waste may contain PFAS or other contaminants of concern
5	Understand the degree of stabilisation and requirement for further processing	• Waste is raw animal material that will attract vermin, create odour and harbour disease
6	Understand the likelihood of waste variability	• The waste sometimes incorporates a clean-in-place washdown chemical that is potentially toxic
7	Consider nutrient/contaminant/salt loadings and an appropriate application rate	• High Phosphorous concentrations prevent application on soils with high background levels. • High sodium levels reduce application rate to the point where the benefit from the addition of beneficial nutrients is offset by the inconvenience to the end user.
8	Confirm that there is a net benefit once landspread	• The nutritional value of the waste does not offset the headaches to the farmer

4.2.1 Waste sampling

When an inquiry is made by a waste generator it is not unusual that the waste quality in relation to the risk factors associated with landspreading is poorly understood. A site-specific approach to sampling is critical. An understanding of the processes impacting waste generation allows development of a sampling plan likely to assess waste quality and variability.

Representative samples that consider any variability associated with how the waste is produced will be collected. Where customers supply samples or analytical reports, detailed enquiry is necessary to confirm their relevance prior to acceptance of data.

For example:
When sampling liquids there are challenges with obtaining representative samples.

- Sample ports should be used where waste is being pumped.
- If sampling from a final storage tank, the waste shall be fully mixed and homogenised before sampling.

An assessment of factors affecting variability of the waste will occur.

- A greater intensity of processing operations may reduce the percentage of wash-down water typically included with a waste and thus increase the nutrient concentration.
- Waste recovered from the first settling tank in a series will have a much higher concentration of solids than the last tank in the series.

The number of samples required and the repeat sampling frequency are site/waste specific. Decisions are informed by initial data provided and the level of process variability that is likely. Further decisions are to be made with reference to the overall waste volume and the level of variability observed relative to proposed application rates.

4.2.2 Waste Analysis

Samples will be sent as soon as practicable after collection to an NATA accredited[9] laboratory and analyse the parameters in Table 5 as a minimum.

Table 5 Typical analytes requiring analysis

Analyte	Relevance
Moisture	Demonstrates flowability and solids content to convert dry matter results
Biological Oxygen Demand	Demonstrates the concentration of organic matter, with high BOD causing soil pore clogging and temporary anaerobic conditions in the soil profile.
Oil and Grease	Can indicate an improperly processed material and result in soil pore clogging and surface crusting
pH	Shows acidity/alkalinity. Potentially indicates a satisfactory level of pre-treatment. Can temporarily change soil pH.
Conductivity	Demonstrates the salt content. Waste can then be characterised against irrigation water guidelines and considered against rainfall and other irrigation inputs
Chloride	Can contribute to foliar injury
Cations: Sodium Magnesium Calcium	Can lead to soil salinity and Sodicity, complementary to conductivity results.
Nitrate + Nitrite	Allows determining of nutrient limiting application rates by understanding total and available macro nutrients for plant growth.
Nitrogen, Total Kjeldahl	
Ammonia as N	
Potassium, Total	
Phosphorous, Total	

[9] Search accredited organisations - NATA

Analyte	Relevance
Aluminium	Allows determination of contaminant limiting application rates. TBRG can provide guidance on upper limits to reduce risk of contaminant accumulation.
Arsenic	
Barium	
Calcium	
Chromium	
Copper	
Iron	
Lead	
Magnesium	
Manganese	
Zinc	
Other contaminants (e.g. PFAS, antibiotics etc)	Risk based approach depending on contaminant sources with an analysis to provide confidence that contaminants of concern are not present.
E.coli	Indicates degree of stabilisation and is a requirement for biosolids reuse

4.2.3 Agronomic suitability

A qualified agronomist will analyse data to determine the agronomic suitability and assign appropriate management controls specific to receiving locations and soil types.

4.2.4 Product Specification

Once a waste is characterised, a waste specification shall be developed that waste producers will be obliged to comply with and ideally included as a condition in contracted arrangements in order control the potential for variability in the waste once landspreading of the material has commenced and management controls have been established.

5 Site selection for land spreading

Selection of a suitable site is critical to the success and ongoing sustainability of land spreading. Landowners must be engaged in the process and willing to embrace the activity. Initial discussions with landowners will be performed by staff knowledgeable with agricultural systems and aware of how a waste reuse activity can be structured to work within an existing agricultural operation.

A valuable amount of information can be gleaned from a desktop assessment (utilising resources such as LISTmap) and a simple screening phone call prior to progressing to more formal discussions and site investigations.

Table 6 details considerations Spectran takes when assessing sites for landspreading suitability. Site specific adjustments to the restrictions may be required on a case-by-case basis and will be detailed in a site EMP. More detail on each criterion is provided in Section 6: Landspreading management controls.

Table 6 Site selection assessment criteria

Consideration	Restrictions		Additional information
Transport access	Must have appropriate road access for heavy vehicles (45t GVM)		Check with council for any issues with extra truck movements, bridge capacities, noise and dust concerns etc.
	Unloading areas >1000m from main roads		To prevent odour and nuisance
Slope	Approx 8 degrees (slope of <15%)		Slope of up to 14 degrees (slope of 25%) is possible with management controls in place to prevent run-off.
Landuse	Many wastes are not suitable for retained pasture, intensive cropping, fresh market food crops (e.g. lettuce, carrots) etc		Select areas where multi-week spreading campaigns will not be disruptive that will be resown to pasture or grazing fodder after spreading. Segregate wastes to suit landuse.
Landholder engagement	Landowner is motivated and has spare management resource to facilitate the activity. Landspreading information document provided. Waste Reuse Agreement to be signed.		Landholders must understand and acknowledge the extra management requirements especially around stock withholding.
Soils	pH between 4.5 and 7		To ensure plant nutrient uptake and soil buffering is maximised
	ECse <4dS/m		To avoid short term yield suppression from elevated soil salinity
	Olsen P <40		To avoid leaching of Phosphorous. Needs further consideration of soil type and Phosphorus buffer capacity.
Buffer distances	Watercourses	10m-50m depending on CFEV ICV classification	Additional distances may be required (e.g. upslope, during winter) and must be addressed and mapped in the site EMP.
	Unmapped farm drains	5m	
	Ramsar wetlands	100m	
	Farm dams	15m	
	Occupied dwellings (on-farm)	100m	To prevent odour nuisance
	Occupied dwellings (off-farm)	1000m	
	Public roads	10m-100m	Apply extra buffer for high use roads or with clear line-of-sight, low buffer on low use roads acceptable to prevent off-site nuisance.
	Native forests and significant vegetation	10m	
	Property access roads	5m	To reduce risk of material drifting on to roads and being trafficked off-site
Zoning	Agricultural or Rural		Other planning restrictions such as conservation overlays, water management zones etc to be assessed.

Consideration	Restrictions	Additional information
Undesirable drainage	Waterlogged, highly permeable or flood prone soils with high water table.	To prevent run-off and groundwater contamination
Water catchments	> 3km upstream of town water supply offtakes	To reduce risks to drinking water supplies
	>250m from potable water bores	
Quality Assurance Schemes	Organic fertiliser of the class proposed is to be a permitted activity under a farms QA scheme	May require extra management requirements through reporting

6 Landspreading management controls

6.1 ENVIRONMENTAL MANAGEMENT PLAN

Preparation of a site-specific Environmental Management Plan (EMP) is essential and will be prepared for every activity. The document will detail all relevant aspects of the wastes being applied, the site they are being spread and all appropriate management controls. The EMP's will contain site maps showing spread areas, exclusion zones, sensitive environments and soil testing transects. Soil test data will be included an appendix once soil tests are taken and calculations demonstrating how specific management controls have been derived will be shown.

The main purposes of an EMP is to:

(a) Demonstrate to regulators that the activity has addressed all relevant risks and has applied appropriate controls, thereby supporting a request for a permit to allow the activity to proceed
(b) Instruct the staff responsible for the landspreading activity how to undertake the activity to be compliant and to provide benefit to the receiving land

As the EMP is intended to be read by persons with varying degrees of scientific competence, the EMP will be written in such a way so it contains sufficient detail but is not over complicated.

6.2 LANDOWNER INTEREST AND ENGAGEMENT

End users must understand and acknowledge the inherent complexity associated with landspreading operations and the additional management requirements placed on them in having landspreading occur on their property and remain willing and engaged participants with that understanding.

Landspreading presents risks to the end user and in many instances the primary management controls sit with the farmer, especially risks surrounding animal health and stock withholding. These risks will be clearly explained to the end user.

Recipients of organic wastes must understand that wastes are rarely 'complete fertilisers' and cannot be tailored to the application site in the same way formulations of synthetic fertilisers can be. In saying that, proper reuse of organic wastes can transform agricultural areas into highly productive landscapes for very little effort to the farmer.

Formal agreements will be entered into to ensure the management controls that are the responsibility of the landowner are well understood and agreed upon.

6.3 SENSITIVE RECEPTORS

Odour and increased traffic movements are common causes of nuisance for nearby residents and are one of the major concerns of regulators when assessing and regulating an activity. Establishing landspreading sites close to residences will be avoided. Wind direction is to be considered however this is considered a reliable management control; one odour complaint is one too many and wind can come from any direction at any time of year.

Line-of-sight can contribute to the likelihood of nuisance complaints. In many instances complaints arise from a general dissatisfaction of the activity rather than actual nuisance, but it is often difficult to differentiate between the two. Sites with lots of road frontage will be avoided.

In instances where there may be sensitive uses close to landspreading sites, active engagement is best. Doorknocking, letterbox drops and/or signage will be considered depending on the situation. When complaints are received this will be followed with an active and professional investigation that applies appropriate corrective actions as required and follows up with the complainant on the efficacy of the actions.

Table 7: Minimum buffer distances from residences

Residence type	Minimum buffer distance
Occupied dwellings (on-farm)	100m
Occupied dwellings (off-farm)	1000m

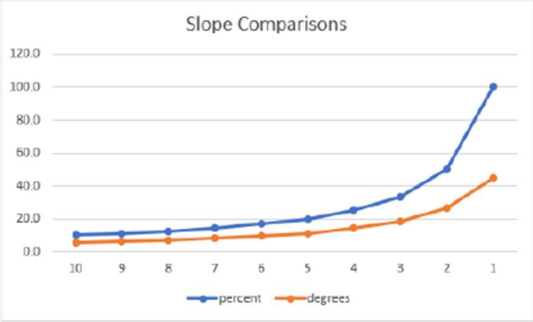
6.4 TERRAIN AND TOPOGRAPHY

Landspreading equipment can only safely operate on even, gently sloping terrain. Rocky, uneven and steep terrain will be excluded from spreading plans for operational safety and equipment protection reasons. The risk of movement of applied waste is also influenced by the terrain and topography.

Controls to prevent downslope movement will consider site specific factors including the nature of the waste and the level of ground cover. As a guide, the TBRG requires areas with slope greater than 15% grade (approx. 8 degrees) are to be avoided unless management controls are in place to prevent run-off, with a slope of up to 25% (approx. 14 degrees) permissible if management controls are in place. The LIST[10] has layers that show the slope at any point and allow the incorporation of this information into site maps and operational software.

Percent v's degrees

Slopes are often referred to in degrees or percent. The graph below shows the conversion. .



Slope Comparisons		
1 in...	percent	degrees
10	10.0	5.71
9	11.1	6.34
8	12.5	7.13
7	14.3	8.13
6	16.7	9.46
5	20.0	11.13
4	25.0	14
3	33.3	18.4
2	50.0	26.6
1	100.0	45

[10] https://www.thelist.tas.gov.au/app/content/home
https://www.worksafe.govt.nz/topic-and-industry/agriculture/farm-vehicles/use-the-right-farm-vehicle/

Table 8: Example management controls for spreading on moderately sloping terrain

Management control	Run-off risk reduction on steep terrain
Thick slurries (>6% solids)	Less likely to flow down slope
Vegetation cover	Waste adheres to large surface area
Roughly cultivated ground	Waste pools in depressions and is absorbed into the soil
Flat areas downslope	Run-off ceases further movement
Large buffers to waterways	Provides extra redundancy for downslope movement

6.5 EXISTING LANDUSE

Landspreading can cause considerable disruption to existing land use practices and workflows which will to be discussed with land managers prior to proceeding with preparations for the activity. An assessment of existing land use operations will be undertaken to determine if the landspreading activities will adversely impact crop and grazing schedules, future land plans etcetera.

Most wastes require a withholding time after spreading before the land can be used for grazing or cropping. This can be highly disruptive for some operations especially where the land use is intensive (e.g. irrigated) with tight grazing or cropping rotations. The uncertainty in withholding periods caused by RAM management (Section 6.14.1) may cause additional disruptions and make planning difficult.

Run-down pastures on marginal soils that are planned for renovation are the most common best-fit for landspreading activities, as well as cropping ground that is planned for resowing (e.g. post grain harvest).

6.6 QUALITY ASSURANCE SCEHEMES

Australia has a number of agricultural quality assurance schemes designed to ensure food safety, environmental sustainability and market access. Whilst most QA schemes promote the use of organic inputs for sustainability reasons there may be requirements for risk assessments to be performed and for these to made available to QA scheme auditors. A review of any applicable QA schemes in use by the property will occur prior to proceeding.

6.7 ZONING AND PROTECTED ENVIRONMENTS

Many potential areas for landspreading have restrictions on the activities that are permitted under local, state and federal laws. As part of the site selection process investigation on site specific restrictions will occur. Most information is publicly available and can be found by using online tools such as The ListMap service[11] and the Protected Matters Seach Tool[12]. Professional planning advice will be used where appropriate.

6.8 MANAGING DIFFERENT WASTES HOLISTICALLY

Spectran manages multiple liquid wastes at the same landspreading sites. Each waste is different to the next to the extent that wastes require specific management controls from the next. This leads to difficulties in ensuring each waste is managed appropriately and not lumped into the same homogeneous management regime.

[11] https://www.thelist.tas.gov.au/app/content/home
[12] https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool

The simplest and most common approach to managing varied wastes together (or the same type of waste from different sites) is to adopt a weighted average for application rate limiting factors. The outcome of this is some spread areas in a paddock will have more than the ideal rate applied, and some areas will have less, but overall the paddock will have the target rate spread. The disadvantage of this approach is the paddock will have varied, "stripy" results and thus detracts from the potential value proposition to the farmer.

With the advent of proof-of-placement systems there is potential to micromanage where different types of wastes are spread and control how many passes of each waste can go on the same area, thereby reducing the variability across a paddock and maximising the opportunity to reuse wastes in a given area of ground and improving beneficial outcomes. Spectran will continue to invest in improvements to reduce result variability.

6.9 APPLICATION RATE CALCULATIONS

Agricultural activities are an inherently extractive industry, utilising resources such as nutrients in the soil, carbon from the atmosphere and sunlight to create products that can be sold or fed to stock. Many of these resources need replacement to avoid depletion. The reuse of waste can replace nutrients and often has the added benefit of remediating soils that have been depleted of organic matter.

Removal rates can differ remarkably depending on what is being grown and how productive the land is; as such site-specific agronomist input will be used to determine the most appropriate application rate to offset nutrient removal and to build capital levels to assist with long term soil productivity.

In addition to addressing nutrient balances the agronomic input will address other factors such as the risk of salinity, sodicity and the impact of identified contaminants by implementation of appropriate management controls.

Any number of waste attributes may be the factor limiting application rate (Table 9) and these will be calculated and documented in the site EMP.

Table 9 typical application rate limiting factors

Application rate limiting category	Common factors for consideration
Nutrient	Calculates crop nutrient requirements and soil holding capacity of each major nutrient and applies a limit to avoid over-application. Application rates are generally limited by Nitrogen and Phosphorus.
Contaminant	Analyses common analytes present in wastes where elevated concentrations in soils may have undesirable impacts. Often contaminants can be essential for plant growth (e.g. zinc and copper) but are toxic at high concentrations, so application needs to be managed and limited where necessary.
Hydraulic	Over-application of liquids within a short space of time may lead to surface water (or waste) movement and soil saturation.
Salinity/sodicity	This is usually incorporated in contaminant limiting application rate calculations for organic wastes.

6.10 SOIL ASSESSMENTS

Receiving soils will be assessed and analysed to be deemed suitable to receive wastes as an input. Soil sampling shall be representative and in accordance with standard industry practice[13] and measure all relevant soil analytes (Table 10). This generally means a 0-10cm topsoil sample along a transect within the area to be spread consisting of at least 25 soil cores.

Soils are inherently complex and expert agronomist advice will used to review results and determine what additional controls may be required to prevent soil attributes being adversely impacted with a waste application.

When comparing soil attribute trending over time, e.g. before and after waste application, the same sampling method will be used including following the same transects and using the same analytical laboratory. All planned application areas will be soil tested within 12 months preceding the activity. Soil test analyses taken too much time in advance may not be representative of soil conditions at time of spreading.

Soil testing post-application provides validation that management controls are appropriate and it considered necessary for all liquid spreading operations. Post-spreading soil testing will allow three months for wastes to be incorporated naturally into the soil profile before samples are collected.

Table 10: Minimum soil test analysis

Analyte	Unit
Soil colour	
Soil texture	
pH (1:5 water)	
pH (1:5 CaCl2)	
Electrical conductivity (1:5 water)	dS/m
Electrical conductivity (saturated extract)	dS/m
Chloride	mg/kg
Organic Carbon (W&B)	%
Nitrate nitrogen	mg/kg
Ammonium nitrogen	mg/kg
Phosphorous (olsen)	mg/kg
Phosphorous (colwell)	mg/kg
Phosphorous Buffer Index (PBI)	
Sulphur (KCl40)	mg/kg
Cation Exchange Capacity (CEC)	cmol(+)/kg
Calcium (Amm-acet.)	cmol(+)/kg
Magnesium (Amm-acet.)	cmol(+)/kg
Sodium (Amm-acet.)	cmol(+)/kg
Potassium (Amm-acet.)	cmol(+)/kg
Available potassium	mg/kg
Aluminium (KCl)	cmol(+)/kg
Aluminium % of cations	%
Calcium % of cations	%
Magnesium % of cations	%
Sodium % of cations (ESP)	%
Potassium % of cations	%

[13] fertcare-soil-sampling-guide.pdf

Calcium/magnesium ratio	
Zinc (DTPA)	mg/kg
Copper (DTPA)	mg/kg
Iron (DTPA)	mg/kg
Manganese (DTPA)	mg/kg
Boron (Hot CaCl2)	mg/kg

6.11 PROTECTING SOILS FROM PH CHANGES

The ideal soil pH for most crops is 6.5. At this pH the availability of nutrients is maximised. Natural processes associated with conventional farming practices such as cultivation and synthetic fertiliser addition can cause pH to decline over time and this is typically corrected by the addition of lime ($CaCO_3$) which consumes H+ ions in the soil and converts them harmlessly to H_2O.

The landspreading of low pH wastes does not materially alter soil pH, especially when soils are close to neutral pH or high in organic matter where buffering capacity is high. Low pH wastes are typically processed with the addition of formic acid to achieve a pH of 3.5-4. Formic acid is an organic acid that is readily biodegradable and is metabolised quickly by soil microbes over a few days with residual acidity easily moved from topsoils though leaching.

Table 11 compares the contribution salmon silage has to soil acidity alongside conventional synthetic forms of nitrogen, demonstrating that presents less acidification impacts than the more common synthetic fertilisers even with the formic acid component. Pre and post spreading soil tests taken by Spectran over several years demonstrate that there is no observable correlation between soil pH reduction and low pH waste applications; in many cases the soil pH is shown to increase slightly, either due to natural sample variability or the inherent buffering mechanisms introduced by the wastes such as addition of carbonates or an increase in acidic cation exchange sites from the organic matter.

Table 11 Various fertilisers and their relative contribution to soil acidity at an application rate of 100kg of elemental N.

Source	Mechanism of H^+ Production	pH buffering capacity from added organic matter	H^+ Ions produced (mol/ha est)	Liming Requirement (kg/ha)
Ammonium Sulphate $(NH_4)_2SO_4$	Nitrification of NH_4^+ releases 2 H^+ per mole of NH_4^+	0%	14,276	715
Urea $CO(NH_2)_2$	Hydrolysis to NH_4^+ followed by nitrification	0%	14,276	715
Di-Ammonium Phosphate $(NH_4)_2HPO_4$	NH_4^+ nitrification and phosphate acidification	0%	12,856	644
Salmon Silage (3% Formic Acid, 1.44% N)	Formic acid releases 1 mol H^+ per 1 mol HCOOH. Nitrogen in the organic matter is mineralised creating H+ through nitrification of NH_4^+ but the organic matter components buffer around 20% of the H+ produced.	20%	11,614	581

Compost	H+ produced through nitrification of NH_4^+ but largely buffered by the high amount of humic substances	95%	714	36

6.12 WATERWAY BUFFER ZONES

Buffer distances to waterways provide an appropriate level of insurance against the failure of other management controls to prevent run-off. Buffer distances form part of a wholistic risk management approach and should never be relied upon in isolation. A highly conservative waterway buffer does not compensate for a lacklustre approach to other management controls.

Larger streams generally require larger buffers due to higher ecological significance and hydrological connectivity to downstream ecosystems. There are however large variations in hydrological regimes across Tasmania with the agricultural regions of the Midlands, East Coast and South-East containing the states driest, most variable systems, which have medium to highly skewed annual flows, highly variable peak and low flows and strong seasonality[14]. As landspreading activities are occurring in these regions it is not appropriate to simply assign a buffer distance dependant on stream catchment size as this approach risks both over and under-assigning buffer distances.

Spectran designates buffer distances in accordance with waterway and waterbody classifications in the Conservation of Freshwater Ecosystem Values (CFEV) program run by NRE Tas[15]. This approach ensures even small or ephemeral streams are assigned an appropriate buffer distance depending on aspects such their ecological significance, vulnerability and rarity.

Individual EMP's will address site specific factors that may require an increased buffer distance to apply, e.g. areas upslope of a waterway with little vegetation cover to slow surface movement of water or waste, or a blanket increase of buffers during winter months.

The default buffers that Spectran use for waterways are shown in Table 12. Default buffer to other types of waterbodies are shown in Table 13.

Table 12 Default waterway buffer distances

CFEV Integrated Conservation Value (ICV) classification	Minimum buffer distance
Very High	50m
High	30m
Medium	20m
Low	10m

Table 13 Other default waterbody buffer distances

Waterbody type	Minimum buffer distance
Farm drains	5m
Ramsar wetlands and lakes	100m
Farm dams	15m
Town water supply offtakes (upstream)	3000m

[14] Conservation of Freshwater Ecosystem Values Project
[15] The Conservation of Freshwater Ecosystem Values (CFEV) Program | Department of Natural Resources and Environment Tasmania

Drinking water bore	250m

6.13 EQUIPMENT SPECIFICATIONS

Suitable equipment will be used for accurate and consistent waste application with low environmental impact. Table 14 shows environmentally relevant requirements of equipment used for landspreading.

Table 14 Equipment specifications

Equipment attribute	Target Specification
Tyres	High flotation to minimise ground pressure and soil compaction
Spray pressure (liquids)	Less than 1BAR of pressure to avoid small droplet size leading to spray drift and odour.
Beater speed (solids)	Tractor needs to be able to operate at the spreader manufacturers specs (e.g. PTO run at 1000/540 rpm) to ensure particle size is appropriate and spread pattern is even.
Speed control	Accurate speed control is required to achieve target application rates at constant engine RPM
Discharge control	Waste discharge is to be controlled in-cab for turning at headlands or in an emergency. For solids, spreader walking floor and rear guillotine gate needs to be controllable in-cab.
Lighting	Essential for spreading in darkness or low light and must illuminate spread pattern area
Even spread pattern	Spray nozzle (liquids) and beater blades (solids) must be designed and maintained to spread material evenly
GPS tracking (Proof Of Placement)	Shows vehicle position, permitted spread areas and records spread path to assist operator from spreading same area multiple times. The GPS system should also detail exclusion zones and record waste type and application rate to be used as proof of placement. Tabula[16] or Agnav[17] are examples of suitable systems.

6.13.1 Application rate control

Equipment will be used that is able to safely and effectively apply wastes at specific application rates. Application rate control is influenced by a number of variables and changing these variables will result in differing rates of wastes being applied (Table 15). Efforts will be made to fix as many variables as possible so a single variable is used to manage application rates.

Table 15: Options for application rate control

Variable	Control option	
	Liquids	Solids
Travel speed	Select appropriate gear to obtain target travel speed	
Spread width	• Use a boom applicator • Alter discharge pressure • Product viscosity	• Beater speed (change PTO speed if provisioned) • Beater blade size

[16] https://www.tabula.live
[17] https://www.agnav.com

	• Alter splashplate design	
Discharge rate	• Discharge pressure • Nozzle aperture • Product viscosity	• Guillotine door opening • Walking floor speed • Product viscosity

6.13.2 Application rate calibration

The required application rate will be detailed within the property Environmental Management Plan (EMP).

Operators need to reference a calibration chart (example shown in Figure 5) that shows what settings need to be used to achieve a target application rate. Operators may also use a suitable application rate calculation app, such as Mastek.

On procurement, or when equipment is modified/changed during use, a calibration will occur. A calibration process will be followed with on-site verification.

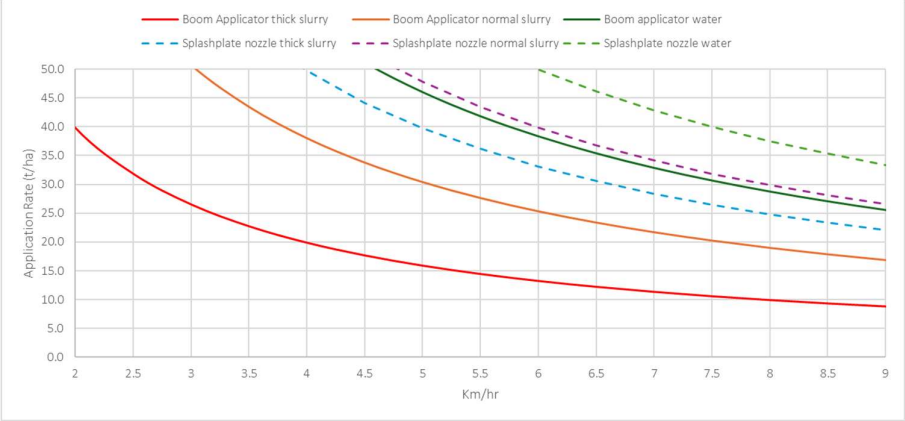


Figure 5 example calibration chart with a liquid spreader using either a boom or splashplate applicator

6.14 ANIMAL HEALTH

6.14.1 Restricted Animal Material

Restricted Animal Material (RAM) refers to materials derived from all vertebrates, including fish and birds, with the internationally recognised exceptions of tallow, gelatine and milk/milk products. RAM is banned from being fed to ruminants in accordance with Australia's Ruminant Feed Ban (ARFB) to prevent the introduction and transmission of Transmissible Spongiform Encephalopathies (TSE's). These are neurodegenerative brain diseases such as 'mad cow disease', scrapie of sheep and goats, and chronic wasting disease of deer. The infectious agent cannot be destroyed like other pathogens.

Biosecurity Tasmania is responsible for ensuring compliance with the ARFB and fact sheets which summarise the Ruminant Feed Ban and the practical implications to end users[18]. The Australian Ruminant Feed Ban uniform guidelines provide information to assist stakeholders with compliance.[19]

[18] Prohibited Pig Feed and Restricted Animal Material Feeding | Department of Natural Resources and Environment Tasmania
[19] ARFB-National-Uniform-Guidelines-2019-20_final.pdf

The majority of wastes managed by Spectran are considered RAM, with less than 1% classified otherwise. Table 16 details methods that will be used to prevent RAM ingestion by stock.

Table 16 Management methods to prevent RAM ingestion by stock

Management method	Description
Withholding period	A mandatory legislated withholding period exists that overrides any other scenario. No stock must enter areas where RAM-classified waste has been applied, stored or spilled for 21 days after the completion of the event or activity. The passage of time may allow for land applied materials to naturally erode and become incorporated into the soil profile. Structured monitoring shall occur to confirm waste is no longer visible before stock are allowed access to the area. This approach is fraught with subjectivity and potential for misinterpretation of requirements and as such strict controls on the inspection method are required.
Cultivation	Cultivation of ground following waste application incorporates wastes into the soil profile and effectively prevents stock from accessing RAM. The subsequent resowing and crop establishment process provides a significant length of time before stock access areas again, adding an additional temporal buffer. Spreading on ground that can be cultivated post sowing should be prioritised, especially where wastes of vertebrate origin are spread.
Spread on ground prior to resowing	Many properties minimise cultivation and sow new pasture and crops directly into fallow ground or stubble. The placement of spread material below the sown crops and the long duration (> 3 months) from sowing to stock reintroduction minimises stock ingestion risk.
Signage	Signage should be erected on fences and gates around spread areas, warning managers of stock that access is not permitted whilst signs are erected. Tags that need to be physically broken to access a gateway should be used to reduce the likelihood of accidental access.
Fencing	Fencing must be adequate to exclude stock from spread areas.
Training	Training of all staff responsible for the waste reuse activity and the farmers managing stock on spread areas is essential. Training should cover the rationale of the ARFB, consequences of non-compliance and effective management strategies used.
Pre-grazing inspection	Arbitrary withholding periods shall not be relied upon to minimise the risk of ingestion. An inspection of spread areas shall occur that follows a structured, documented process to determine if the spread area can be accessed by stock. Ongoing engagement with Biosecurity Tasmania shall occur to ensure adequacy of the inspection process and alignment with the ARFB National Uniform Guidelines.

6.14.2 Disease

Waste transport and reuse can cause movement and proliferation of disease. Effective treatment and processing of wastes will occur, and appropriate biosecurity and hygiene procedures will be followed, including:

- Validation of effective treatment processes (e.g. pH testing)
- Transport equipment cleaning and disinfection regimes
- Adherence to suitable withholding periods for stock (generally easily managed as the mandatory RAM controls are highly conservative)
- Restriction of movement of waste and compliance with relevant waste movement restrictions (e.g. Macquarie Harbour Movement Permit)
- Vermin prevention and control (e.g. preventing/controlling feral cats to restrict transfer of toxoplasmosis)

6.15 Florfenicol Use and Presence in Morts

Florfenicol is a broad-spectrum antibiotic from the phenicol group, primarily used in veterinary medicine. In aquaculture, it is employed to control bacterial infections in fish.

Approved in November 2025 for emergency use in Tasmanian salmon farms to combat Piscirickettsia salmonis, an endemic bacterium causing mass mortality events (up to 15,000 tonnes lost in early 2025). Emergency permit covers up to 56,000 tonnes of salmon, affecting ~75% of production through August 2026.

Environmental Fate in Tasmanian Waters

- Half-life: Florfenicol breaks down relatively quickly in marine water but persists longer in sediments.
- Bioaccumulation Concerns: Environmental groups warn of potential antibiotic transfer through the food chain, especially in benthic organisms.

Ecological Risks

- Wild Fish Exposure: Wild fish may ingest medicated feed; residues detected near pens during treatment windows.
- Sediment Impact: Organic enrichment from feed plus antibiotic residues may alter benthic community structure.

Risk Characterisation

- Human Health: No evidence of harm from trace residues, but precautionary advice issued for recreational fishers.

Comparison of Florfenicol and Oxytetracycline in Aquaculture

- Persistence in Water and Sediment
    - Florfenicol: Water half-life ~30–52 hours; sediment half-life 25–54 days. Strong adsorption to sediments.
    - Oxytetracycline: Highly adsorptive to sediments; can persist for months or years. Slow degradation.
- Ecotoxicity
    - Florfenicol: High toxicity to microalgae; disrupts sediment microbiomes; promotes floR and optrA resistance genes.
    - Oxytetracycline: Toxic to algae; promotes tetR resistance genes; less microbiome

disruption than florfenicol.

- Antibiotic Resistance Risk
  - Both antibiotics strongly select for resistant bacteria; ARGs persist in sediments and spread via horizontal gene transfer.

Overall Environmental Footprint

Factor	Florfenicol	Oxytetracycline
Water persistence	Short (hours)	Short (days)
Sediment persistence	Weeks	Months–Years
Ecotoxicity	High	Moderate–High
Resistance risk	High	High

6.15.1 Control Measures for Land Spreading OF MORTS Containing Florfenicol Residues

Worker Health & Safety – Chemical Exposure (Florfenicol)
Aspect: Handling organic material that may contain antibiotic residues.
Unwanted Events:
- Dermal, inhalation, or accidental ingestion exposure to Florfenicol
- Allergic reaction or antibiotic related health effects

Mandatory Controls:
- Provide PPE: gloves, coveralls and eye protection where exposure risk is presented
- Workers trained on this task specific risk assessment and supporting EMP's
- Provide suitable handwashing facilities at land spreading and ensile locations
- No eating, drinking, smoking, or vaping while handling mort bins or other equipment

Soil Contamination
Aspect: Application of salmon morts containing Florfenicol residues to land.
Unwanted Events:
- Accumulation of Florfenicol or metabolites in soil
- Long-term soil function impairment

Mandatory Controls:
- Only land spread ensiled material containing Florfenicol residues to uncultivated, separate, land
- Maintain traceability of mortality sources and antibiotic treatments administered
- Maintain records of all loads applied (location, date, volume, source batch)
- Complete soil testing within scheduled timeframes; analyses by a competent person to interpret data correctly
- Adherence to NATA accredited sampling as per Appendix A – Monitoring Framework, in accordance with EPN 12570/1 and EPA written correspondence 17 November 2025.

Water Contamination
Aspect: Leaching or runoff carrying antibiotic residues.
Unwanted Events:
- Florfenicol or nutrient-rich effluent entering waterways
- Eutrophication, fish kills, or ecosystem disruption
- Breach of environmental protection notice (EPN) conditions

Mandatory Controls:
- Land spread only on sites with appropriate slopes (refer to *Table 6 Site selection assessment criteria* of this document)

- Strict no-application of ensiled material containing Florfenicol residues on land that has waterways, dams, or drainage lines
- No application during or immediately before heavy rainfall events

Waste, Spills & Cross-Contamination
Aspect: Leaks or spills during loading, transport, or spreading.
Unwanted Events:

- Contamination of soil or water outside approved areas
- Off site transfer of contaminated material
- Mixing of non-treated and antibiotic treated morts

Mandatory Controls:

- Mort bins and tankers must be leak-free and inspected before loading.
- Spill kits (absorbent pads, shovel, waste bags) and controlled waste spill management plans installed in every heavy vehicle transporting waste material (in accordance with Controlled Waste Handlers Certification).
- Contain and clean spills immediately; contaminated soil must be removed and disposed appropriately.
- Segregation of morts prior to and after ensilage, including any waste water captured during the process (dedicated bins, tankers and storage tanks)
- All bins, tankers, and heavy vehicles must be thoroughly cleaned immediately following tip off
- Labelling of all tanks, tankers and bins that hold morts/ensiled material containing Florfenicol residues

7 Monitoring and record keeping

Activities will be constantly monitored to ensure management controls are effective. The monitoring also informs what incremental changes are needed to allow for continuous improvement.

Table 17 Record keeping requirements

Item	Record keeping requirement
Waste analysis	• Sample analysis data provided by the applicable NATA accredited laboratory, including chain-of-custody reports, shall be retained in a centralised file folder. • Results shall be inputted into a centralised database showing all results per waste type and production site.
Delivery data	• Transport and landspreading data shall be integrated. Each delivery shall record: o Date o Customer o Collection Site o Delivery Site o Vehicle ID o Job ID o Invoice ID o Delivery Tonnes o Property Name o Paddock Name o Application Rate o Waste Type

Item	Record keeping requirement
	○ Waste Tonnes • Delivery Data shall be maintained in a flat file format for ease of interrogation • Files shall be stored, secured and managed appropriately.
Proof of placement	• GPS records showing ○ Spreading path ○ Exclusion zones ○ Date and Time ○ Waste Type ○ Waste Origin
Livestock management	• Pre-grazing inspection reports
Compliance audits	• Inspection Date and Time • Person who undertook inspection • Unloading area housekeeping and stock exclusion • Signage • Waste storage bunding and run-off routes • Observable odour and distance from activity • Stock presence and exclusion efforts • Equipment condition • Staff competence and understanding of management control methods • Spread area evenness, quality • RAM assessment of spread areas
Complaints Hazard reports Incident reports	• Name and address of complaint origin • Nature of complaint (odour, noise dust etc) • Timing and frequency • Weather conditions • Contributing factors • Corrective actions • Follow up and review of outcomes • Policy changes made as a result
Soil tests	• Date • Property • Paddock identifier • Sample depth • Timing relative to activity (i.e. before, after) • Record of associated spreading activity (waste type and spreading records)
Training records	• Trainee name • Date • Trainer name • Location • Training type (e.g. EMP training, equipment operation Verification of Competency, spill response training) • Topics covered • Pass/Fail, trainer comments

Item	Record keeping requirement
	• Signatures of trainer and trainee

Appendix 1 Risk assessment

A risk assessment has been performed that assigns a risk rating to each type of risk likely to be encountered in a landspreading operation. A likelihood/consequence risk rating approach is adopted for this assessment (Figure 6).

This risk assessment has not addressed Worker Health and Safety or commercial risks directly. The risk assessment is focussed on environmental and sustainability risks. For example, poor engagement with the agricultural community does not necessarily lead to an environmental risk, but it does present a risk to the sustainability of the operation though difficulty in sourcing suitable ground to undertake operations.

Existing control measures adopted by Spectran are detailed and a residual risk rating calculated for each risk category. Where the residual risk is considered high (or extreme) for a risk category, or where there is an obvious and easily implemented improvement opportunity, a recommended action has been provided.

1.1.1 Consequence Categories

- Insignificant – Minimal or no impact.
- Minor – Slight environmental damage, easily reversible.
- Moderate – Noticeable damage, may require remediation.
- Major – Significant damage, long-term effects.
- Catastrophic – Irreversible damage, major legal or reputational consequences.

1.1.2 Likelihood Categories

- Rare – May occur only in exceptional circumstances.
- Unlikely – Could occur at some time.
- Possible – Might occur at some time.
- Likely – Will probably occur in most circumstances.
- Almost Certain – Expected to occur frequently.
-

These two dimensions are multiplied or cross-referenced in a matrix to determine the risk level, which have been colour coded:

- Low (Green) – Acceptable risk.
- Medium (Yellow) – Monitor and manage.
- High (Orange) – Requires mitigation.
- Extreme (Red) – Immediate action required.

Risk Matrix
Likelihood + Consequence = Risk Rating

		Consequence									
		Insignificant		Minor		Moderate		Major		Catastrophic	
Likelihood		1		2		3		4		5	
5	Almost Certain	Medium	6	High	7	High	8	Extreme	9	Extreme	10
4	Likely	Medium	5	Medium	6	High	7	High	8	Extreme	9
3	Possible	Low	4	Medium	5	Medium	6	High	7	High	8
2	Unlikely	Low	3	Low	4	Medium	5	Medium	6	High	7
1	Rare	Low	2	Low	3	Low	4	Medium	5	Medium	6

Figure 6 Risk matrix showing determination of risk ratings

Category	Hazard	Potential outcomes	Likelihood	Consequence	Uncontrolled Risk rating	Existing controls	Likelihood	Consequence	Residual risk rating	Recommended actions to reduce residual risk
Waste Suitability	Waste physical attributes	Waste is difficult or unsafe to handle, spreading is uneven.	4	2	6	Assess waste for suitability to be spread as a liquid or a solid. Use equipment that can handle a range of waste physical properties	2	2	3	Develop a product spec that details physical restrictions for safe transport and handling
Waste Suitability	Waste variability	Management controls may not be effective as waste changes	4	3	7	Sample waste to determine composition. Visit site and investigate process flows and inputs.	3	3	6	Conduct regular sampling and analysis of major wastes. Develop a contracted waste specification that producers are obliged to comply with.
Waste Suitability	Sampling method	Sample results are not representative	3	3	6	Multiple samples are collected for higher relevance wastes with average values used	2	3	5	Undertake a fresh sampling program for high relevance wastes, develop a SOP for collecting representative samples.
Waste Suitability	Contaminants	Contaminants are applied to land at damaging levels	4	3	7	Analyse waste to determine contaminant presence and concentration. Employ effective management controls such as contaminant limiting application rates.	1	3	4	Apply contamination level triggers that require contaminant loadings to be calculated for non-biosolids wastes.
Waste Suitability	Nutrient run-off	Nutrients are overapplied	4	4	8	Assess nutrient concentrations and assign appropriate application rates. Apply appropriate buffers. Monitor for run-off	1	3	4	Have existing application rate methodology audited
Waste Suitability	Salinity	Soil Salinity and/or Sodicity	3	3	6	Assess salt concentrations and assign appropriate application rates	1	3	4	Have existing application rate methodology audited
Waste Suitability	Stabilisation	Odour and vermin attraction, biosecurity concerns	4	2	6	Assess waste suitability for direct land application and apply suitable management controls e.g. further processing or cultivation after application	2	2	4	Develop a product spec that addresses particle size, processing requirements etc
Site Selection	Slope and terrain	Waste movement downslope. Equipment rollover.	4	4	8	Inspect property and assess potential spread areas for suitability. Review relief map and assess spread areas for slope. Model and map prohibited gradients and show in EMP and on Tabula system.	1	4	5	Ensure slope mapping is included in Tabula maps and is visible in operator cab.
Site Selection	Water bodies	Waste spread in or migrates to water bodies	3	4	7	Inspect and map property for waterways and water courses. Apply appropriate exclusion zones from waterways.	1	4	5	
Site Selection	Sensitive receptors	Nuisance from odour, traffic movements Enforcement action from regulators Reputational damage	5	3	8	Assess sensitive receptors when assessing sites for suitability. Apply exclusion buffers around dwellings and other sensitive uses. Avoid sites close to sensitive receptors. Follow complaint procedures	1	3	4	Develop an information leaflet to provide to sensitive receptors. Erect information signage.

Category	Hazard	Potential outcomes	Likelihood	Consequence	Uncontrolled Risk rating	Existing controls	Likelihood	Consequence	Residual risk rating	Recommended actions to reduce residual risk
Site Selection	Land use conflicts	Restrictions in existing and future land uses, conflicts with QA schemes, relationship issues with end user, lack of continuity of spread ground.	5	3	8	Inspect property and discuss existing agricultural landuse with landowner. Ensure spreading activities will compliment these.	2	3	6	Focus on RAM management controls to prevent adverse impacts on grazing operations
Site Selection	Regulatory constraints	Waste is applied on conservation areas, water catchments, protected vegetation etc	2	3	6	Assess relevant overlays and conservation covenants. Check records for previous spreading dates and applicable recurrence period.	1	3	4	
Site Selection	Soils	Soils are not suitable for waste application or require reduced application rates	2	2	4	An agronomist is involved in the site section process. All paddocks are soil tested prior to land applications.	1	2	3	Obtain appropriate agronomist advice when selecting landspreading sites. Calculate paddock-specific application rates for liquid wastes.
Resourcing	Training	Activity not performed in accordance with EMP	4	4	8	Undertake appropriate training for all relevant staff and stakeholders	2	4	6	Develop a training framework and training materials.
Resourcing	Staff shortage	Activity not performed in accordance with EMP. Monitoring inadequate	3	2	6	Employ a sufficient headcount of qualified staff suitable for the relevant roles	2	2	4	
Resourcing	Staff competency	Stakeholder engagement inadequate. Activity not performed in accordance with EMP.	4	3	7	Allocate roles and responsibilities suitable to levels of competency. Outsource where key competencies not available in-house	2	3	6	Determine qualification requirements for each position and assess access to required competencies
Resourcing	Staff supervision	Activity not performed in accordance with EMP	4	4	8	Regular compliance inspections. Staff mentoring and training. Vehicle movement tracking and proof-of-placement recording.	2	2	4	Develop a compliance inspection schedule. Ensure compliance staff are trained.
Resourcing	Staff instruction	Activity not performed in accordance with EMP Key roles not performed	4	4	8	Submit instructions via the Tabula system. EMP provided to operational staff with a supervisor run-through.	3	3	6	Develop and organisational chart showing allocated responsibilities and ensure accountabilities and information flows.
Management controls	Environmental Management Plan	Plan not adequate to manage risks. Activity does not proceed through the regulatory pathway. Operational staff not aware of risks and management controls Activity leads to environmental harm	4	3	7	EMP is written by qualified agronomists. EMP is reviewed by regulators.	3	3	6	Have EMP structure professionally reviewed.

Category	Hazard	Potential outcomes	Likelihood	Consequence	Uncontrolled Risk rating	Existing controls	Likelihood	Consequence	Residual risk rating	Recommended actions to reduce residual risk
Management controls	Equipment suitability	Soil compaction Application rates not consistent with plan Poor spread pattern or waste clumping	4	3	7	Suitability assessment to occur prior to equipment procurement or modification Pre-start inspections Fault reporting	2	3	4	Compliance checks to inspect spread quality
Management controls	Equipment calibration	Settings to achieve target application rate not accurate	4	3	7	Trained staff are to calibrate equipment to determine settings to achieve target application rate.	2	3	5	Undertake a fresh round of equipment calibration and document. Put calibration charts in all equipment.
Management controls	Stakeholder engagement	Stakeholders not adequately consulted. Plans do not cover all aspects of interest by stakeholders.	4	4	8	Contact council to determine any local government matters. Doorknock or contact potential impacted residents in initial stages. Advise waste producers of reuse location and approach. Provide stakeholders with appropriate EMP.	2	4	6	Provide stakeholders with this framework document and/or an information brochure
Environmental	Soil acidification	soil pH is lowered beyond optimal levels	3	2	5	Document appropriate management controls in EMP. Adhere to assigned application rates Monitor soil conditions	2	2	4	Develop pH acceptance criteria for wastes
Environmental	Soil Salinity / Sodicity	Soils become saline and/or sodic	3	3	6	Document appropriate management controls in EMP. Adhere to assigned application rates Monitor soil conditions Set a suitable recurrence period	2	2	4	Set EC acceptance criteria for wastes
Environmental	Soil compaction	Soil structure decline Yield losses Loss of landholder support	4	2	6	Site selection- select trafficable soil types suitable for the season Stay to existing trafficked areas where possible Use high flotation equipment	2	2	4	
Environmental	Waterways	Waste adversely impacts aquatic ecosystems and downstream water quality.	3	3	6	Restrict application rates to avoid direct run-off and nutrient loading Restrict application on steep slopes Restrict application on unvegetated areas Map waterways and assign appropriate exclusion zones. Display all exclusion zones on proof-of-placement system.	1	3	4	

Category	Hazard	Potential outcomes	Likelihood	Consequence	Uncontrolled Risk rating	Existing controls	Likelihood	Consequence	Residual risk rating	Recommended actions to reduce residual risk
Environmental	Weeds	Weed seeds are distributed across landspreading site(s)	3	4	7	Use an appropriate equipment washdown procedure Spread in dry conditions and avoid trafficking soil material	1	2	3	
Environmental	Vermin	Vermin proliferates causing off-site nuisance Vermin proliferates impacting on stock and the environment	4	3	7	Assess waste for stabilisation in the waste characterisation process Inspect sites for vermin proliferation Control vermin with targeted baiting	2	3	5	Set a product spec and acceptance criteria for wastes derived from raw animal products Develop and implement a vermin inspection plan with trigger levels for control Develop a vermin control procedure
Animal health	Restricted Animal Material (RAM)	Ambiguity in regulatory requirements resulting in non-compliance. Stock infected by TSE Stock exposed to RAM Enforcement action Financial impacts to stock owner	4	4	8	Cultivate spread areas for vertebrate animal derived wastes. Inspect and ensure fencing is adequate to exclude stock from work areas. Discuss implications and responsibilities with landowners and supply of Biosecurity RAM fact sheet.	2	4	6	Develop acceptance criteria for raw animal wastes requiring processing to decrease persistence on the soil surface Create and erect signage. Train all staff and stakeholders (including stock managers) on Ruminant Feed Ban responsibilities. Develop a procedure for conducting pre-grazing inspections prior to reintroduction of stock.
Animal health	Antibiotics	Antibiotic residues in waste transferred to grazing animals. Regulatory implications for farmer.	2	4	6	Stock exclusion managed in the same way as RAM	1	4	5	Engage with industry on antibiotic use Understand antibiotic persistence in the environment and stock implications, apply additional controls if necessary
Animal health	Pathogens	Stock are exposed to disease and pathogens Disease is moved across regions	3	4	7	Stock risk managed with withholding periods. Biosecurity cleaning procedure used for all vehicles. Avoid centralised operations to limit cross-contamination.	1	4	5	Have industry and Biosecurity Tas endorse a biosecurity plan for landspreading operations.
Regulatory	Permits	Regulatory permissions not in place	5	4	9	Obtain relevant regulator authorities as required	1	4	5	Create a permit register with a early warning system of permit expiry
Regulatory	Non-compliance	Environmental Harm	3	4	7	Regular and structured compliance inspections by qualified staff. Training of staff and stakeholders. Corrective actions implemented in appropriate timeframes.	1	4	6	Develop and implement a compliance audit and inspection program (with frequency targets) for all landspreading sites.
Regulatory	Reporting	Collection of data and reporting inadequate	4	2	6	Collect all delivery data and maintain in a flat-file format for use as needed	2	2	4	Develop a procedure for collecting and maintaining data including a quality control procedure.

Category	Hazard	Potential outcomes	Likelihood	Consequence	Uncontrolled Risk rating	Existing controls	Likelihood	Consequence	Residual risk rating	Recommended actions to reduce residual risk
		Inability to demonstrate compliance (by Spectran and waste customers)				Create proof-of-placement records for each activity				
Stakeholder engagement	Regulators	Regulators unaware of the activity or assume there are uncontrolled risks. Regulators change position and cause regulatory continuity challenges	4	3	7	Proactive engagement with regulators (both mandatory and non-mandatory).	2	3	5	Actively engage with and build trust with stakeholders and linked associations. Make this framework document externally facing and circulate.
Stakeholder engagement	End user (farmer)	Agricultural outcomes not in line with end user expectations Risks not understood by end user. Witholding periods not observed.	4	3	7	Informal (verbal) briefings and regular communications occur.	3	3	6	Qualified staff to communicate benefits and risks with end user. Training of end user on management controls. Contracts with end user Develop information documentation. Develop an approach to train farmers on their management control responsibilities. Develop and execute contracted arrangements with farmers.
Stakeholder engagement	Sensitive receptors	Community concerns about activity	4	3	7	Locate activity in suitable areas Engage with local residents, inform them of risks and activity duration Erect information signage	2	3	5	Develop a sensitive receptor engagement policy. Develop a sensitive receptor engagement record template. Design and erect information signage
Stakeholder engagement	Waste producer	Waste variability Waste contamination Unmanageable increase in volumes	3	3	6	Communicate issues with waste producer as the arise Inform waste producer of implications of waste variability	2	3	5	Create acceptance criteria for specific wastes Implement appropriate contracts Develop a product spec and a waste quality management policy. Monitor waste quality and condition Ongoing engagement e.g. alerts, non-conformance reporting
Stakeholder engagement	Other stakeholders	Unidentified stakeholder impacted	3	3	6	Proactive engagement with regulators	2	3	5	Develop a strategy for engaging with peripheral regulating entities, industry groups, community groups and industry bodies

SPECTRAN Group

North Tas
23 Merino Street,
Kings Meadows TAS 7249

Headquarters
6 Birdwood Avenue,
Moonah TAS 7009

ReProcess Tas
42 Scotts Road,
Risdon Vale TAS 7016

spectrangroup.com.au

SOP Land Spreading Particle Size Sampling

1. Purpose

This procedure outlines the process for inspecting and recording the particle size of material processed through the ensiler. The aim is to ensure:

- The ensiler is operating efficiently and consistently.
- The processed material meets defined particle size parameters suitable for land application.
- Confidence is provided to the EPA and Biosecurity Tasmania that the material is adequately processed, reducing environmental and biosecurity risks.

2. Scope

This SOP applies to fish waste, specifically 'Morts', land spreading operations involving processed organic material generated through the Spectran Group ensiling system.

3. Responsibilities

- SEM General Manager: Ensure resources and time are provided in order to carry out particle size sampling process.
- SHEQ General Manager: Ensures particle size inspections are conducted as per this SOP.
- Group Environmental Specialist: Collects representative samples of land spread area for particle size analysis. Analyses trend data and initiate corrective actions if particle size deviations occur. Maintains records of analysis and photos for review by regulatory bodies, if requested.

4. Equipment and Materials

- Sample collection container
- Square ground outline device
- Inspection form (lucidity) to capture results and photos
- PPE: high vis, hat, gloves, eye protection, dust mask (as required)
- Tank sampling with ladder and extension pole
- 4-5mm sieve
- Bucket

5. Tank Sampling Procedure

To collect fish waste samples for particle size and distribution analysis, use a long-handled sampling cup attached to a pole in combination with a stable ladder to access the material safely.

Collect enough fish waste to fill two clean, labeled soil jars, ensuring the samples are representative of the material in the tank or container.

After sampling, record the sampling details such as date, time, location, and sampler name. Spread the fish waste onto a flat even surface and pour through a 4-5mm sieve into a bucket.

Pass the sample through the 5mm sieve and record the proportion retained (by weight or estimated percentage).

Record the percentage of material >5mm within the sieve.

Note any contamination, clumping, or excessive moisture affecting the process.

Acceptance Criteria

Target particle size: ≥90% of material passing a 4-5 mm sieve.

Non-conforming results: Any sample exceeding the limits above triggers reinspection and ensiler performance review.

6. Corrective Actions

Notify the Operations Supervisor and Environmental Officer.

Inspect and adjust ensiler blade settings or feed rate.

Re-sample and test after adjustment.

Record corrective action taken on the inspection form.

7. Documentation and Records

All inspection data shall be recorded on the Particle Size Inspection Form (or within Lucidity). Records must include:

- Date and time of inspection
- Batch or load ID
- Operator name
- Sample location
- Results (% passing <5 mm)
- Observations and corrective actions (if applicable)

Completed forms are to be retained for a minimum of 3 years and made available for EPA or Biosecurity audits upon request.

8. Reporting and Review

The Environmental Officer shall compile monthly summaries of inspection results for trend analysis.

Any recurring deviations or trends indicating poor performance must be reported to management for review and potential equipment servicing or calibration.

The SOP and associated limits shall be reviewed annually or following regulatory feedback.

Information to be included in report:

a) Type of waste
b) Processing time in ensiler
c) Dosage amount of formic acid
d) Time in storage tank post processing

9. References

EPA Tasmania: Guidelines for Land Application of Organic Materials

Biosecurity Tasmania: Biosolids Reuse Framework

Spectran Group Land Spreading Policy

Spectran Group Land Spreading Information for Farmers

Paddock Name	Sampling Date	pH (1:5 Water)	pH (1:5 CaCl2)	Electrical Conductivity (1:5 water)	Elec. Cond. (Sat. Ext.)	Phosphorus (Olsen)	Available Potassium	Calcium (Amm-acet.)	Potassium (Amm-acet.)	Magnesium (Amm-acet.)	Sodium (Amm-acet.)	Calcium/ Magnesium Ratio	Aluminium (KCl)	Cation Exch. Cap.	Sodium % of Cations (ESP)	Aluminium Saturation	Sulphur (KCl40)	Organic Carbon (W&B)	Phosphorus Buffer Index (PBI-Ols)
The Quoin D	7/03/2026	5.8	4.7	0.03	0.3	9.53	110	1.9	0.27	0.64	0.037	3	<0.10	2.87	1.3	<1	1.5	1.35	31
Quion East of Road	15/09/2025	8.4	7.6	0.42	4.2	7.78	210	9.7	0.54	5.5	3.6	1.8	<0.10	19.3	19	<1	8.9	2.95	59
The Quoin F	7/03/2026	5.6	4.8	0.09	0.9	4.42	170	5.2	0.44	1.5	0.18	3.5	<0.10	7.33	2.4	<1	3	3.81	67
Quion West of Road	15/09/2025	5.9	4.9	0.05	0.5	4.15	150	4.5	0.37	1.8	0.2	2.5	<0.10	6.93	2.9	<1	3.9	3.03	68
The Quoin E	7/03/2026	5.7	4.8	0.08	0.8	3.98	200	3.8	0.51	1.5	0.19	2.5	<0.10	6.04	3.2	<1	2.1	3.15	73
The Quoin C	7/03/2026	5.7	4.9	0.08	0.8	5.51	240	6.4	0.62	2.3	0.18	2.8	0.11	9.67	1.9	1.2	3.6	4.43	110
The Quoin A	7/03/2026	6.7	5.9	0.06	0.6	2.6	170	11	0.43	4.6	0.17	2.4	<0.10	15.8	1.1	<1	2.4	3	150
The Quoin B	7/03/2026	5.6	4.7	0.1	1	5.75	220	5.1	0.55	3.4	0.53	1.5	0.34	9.93	5.3	3.5	5	4.98	240

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
41698	1
EDITION	DATE OF ISSUE
4	28-Oct-2005

SEARCH DATE : 09-Dec-2025
SEARCH TIME : 03.11 pm

DESCRIPTION OF LAND

Parish of LARGO, Land District of MONMOUTH
Lot 1 on Diagram 41698
Derivation : Whole of 1,000 Acres Gtd to E Bisdee
Prior CT 4609/9

SCHEDULE 1

B338546 TRANSFER to GRAEME ALEXANDER MARSHALL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
60/8737 GRANT: Burdening Easement: Water right (appurtenant to the land comprised in Certificate of Title Volume 2559 Folio 6) over the Water Race Easement shown on Deeds Office Diagram 110/30 as passing through the said land within described
C46000 PRIVATE TIMBER RESERVE pursuant to Section 15(1) of the Forest Practices Act 1985 against part of the said land within described as shown on the plan annexed hereto Registered 11-Aug-1998 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
41700	1
EDITION	DATE OF ISSUE
4	28-Oct-2005

SEARCH DATE : 28-Jan-2026
SEARCH TIME : 02.44 pm

DESCRIPTION OF LAND

Parish of LARGO, Land District of MONMOUTH
Lot 1 on Diagram 41700
Derivation : Whole of 250 Acres Gtd. to I. Bisdee
Prior CT 4609/11

SCHEDULE 1

B338546 TRANSFER to GRAEME ALEXANDER MARSHALL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
C45981 PRIVATE TIMBER RESERVE pursuant to Section 15(1) of the Forest Practices Act 1985 Registered 21-July-1998 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
41703	1
EDITION	DATE OF ISSUE
4	28-Oct-2005

SEARCH DATE : 28-Jan-2026
SEARCH TIME : 02.43 pm

DESCRIPTION OF LAND

Parish of LARGO, Land District of MONMOUTH
Lot 1 on Diagram 41703
Being the land sixthly described in Conveyance No. 36/2166
Derivation : Part of 200 Acres Gtd. to I. Bisdee
Prior CT 4609/14

SCHEDULE 1

B338546 TRANSFER to GRAEME ALEXANDER MARSHALL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
41704	1
EDITION	DATE OF ISSUE
4	28-Oct-2005

SEARCH DATE : 28-Jan-2026
SEARCH TIME : 02.43 pm

DESCRIPTION OF LAND

Parish of LARGO, Land District of MONMOUTH
Lot 1 on Diagram 41704
Derivation : Whole of 250 Acres Gtd. to I. Bisdee
Prior CT 4609/15

SCHEDULE 1

B338546 TRANSFER to GRAEME ALEXANDER MARSHALL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
C46000 PRIVATE TIMBER RESERVE pursuant to Section 15(1) of the Forest Practices Act 1985 against part of the said land within described as shown on the plan annexed hereto Registered 11-Aug-1998 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
41699	1
EDITION	DATE OF ISSUE
4	28-Oct-2005

SEARCH DATE : 28-Jan-2026
SEARCH TIME : 02.45 pm

DESCRIPTION OF LAND

Parish of LARGO, Land District of MONMOUTH
Lot 1 on Diagram 41699
Derivation : Part of 640 Acres Gtd to E Bisdee
Prior CT 4609/10

SCHEDULE 1

B338546 TRANSFER to GRAEME ALEXANDER MARSHALL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
C46000 PRIVATE TIMBER RESERVE pursuant to Section 15(1) of the Forest Practices Act 1985 against part of the said land within described as shown on the plan annexed hereto Registered 11-Aug-1998 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
41702	1
EDITION	DATE OF ISSUE
4	28-Oct-2005

SEARCH DATE : 28-Jan-2026
SEARCH TIME : 02.44 pm

DESCRIPTION OF LAND

Parish of LARGO, Land District of MONMOUTH
Lot 1 on Diagram 41702
Derivation : Whole of 500 Acres Gtd. to I. Bisdee
Prior CT 4609/13

SCHEDULE 1

B338546 TRANSFER to GRAEME ALEXANDER MARSHALL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
C46000 PRIVATE TIMBER RESERVE pursuant to Section 15(1) of the Forest Practices Act 1985 against part of the said land within described as shown on the plan annexed hereto Registered 11-Aug-1998 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
41701	1
EDITION	DATE OF ISSUE
4	28-Oct-2005

SEARCH DATE : 28-Jan-2026
SEARCH TIME : 02.44 pm

DESCRIPTION OF LAND

Parish of LARGO, Land District of MONMOUTH
Lot 1 on Diagram 41701
Derivation : Whole of 140 Acres Gtd. to I. Bisdee
Prior CT 4609/12

SCHEDULE 1

B338546 TRANSFER to GRAEME ALEXANDER MARSHALL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
C46000 PRIVATE TIMBER RESERVE pursuant to Section 15(1) of the Forest Practices Act 1985 against part of the said land within described as shown on the plan annexed hereto Registered 11-Aug-1998 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
119006	1
EDITION	DATE OF ISSUE
5	28-Oct-2005

SEARCH DATE : 29-Jan-2026
SEARCH TIME : 09.30 am

DESCRIPTION OF LAND

Parish of LARGO, Land District of MONMOUTH
Lot 1 on Plan 119006
Derivation : Whole of Lots 3911, 3912 and 3913 and Part of Lot 3914 Gtd to J Bisdee and Whole of 1A-2R-30Ps, 0A-1R-10Ps and 4A-1R-9Ps Gtd to E O Bisdee & Anor
Prior CT 2579/78

SCHEDULE 1

B338546 TRANSFER to GRAEME ALEXANDER MARSHALL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
C46000 PRIVATE TIMBER RESERVE pursuant to Section 15(1) of the Forest Practices Act 1985 against part of the said land within described as shown on the plan annexed hereto Registered 11-Aug-1998 at noon
C673619 MORTGAGE to Australia and New Zealand Banking Group Limited Registered 28-Oct-2005 at 12.01 pm

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
119006	2
EDITION	DATE OF ISSUE
5	28-Oct-2005

SEARCH DATE : 29-Jan-2026
SEARCH TIME : 09.29 am

DESCRIPTION OF LAND

Parish of LARGO, Land District of MONMOUTH
Lot 2 on Plan 119006
Derivation : Part of Lot 3916 Gtd to J Bisdee
Prior CT 2579/78

SCHEDULE 1

B338546 TRANSFER to GRAEME ALEXANDER MARSHALL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
C673619 MORTGAGE to Australia and New Zealand Banking Group Limited Registered 28-Oct-2005 at 12.01 pm

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

Owner:
L.T. ACT 1980.

Title Reference: Y. 12614

Grantee:
WHOLE OF 1000·0·0 GTD TO EDWARD BISDEE.

PLAN OF SURVEY

of land situated in the

LAND DISTRICT OF MONMOUTH

PARISH OF LARGO

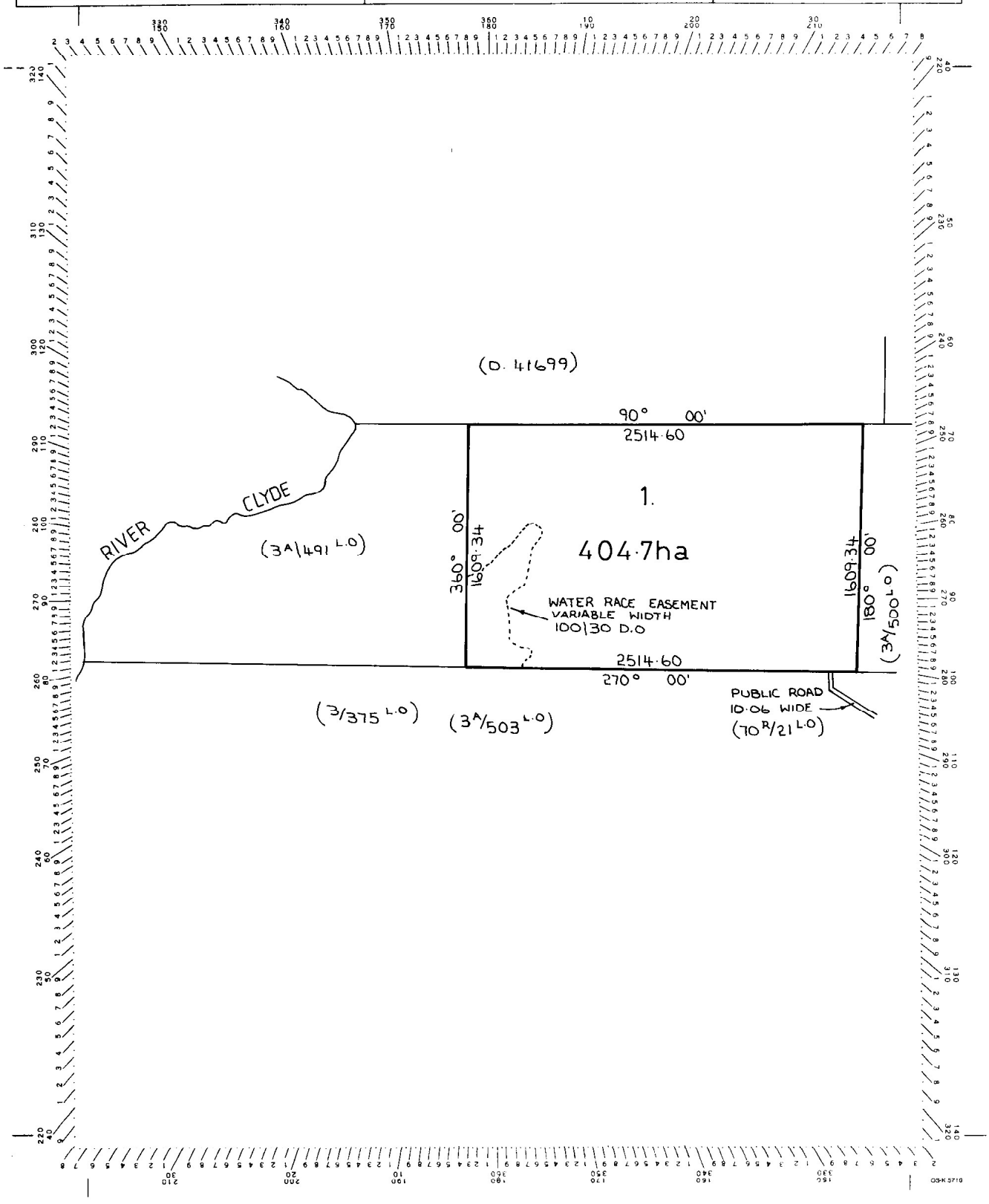
COMPILED FROM 3A\500 MON L.O

SCALE 1: 25000 MEASUREMENTS IN METRES

Registered Number:
D.41698

Approved

Recorder of Titles



FOLIO PLAN

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

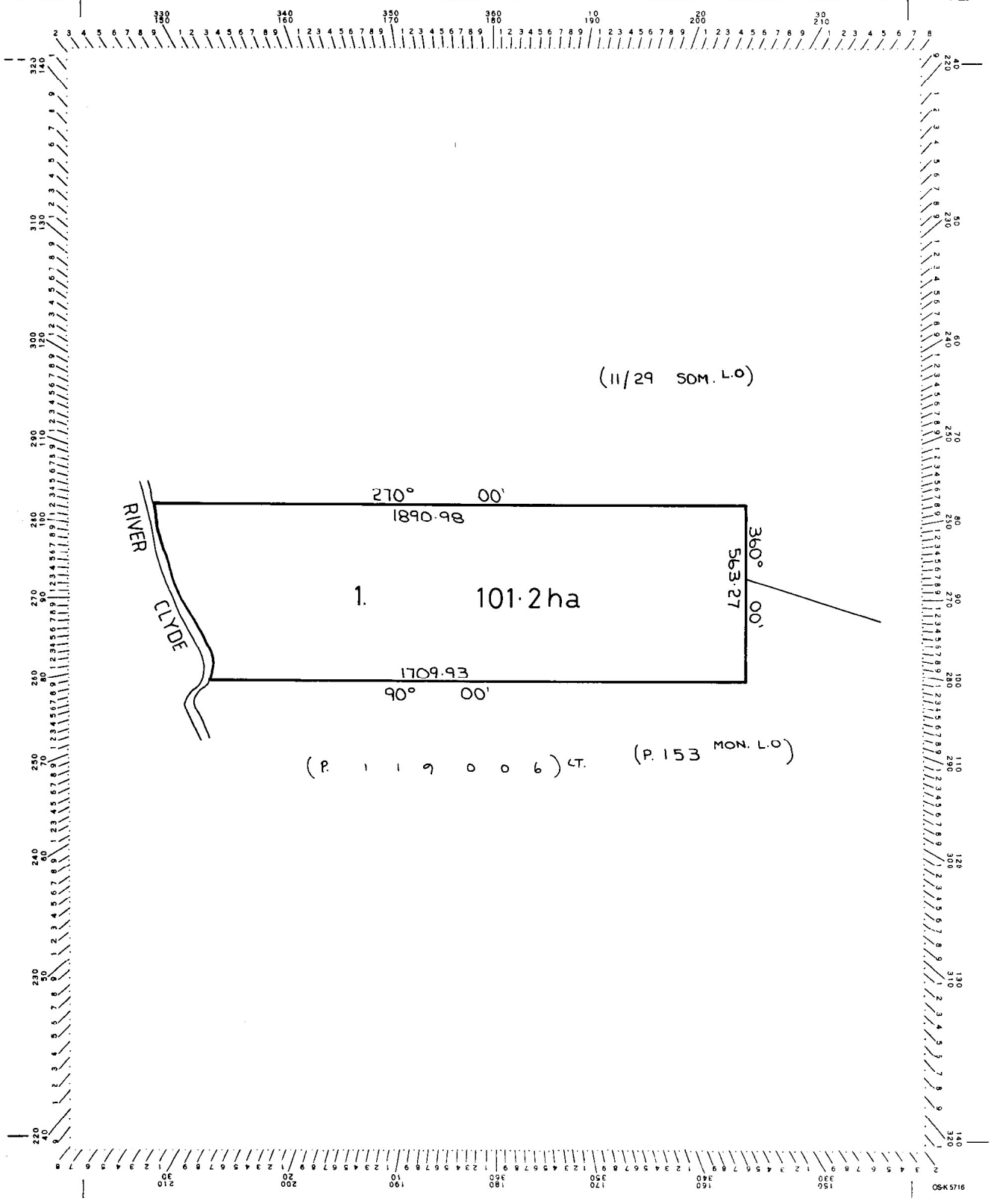
Owner:
L.T. ACT 1980.

Title Reference: Y.12614

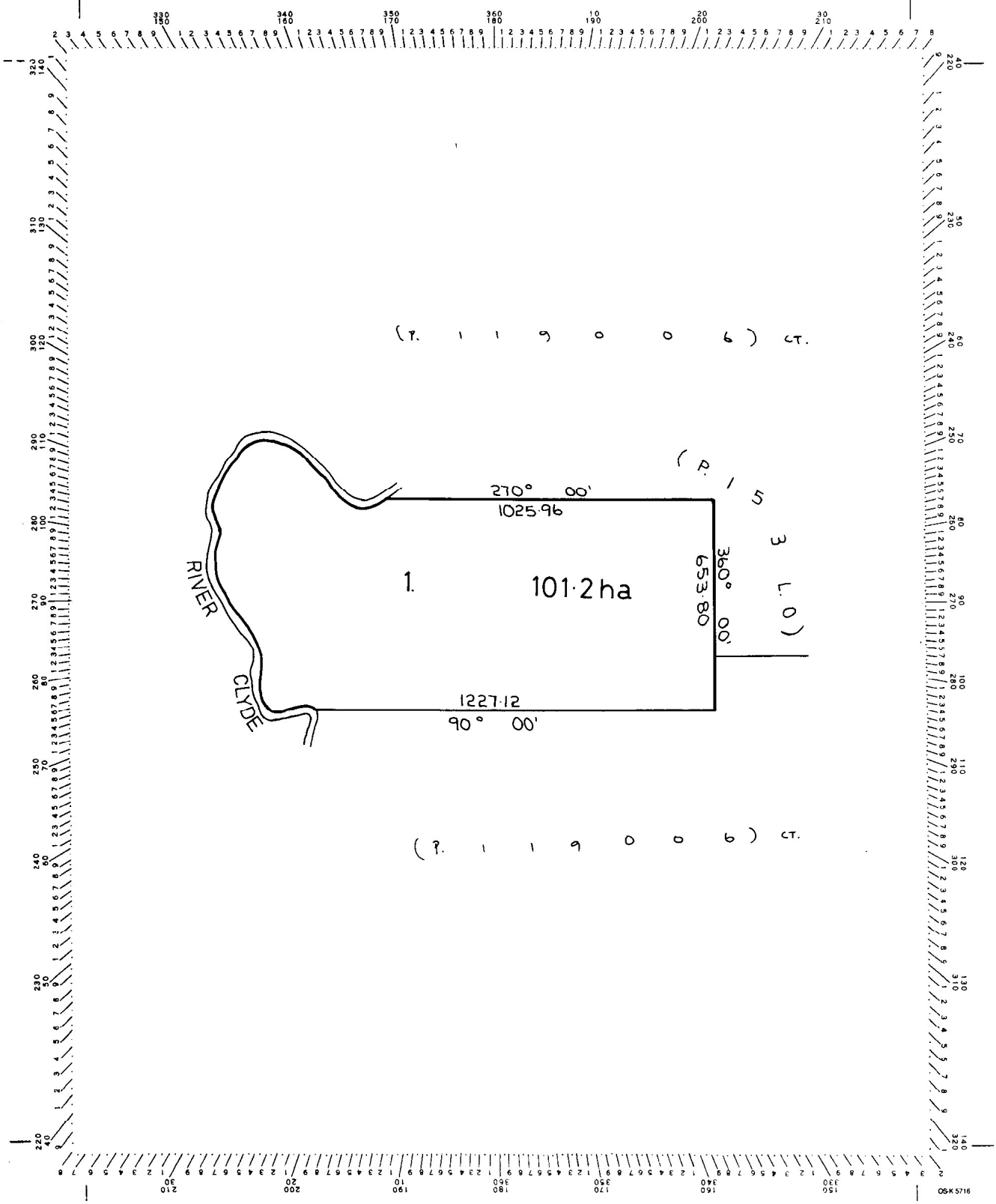
Grantee:
WHOLE OF 250·0·0 GTD TO ISAAC BISDEE.

PLAN OF SURVEY
of land situated in the
LAND DISTRICT OF MONMOUTH
PARISH OF LARGO
COMPILED FROM 1\168 MON L.O.
SCALE 1:12500 MEASUREMENTS IN METRES

Registered Number:
D. 41700
Approved 25 OCT 1989
Recorder of Titles



Owner: L.T. ACT 1980.	**PLAN OF SURVEY** of land situated in the LAND DISTRICT OF MONMOUTH PARISH OF LARGO COMPILED FROM IV.65 (MON L.O)	Registered Number: D.41704
Title Reference: Y. 12614		Approved 25 OCT 1989
Grantee: WHOLE OF 250·0·0 GTD TO ISAAC BISDEE.	SCALE 1:12500 MEASUREMENTS IN METRES	Recorder of Titles



FOLIO PLAN

RECORDER OF TITLES

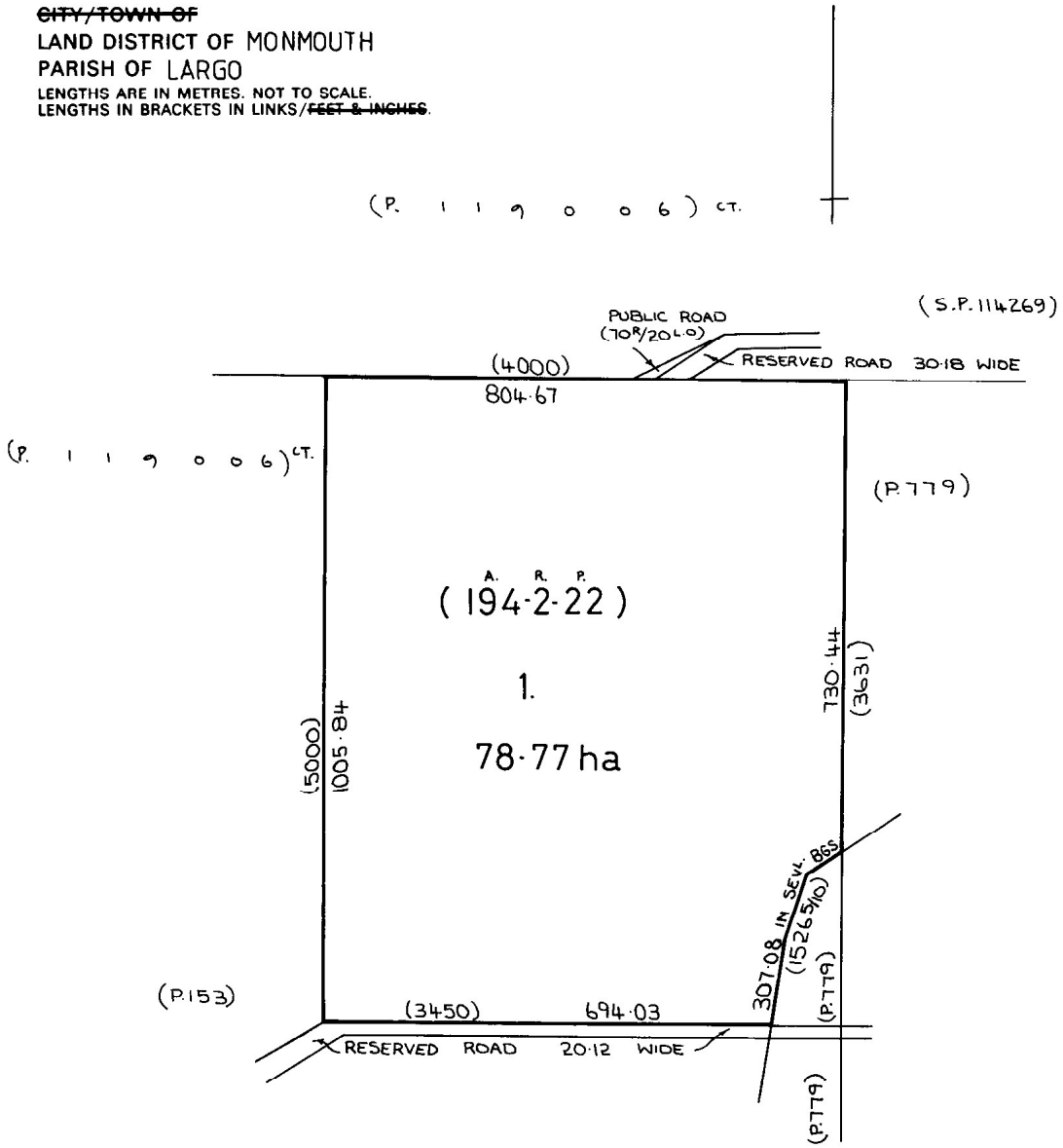
Issued Pursuant to the Land Titles Act 1980

APPROVED 25 OCT 1989 RECORDER OF TITLES	**CONVERSION PLAN** CONVERTED FROM CONV 36\2166	REGISTERED NUMBER D.41703
FILE NUMBER Y.12614	GRANTEE: PART OF 200·0·0 GTD TO ISAAC BISDEE.	DRAWN 17-10-89

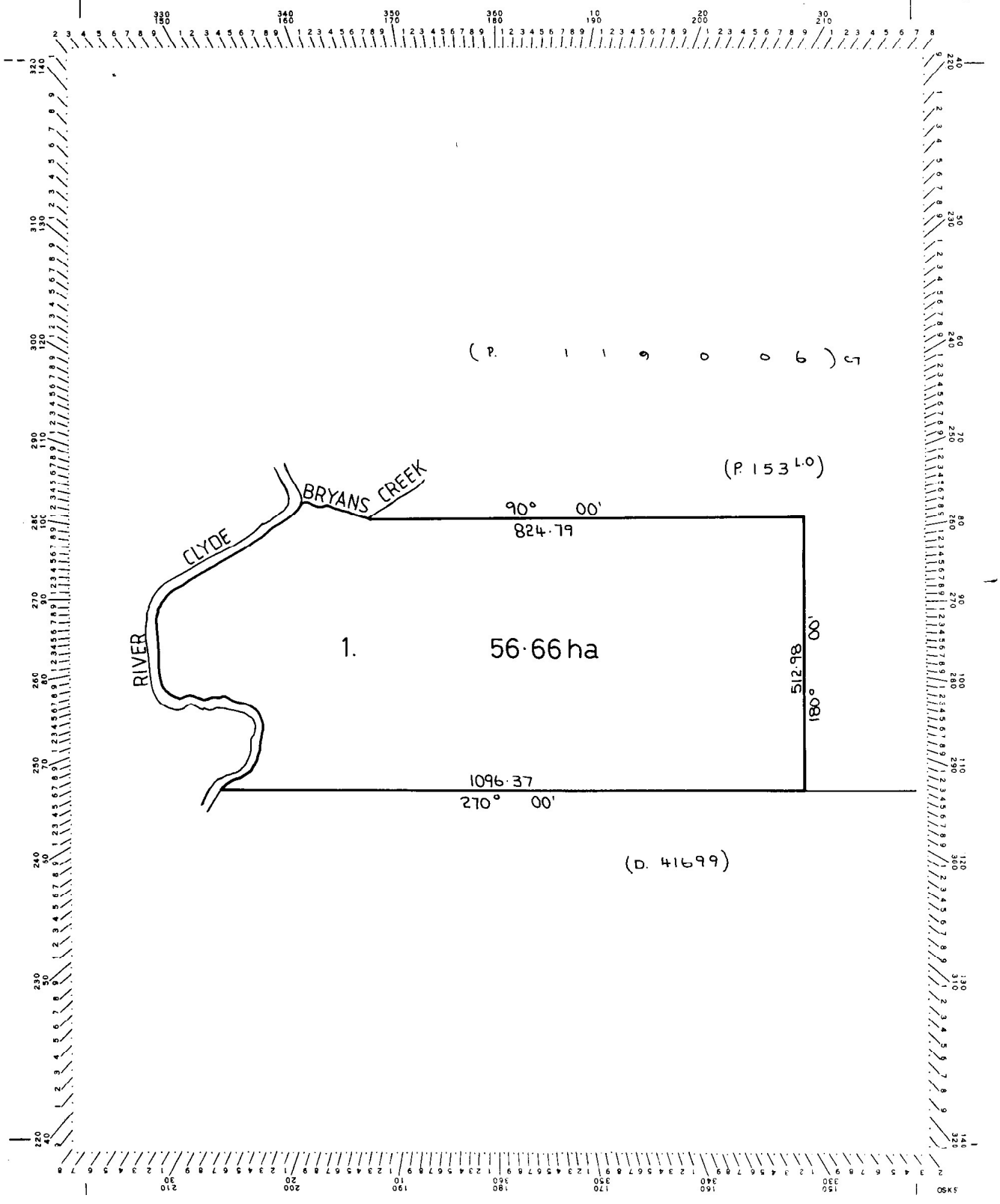
OS-K 2082

SKETCH BY WAY OF ILLUSTRATION ONLY

~~CITY/TOWN OF~~
LAND DISTRICT OF MONMOUTH
PARISH OF LARGO
LENGTHS ARE IN METRES. NOT TO SCALE.
LENGTHS IN BRACKETS IN LINKS/~~FEET & INCHES~~.



Owner: L. T. ACT 1980.	**PLAN OF SURVEY** of land situated in the LAND DISTRICT OF MONMOUTH PARISH OF LARGO COMPILED FROM 1\167 MON L.O SCALE 1: 7500 MEASUREMENTS IN METRES	Registered Number: D. 41701
Title Reference: Y. 12614		Approved 25 OCT 1989 Recorder of Titles
Grantee: WHOLE OF 140·0·0 GTD. TO ISAAC BISDEE.		



Owner:
L T ACT 1980

Title Reference: Y.12614

Grantee:
PART OF 640·0·0 GTD TO EDWARD BISDEE.

PLAN OF SURVEY

of land situated in the

LAND DISTRICT OF MONMOUTH

PARISH OF LARGO

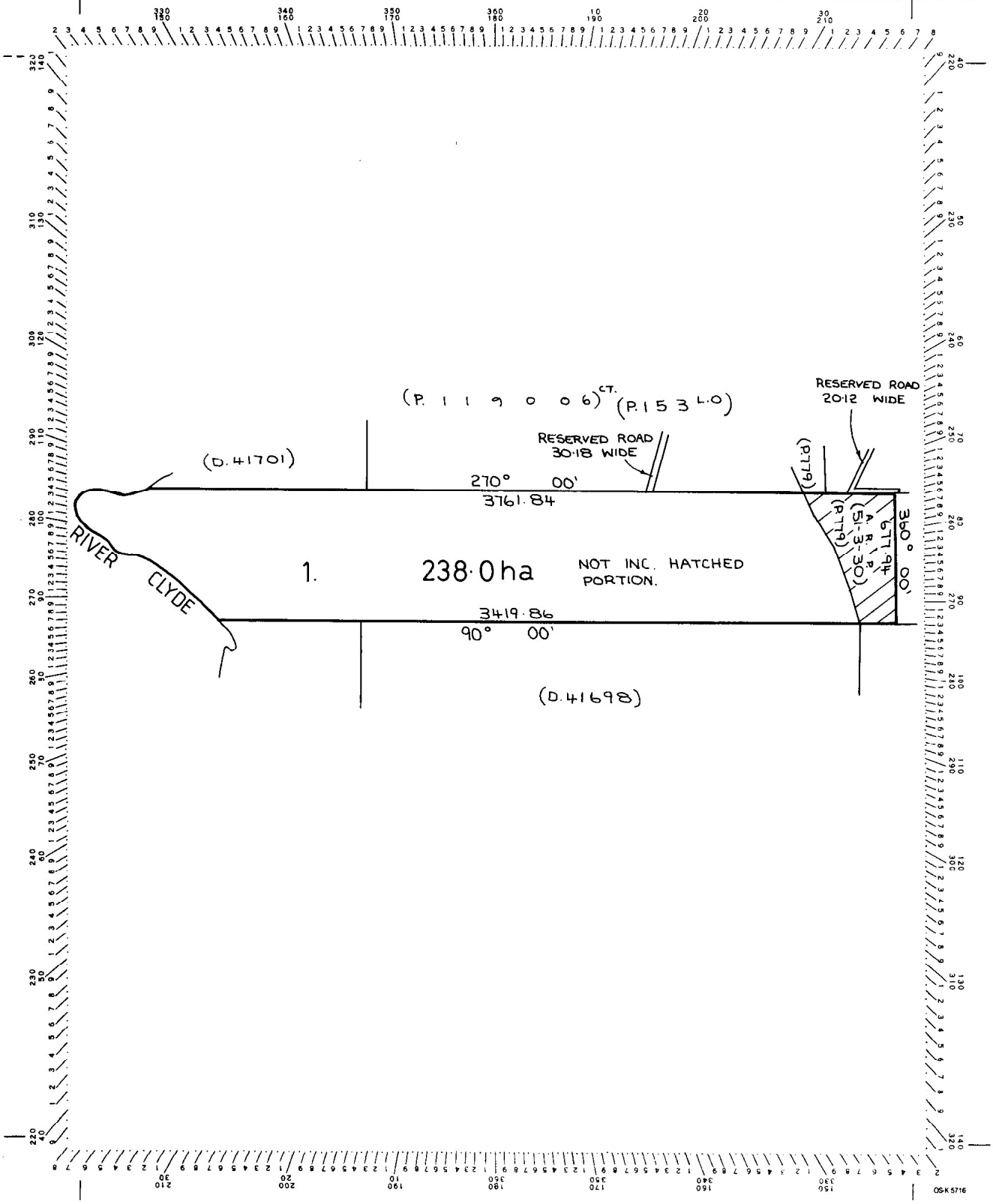
COMPILED FROM 3A 501 MON. L.O

SCALE 1: 20 000 MEASUREMENTS IN METRES

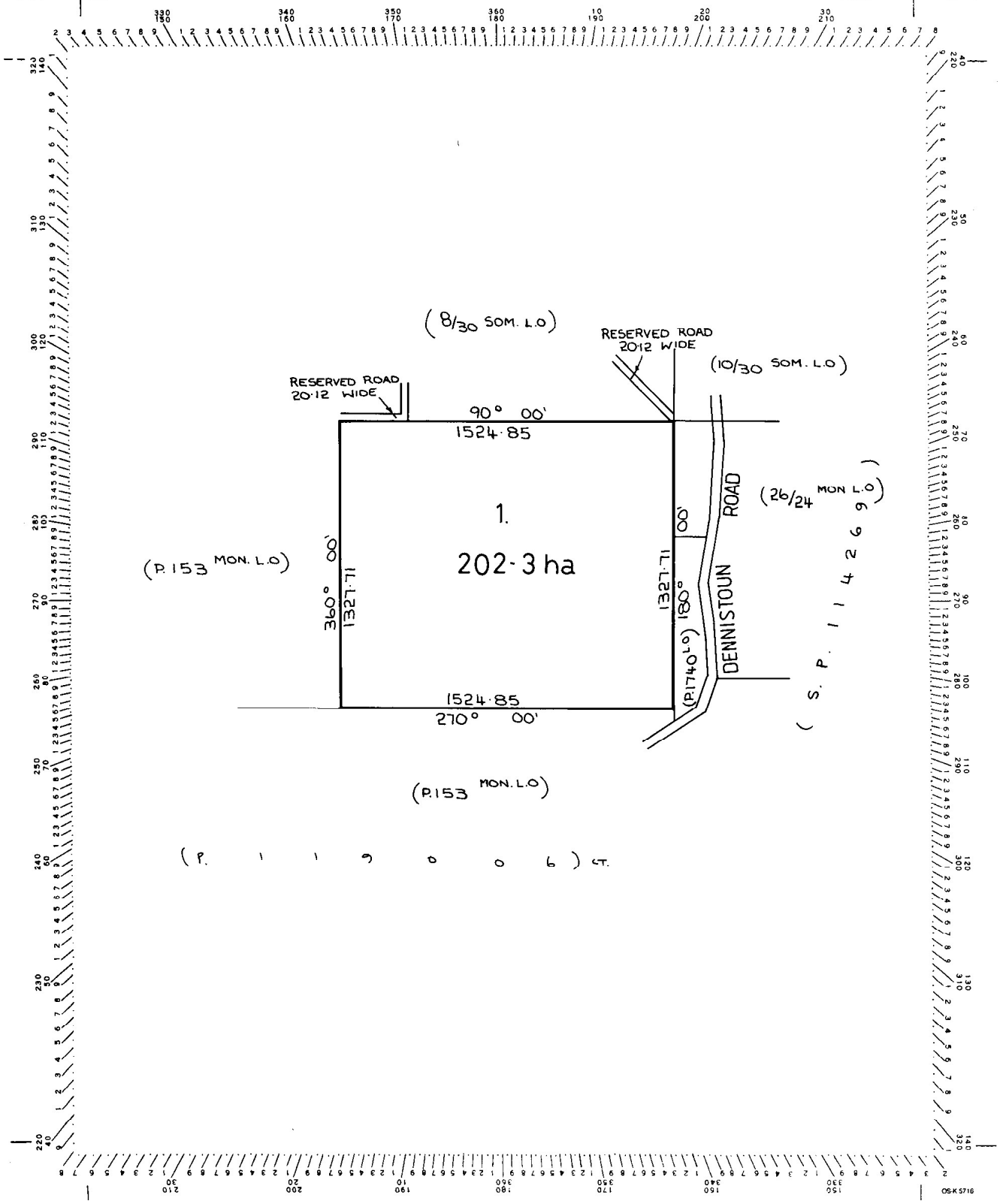
Registered Number:
D. 41699

Approved 25 [illegible] 1989

Recorder of Titles



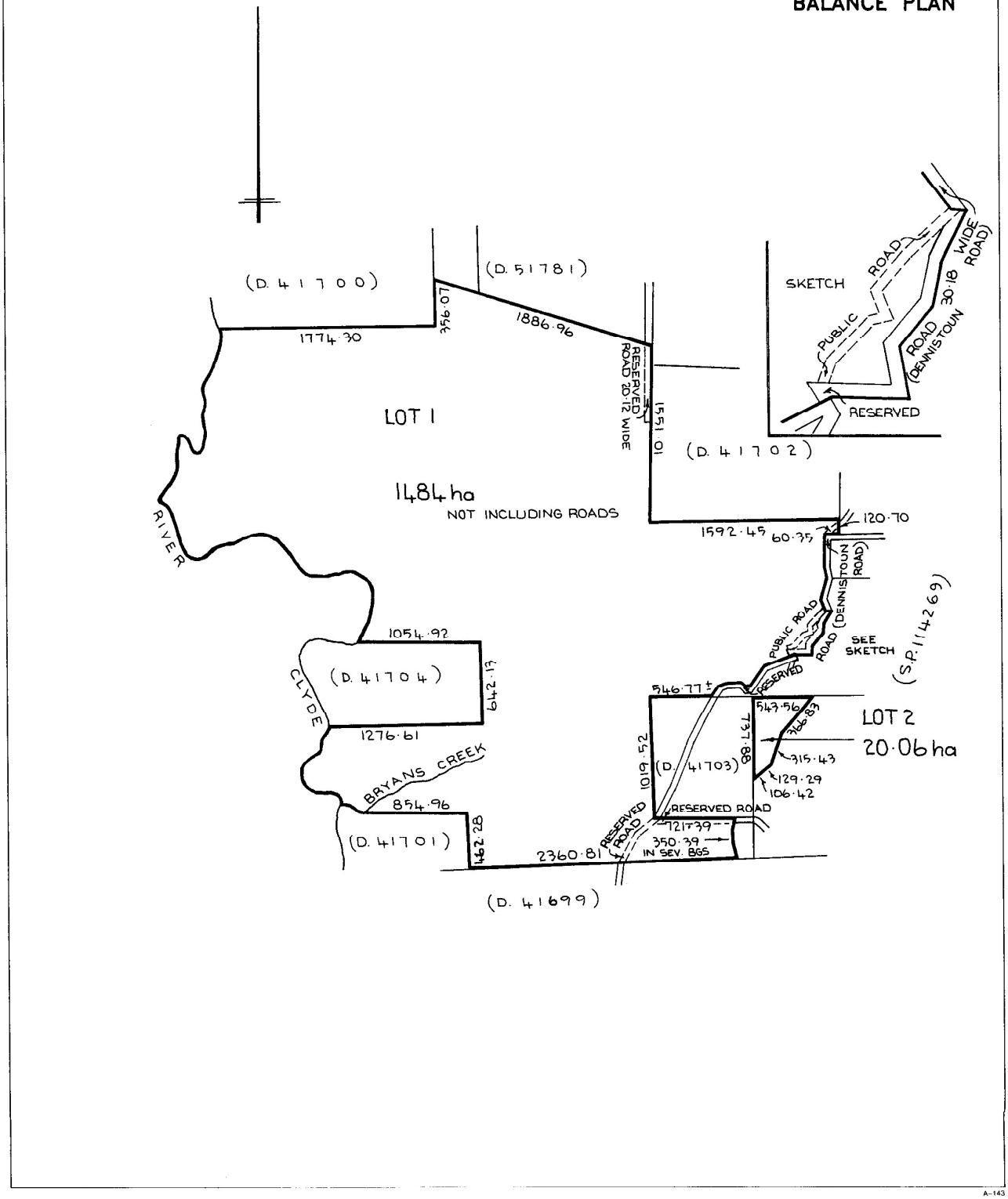
Owner: L.T. ACT 1980	**PLAN OF SURVEY** of land situated in the LAND DISTRICT OF MONMOUTH PARISH OF LARGO COMPILED FROM 1/163 MON L.O SCALE 1: 18000 MEASUREMENTS IN METRES	Registered Number: D.41702
Title Reference: Y. 12614		Approved 25 OCT 1989 Recorder of Titles
Grantee: WHOLE OF 500·0·0 GTD. TO ISAAC BISDEE.		



OWNER FOLIO REFERENCE 247196-1 247196-2 GRANTEE 1100636	**PLAN OF TITLE** LOCATION MONMOUTH - LARGO FIRST SURVEY PLAN No. P.153 MON COMPILED BY L.T.O. SCALE 1: 30000 LENGTHS IN METRES	REGISTERED NUMBER **P119006** APPROVED 12 JUL 1995 Recorder of Titles

MAPSHEET MUNICIPAL CODE No. 105	LAST 1100637, 1100439 UPI No 1100439, 1100478	LAST PLAN No. P.153 MON.	ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

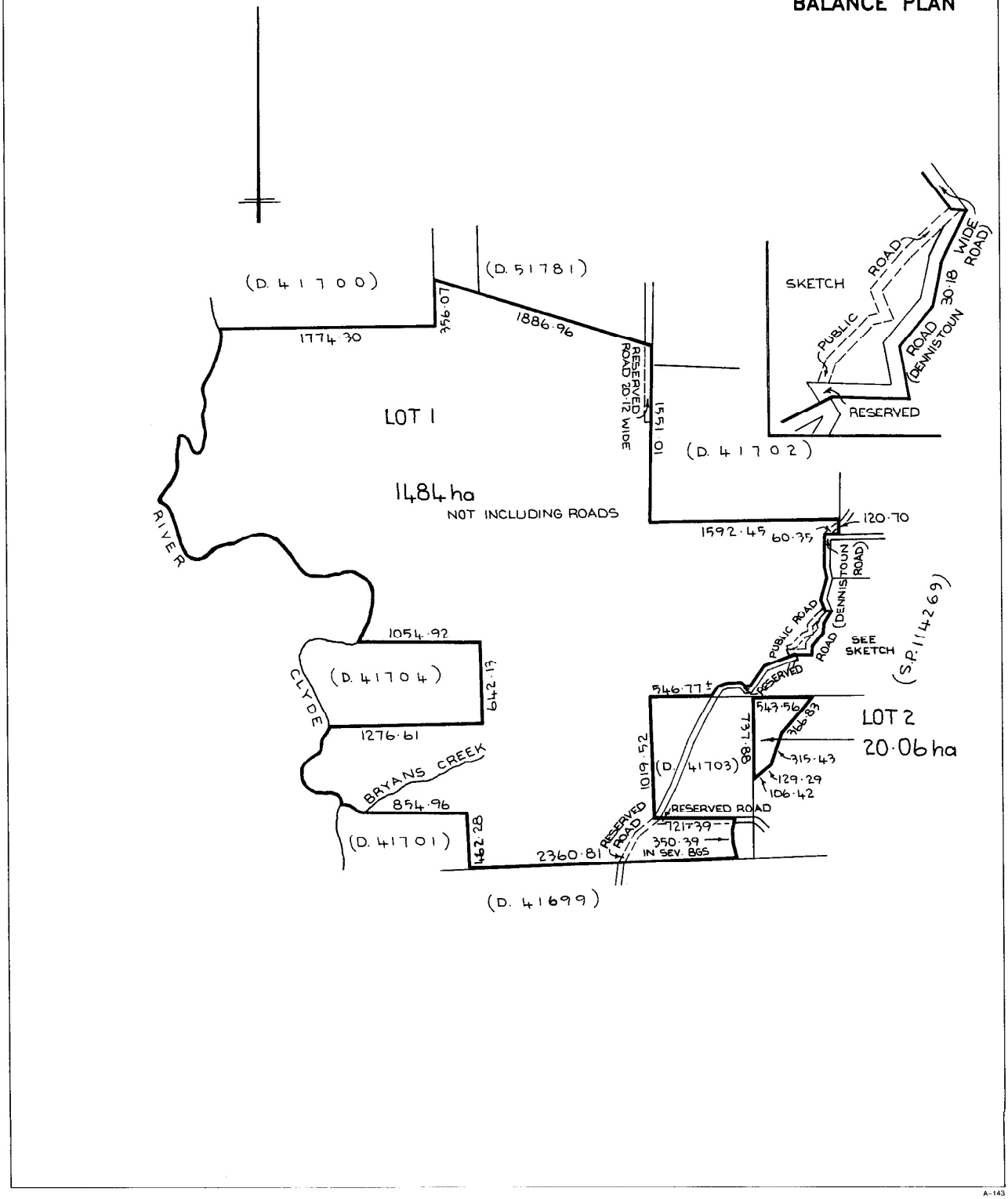
BALANCE PLAN



OWNER FOLIO REFERENCE 247196-1 247196-2 GRANTEE 1100636	**PLAN OF TITLE** LOCATION MONMOUTH - LARGO FIRST SURVEY PLAN No. P.153 MON COMPILED BY L.T.O. SCALE 1: 30000 LENGTHS IN METRES	REGISTERED NUMBER **P119006** APPROVED 12 JUL 1995 Recorder of Titles

MAPSHEET MUNICIPAL CODE No. 105	LAST 1100637, 1100439 UPI No 1100439, 1100478	LAST PLAN No. P.153 MON.	ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

BALANCE PLAN



A-143