



2121 Finlay Road, Tongala Works Approval Application

Prepared for:

H.W Greenham & Sons Pty Ltd

May 2019

Project No:30491



2121 FINLAY ROAD, TONGALA WORKS APPROVAL

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Executive Summary

H.W Greenham & Sons Pty Ltd (Greenham) propose to invest in a new rendering plant at their existing abattoir located at 2121 Finlay Road, Tongala (the Site), EPA Licence 2327. The proposed rendering plant will convert waste from animal by-product into stable, usable materials including tallow and meat-meal.

An EPA Works Approval is required for the proposed rendering plant under Section 19B of the *Environment Protection Act 1970* (EP Act). It also addresses commissioning approvals under Section 30A and applications for new licences or licence amendments subsequent to works approvals.

This Works Approval and the supporting technical assessment have been prepared in response to the *Pathway outcome and application preparation guidance for H. W. Greenham & Sons Pty Ltd* (EPA Reference 1003448).

The rendering plant will be designed and constructed by Keith Engineering, a specialist in the design, manufacture and installation of processing equipment for the rendering and abattoir industries. Keith Engineering has been manufacturing equipment for the animal rendering industry for over 60 years and is the largest supplier of red and white meat rendering and by-product processing equipment in Australia.

Greenham was established in 1933 and has operated the Tongala Abattoir since it was opened in January 1993. The existing abattoir at 2121 Finlay Road Tongala operates under EPA Licence 2327. Greenham propose to re-establish a rendering plant at the Site to convert waste from animal by-product into stable usable materials (a former rendering plant was decommissioned in 2004). The high temperature rendering process proposed is more advanced than the conventional low temperature rendering processes resulting in significantly lower wastewater concentrations and lower environmental emissions.

The proposed rendering works will be developed utilising best practice in rendering plant and environmental management technology. The rendering operations will be housed in an enclosed building employing a process air extraction system and roof mounted exhaust fans. All captured odour from the process air extraction system will be treated in a biofilter system. Odour dispersion modelling supports a recommended reduction in the separation distance from 1000m to 740m. It is concluded that the likelihood of adverse odour impacts from the operation of the proposed plant is low and satisfies Environment Protection Authority Victoria guidelines.

Noise emissions resulting from the operation of the proposed works were assessed against the EPA Victoria guidance documents, publication 1411 and SEPP N-1. It is concluded that the operation of the facility will comply with these requirements. An integrated environmental assessment has concluded that environmental impacts from noise emissions, air emissions, wastewater, greenhouse gas, energy and water usage will be low and within EPA guidance requirements.

Community engagement was undertaken in accordance with the EPA approvals pathway where no concerns were identified in relation to the proposal.

This Works Approval application is submitted separately to a planning permit application which has been submitted to the Shire of Campaspe meeting the relevant policy objectives and intent of the Campaspe Planning Scheme. The proposed \$12M investment will provide significant economic benefit to the local community. It is submitted that this Works Approval application is consistent with EPA Victoria guidance and regulatory requirements and should be supported by the EPA.

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GLOSSARY

TERM	DEFINITION
EPA	Environment Protection Authority
EP act	Environment Protection Act 1970
EPHC	Environment Protection & Heritage Council
FZ	Farming Zone
NEPM	National Environment Protection Measure
PCRZ	Public Conservation and Recreation Zone
PLC	PLC Consulting Pty Ltd
SEPP	State Environment Protection Policy
Site	2121 Finlay Rd, Tongala, Victoria

APPLICATION PACKAGE

Item	Description	Status
Works Approval Application	Environment Protection Authority	Advertised in full
Appendix A	EPA Licence and Company Information	Advertised in full
Appendix B	Plans	Commercial-in-confidence –plans redacted for public consultation
Appendix C	Community Consultation	Advertised in full
Appendix D	Greenhouse Gas and Energy Impact Assessment	Commercial-in-confidence – report redacted for public consultation
Appendix E	Odour Impact Assessment Study	Advertised in full
Appendix F	Noise Emissions Assessment	Advertised in full
Appendix G	Wastewater Treatment Capacity Assessment	Commercial-in-confidence – not advertised publicly
Appendix H	Risk Assessment and Monitoring Program	Commercial-in-confidence – not advertised publicly
Appendix I	Draft Trade Waste Agreement	Commercial-in-confidence – not advertised publicly
Appendix J	Solid Waste Management Plan	Commercial-in-confidence – not advertised publicly
Appendix K	Operational Risk Analysis	Advertised in full
Figures	<ol style="list-style-type: none"> 1. Site Location Plan 2. Nearby Receptor Plan 3. Planning Context Plan 4. Schematic Stormwater / Wastewater Retention Plan 5. Material Transfer Pipeline 	Advertised in full
Other Information	Biofilter Design	Commercial-in-confidence – not advertised publicly
	Memorandum of advice - odour	Commercial-in-confidence – not advertised publicly

1 Introduction

Greenham propose to invest in a new rendering plant at their existing abattoir located at 2121 Finlay Road, Tongala (the Site), EPA Licence 2327 (**Appendix A**). The proposed rendering plant will convert waste from animal by-product into stable, usable materials including tallow and meat-meal.

An EPA Works Approval is required for the proposed rendering plant under Section 19B of the *Environment Protection Act 1970* (EP Act). It also addresses commissioning approvals under Section 30A and applications for new licences or licence amendments subsequent to works approvals.

This Works Approval and the supporting technical assessment have been prepared in response to the *Pathway outcome and application preparation guidance for H. W. Greenham & Sons Pty Ltd* (EPA Reference 1003448).

Greenham have engaged Keith Engineering to design and install the proposed rendering plant. Keith Engineering are a specialist in the design, manufacture and installation of processing equipment for the rendering and abattoir industries. Keith Engineering has been manufacturing equipment for the animal rendering industry for over 60 years and is the largest supplier of red and white meat rendering and by-product processing equipment in Australia.

Greenham have also engaged with EPA, Campaspe Shire Council and the community to implement this new project. The new purpose-built rendering plant will incorporate best design and construction standards to minimise potential impacts on neighbouring properties and the environment.

Greenham is committed to a long, sustainable future in Tongala and the greater region. This proposal is an investment to improve energy efficiency, reduce transport movements and ensure the ongoing success of the facility.

The Works Approval application is supported by technical reports, including odour and noise assessments, a wastewater treatment capacity assessment and a greenhouse gas and energy impact assessment. Greenham have also undertaken a community and stakeholder engagement process to inform and consult with interested parties regarding the proposal.

2 Background

Greenham was established in 1933 and for some time operated from the Melbourne City Abattoirs. The company initially serviced the domestic market before adding frozen lamb exports to the United Kingdom market.

A leader in the Australian meat export business, Greenham was the first Australian company to set up its own hot boning plant following investigations into methods of achieving cost reduction and competitiveness. The Tongala plant was opened in 1993. The plant currently operates with working two shifts per day across two plants (a cow plant and bull plant) capable of processing up to 700 head of cattle per day.

Greenham's Tongala operation buys cows from over 4,000 mainland and Tasmanian suppliers through its live weight scale operations or 'Over The Hooks' trading at its plants. The plant processes mainly cast-for-age dairy cows and bulls of all ages and sizes for lean manufacturing beef to established USA customers.

Greenham previously operated a rendering plant at the Site. The rendering plant was decommissioned in 2004 for commercial reasons, as it was more economical to transport animal by-product off Site for processing.

3 Legislative Framework

An EPA Works Approval is required for the proposed rendering plant under Section 19B of the *Environment Protection Act 1970* (EP Act). It also addresses commissioning approvals under Section 30A and applications for new licences or licence amendments subsequent to works approvals. The preparation of this Works Approval has been undertaken with reference to the following:

- Climate Change Act 2017.
- Environment Protection Act 1970.
- State Environment Protection Policy (Prevention and Management of Contaminated Land).
- State Environment Protection Policy (Waters of Victoria), 2018
- State Environment Protection Policy (Air Quality Management), 2001.
- State Environment Protection Policy (Ambient Air Quality), 1999.
- State Environment Protection Policy (Control of Noise from Commerce Industry and Trade No N-1).
- EPA Victoria Publication 1518 – Recommended separation distances for industrial residual air emissions.
- EPA Victoria Publication 1551 – Draft guideline: Guidance notes for using the regulatory air pollution model AERMOD in Victoria.
- EPA Victoria Publication 1517.1 – Demonstrating Best Practice 2017.
- EPA Victoria Publication 1411 *Noise from Industry in Regional Victoria – Recommended Maximum Noise Levels from Commerce, Industry and Trade Premises in Regional Victoria* (NIRV).
- EPA Victoria Publication 1698 – Liquid storage and handling guidelines.

4 Primary Information




ENVIRONMENT PROTECTION ACT 1970

WORKS APPROVAL APPLICATION COMPANY LEGAL ENTITY

Applicant type (select relevant box below)

Company <input checked="" type="checkbox"/>	State government <input type="checkbox"/>	Owners corporation <input type="checkbox"/>
Partnership <input type="checkbox"/>	Local government <input type="checkbox"/>	

Corporation


Full name of company^ HW Greenham & Sons Pty Ltd

Trading name HW Greenham & Sons Pty Ltd

ABN 26 054 461 415 ACN 054 461 415

Registered address 222 Lorimer Street

Suburb/Town Port Melbourne State VIC Post Code 3208

 Attach – ASIC company search, not more than 14 days old

^ In the case of a partnership, the application must specify the full names of the individual partners under company name, in addition to referring to the trading name and supplying

An ASIC company search is provided in **Appendix A**.

5 Land Use

5.1 The Site

The Site is located on the south western corner of Finlay Road and Watson Road at 2121 Finlay Road, Tongala. The Site borders Finlay Road for a length of 604 metres and Watson Road for a length of 461 metres and has an over Site area of 28.51ha. Existing vegetation runs along the perimeter of both frontages with some scattered throughout the Site. The Site is secure with fencing along the property frontage.

The Site comprises of abattoir buildings with associated car parking and loading bays, and five water treatment ponds consisting of three anaerobic ponds, an aerobic pond fitted with agitators, a settlement pond, a stormwater pond. The majority of the built infrastructure is located to the north east corner of the Site, refer to **Figure 1**.

5.2 Planning Context

The Site is currently zoned Industrial 2 Zone, refer to **Figure 3**. A planning permit application has been lodged with Campaspe Shire Council for the construction of the rendering plant in association with the existing abattoir. It is proposed that this Works Approval is considered separately to the planning permit application.

The proposed rendering plant is well buffered from sensitive uses and is located approximately 740-750 meters from potential sources of noise and odour to the nearest residential property.

5.3 Surrounding Land Use

The planning context of the Site and surrounding area is provided in **Figure 3** and is described below.

North

Land to the north of the Site is predominantly used for farming and is zoned Farming Zone Schedule 2 (FZ2).

East

Campaspe Shire Council own land immediately to the east of the Site. Further to the east, land is used for industrial and farming purposes. Industrial uses include:

- The SLTEC (Sustainable Liquid Technology) facility which is located 200 meters east of the Site at 2055 Finlay Road.
- Nestle Australia facility which is located 1.2km north-east at 50 Henderson Road.

The township of Tongala is located approximately 2 km east of the Site.

West

Land to the west of the Site is predominantly used for farming purposes and is zoned Farming Zone Schedule 1 (FZ1).

South

Immediately to the south of the Site is land that is zoned Public Use Zone Schedule 1 (PUZ1 – Service and Utility) which is owned by Goulburn Valley Water and contains a water storage dam reservoir. Further south land is used for farming purposes.

5.4 The Proposal

It is proposed to use and develop land at 2121 Finlay Road, Tongala to construct a rendering plant associated with the existing abattoir operations.

The plant will be supplied by Keith Engineering of Sydney, who are specialists in rendering plants. The proposed rendering plant will sit in a large shed within the existing abattoir Site. The odour control system designed by The Odour Unit (TOU) will be based on the Split System design developed by TOU representing best-practice in the rendering industry and used widely in Australia. This system involves the capture of up to 95% odour capture which is treated in a modern biofilter system, together with vertical dispersion of building ventilation air through roof mounted exhaust fans. The system is designed to minimise the risk of industrial residual air emissions (IRAEs) and to ensure the comfort of plant operators.

5.4.1 Siting and Design

Existing buildings on the subject land are located on the north east corner of the Site. The Site is currently occupied by an abattoir and associated workshop, packaging store, animal holding pens, office and amenities. The rendering plant will be located with proximity to the existing buildings, **Figure 1** and **Appendix B**.

The location has been selected as it is generally free of encumbrances and provides the opportunity to function well with the existing operations on the Site. The proposed location of the rendering plant will also allow for convenient access in and out of the subject Site and ensure that adequate setbacks are provided from Site boundaries.

The proposed rendering plant is to be located within a new shed measuring 26m in width, 46m in length and 9.6m in height. The shed is typical of the appearance of an agricultural building and will have an area of 1,230m² (excluding the separate biofilter). The shed is to be designed to include precast concrete panel walls to 2.2m high with Colourbond for the remaining 7.4m. As the proposed shed will be located amongst a cluster of other existing buildings and infrastructure within the Site, it is expected to have little visual impact on surrounding land.

The plant has been designed and will be built to high specifications and finished in a two-pack epoxy paint. All platforms, access steps and hand railings will be hot dip galvanised in finish, whereas tanks, guards, screw conveyor covers, thermal cladding, ducting and tallow pipework will be constructed using stainless steel.

All plant and components will comply with Australian Standards, with pressure vessel designs being approved and registered with the relevant Australian authority.

The rendering plant will be constructed at 300mm above the designated 1in100 year ARI flood level as shown on the Rural Water Commission Plan No. 135897.

Please refer to the plans provided in **Appendix B**.

5.5 Operations

The proposed rendering plant will be ancillary to the existing abattoir and operate solely for Greenham's use. The plant will begin to receive material after the commencement of abattoir operations each day and will continue to operate until all by-product from that day's operation has been processed.

There will be no change in hours of operation as a result of this proposal, however, the plant has the capacity to operate up to 24 hours a day 7 days a week.

5.6 Process

The proposed rendering plant will convert waste from animal by-product into tallow and meat-meal. No blood processing is being proposed to be carried out in this plant and all raw material will be sourced from the on-Site abattoir.

The proposed rendering plant will process approximately 110,000 kg of raw material per day and has the capacity to process up to 6,000 kg of raw material per hour. This process involves fresh pre-broken raw material from the kill floors and boning rooms being pumped to a raw material bin situated in the rendering plant. The raw material will be pumped from the existing raw material hopper at the abattoir in an enclosed pipe, preventing any loss of material and preventing any potential fugitive odour emissions. The alignment of the material delivery pipework is provided in **Appendix B** and **Figure 5**.

The raw material is then conveyed from the bin to a Continuous High-Temperature Cooker. This enclosed cooking system has a steam heated jacket and a steam heated agitator shaft to keep the material in motion while cooking. The moisture is evaporated from the raw material (cooking vapour) and will be directly ducted to an air-cooled condenser where the cooking vapour is condensed. The condensate is then piped to the drainage pit, prior to being pumped to the existing dissolved air flotation (DAF) wastewater treatment unit and wastewater treatment lagoons.

Any non-condensable vapours from the cooking process will be extracted and ducted to the biofilter for treatment. The plant will utilise point-source vapour extraction, to minimise odour within the shed and reduce the risk of fugitive odour emissions.

The rendering plant will be computer operated and have a complete SCADA control system which will automatically control all equipment including integral items in the event of a failure along with providing visual and Audio warnings for these and all other plant or processing faults. These faults will also be recorded and logged for future reference.

Interlocks will be installed in all critical areas to negate process or operator failures and prevent damage to equipment or any potential environmental issues.

A list of rendering plant equipment and rendering plant layout plan is provided in **Appendix B**.

6 Community Engagement and Track Record

Greenham's Tongala abattoir and wider operations are integral to the Northern Victorian community. The proposed rendering plant is expected to deliver improved environmental and sustainability outcomes that will not adversely impact the local community.

The community engagement is an important part of the application process. Greenham engaged Spence Consulting Pty Ltd to undertake a program of community engagement including:

- public advertisements in local and statewide newspapers;
- direct approaches to nearby residents and businesses;
- distribution of fact sheets to Tongala residents;
- posting of plans and a factsheet in the local IGA supermarket; and
- a community drop-in session.

The results of the community consultation are as follows:

- A thorough consultation and communication strategy was undertaken in accordance with the EPA Approvals proposal pathway and utilising the International Association for Public Participation's (IAP2) Public Participation Spectrum; and
- Based upon the consultation undertaken and feedback received, no concerns were identified in relation to the proposed rendering operations at Greenham's abattoir at 2121 Finlay Road, Tongala.

Please refer to Community Engagement report contained in **Appendix C** for full details on the community engagement process.

7 Integrated Environmental Assessment

The *Climate Change Act 2017* requires the consideration of potential impacts as discussed in the EPA 'Demonstrating Best Practice' (Publication 1517.1 October 2017).

This application seeks to implement 'best practice' and is supported by odour, noise, wastewater and greenhouse technical reports.

This proposal requires a Planning Permit and an EPA Works Approval. Section 7 and 8 of the report address the State Environment Protection Policy (SEPP) for odour and noise. In addition, the EPA's Recommended Separation Distances for Industrial Residual Air Emissions (March 2013) has been considered.

The approach for the 'best practice assessment' has been undertaken generally in accordance with the types and evidence in Table 3 of the EPA 'Demonstrating Best Practice' (Publication 1517.1 October 2017).

Table 1: Integrated Environmental Assessment

Item	Description
Technical Assessments	The accompanying technical assessment reports and literature reviews have considered and adopted relevant national and state legislation and guidelines and industry accepted models and guidelines.
Benchmarking	<p>Greenham are proposing to install a proven, modern high temperature rendering plant with an integrated at the source odour capture system at the Site. Greenham have selected Keith Engineering as they have considerable experience and expertise in the Australian rendering market. Keith rendering plants have been successfully constructed and are now operational at a number of properties across Australia.</p> <p>The odour control system designed by The Odour Unit (TOU) will be based on the Split System design developed by TOU representing best-practice in the rendering industry and used widely in Australia. This system successfully captures up to 95% of odour at the source prior to treatment in a modern biofilter system, together with vertical dispersion of building ventilation air through vertical-discharge roof fans. The system is designed to minimise the risk of industrial residual air emissions (IRAEs) and to ensure the comfort of plant operators. The 'Split System' OCS has been successfully adopted in part or fully by many rendering plants of similar scale and nature in Australia, including:</p> <ul style="list-style-type: none"> • Throsby Abattoir, Singleton, NSW 2001; • Cargill Beef (now Teys Australia), Wagga Wagga, NSW 2005 and 2016; • Cargill Beef (now Teys Australia), Tamworth, NSW 2008; • Thomas Food Industries (formerly Peel Valley Exporters), Tamworth, NSW 2009; and • Baiada Poultry Rendering Plant, Tamworth, NSW, 2016.
Application of Waste Hierarchy	The proposed rendering plant will convert animal by-product into usable, sellable products including tallow and meat-meal, effectively reducing the waste generated at the Site. Tallow is generally used in the production of soaps and candles and meat-meal is used as an organic fertilizer for plants and as a nutritional supplement for animals.

Item	Description
	<p>Greenham are also in the process of seeking approval for the installation of a cogeneration plant at the Site, which will allow the conversion of waste (water) to energy through the capture of biogas from the anaerobic lagoons.</p>
<p>Triple Bottom Line Assessment (Environmental, Social, Economic)</p>	<p>The rendering plant will ensure the long-term economic viability of Greenham’s Tongala facility. Greenham are key employer in the region and have a history of providing financial support to a number of local community groups and sporting organisations.</p> <p>The proposed development will result in an increase in job security at the facility and is designed to ensure nuisance odour and noise emissions are minimised to preserve the amenity of the area.</p>
<p>Integrated Environmental Assessment</p>	<p>The potential environmental impacts, including noise emissions, air emissions, wastewater, greenhouse gas, energy and water usage have been assessed to determine all potential environmental impacts related to proposed rendering plant.</p> <p>These assessments have confirmed the risk to the environment as a result of the proposal is low and acceptable. An Environmental Monitoring Program (Appendix H) has also been developed for the Site, to ensure continued operation of the rendering plant post construction does not result in any unacceptable environmental impacts.</p>

8 Climate Change

The *Climate Change Act 2017* has been considered in preparation of the application. The social, economic and environmental benefits of the rendering plant have been considered and discussed throughout the application.

8.1 Potential Impacts

The proposed rendering plant is located in an area that is subject to inundation, as indicated by the presence of a Land Subject to Inundation overlay at the Site. The plant will be constructed 300mm above the 1 in 100-year floor level to mitigate any risk of inundation of the rendering plant.

The direct environmental benefits include reduced transport movements, more efficient water consumption all of which will be beneficial to the Tongala and Victorian environment.

This proposal will implement new infrastructure which will be climate change resilient by:

- Being located above the 1 in 100-year flood level,
- Consolidate operations on one property through the utilisation of waste from animal by-product to produce tallow and meat-meal.

Greenham are also undertaking a separate approval process for the conversion of the existing anaerobic lagoons into covered anaerobic lagoons and the installation of a cogeneration system, which will utilise captured biogas for electricity production.

A greenhouse gas (GHG) and energy impact assessment was prepared by PLC, and is provided in

Appendix D. The findings of the assessment are as follows:

- The construction of a rendering plant at the Site will result in an increase in the consumption of energy by up to 90% and increase greenhouse gas emissions by approximately 6,000 tonne tCO₂-e per year. However, there will be a commensurate reduction in energy consumption at the Laverton based plant currently receiving the raw by-product from the Site.
- The installation of a cogeneration system along with the rendering plant will reduce the GHG emission by approximately 20,000 tCO₂-e per year. This will also reduce the fugitive emissions of methane and reduce the risk of nuisance odour generation at the Site.
- The proposed rendering plant will reduce truck movements from the Site to the current rendering plant in metropolitan Melbourne. This equates to a reduction in transport related diesel consumption of approximately 4740 litres per year, equivalent to 13 tCO₂-e (carbon dioxide equivalents).
- Approximately 15,000kL of additional wastewater will be generated by the operation of the rendering plant. The additional water is generated through the cooking process as water is evaporated off the process material. Greenham already have in principal approval from Goulburn Valley Water to increase their Trade Waste Agreement (TWA) from 300ML to 315ML. A draft TWA with GVW is provided in **Appendix I**. It is noted that the agreement is yet to be finalized, however is not expected to change materially.

9 Environmental Information

9.1 Air Emissions (Odour)

The Odour Unit Pty Ltd (TOU) were engaged to undertake an Odour Impact Assessment Study (OIAS) of the potential odour impacts from the rendering plant. TOU have also been engaged to develop a concept design for an odour control system (OCS) for the proposed rendering plant.

The OIAS was conducted in accordance with the State Environmental Protection Policy (Air Quality Management), EPA Victoria's 'Publication number 1518 – Recommended separation distances for industrial residual air emissions' and EPA Victoria Publication 1551 – 'Draft guideline: Guidance notes for using the regulatory air pollution model AERMOD in Victoria'. The study has taken the conservative position, where emissions are modelled as continuous across a 24/7 week.

The OIAS is provided in **Appendix E** and the findings are summarised as follows:

- The location of the proposed rendering plant is directly adjacent to the anaerobic lagoons that will become a covered system – eliminating them as an odour source. The abattoir is located approximately 1.3 km to the west of the Tongala township, on rural land. The nearest potential sensitive odour receptor is a rural residence located approximately 750 m from the proposed rendering plant.
- The odour controls proposed for the new plant will be based on the Split System design developed by TOU representing best-practice in the rendering industry and used widely in Australia. This system features up to 95% odour capture at individual process odour sources and treats the captured odour in a modern biofilter system. The building is also fitted with roof mounted exhaust which enhance vertical dispersion of building ventilation air flow. The total process air collected is detailed in **Table 4.1** of the OIAS.
- Odour dispersion modelling has demonstrated that the odour emissions from the proposed rendering plant under normal operations are highly unlikely to cause adverse odour impacts upon sensitive receptors.
- In TOU's view, it is appropriate for Greenham to seek a reduction in the recommended separation distance of 1,000m for the proposed rendering plant (including the abattoir operations) based on the following grounds:
 - The recommended distance does not consider the condition of the rendering plant or the quality of odour management and control technologies in place. This puts rendering plants of modern and best practice design, management and control technology into the same category as older rendering plant designs with obsolete odour controls and management measures.
 - The magnitude and risk of industrial residual air emissions are considerably lower for a modern rendering plant in contrast with an older rendering plant.
 - The OIA Study has demonstrated that the rendering plant design has an exceptionally high standard of emissions control technology.
 - An Environmental Monitoring Program including a risk assessment and control measures has been prepared for the Site to manage normal operation and possible errant events (**Appendix H**) and regular monitoring and inspections of the OCS system will be implemented.
 - Greenham have a good track record of odour management at the existing abattoir, with no historic complaints related to odour and an overall positive response to the community and stakeholder engagement process.

All possible process upset conditions that could affect off-Site odour impacts were examined and remedial actions developed. The resultant remedial actions plan (**Table 7.1, OIAS, Appendix E**) is a highly effective means of ensuring sustainable performance from the system.

Overall, this study has concluded that the proposed rendering plant is a compatible and beneficial land use for the area and has industry best practice management and controls in place, having a small odour footprint demonstrated by the odour dispersion modelling. Therefore, the likelihood of adverse odour impacts and emissions from the operation of the proposed plant is low and satisfies Environment Protection Authority Victoria guidelines, and justifies a variation in the minimum separation distance required under EPA Victoria Publication 1518.

9.2 Noise Emissions

Watson Moss Growcott (WMG) were commissioned to undertake a noise assessment of the proposed use (**Appendix F**). This report presents the results of the acoustic assessment and considers noise emissions associated with the facility in accordance with the Victorian Environment Protection Authority Publication 1411 *Noise from Industry in Regional Victoria – Recommended Maximum Noise Levels from Commerce, Industry and Trade Premises in Regional Victoria* (NIRV).

The Noise Assessment was based on the location of the sensitive receptors being located within proximity to the proposed rendering plant (approximately 1200m to the north east, 740m to the west and 1,180m to the south east). The calculated resultant noise levels associated with noise emissions from the rendering plant at each of the identified off-Site noise sensitive receptors is provided in **Table 2**.

Table 2: Predicted noise levels at sensitive receptors

Sensitive Receptor	Direction from Site	Distance from Site	Predicted Total Noise Including Proposed Cogeneration and Rendering Plant, dB(A)	NIRV Night Period Recommended Maximum Noise Level, dB(A)	Desirable Combined Rendering and Cogeneration Plant Noise Target, dB(A)
85 Bosse Rd Tongala (NE of the proposed rendering plant)	NE	1200	26	41	31
491 Murphy Rd Tongala (W of the proposed rendering plant)	W	740	34	41	36
818 Henderson Rd Tongala (SE of the proposed rendering plant)	SE	1180	30	43	38

The noise emissions assessment report is provided in **Appendix F**. The findings of the assessment are as follows:

- The purpose of the assessment was to consider potential noise emission associated with the proposed use on noise sensitive residential receptors surrounding the Site.
- Noise emissions associated with the proposed use were considered in accordance with methodologies described in the following guidelines and policies:
 - Environment Protection Authority Publication 1411 *Noise from Industry in Regional Victoria – Recommended Maximum Noise Levels from Commerce, Industry and Trade Premises in Regional Victoria* (NIRV); and
 - State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (SEPP N-1).
- Based on the assessment, WMG concluded that operation of the proposed facility can comply with the NIRV Recommended Maximum Noise Levels and project design objectives at each of the existing residential noise sensitive receptors during the EPA-defined day, evening and night periods without any additional noise control measures.
- This conclusion takes into account the noise contributions of existing industries in the area and the proposed cogeneration plant at the Site.

9.3 Wastewater

9.3.1 Process Wastewater

Greenham commissioned PLC to prepare a wastewater treatment capacity assessment (WTCA). The purpose of the assessment was to demonstrate that the existing wastewater treatment system can treat additional wastewater load associated with the proposed rendering plant. The WTCA report is provided in **Appendix G**.

The objectives of this report were to:

- Detail the current wastewater treatment system, wastewater generation and wastewater quality at the Site;
- Define the proposed increase in and quality of the wastewater associated with the proposed rendering plant; and
- Assess the capacity of the existing wastewater treatment system to take the additional wastewater generated by the proposed rendering plant.

The existing wastewater treatment process at the Site consists of combined red and green stream wastewater collection. Primary treatment occurs via a 2mm wedgewire drum screen, followed by a dissolved air flotation (DAF) system to remove gross solids, fats, oils and grease. Wastewater is then discharged into three, in-series anaerobic Ponds 1, 2 & 3, followed by an aerobic Pond 4, with powered surface aeration. Wastewater then flows to a settlement pond, where alum is dosed to remove phosphorus prior to discharge to the Goulburn Valley Water treatment plant under a trade waste agreement.

The primary source of wastewater discharge from the Rendering Plant will be condensate from the cooking process. The condensate is expected to be generated / discharged at a rate of approximately 3,500L per hour, across 18 hours of operation (approximately 60,000L per day). Condensate water characteristics have been measured at an equivalent operating facility in NSW, also designed by Keith Engineering. The reference data provided is considered by Keith Engineering to be “worst-case”, as it was collected at a co-processing rendering plant, which processes waste from multiple species.

Based on the WTCA the following conclusions were made:

- The high temperature rendering process proposed is significantly different to conventional low temperature rendering processes commonly used in abattoirs, with significantly lower wastewater concentrations than conventional “stick water” which is a commonly observed waste stream from low temperature rendering.
- The high temperature rendering process proposed for the Site is expected to produce minimal additional wastewater load; particularly with respect to nutrients such as total nitrogen and total phosphorous.
- The additional load on the existing wastewater treatment plant at Tongala is expected to be negligible and can be processed through the plant without any amendment to the treatment system.
- Improved work practices, driven by the availability of rendering on Site is expected to reduce washdowns, potable water consumption and further improve wastewater quality.
- Greenham are currently trialing alternative treatment techniques for dissolved phosphorus through laboratory bench-scale trials and on-Site trials and are in the process of finalising their preferred treatment technology. This will be finalised prior to the commissioning of the proposed rendering plant. The concentration of phosphorus in untreated wastewater will likely decrease as a result of the introduction of rendering plant process water, due to dilution as it is expected to contain negligible dissolved phosphorus. It is also expected that improvements in Site practices to ensure all waste biological material is captured for processing in the rendering plant will lead to a reduction in total phosphorous entering the wastewater treatment system.
- Increased availability of surface aerators is expected to further improve the level of nitrification, leading to lower total nitrogen concentration in the effluent (this is not required to meet trade waste limits).
- Approximately 15,000kL of additional wastewater (condensate) will be generated by the operation of the rendering plant. Greenham already have in principal approval from Goulburn Valley Water to increase their Trade Waste Agreement from 300ML to 315ML. A draft TWA with GVW is provided in **Appendix I**. It is noted that the agreement is yet to be finalized, however is not expected to change materially.
- No modifications or upgrades to the Site’s wastewater treatment system are required to handle the additional load from the proposed rendering plant.

9.3.2 Stormwater

A process schematic for the management of stormwater at the Site is provided in **Figure 8-1** below and a schematic stormwater and wastewater drainage plan is provided in **Figure 4**.

Wastewater from the humidifier and concrete apron to the south of the rendering plant will drain to a grated pit underlying the humidifier, wastewater will then drain to a sump to the north-east of the rendering plant building. Wastewater from the air-cooled condenser to the east of the plant will drain directly to grated pit underlying the condenser, which will then drain to the wastewater sump.

The rendering plant is self-contained and all areas are fully enclosed whereby there will be no contact of rainwater with the processing areas. All washdown water from within the rendering plant building will drain to open grates, which will drain to the wastewater sump

Any water within the Tallow Tank bunded area will drain to a grated pit, water will then drain to the wastewater sump. Tallow loading will take place on the existing concrete apron adjacent to the contrashear and DAF. Stormwater from the concrete apron drains to a sump underlying the contrashear and DAF, prior to being pumped to the wastewater treatment system.

Loading of meat meal will occur within the rendering plant building. Any water within building will drain via the grated drains to the wastewater sump.

The stormwater from the roof of the rendering plant building will be directed to the existing on-Site stormwater retention dam (**Figure 1**). Greenham reuse water from the retention dam to wash down cattle-yards and limited outdoor hardstand areas in operational areas. This washdown water is directed to the existing wastewater treatment system.

Wastewater from all operational areas is directed to the on-Site wastewater treatment system. Stormwater from non-operational areas is directed to an underground stormwater drainage system which discharges to the roadside drain along Watson’s Rd. There is no proposed increase to uncovered hardstand areas.

Any excess moisture from the bio-filter will be collected via the sloped base of the bio-filter and directed via the enclosed ducting system to the condensation pump and pumped to the wastewater treatment system.

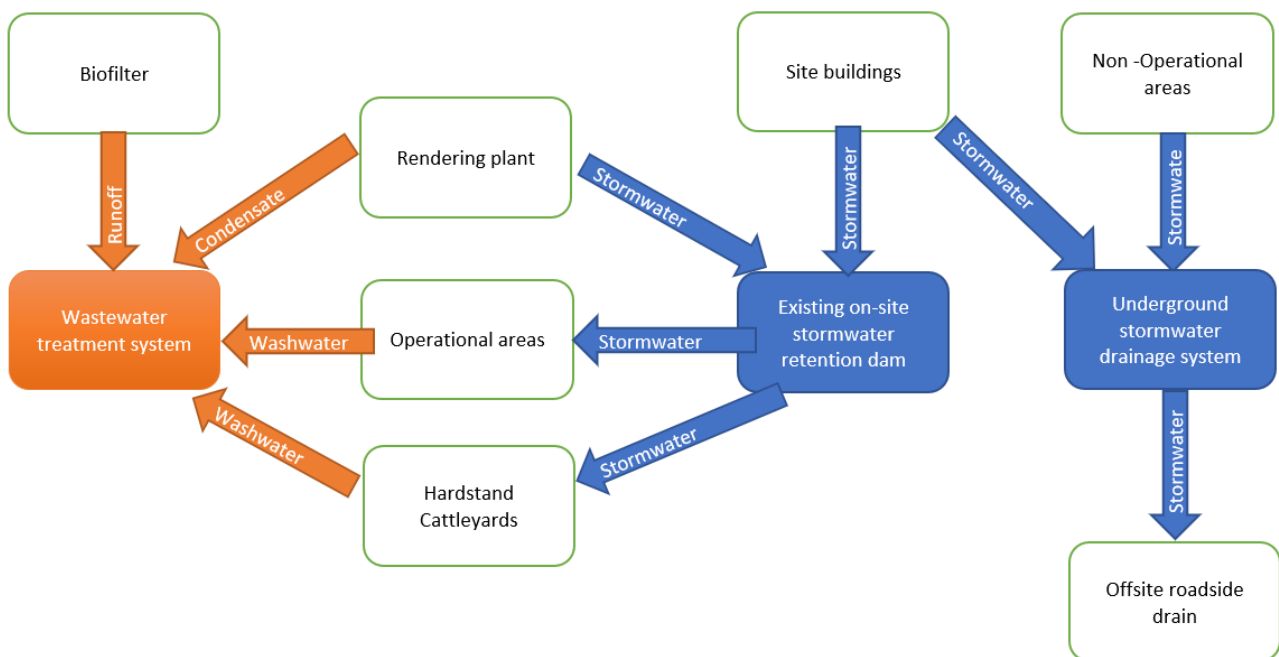


Figure 8-1 – Stormwater Management

10 Environmental Monitoring and Risk Assessment

PLC has undertaken an environmental risk assessment and developed an Environmental Monitoring Program (EMP) for the Site to include the addition of the rendering plant. The EMP and Risk Assessment is provided in **Appendix H**.

The monitoring program has been developed based on the risk assessment described in Section 3 of the EMP and Risk Assessment. The risk assessment has identified a number of aspects that will require monitoring during the life of the abattoir and rendering plant either as part of routine Site inspections undertaken by Site staff, or periodic targeted monitoring of aspects by technical professionals. The proposed inspection, monitoring and maintenance programs are provided in the following sections.

10.1 Site Inspections

The following routine inspections should be undertaken at the Site:

Table 3: Site Inspections

Item	Monitoring Parameter	Frequency
Water Usage	Potable water usage at the Site, metered.	Daily
Wastewater Ponds	Water levels in Ponds 1-5. Inspection to confirm water level is below acceptable freeboard levels and to confirm no overflow or runoff. Monitor for aesthetically displeasing odours, algal blooms and pond scum / fats and oils.	Daily
Wastewater Ponds	Depth of sediment / solids in ponds to be measured across Ponds 1-5. Thickness of crust on Ponds 1-3 to be measured.	Quarterly
Wastewater Pond Seepage	The banks of all ponds (1-5) should be inspected for signs of seepage. Potential signs of seepage include active seepage of water from the banks, areas of saturated ground or green vegetation during dry climatic conditions.	Quarterly
Wastewater Pits	Solids and water levels in wastewater pits/sumps.	Daily
Wastewater Pump	Operation of the wastewater pump in each sump (cow and bull plant).	Daily

Item	Monitoring Parameter	Frequency
Proposed Rendering Plant	Rendering plant systems are to be inspected daily during each shift for visible signs of wear and tear, seal failures, fan operation, visible steam, odours around building perimeter, blockages in pipes or screw conveyors.	Daily
Biofilter	Biofilter to be inspected in accordance with Operating and Monitoring Manual. Operators to check for short-circuiting, dry beds, humidifier operation, fan and pumping system, irrigation system blockages / leaks and rendering type odours at the biofilter medium surface.	Daily

Any issues identified during Site inspections should be reported to the plant manager and plant engineer immediately. Any issues which may constitute a breach of licence conditions, must be reported to EPA.

10.2 Maintenance Program

A proposed guide to maintenance is provided in **Table 4**, below:

Table 4: Site Inspections

Item	Maintenance Frequency
Equipment and Machinery	Maintenance of equipment and machinery should be carried out as per manufacturer's recommendations, or on an as needs basis.
Wastewater Ponds	The depth of sediment/sludge in wastewater ponds should be managed to ensure the ongoing effectiveness of the wastewater treatment system. Excessive sludge build-up can lead to an unacceptable reduction in the pond detention time, and ineffective wastewater treatment. The depth of sediment should be reviewed annually, with recommendations for de-sludging provided in ongoing environmental monitoring reports.
Wastewater Pond Seepage	The banks of all ponds (1-5) should be inspected for signs of seepage. Potential signs of seepage include active seepage of water from the banks, areas of saturated ground or green vegetation during dry climatic conditions. Repair / replacement of liners should be undertaken where seepage is confirmed.
Wastewater Pits / Drains	Solids should be removed from wastewater pits daily during cleaning.
Wastewater Pump(s)	The wastewater pumps from the bull and cow plant sumps should be maintained in accordance with the manufacturer's recommendations, or on an as needs basis.
Biofilter	Maintenance should be carried out in accordance with the Operating and Maintenance Manual.

10.3 Environmental Sampling Program

Monitoring locations, including proposed soil, groundwater and surface water sampling locations are shown in Figure 1 of the EMP (**Appendix H**). The monitoring parameters and testing frequency are presented in **Table 5**.

Table 5: Sampling Program

Sampling Site	Parameters Monitored	Sampling Frequency
Treated Wastewater		
Tradewaste Sampling	Daily Flow, Biochemical Oxygen Demand (BOD 5-day), Sodium, nutrients (Total Kjeldahl Nitrogen (TKN), Total Phosphorus (total P)), Lab receipt temperature, Discharge Temperature, Suspended Solids (SS), Total Dissolved Solids (TDS), pH, Electrical Conductivity (EC), Oil and Grease (O&G), Chemical Oxygen Demand (COD), Sulphate, Total Alkalinity	Two (2) daily 24-hour composite samples per month
Groundwater		
Groundwater Monitoring Wells	BOD, COD, TDS, nutrients, EC, pH, <i>E. coli</i>	Six monthly (wet / dry season) #1
Soil		
Refer Appendix J.	In accordance with the Solids Waste Management Plan, Appendix J.	Annual
Other		
Complaints	Contact details, address, nature of complaint	As required

Note 1. Frequency of monitoring may be reduced once effectiveness of environmental management is proven to regularly achieve desired objectives through repeated sampling events.

11 Waste

The term waste doesn't apply to the animal by-products raw material, as it will be directed to the proposed rendering plant for further processing into protein-based products of tallow and meat-meal. The only waste from the rendering process will be the condensate water described in **Section 8.3** above.

All liquid waste from Site amenities, including toilet, shower, laundry and kitchen facilities are discharged to sewer. There are no septic tanks located on Site.

Solid waste, including paunch, DAF scum, screened solids and biosolids is managed in accordance with the Solids Waste Management Plan (**Appendix J**) (Ecowise Environmental, 2009). There will be no change to the quantity of paunch material and there will be a negligible increase in the quantity of biosolids as a result of the proposal. As such, Greenham propose to continue to manage solid waste in accordance with this plan. A solids waste management schematic plan is presented in **Figure 11-1** below.

Solid waste from staff amenities will be disposed of using existing commercial waste disposal suppliers.

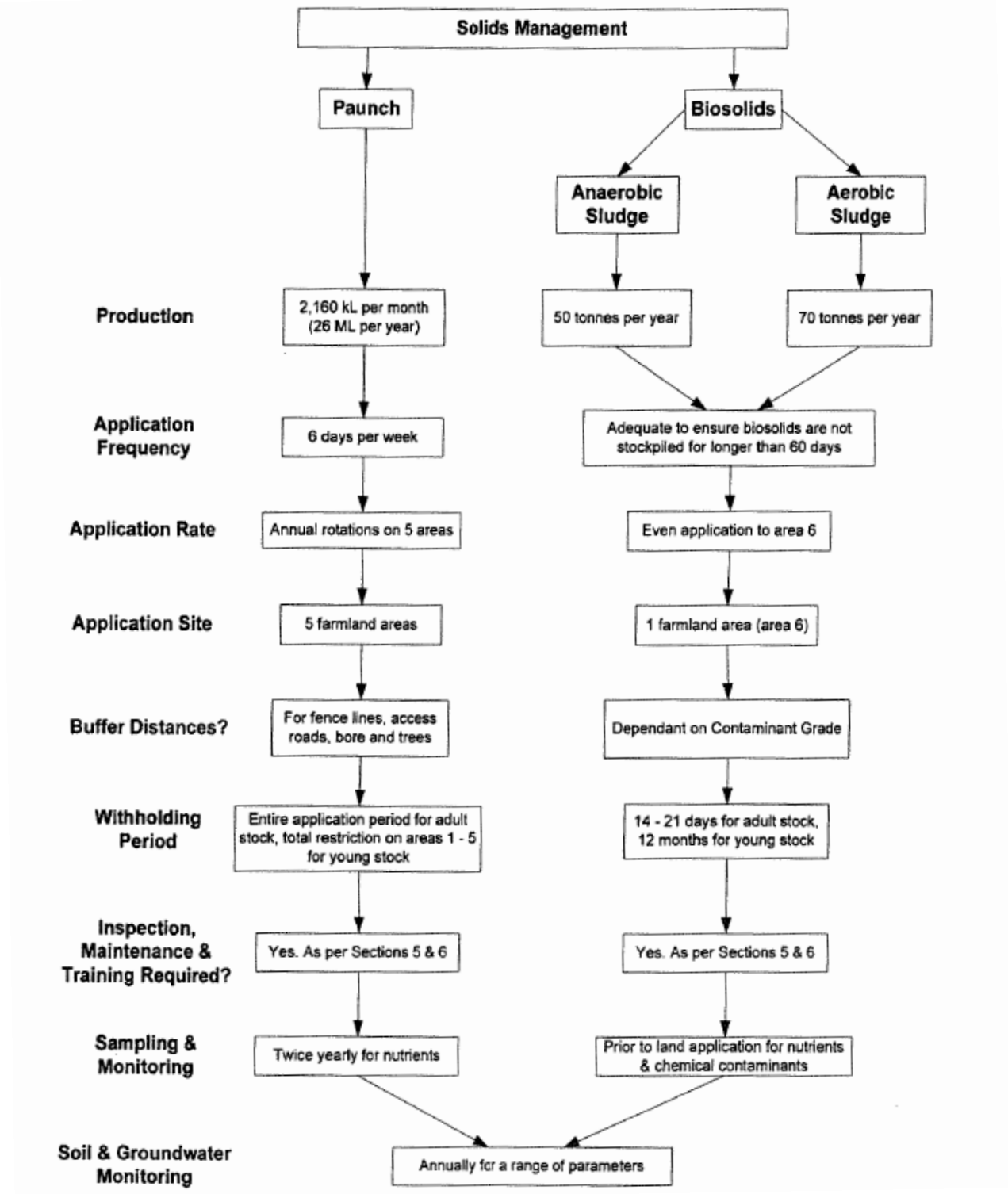


Figure 11-1 Solid Waste Management Plan Schematic

12 Operational Risk Analysis

A thorough risk analysis for potential process failures / faults is provided in **Appendix K**. A summary of the analysis, including control measures and response actions is provided in **Table 6**.

Table 6: Operational Risk Analysis

Activity	Area	Description	Risk	Control	Short Term Action	Medium Term Action	Long Term Action
Material Transfer	Material Transfer Pump	Pump failure stopping delivery of material to rendering plant	Low	SCADA system	Hold material in existing raw material hopper at abattoir.	Repair / replace pump	Transport material via forklift until repairs are made.
		Pipe failure causing material spillage between abattoir and rendering plant	Low	Weekly Inspections of transfer pipeline	Hold material, contain and clean up spillage.	Repair pipe and inspect entire pipeline	Transport material via forklift until repairs are made.
	Material Transfer Pipe	Pipe failure causing material spillage between abattoir and rendering plant	Low	Weekly Inspections of transfer pipeline	Hold material, contain and clean up spillage.	Repair pipe and inspect entire pipeline	Transport material via forklift until repairs are made.
Material Processing (Rendering)	Raw Material Area	Equipment failure in the raw material area causing minor odour release	Medium	SCADA system	Halt operations / hold material.	Appropriate repairs will be conducted	Transport material off-site for processing.
	Cooking and Pressing	Cooker / screw press breakdown halting input of product	Medium	SCADA system	Halt operations via interlock. Hold material.	Appropriate maintenance will be scheduled and conducted	Transport material off-site for processing should repairs fail.
	Meal Area	Equipment failure of hammer mill, screw press or other resulting in inability to receive material from the cooker.	Medium	SCADA system	Hold material in cake bin while repairs are undertaken.	Halt operations until appropriate repairs are undertaken.	Transport material off-site for processing.

Activity	Area	Description	Risk	Control	Short Term Action	Medium Term Action	Long Term Action
		Noise from the operation of machinery	Low	Operator process check	Workers to wear PPE, building acoustically treated with double skin Colourbond.	Schedule and perform appropriate maintenance of plant and equipment	Replace equipment / transport material off-site for processing
	Tallow Area	Failure of tallow processing equipment resulting in inability to receive material from the cooker.	Medium	SCADA system	Halt operations / hold material	Appropriate repairs will be conducted	Transport material off-site for processing.
		Pipe failure causing tallow spillage within rendering plant	Low	Operator process check	Halt operations / hold material	Appropriate repairs will be conducted	Transport material off-site for processing.
	Tallow / Meal Loading	Build-up of material for truck loading causing spillage	Low	SCADA system	Hold loading, clean and dispose of spoiled material	Hold material in storage tanks / hoppers. Arrange alternative transport contractor	Shut-down plant and transport raw material offsite for processing
		Spillage of material during truck loading	Medium	SCADA system	Halt processing. Contain spillage to prevent from spreading further.	Appropriate repairs will be conducted	Transport material off-site for processing should repairs fail.
Odour capture system	The Odour Unit has also prepared a risk assessment and provided it as a commercial in confidence document.						
Biofilter	The Odour Unit has also prepared a risk assessment and provided it as a commercial in confidence document.						

Activity	Area	Description	Risk	Control	Short Term Action	Medium Term Action	Long Term Action
Services	Electricity	Equipment fault / failure resulting in odour release outside building	Low	SCADA system	Halt processing via interlock.	Appropriate repairs will be conducted	Transport material offsite
	Steam		Medium	SCADA system	Halt operations / hold material	Appropriate repairs will be conducted	Transport material offsite
	Water		Medium	SCADA system	Halt operations / hold material	Appropriate repairs will be conducted	Transport material offsite
	Compressed air		Medium	SCADA system	Halt operations / hold material	Appropriate repairs will be conducted	Transport material offsite

13 Post Decision – Operation Requirements

13.1 Financial Assurance

The *Environment Protection (Scheduled Premises and Exemptions) Regulations 2017* identifies premises that are scheduled in accordance with the *Environment Protection Act 1970*. The legislation also identifies whether a Financial Assurance is required. Neither abattoirs (Category D01) nor Rendering work (Category D02) require a Financial Assurance.

14 Conclusions

Greenham was established in 1933 and has operated the Tongala Abattoir since it was opened in 1993. The existing abattoir at 2121 Finlay Road Tongala operates under EPA Licence 2327. Greenham propose to develop a rendering plant at the Site to convert waste from animal by-product into tallow and meat-meal. The high temperature rendering process proposed is more advanced than the conventional low temperature rendering processes resulting in significantly lower wastewater concentrations and lower environmental emissions.

The proposed rendering works will be developed utilising best practice in rendering plant and environmental management technology. The rendering operations will be housed in an enclosed building employing a process air extraction system and roof mounted exhaust fans, with all captured process odour treated in a biofilter system. Odour dispersion modelling supports a recommended reduction in the separation distance from 1000m to 740m. It is concluded that the likelihood of adverse odour impacts from the operation of the proposed plant is low and satisfies Environment Protection Authority Victoria guidelines.

Noise emissions resulting from the operation of the proposed works were assessed against the EPA Victoria guidance documents, publication 1411 and SEPP N-1. It is concluded that the operation of the facility will comply with these requirements. An integrated environmental assessment has concluded that environmental impacts from noise emissions, air emissions, wastewater, greenhouse gas, energy and water usage will be low and within EPA guidance requirements.

Community engagement was undertaken in accordance with the EPA approvals pathway where no concerns were identified in relation to the proposal.

This Works Approval application is submitted separately to a planning permit application which has been submitted to the Shire of Campaspe meeting the relevant policy objectives and intent of the Campaspe Planning Scheme. The proposed \$12M investment will provide significant social and economic benefit to the local community. It is submitted that this Works Approval application is consistent with EPA Victoria guidance and regulatory requirements and should be supported by the EPA.

15 References

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APPENDIX A – EPA Licence

APPENDIX B – Plans

APPENDIX C – Community Consultation

APPENDIX D – Greenhouse Gas and Energy Impact Assessment

APPENDIX E – Odour Impact Assessment

APPENDIX F – Noise Emissions Assessment

APPENDIX G – Wastewater Treatment Capacity Assessment

APPENDIX H – Environmental Monitoring Program and Risk Assessment

APPENDIX I – Trade Waste Agreement

APPENDIX J – Solid Waste Management Plan

APPENDIX K Operational Risk Analysis