



Application for licence renewal

Part V Division 3 of the *Environmental Protection Act 1986*

Licence Number	L7316/1996/10
Licence Holder	Fletcher International Exports Pty Ltd
ACN	003 213 652
DWER file number	DEC9037/2
Premises	Narrikup Export Abattoir 520 Settlement Road NARRIKUP WA 6326 Legal description - Lot 5216 on Plan 205738 and Lot 4 on Diagram 69395 as depicted in Schedule 1 of the licence.
Date of report	19/09/2023
Decision	Licence granted

1. Decision summary

The delegated officer has determined to grant licence L7316/1996/10, which includes a partial review of the licence as part of the replacement process, to ensure the risks to human health and the environment from the discharge of wastewater to land on the premises, as previously assessed by the department, have not materially changed.

Administrative amendments have been made which include an extension of the expiry date of the licence and an update to the current format, with existing conditions being transferred, but not reassessed. The delegated officer has also determined to make material changes to the previous licence in accordance with *Guideline: Risk Assessments* (DWER 2020). New conditions that have been included on the licence are detailed in section 8.

This report documents changes made to the previous licence as part of the replacement process, pursuant to sections 62 and 62(A) of the *Environmental Protection Act 1986* (EP Act).

2. Purpose and scope of assessment

On 12 June 2020, Fletcher International Exports Pty Ltd (licence holder) submitted an application for a licence renewal to the department under section 57 of the EP Act. This application was to replace the licence for the Narrikup Export Abattoir (the premises), which was due to expire on 3 October 2020, and included a Nutrient and Irrigation Management Plan (NIMP) that was unable to be assessed by the department due to time constraints. The licence expiry date was subsequently extended by 2 years, followed by a further 1 year, to allow for an assessment of the application and NIMP during the next licence renewal.

The premises relates to the category and assessed production capacity under Schedule 1 of the *Environmental Protection Regulations 1987*, which are defined in licence L7316/1996/10.

A review of the risks to human health and the environment from the discharge of wastewater to land on the premises is detailed in sections 7 and 8 of this report, of which the submitted NIMP has been considered as part of this assessment.

In replacing the licence, the department has considered and given due regard to its regulatory framework and relevant policy documents which are available at

<https://www.wa.gov.au/service/building-utilities-and-essential-services/integrated-essential-services/dwer-regulatory-documents>.

3. Premises overview

The licence holder operates a lamb and sheep abattoir near Narrikup, approximately 20 km NNW of Albany.

The main activities occurring on the premises include the slaughtering and processing of lambs and sheep, fellmongering, salting of skins and rendering (to produce tallow and bone meal). Two biomass boilers process woodchips to generate steam for use in the abattoir and rendering facilities. Processing generally occurs over approximately 220 days as there is an annual maintenance shut down for 4 weeks in the middle of the year.

Wastewater generated from the abattoir and rendering operations is directed through primary (fats and solids removal) and secondary (aerobic pond, wetland cells, and maturation ponds) treatment. Wastewater from the fellmongering process is also directed to the wastewater treatment system. The treated wastewater is then irrigated onsite.

Wastewater generated through the salting of skins, which is highly saline, is stored in a separate tank, which is then pumped out by a contractor for disposal offsite.

4. Nutrient and Irrigation Management Plan (from application)

4.1 Wastewater treatment system

The wastewater treatment system at the premises consists of a contra shear, dissolved air floatation system (SYSDAF), aerobic aeration pond (10 ML capacity), a constructed wetland system (4 below ground HDPE lined cells with wetland vegetation, each separated by weirs), and two aerobic maturation holding ponds (35 ML capacity each). The two maturation holding ponds have two interconnecting pipes, set at different depths, to allow wastewater to flow between the ponds and to allow the licence holder to manage water levels in both ponds.

The licence holder has advised that the aerobic aeration pond has a hydraulic retention capacity of 10 days and the two aerobic maturation holding ponds are designed to achieve a hydraulic retention time of approximately 140 days. All three ponds are lined with 2 mm high density polyethylene (HDPE).

4.2 Wastewater quality

The licence holder has provided monthly pH, electrical conductivity (EC), total nitrogen (TN), and total phosphorus (TP) data from the monitoring of the raw wastewater, SYSDAF, wetlands and maturation holding pond during 2010 and 2019, with some data also provided for late 1999 to early 2000.

The NIMP states that pH and TP have remained relatively consistent since operations commenced in 1998, while EC and TN appear to have increased. It is noted that biochemical oxygen demand (BOD), total suspended solids (TSS) and oil and grease are also monitored.

Graphs of 2019 monthly monitoring results, for 4 of the 7 parameters that are monitored, was provided in the NIMP. However, to provide an indication of recent treated wastewater quality, Table 1 below shows the range and average wastewater quality from the last 5 years of submitted monitoring results.

Table 1: Quality of treated wastewater discharged to irrigation areas (from licence holder)

Parameter	Units	January 2017 – December 2021 ¹		ANZECC 2000 – Primary Industries ²
		Range of treated wastewater quality	Average treated wastewater quality	
TN	mg/L	48 - 555	177	25 – 125 ³
TP	mg/L	0.2 – 22.1	5.7	0.8 – 12 ³
pH	pH units	6.1 – 8.7	7.9	6 - 9
EC	µS/cm	1,910 – 7,800	3,502	-
BOD	mg/L	7 - 127	72	<15
TSS	mg/L	44 – 4,870	376	-
oil and grease	mg/L	9 - 418	65	-

Note 1: Maturation Holding Pond sampling results. Data taken from annual reports submitted by the licence holder.

Note 2: National Water Quality Management Strategy Paper No. 4 – Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 3 Primary Industries, 2000, ANZECC and ARMCANZ (ANZECC 2000).

Note 3: ANZECC 2000, requires site specific assessment to determine actual value.

4.3 Irrigation of wastewater

Size and infrastructure

Treated wastewater is currently irrigated from maturation holding pond 2 via a network of pipes (generally 100 mm diameter) and applied to irrigation areas (1, 2A, 2B, 3A, 3B and 4) using two travelling irrigators. Each travelling irrigator has a radius of 40 m, and a pipe length of 500 m.

The submitted NIMP indicates that the irrigation areas total 141 ha but the licence holder has since submitted further information that suggest the irrigation area totals 132.3 ha. The licence holder has provided an infrastructure map to show where the travelling irrigators attach to the pipework. It is noted that the licence holder has stated, without providing any evidence, that no irrigation occurs within 20 m of the premises boundary, or within 100 m of Mill Brook; however, irrigation areas are defined in the licence.

Hydraulic loading

The licence holder has used data from February 2019 to January 2020 in their NIMP, stating that 151,070 m³ of wastewater was produced and 147,894 m³ of wastewater was irrigated. It is noted that during this time 1,405,765 head of livestock were received (which the department calculated to be approximately 56,231 tonnes (hot standard carcase weight)). This is less than the existing assessed production throughput of 77,740 tonnes, with the department estimating that approximately 216,639 kL of wastewater could be potentially irrigated annually.¹

¹ The licence holder requested (after receiving initial draft documents) to reduce the assessed production throughput for category 15, and increase category 83. While this may appear to reduce the estimated maximum irrigation volume, it is noted that the amount of wastewater irrigated per head of livestock received, and per tonne (HSCW) processed approximately doubled from the 2020-2021 to the 2022-2023 annual periods. Therefore, irrigation volumes may potentially be closer to 344,630 kL at the amended assessed production throughputs.

The NIMP states that *the irrigation rate is carefully controlled to prevent adverse environmental impacts using a slow rate irrigation system with lower rates of irrigation applied during the wetter months*. The NIMP also states that *the design of the slow rate system follows the methodology described by the EPA Victoria (1991) (and two other documents) with no further information provided in the NIMP*. In addition to the slow rate system the licence holder utilises control measures such as vegetation strips and a monitoring program (soil, surface water and groundwater monitoring – see sections 4.4 to 4.6 for details).

While the licence holder has included a water balance in their NIMP, it does not show monthly inputs (precipitation and irrigation) and appears to be for the entire site (425 ha) rather than specifically for the irrigation areas. The licence holder has provided monthly irrigation volumes for 2019-2020 reporting period which shows that wastewater was not irrigated on the same area in consecutive months (except March-April when area 4 was irrigated). It is noted that from 2017 to 2021, areas 3B and 4 have had approximately 54% of the wastewater applied. It is also noted that approximately 29% of the wastewater is irrigated during the winter (May to August), when rainfall exceeds evaporation, with a further 20% irrigated during April and September.

The department calculated water balance shows that inputs (precipitation and irrigation) exceed outputs (evapotranspiration and percolation to remove salt) for at least 4 months (May to August) of the year indicating that wastewater should be stored during this time and that irrigation should only occur during the remaining 8 months (35 weeks) of the year. It is noted that the licence holder currently irrigates for 12 months of the year and therefore, treated wastewater applied during May to August may infiltrate past the root zone into groundwater and/or cause waterlogging, or overland flow of treated wastewater into the existing watercourse on the premises causing surface water and groundwater contamination. If this occurs, the ecosystem health of environmental receptors, including threatened ecological communities, may be affected. Average surface water monitoring results (see section 4.5) for total phosphorus and total nitrogen are above the ANZECC 2000 guidelines, suggesting that irrigation may be impacting the watercourse on the premises. The premises is also located within the Albany Waterways Management Area, declared under the *Waterways Conservation Act 1976*, with the Albany Waterways Management Programme focusing

on reducing nutrient inputs.

The NIMP indicates that kikuyu predominately covers the irrigation areas; however, no information has been provided on seasonal growth rates or water requirements of kikuyu. Conditions have been included on the licence to require the licence holder to submit a winter irrigation management plan and a nutrient offtake strategy – see section 8 for further information.

Nutrient balance

The licence holder has used data from the 2019 reporting period to calculate nutrient (TN and TP) loading to the irrigated areas. It is noted that the NIMP calculates nutrient loading to the irrigation areas as a whole (141 ha) whereas the licence holder has provided nutrient loading rates to each irrigation area (1, 2A, 2B, 3A, 3B and 4) in their annual reports. It is noted that the NIMP also provides TN and TP loading to the whole premises (425 ha); however, it is unclear how this relates to nutrient loading within the irrigation areas.

The nutrient balances contained in the NIMP have been based on the following:

- concentrations of 234 mg/L and 5.2 mg/L for TN and TP respectively in the wastewater;
- an annual effluent volume of 151,070 kL. *The department notes that during this reporting period 147,894 kL was actually irrigated and is less than the existing potential maximum irrigation amount of 216,639 kL (see hydraulic loading section above).*
- an annual nitrogen uptake of 288 kg/ha for irrigated pasture and 192 kg/ha of dryland pasture, for kikuyu;
- an annual phosphorus uptake of 42 kg/ha for irrigated pasture and 28 kg/ha of dryland pasture, for kikuyu;
- 55% of the nitrogen in the effluent will be lost through volatilisation of ammonia and denitrification through microbial action. *The department notes that this has also been used in the calculation of the phosphorus balance.*
- grazing of the pasture reduces nutrient uptake due to disturbance of the pasture with additional contributions from faeces and urine deposited by grazing sheep. Given the grazing of sheep in the paddocks is highly variable throughout the year, the NIMP has assumed that both N and P will be taken up at 70% of the expected uptake values identified above.
- 50% (70.5 ha) of the irrigation area has been calculated using the uptake rates of an irrigated pasture with the remaining calculated using the uptake rates of dryland pasture.

Given the above, the NIMP has calculated that there is a deficit of 7,238 kg of TN and 3,100 kg of TP within the entire irrigation area each year.

While the NIMP mentions that cropping takes place, no information was provided on crop yields or amounts harvested. Additionally, the licence holder's annual reports, since the 2015-2016 reporting period, have stated that *'there has been no nutrient removal through cropping due to loading rates for each irrigation not exceeding licence loading rate limits.'*

It is noted that while annual reports in the last 5 years have shown no exceedances of licence loading limits within the irrigation areas; the licence holder has recalculated the size of the irrigation areas and found that area 3B is 36 ha, rather than 42 ha that has been used in the calculations, and therefore, loading limits would have been exceeded during the 2019-2020 reporting period. Additionally, it is unknown whether the entire irrigation areas are irrigated, therefore, actual loading rates may be much higher than what has been reported in the annual reports. It should also be noted that it is unknown whether nutrient loading rate limits in the existing licence are suitable as they were based on the harvesting of hay, which is reported to be no longer occurring.

The NIMP also states that *'sheep are grazed within the irrigation areas, with numbers being highly variable throughout the year (e.g., 1,200 sheep during winter months and up to 16,000 sheep during spring/summer months')*. While the NIMP's nutrient balance has suggested that pasture nutrient uptake is decreased due to grazing stock, they have not included additional nutrients from sheep manure and urine. The Department of Primary Industries and Regional Development (DPIRD) suggest that a 50 kg wether may add 4.4g of phosphorus per day. The department has calculated that an additional 7,620 kg¹ of P may be added to the irrigation areas each year by the grazing of

stock in the irrigation area.

¹ This has been calculated assuming that 1,200 sheep are grazed each day during May to September (excluding July), 4,000 sheep are grazed each day during October – November and February to April, and 16,000 are grazed each day during December and January, across the entire irrigation area. The department notes that actual grazing numbers are unknown.

In any case, the licence has never assessed or authorised the holding of stock in the irrigation area or outside of the authorised lairage areas. Should the licence holder wish to continue holding sheep anywhere outside the authorised lairage or stock holding yards, then this will need to be applied for and the activity assessed and specifically authorised through an amended licence.

4.4 Monitoring of groundwater quality

The existing licence requires the licence holder to monitor 18 groundwater monitoring bores on a quarterly basis for standing water level, pH, EC, total dissolved solids (TDS), TN and TP.

In the NIMP has provided 2010 and 2019 results of this monitoring for pH, EC, TN and TP in graphical format. Additionally, they have provided results of monitoring of four production bores in 1997-1998. The NIMP states that pH, EC and TN have remained relatively consistent over time with TP being more varied.

The NIMP does not include bore logs or give any indication on the screening depths of any of the groundwater monitoring bores. There is also no indication on which bores are considered up or down hydraulic gradient of the irrigation areas. Some monitoring results suggest that some bores may be influenced by farming and other practices offsite, or that samples may have been contaminated.

Given that no bore logs have been provided, screening depths are unknown, and offsite influences may be occurring, it is unclear whether the data gathered from the monitoring of the bores is useful for determining whether any impacts to groundwater from irrigation of wastewater on the premises has occurred.

4.5 Monitoring of surface water quality

The existing licence requires the licence holder to monitor surface water quality within Mill Brook where it enters and exits the premises for pH, BOD, TDS, TN and TP.

The NIMP has provided average surface water quality for Mill Brook at the causeway (where it exits the premises) and the spring (where it enters the premises) for a range of parameters from sampling during 1996 and 1998 but has otherwise provided no further monitoring data.

The licence holder's annual reports from 2017 – 2021 include surface quality monitoring data from Mill Brook; however, only the point where Mill Brook exits the premises has been sampled each month. The licence holder has stated that samples cannot be taken where Mill Brook enters the premises as it rarely flows at this location. Results of this monitoring is shown in Table 2.

Table 2: Surface water quality within Mill Brook¹

Parameter	Units	January 2017 – December 2021 ²		ANZECC 2000 ³
		Range of sampling results	Average sampling results	
pH	pH units	5.6 – 6.9	6.3	6.5 – 8.0 ⁴
TP	mg/L	0.01 – 1.8	0.19	0.065 ⁴
TN	mg/L	0.05 - 12	1.43	1.2 ⁴
TDS	mg/L	15 – 2,200	1,077	-
BOD	mg/L	2 - 39	9	-

Note 1: Unknown location within Mill Brook.

Note 2: Data taken from annual reports submitted by the licence holder.

Note 3: National Water Quality Management Strategy Paper No. 4 – Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1 The Guidelines, ANZECC and ARMCANZ (ANZECC 2000)

Note 4: Default trigger values for south-west Australia for slightly disturbed ecosystems – lowland rivers.

4.6 Monitoring of soil quality

The NIMP describes the soils within the irrigation areas as having a sandy surface, bleached A2 horizon, mottled clay B horizon with a layer of lateritic gravel or duricrust between the A and B horizons. There was no indication of the depth of these soil layers.

The existing licence requires the licence holder to monitor soil quality within the irrigation areas. Sampling is required at four locations within each irrigation area every 6 months (April and October). Soil samples are taken at the surface, 30 cm and 45 cm below the surface and are analysed for pH, salinity, ammoniacal nitrogen, nitrate, nitrogen, orthophosphate phosphorus and phosphorus retention index (PRI).

The NIMP has provided average soil monitoring results for each irrigation area in 2010 and 2019, with some results provided for May 2000. The licence holder has stated in the NIMP that pH and EC levels have remained relatively consistent, mineral nitrogen (NH₄-N and NO₃-N) is significantly higher in the topsoil and has decreased from 2010 to 2019, orthophosphate phosphorus (PO₄-P) has varied over time and has increased at the surface from 2010 to 2019, and PRI levels vary with location but were generally higher with increasing depth in both 2010 and 2019.

The licence holder has included soil monitoring results in their annual reports. Data from 2017 to 2021 show that PO₄-P ranges from 3 to 350 mg/kg at the surface, 1 to 148 mg/kg at 30 cm and 2 to 124 mg/kg at 45 cm; with irrigation areas 1 and 4 having the highest concentrations. The results vary significantly between sites within the same irrigation area and between irrigation areas. It is noted that while soil monitoring locations have been shown on a map, they are not labelled, and it is unknown which soil monitoring site corresponds to which data within each irrigation area.

It is also noted that while on average PO₄-P decreases with increasing depth, some soil monitoring results, within all irrigation areas, show that PO₄-P is higher at 30 cm or 45 cm than at the surface.

In June 2023 DWER sent the licence holder a request for more information on the licence holders' nutrient off take strategy for the irrigation areas and how winter irrigation will be managed. On 27 June 2023 the following information was provided and has been considered in this assessment and in the additional regulatory controls that have been included in the new licence. This information was also provided to DPIRD seeking their specialist agronomic advice- see section 6, Table 3.

Q1. The provision of a nutrient off-take strategy for the irrigation area. We understand you had reached out to DPIRD for assistance on this.

'Yes we have contacted DPIRD. We are unaware what other industries do but we are confident in our program and believe that it is the best for our site. Below are the points that FIE operate to:

Crop 3 tonne/ha/dry matter basis of kikuyu.

Crop Phosphorus uptake 3kg/tonne/Dry

Crop Nitrogen uptake 24kg/tonne/Dry

Our cropping is in line with soil monitoring results and visual inspections. Crop removal in irrigation areas occur as required based on these results. Yearly findings are reported in annual report to DWER. Livestock will still be present in irrigation paddocks.

Livestock play a role in the management of the paddocks. Livestock do not contribute to the loading of nutrients to the irrigation areas. (Livestock remove less than 10% of the nutrient they take in). FIE do not rely on livestock for nutrient removal.'

Q2. How you propose to manage winter irrigation when soils are saturated, and rainfall far exceeds evaporation and the crops water (and nutrient) uptake needs.

'We are aware during lower evapotranspiration months to ensure no irrigation event causes any run off. This is controlled by the reduce volume applied to the application areas and heightened supervision of the irrigation period. It is noted that run off over our buffer zones or mechanical failures have not been an issue to date. We have a robust maintenance program and operate the irrigators under higher supervision.'

Key Findings:

1. While an irrigation infrastructure map has been provided that indicates where the travelling irrigators attach to the pipework, it is unclear how the travelling irrigators are managed to ensure the entire irrigation areas are irrigated, and whether the areas are irrigated evenly.
2. Calculations provided in the NIMP have been based on the amount of wastewater irrigated during the 2019-2020 reporting period rather than being based on the maximum volume that may be irrigated if the premises was operating at the existing assessed production throughput (i.e. 77,740 tonnes (hot standard carcase weight) per annual period).
The department has calculated that approximately 216,639 kL¹ could be irrigated if 77,740 tonnes (hot standard carcase weight) of animals were processed at the premises.
¹ This has been calculated from information provided by the licence holder in their annual reports, including head of livestock received, tonnes of livestock, and volume of wastewater irrigated.
Additionally, it is noted that the licence holder, after receiving draft documents, has requested to reduce the assessed production throughput for category 15 and increase category 83. It is difficult to calculate estimated volumes of wastewater irrigated as the ratio of wastewater irrigated to livestock received or tonnes (HSCW) processed has approximately doubled in the last 3 reporting periods. Irrigation volumes may potentially be closer to 344,630 kL at the amended assessed production throughputs.
3. A nutrient balance for the entire irrigation area has been provided, rather than for each individual irrigation area. However, it is noted that nutrient loading rates have been calculated for each irrigation area within the annual reports submitted by the licence holder.
4. Nutrient inputs from the grazing of sheep (manure and urine) has not been included in the nutrient balance provided by the licence holder.
5. The licence holder has indicated that kikuyu is grown within the irrigation areas; however, no information on growth rates or daily/monthly pasture/crop water use and nutrient requirements has been provided. It is noted that kikuyu may be dormant in the winter months.
6. No cropping has or is occurring on the premises, therefore, there is no export of nutrients from the irrigation areas.
7. It is unclear whether data gathered from the monitoring of the groundwater bores is useful for determining any impacts to groundwater from the irrigation of wastewater on the premises given that no bore logs, and no information on screening depths have been provided.
8. Surface water quality monitoring has not been completed in accordance with existing licence conditions, with only one location being sampled (where Mill Brooks exits the premises). Without upstream (reference) and downstream (potentially impacted) monitoring data, influences from irrigation on the premises within Mill Brook is unknown. However, 2017-2021 average monitoring results for TP and TN are higher than ANZECC 2000 guidelines, with TP results nearly 3 times higher (see Table 2), suggesting that irrigation may be impacting on surface water quality.
9. The high variability of the results of soil quality monitoring, particularly for PO₄-P, may suggest that:
 - (a) irrigation areas are not being irrigated in their entirety, and therefore, soil sampling locations are not representative of potential impacts from the irrigation of wastewater; and/or
 - (b) phosphorus may be leaching through the soil profile.

5. Part IV of the EP Act

The premises is subject to Ministerial Statement 408 (MS 408) issued on 15 March 1996 which specifies conditions for the construction, commissioning and operation of the premises. MS 408 also specifies environmental management commitments made by the proponent.

MS408 requires the proponent to prepare and implement an Environmental Management Program which addresses, but not limited to:

- the protection of groundwater (from the taking of groundwater),
- an irrigation management plan which when implemented:
 - allows nutrient uptake in plants and phosphorus retention in amended soil, but not salt build up in the soil; and
 - balances the requirements for leaching to prevent salt build-up in the soil but not to transfer nutrients to groundwater.
- impacts on irrigated pastures and woodlots, soil conditions, and water quality in Mill Brook (e.g. from nutrients and salinity);
- a contingency plan in the event of there being unacceptable impacts on the water quality of Mill Brook, pastures and woodlots and soil conditions;
- phosphorus retention capacity of the amended soils (monitoring program to be reviewed at five yearly intervals);
- a contingency plan to ensure adequate retention of phosphorus; and
- management of solid waste, noise and odour emissions.

Conditions 5-1 and 5-2 of MS408 specify that:

- during the operation of the abattoir, the proponent shall ensure that no net export of nutrients via surface or groundwater occurs at the property boundary, and that there is adequate monitoring and control to meet this objective; and
- during the operation of the abattoir, the proponent shall ensure that no net export of salts via surface waters occurs at the property boundary, and that there is adequate monitoring and control to meet this objective.

Some of the proponent's commitments include that:

- the proponent will maintain the vegetation and soil structure of the irrigated pastures and woodlots to ensure optimum nutrient uptake; and
- the proponent will undertake to remove the red mud gypsum (RMG) amended soil layer and replace it with a new layer of RMG when monitoring of the RMS amended soils show that the phosphorus storage capacity is depleted to 90%.

It is noted that the NIMP does not mention the irrigation of woodlots, only the irrigation of kikuyu pasture. Additionally, there is no mention in the NIMP of the irrigation areas having a RMG amended soil layer added or replaced.

6. Consultation

Table 3 provides a summary of the consultation undertaken by the department.

Table 3: Consultation

Consultation method	Comments received
Application advertised on the department's website (17/06/2022)	None received
Local Government Authority advised of proposal (22/6/2022)	None received
Department of Primary Industries and Regional Development (DPIRD) advised of proposal (22/6/2022)	<p>The following comments were provided regarding the licence holder's NIMP:</p> <ul style="list-style-type: none"> • Expected effluent volumes need to reflect the licensed capacity of the facility, not historical production. It is estimated that the licensed production capacity of the facility could generate effluent volumes significantly greater than documented in the NIMP. DPIRD therefore recommends that the estimated waste production matches the licensed capacity of the facility. • Irrigating in winter, when rainfall exceeds evaporation, can be problematic. Given the proposed irrigation management there is not enough information in the application to assess whether winter irrigation is appropriate at this location. Reviewing the wastewater irrigation rates during the June-September period is recommended to ensure they are not more than plant nutrient or water requirements. • DPIRD expects that a NIMP includes a clear offtake plan that documents the crop type, expected yield and method of removal. If stock grazing is proposed as a nutrient offtake, the area grazed, number of head and length of grazing period should be used to show how the proposed offtake is able to remove the nutrients added through irrigation. Showing the supporting evidence for nutrient offtake and nitrogen volatilisation would be required.
DPIRD requested to provide comment on the licence holder's response to DWER's questions on the nutrient off-take strategy for the irrigation areas and on how the licence holder proposes to manage winter irrigation. (Response email dated 27 June 2023)	<p>DPIRD's comments on the applicant's response dated 27 June 2023:</p> <ul style="list-style-type: none"> • Although the applicant is saying 3 tonnes/ha cut for hay, there is no indication of what area is being harvested. • The commentary around winter irrigation is light on, there is no indication of winter storage capacity or how the applicant will decide/monitor (other than run off) on volumes and run times. • When considering the grazing of animals in the irrigation area – they will either need to be included in the nutrient budget, or not held in the irrigation areas.
Licence holder was provided with draft documents on 5/07/2023	Comments were received on 4, 14, 22 and 25 August. The licence holder met with the department on 15 August 2023 and provided additional comments and information. A summary of the licence holder's comments are provided in Appendix 1, Table 5.
Licence holder was provided with additional draft documents on 30/08/2023	Comments were received on 6 and 11 September 2023. A summary of the licence holder's comments are provided in Appendix 1, Table 6.

7. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk Assessments* (DWER 2020). To establish a risk event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

Table 4 describes the risk events associated with the irrigation of treated wastewater to land on the premises, consistent with the *Guideline: Risk Assessments* (DWER 2020). In accordance with this guideline, the Delegated Officer has excluded the employees, visitors, and contractors of the licence holder's from its assessment of the discharge of wastewater to land. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Where the licence holder has proposed mitigation measures/controls, these have been considered when determining the final risk rating. Where the delegated officer considers the licence holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the licence holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in the below table.

Licence L7316/1996/10 that accompanies this decision report authorises emissions associated with the irrigation of treated wastewater to land on the premises. The conditions in the issued licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DWER 2015).

Table 4: Risk assessment of irrigation of treated wastewater to land on the premises during operation

Risk Event		Licence holder controls	Risk rating ¹ C = consequence L = likelihood	Reasoning	Regulatory controls
Source/ Activities	Potential emissions, receptors, pathway and impact				
Onsite disposal of treated wastewater via irrigation to 132.3 ha of kikuyu.	<p>The discharge of nutrient rich wastewater (treated or untreated) to land through irrigation has the potential to contaminate surrounding land (with excessive nutrients or excessive hydraulic loading) and adversely impact upon soil, surface water, and groundwater. This can then cause the degradation of nearby sensitive environmental receptors.</p> <p>Soils, topography and vegetation Irrigation areas 1, 2A, 2B, 3A and 3B generally slope towards Mill Brook. Irrigation area 4 slopes E, towards the premises boundary and is approximately 100 m from a dam on the adjacent lot.</p> <p>The NIMP describes the soils within the irrigation areas as having a sandy surface, bleached A2 horizon, mottled clay B horizon with a layer of lateritic gravel or duricrust between the A and B horizons.</p> <p>Remnant native vegetation is located immediately adjacent (and downslope) of irrigation areas 3A and 3B and adjacent (slightly upslope) of irrigation areas 2B and 4.</p> <p>Surface water Mill Brook, a tributary of the King River, that flows N to SE through the centre of the premises. The closest irrigation areas are 60 m W and 250 m NE of Mill Brook.</p> <p>Premises is located within the Albany Waterways Management Area, declared under the <i>Waterways Conservation Act 1976</i>.</p> <p>10-30% of the premises, including the irrigation areas, has a moderate to very high waterlogging risk.</p> <p>Groundwater Depth to groundwater is approximately 2 to 7 mbgl (SWL measured within bores closest to irrigation areas), reducing to <2 mbgl at one bore immediately adjacent to Mill Brook.</p> <p>Offsite environmental receptors Mill Brook nature reserve, for the conservation of flora and fauna, is located approximately 1.6 km SE of the closest irrigation area.</p> <p>An area approximately 2 km downstream of the premises, within the vicinity of Mill Brook, is classified as a South Coast significant wetland (King River suite) with <i>Banksia coccinea</i> thicket (a priority 1, endangered, threatened ecological community) located nearby.</p> <p>Climate Rainfall exceeds pan evaporation for 4 months of the year (May to August).</p>	<p>Effluent is applied to a different irrigation area each month, allowing the remaining areas to rest under dryland conditions.</p> <p>Wastewater is irrigated using a slow rate system to prevent runoff.</p> <p>Runoff that does occur will be collected by contour banks surrounding the irrigation areas and diverted to the holding dams for future irrigation purposes.</p> <p>Lower volumes of wastewater are generally applied in July, which corresponds with the annual shutdown.</p> <p>Tree plantations, located down gradient of each irrigation area, act as a secondary barrier to the migration of effluent and nutrients.</p> <p>Monitoring program is designed to ensure optimum management of the irrigated land and to provide an early indication of nutrient migration or other environmental impacts.</p> <p>No fertilisers are applied to any of the irrigation areas.</p> <p>Any potential waterlogged areas will not be irrigated.</p>	<p>C = Moderate: mid-level on-site impacts</p> <p>L = Possible: could occur at some time</p> <p>Medium Risk, acceptable, subject to regulatory controls</p>	<ul style="list-style-type: none"> A preliminary assessment¹ of nutrient loading rates shows that the irrigation area (1, 2A, 2B, 3A, 3B and 4) are not large enough to manage the nutrient application rates for TN and TP at the amounts used in the NIMP (157,070 kL), and therefore not large enough at the existing maximum approved throughput (77,740 tonnes per year). It should be noted that the calculation only provides an estimate and does not accurately represent what may occur onsite. It is also noted that while an area of 132.3 ha was used in the calculations, it is unknown whether this reflects the actual area utilised for irrigation. ¹ The calculation used for the preliminary assessment of nutrient loading rates can be found in the NSW EPA, 1998 document. For this assessment, information provided in the NIMP, via email, and 2017 – 2021 annual reports have been used. The licence holder has provided a nutrient balance for the combined irrigation areas; however: <ul style="list-style-type: none"> the volume of irrigated wastewater used in the licence holder's calculations (151,070 kL) is less than the potential maximum irrigation amount of 216,639 kL (see section 4.3 – hydraulic loading); the licence holder has not considered soil moisture or considered the potential impacts of irrigating during months where rainfall exceeds evaporation (May to August). the licence holder has not considered nutrient inputs from the grazing of sheep (manure and urine) (see section 4.3 – nutrient balance); it is understood that no crops are harvested onsite, and therefore, there is no nutrient offtake from the irrigation areas. It is noted the NIMP mentions "removed biomass" but does not state how this occurs. The licence holder has indicated that kikuyu is grown within the irrigation areas; however, no information on growth rates or daily/monthly pasture/crop water use and nutrient requirements has been provided. It is unclear whether kikuyu is suitable for removal of nutrients during winter irrigation as kikuyu has reduced growth during winter and therefore less water and nutrient requirements during this time. It is unknown whether the entire irrigation areas are irrigated. While the licence holder has provided an irrigation infrastructure map that indicates where the travelling irrigators attach to the pipework, it is unclear how the travelling irrigators are managed to evenly distribute wastewater over the entire irrigation areas. Aerial imagery (from 2016) potentially shows small (<1 ha) areas that have been irrigated and runoff has occurred. Additionally, aerial imagery shows there may be areas outside of the irrigation areas where wastewater is being applied to land. While the licence holder has not reported an exceedance of any annual gross nutrient loading rate limit (as per existing licence conditions) in at least the last 5 reporting periods, it is noted that the loading rates were calculated using an irrigation area of 141 ha. As described above, there is potential that a significantly smaller area is being irrigated; and therefore, potential that existing loading rate limits in the licence have been exceeded. While the licence holder has included a water balance in their NIMP, it does not show monthly inputs (precipitation and irrigation) and appears to be for the entire site (425 ha) rather than specifically for the irrigation areas. The department calculated water balance shows that inputs (precipitation and irrigation) exceed outputs (evapotranspiration and percolation to remove salt) for at least 4 months (May to August) of the year indicating that wastewater should be stored during this time and that irrigation should only occur during the remaining 8 months (35 weeks) of the year. It is noted that the licence holder currently irrigates for 12 months of the year and therefore, treated wastewater applied during May to August may infiltrate past the root zone into groundwater and/or cause waterlogging, or overland flow of treated wastewater into the existing watercourse on the premises causing surface water and groundwater contamination. If this occurs, the ecosystem health of environmental receptors, including threatened ecological communities, may be affected. While the licence holder monitors groundwater, surface water and soil quality at the premises, the reliability and assurance of this data is unknown. <ul style="list-style-type: none"> Screening depths of the groundwater monitoring bores is unknown; therefore, it is difficult to ascertain whether they are appropriate for determining any impacts to groundwater from the irrigation areas. Surface water quality monitoring has only been conducted at one location within Mill Brook. Without upstream (reference) and downstream (potentially impacted) monitoring data (as per existing licence conditions), potential impacts to Mill Brook from irrigation is unknown. However, 2017-2021 average monitoring results for TP and TN are higher than ANZECC 2000 guidelines suggesting that irrigation may be impacting on surface water quality. This poses a risk to sensitive receptors downstream, such as the south coast significant wetland, Mill Brook nature reserve, and threatened ecological communities. 	See section 8

Risk Event			Risk rating ¹ C = consequence L = likelihood	Reasoning	Regulatory controls
Source/ Activities	Potential emissions, receptors, pathway and impact	Licence holder controls			
				<ul style="list-style-type: none"> Soil quality monitoring results are highly variable, particularly for orthophosphate phosphorus, suggesting that soil monitoring locations may not be representative of the areas being irrigated, and/or phosphorus may be leaching through the soil profile. <p>The delegated officer has considered the above, including applicant controls, potential for treated wastewater to be discharged to groundwater and surface water, irrigation area available, and distance to environmental receptors. The delegated officer considers the risk event to be tolerable and subject to regulatory controls.</p>	
	<p>Odour from the irrigation of treated wastewater impacting on nearby residential premises.</p> <p>There are 5 rural residential premises located within 1 km of an irrigation area, with the closest being approximately 200 m NW.</p>	<p>The licence holder has not proposed any controls in addition to existing licence conditions.</p>	<p>C = Slight: minimal impacts to amenity at a local scale.</p> <p>L = Unlikely: the risk event will probably not occur in most circumstances.</p> <p>Low Risk</p>	<p>The delegated officer has determined that the irrigation of treated wastewater at the premises results in low risk of odour impacting on sensitive receptors.</p> <p>The delegated officer considers that the separation distance between the source and potential receptors is sufficient noting that fugitive odour from the irrigation of treated wastewater on the premises is expected to be insignificant compared to the treated of wastewater in the onsite wastewater treatment system and the rendering of animal material.</p> <p>There have been no complaints received by the department in relation to odour from the irrigation of treated wastewater in at least the last 5 years.</p>	<p>Existing licence conditions require the licence holder to ensure that odour emitted from the premises does not unreasonably interfere with the health, welfare, convenience, comfort or amenity of any person who is not on the premises.</p> <p>Additionally, the existing licence conditions require the licence holder to ensure that wastewater is evenly distributed, no ponding of wastewater occurs and there is no spray drift or discharge beyond the boundaries of the premises.</p>

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk Assessments* (DWER 2020).

8. Decision

Based on the above risk assessment, the delegated officer determined that the overall rating of the risk of treated wastewater irrigated to the irrigation area, impacting on environmental receptors in terms of nutrient and hydraulic loading, is medium and subject to regulatory controls as outlined in this decision report.

Irrigation of treated wastewater – Existing licence conditions

Existing licence conditions that the delegated officer considers necessary, regarding the irrigation of treated wastewater, and have been transferred to the replacement licence require the licence holder to:

- only discharge treated wastewater to the irrigation area; and
- ensure that irrigation of treated wastewater occurs such that wastewater is evenly distributed, no soil erosion or ponding occurs, no surface runoff, spray drift or discharge occurs beyond the premises boundary or onto remnant vegetation, irrigation does not occur within 50 m of a watercourse or drain (including Mill Brook), and irrigation does not occur during periods of rainfall or onto flooded areas.

Note that the delegated officer has amended the condition relating to surface runoff to clarify that it does not occur beyond the irrigation areas, as irrigation is not authorised outside of these areas.

Irrigation of treated wastewater – Additional licence conditions

Irrigation of wastewater during winter months

It is noted the licence holder currently irrigates for 12 months of the year. Based on the department calculated water balance (see Table 4), the delegated officer considers there is a risk of nutrients being leached to surface and groundwater if irrigation occurs during the winter months (May to August) when soils are already saturated. If this occurs, the ecosystem health of environmental receptors, including threatened ecological communities, may be detrimentally affected.

A condition will be included on the licence to require the licence holder to submit a winter irrigation management plan. The licence holder will be required to demonstrate that the amount and quality of wastewater being applied to the irrigation areas over the winter months does not exceed the crop / vegetation nutrient, salt or water requirements. The plan should demonstrate that the winter irrigation will not cause wastewater containing nutrients and salt to leach to groundwater or cause waterlogging or overland flow into the existing watercourse on the premises causing surface water and groundwater contamination potentially affecting ecosystem health, including nearby threatened ecological communities. This may include the construction of additional storage dam(s), determining crop nutrient and water requirements using crop factors or crop coefficients for different crop stages and determining climate data specific to the premises.

Additionally, a condition will be included on the licence to restrict the irrigation of wastewater to the irrigation areas from September to April inclusive. Wastewater generated between May and August inclusive will have to be stored in the maturation holding ponds and/or removed from the premises.

Note that the licence holder can apply for an amendment to the licence to remove the restriction that wastewater may only be irrigated from September to April (inclusive). A winter irrigation management plan that demonstrates how the irrigation of wastewater containing nutrients and salts during the wet winter months will be managed so as to not impact on environmental receptors must be submitted to support the application.

Cropping within irrigation areas

The existing licence requires the licence holder to report information on cropping. The reporting condition has been amended to clarify the information required (plant biomass and

crop type) and an additional licence condition has been included to require the licence holder to record this information for irrigation areas harvested. Additionally, the requirement for the licence holder to estimate the net nutrient loading rates for each irrigation area, considering crop rotation and plant biomass tonnage (crop yields) has been added to the licence.

However, the delegated officer understands that there is currently no offtake (cropping) strategy for the irrigation areas. If no cropping is taking place, there is an increased risk of nutrients, particularly phosphorus, to runoff and leach through the soil profile contaminating surface waters and groundwater and potentially impacting on sensitive receptors such as nearby native vegetation, Mill Brook, significant wetlands and threatened ecological communities.

The quality of wastewater being applied to the irrigation areas shows levels above the ANZECC guidelines for TN and TP (see Table 1) and US EPA (2006) guidelines suggest that up to 0.3 m of soil becomes saturated with phosphorus every 10 years. Soil monitoring results (see section 4.6) suggest that phosphorus may be leaching beyond the root zone of the irrigation area vegetation and surface water monitoring results (see section 4.5) show phosphorus levels 3 times above ANZECC guidelines.

Considering the above, the delegated officer has included a condition on the licence to require the licence holder to only irrigate areas that are about to be sown with or are actively growing crops/pasture, and that irrigation areas utilised must be harvested at least once every 12 months.

Additionally, the licence holder will be required to submit a nutrient offtake strategy for the irrigation areas. The strategy will require the licence holder to provide information on crop type, expected biomass tonnage, fertiliser inputs, information on any amended soils and provide a nutrient balance with crop rotation for at least a 5 year period. The nutrient offtake strategy will then be used to reassess the existing nutrient loading rates in the licence and determine site specific loading rates. The delegated officer acknowledges that the licence holder has submitted some information on the cropping of kikuyu; however, this information is not sufficient to determine site appropriate nutrient loading rates for TN and TP.

Wastewater loading limits

Loading limits for the application of wastewater to land are existing in the licence and have not been reassessed at this time; however, the condition has been amended to clarify that the loading rates only apply to wastewater that is irrigated. It does not include other sources of nutrients, such as fertiliser, that may be applied to the irrigation areas.

BOD loading limit – Soils can remove organic carbon from wastewater if there are sufficient long drying periods between irrigation events. However, excessive BOD loading can lead to bacterial slimes (clogging of soil pores), anaerobic odour issues, and potentially arsenic mobilisation from soils. The delegated officer has amended the BOD loading limit in accordance with internal DWER advice and relevant guidelines (DEC NSW 2004).

Calculation of loading limits – To ensure nutrient and BOD loading limits are calculated correctly, the licence holder will be required to provide their loading rate calculations in the form provided in Appendix 2 of this decision report.

Monitoring of wastewater volume and quality

Treated wastewater is irrigated from maturation holding pond 2, and therefore the quality of wastewater in this pond is required to be monitored to enable nutrient loading rates to be calculated. However, the requirement to monitor the quality of wastewater at the DAF outflow, subsurface flow, and raw, are not required for the calculation of wastewater loading rates and have been removed from the licence. The removal of these requirements does not preclude the licence holder from continuing to monitor wastewater quality at these locations for their own records; particularly raw wastewater quality, which can be used to determine the effectiveness of the wastewater treatment system.

Additionally, *E.coli* bacteria, major ions, metals, and chlorine residuals have been added to the wastewater quality monitoring as these parameters are typically found in abattoir wastewater and should be included in the annual licence fee applications.

The requirement to report the daily volume of wastewater applied to each irrigation area has been included on the licence to determine the number of irrigation days throughout the year.

Monitoring of groundwater

Without bore log information (such as screening depths) it is difficult to interpret the monitoring data being submitted by the licence holder. Groundwater monitoring bores should be screened around the water table (approximately 1 m above and 2 m below) to be useful in determining impacts to groundwater from the irrigation of wastewater on the premises. A condition has been added to the licence for the licence holder to provide either the bore logs or details on the screening depths of each groundwater monitoring bore. Additionally, GPS coordinates and the surveyed height (AHD) of each bore is required to confirm the location of each bore and provide a better understanding of the groundwater levels across the premises. This is standard information required to be provided to the department following groundwater bore construction; and will enable the department to have a more accurate understanding of groundwater movement across the premises.

Soil information is also required to ensure the monitoring bores are screened appropriately and to enable a better understanding of potential impacts to groundwater. Monitoring bores, MW8, MW13A, MW13B and MW19, that are currently not required to be monitored through the licence, have been included for investigation as these may be appropriate alternative or additional monitoring bores. It is noted that the licence holder submitted two bore logs; however, these were for two production bores, both located on the eastern section of the premises. While one of these bore logs is within the vicinity of MW4A and B, the delegated officer does not consider them representative of the bores currently monitored.

While there are numerous bores across the premises, DWER internal advice suggests that potentially all of the bores currently monitored on the licence could be influenced by the irrigation of wastewater on the premises; however, without bore log information, this is difficult to confirm. Hydrogeological advice suggests that the high point (>105 mAHD) southeast of MW17A and B would be suitable as a background bore; however, MW17A and B may also be suitable. The delegated officer, therefore, has included MW17A and B in the list of monitoring bores to be sampled by the licence holder. A suitably sited up gradient monitoring bore is required to enable comparison with monitoring from down gradient bores that are potentially impacted by wastewater irrigation activities.

The frequency of groundwater monitoring for standing water level, pH and electrical conductivity has been increased to monthly, until 2 years of consecutive data has been recorded for each bore; after which quarterly monitoring will resume. This is to establish a clear understanding of seasonal groundwater depth fluctuations, pH and EC levels.

Key groundwater monitoring parameters, reactive phosphorus, arsenic and major ions, have been added to the licence which will allow seasonal changes to groundwater quality to be identified.

DWER may review the appropriateness and adequacy of the licence controls based on the review of the monitoring data, including requirements for monitoring frequency and parameters tested. Following submission of groundwater monitoring bore investigation and monitoring results from MW17A and B, other existing bores on the premises may be required to be monitored or new groundwater bores installed to ensure there is a suitably sited upgradient monitoring bore.

Monitoring of soil quality

The licence holder has submitted soil monitoring results in their annual reports; however, it is unclear which results correspond to which locations and therefore difficult to interpret results. Additionally, it is uncertain whether the soil monitoring is providing data that is representative

of the irrigated areas.

Therefore, the delegated officer has updated the soil monitoring requirements to align with relevant guidelines (DEC NSW 2004). *It is noted that the licence holder has requested (September 2023) to remove the 0-20 cm soil sampling and amend the 40-70 cm soil profile to 40-60 cm. No justification was provided for these changes. There are two soil sampling strategies required under the DEC NSW 2004 guidelines – surface soil sampling (composite grab samples) and soil profile sampling (composite core sampling). The delegated officer has determined that the 0-20 cm soil profile sampling is necessary for determining how the monitored parameters are moving through the soil profile – from the surface to the other sampled depths, and therefore it will remain on the licence. It is noted the department has already reduced the soil profile monitoring, on licence holder request (Table 5), to not require sampling of the deepest soil profile (70-100 cm) as recommended by the above guidelines, which also reduced the number of depth intervals from four (recommended by the guidelines) to three. The NIMP, provided by the licence holder, described the soils within the irrigation areas as having a sandy surface, bleached A2 horizon, mottled clay B horizon with a layer of lateritic gravel or duricrust between the A and B horizons, with no indication of the depth of the soil layers (see section 4.6). It is noted that previous soil sampling (see section 4.6 for details) conducted at the premises only went to a depth of 45 cm. Some soil monitoring results, within all irrigation areas, show PO₄-P increasing with depth, suggesting that phosphorus may be leaching through the soil profile. The delegated officer considers it necessary to retain the soil monitoring depth to 70 cm, as the soil horizon depths are unknown and the soil monitoring has already been reduced from what is recommended in the guidelines.*

Phosphorus (Colwell) (Colwell P) (replacing orthophosphate phosphorus) and phosphorus buffering index (PBI) (replacing phosphorus retention index) have been added to the licence as the results of these can be used to determine the phosphorus environmental risk index (PERI), which is the ratio of Colwell P to PBI. This ratio can provide an indication of the risk of soluble phosphorus loss.

Conditions have also been added to specify that soil samples are collected in accordance with DPIRD guidelines for soil sampling and submitted and tested by a laboratory with current ASPAC certification to ensure reliability of the monitoring data.

Note that the licence holder can apply for an amendment to the licence to remove or amend soil monitoring requirements. An adequate number of soil monitoring results taken in accordance with the conditions of the licence, along with a justification, which may include detailed soil profile analysis for the irrigation areas, for any amendments requested, must be submitted to support the application.

Holding of sheep outside lairage yards

It has come to the delegated officer's attention that sheep are being held outside of the lairage yards (within irrigated paddocks) on the premises. The department has not assessed nor authorised this activity (holding of sheep outside of the approved lairage and ground sheep yards) and has several concerns that include, but are not limited to:

- unknown amount of nutrients, particularly nitrogen and phosphorus, being applied to irrigated areas from the manure of grazing sheep. This manure has not been considered in the licence holder's NIMP; and
- potential biosecurity issues with unknown withholding times between flood irrigation of paddocks with abattoir effluent and the grazing of livestock.

Therefore, the holding of sheep outside of approved areas (lairage yards and ground sheep yards) is not authorised and has been added as an additional regulatory control.

Note that the licence holder can apply for an amendment to the licence to include the holding of sheep within the irrigation areas. An updated nutrient balance that considers additional nutrients from the holding of sheep and justification that the additional nutrients will not impact on environmental receptors must be submitted to support the application.

Monitoring of inputs and outputs

Additional licence conditions have been added to require the licence holder to monitor and record the amount of animal material rendered, the number of animals skins processed, and the amount of organic solid waste removed to enable compliance with authorised production capacities.

The licence holder is also required to monitor and report on the amount of renderable animal material removed from the premises. A condition of the licence requires the licence holder to process renderable material in the onsite rendering facility or remove from the premises. The monitoring and reporting of renderable animal material removed from the premises will ensure the department is aware of amounts being removed each year. The department will also be able to enquire further and ensure the material is being managed appropriately.

References

1. ANZECC and ARMCANZ (2000), *National Water Quality Management Strategy Paper No. 4 – Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1 The Guidelines*.
2. ANZECC and ARMCANZ (2000), *National Water Quality Management Strategy Paper No. 4 – Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 3 Primary Industries*.
3. Department of Environment and Conservation (NSW) (2004), *Environmental Guidelines – Use of Effluent by Irrigation*, Sydney South, Australia.
4. Department of Environment Regulation (DER) (2015), *Guidance Statement: Setting Conditions*, Perth, Western Australia
5. DER (2016), *Guidance Statement: Licence duration*, Perth, Western Australia.
6. Department of Water and Environmental Regulation (DWER) (2019), *Guideline: Industry Regulation Guide to Licensing*, Perth, Western Australia.
7. DWER (2020), *Guideline: Risk Assessments*, Perth, Western Australia.
8. Gourley CJP and Weaver DM (2019), *A guide for fit for purpose soil sampling*, Fertilizer Australia, Canberra, Australia.
9. Ministerial Statement 408 (1996), *Export Abattoir, Location 5216 & Lot 4 of Location 5215, Settlement Road, Narrikup, Shire of Plantagenet (935), Benale Pty Ltd*, Minister for the Environment.
10. United States Environmental Protection Agency (US EPA) (2006), *Process Design Manual – Land Treatment of Municipal Wastewater Effluents*, Cincinnati, Ohio.

Appendix 1: Summary of licence holder's comments on draft documents

Table 5: Summary of licence holder's comments on draft licence that was provided to licence holder on 5 July 2023

	Summary of licence holder's comments submitted in August 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
1	The licence holder has requested the following amendments to the prescribed premises categories – assessed production capacities:	The delegated officer has considered the licence holder's requests, noting that no explanation was given for any of the changes, and has made the following changes to the licence:
	Category 15 – From 77,740 tonnes HSCW to 50,000 tonnes HSCW	Decreased the assessed production capacity to 50,000 tonnes hot standard carcase weight (HSCW). A definition of HSCW has been added to the licence to ensure it is being consistently estimated.
	Category 16 – From 15,548 tonnes to 15,000 tonnes	Decreased the assessed production capacity to 15,000 tonnes. The licence holder is to note that this is the amount of animal material rendered (input), not the amount of rendered product.
	Category 62 – From 1,000 tonnes to 10,000 tonnes	Increased the assessed production capacity to 10,000 tonnes at any one time. The delegated officer understands this is the maximum amount that can be stored within the solid waste storage area at any one time. A specified requirement for the management of organic solid waste has been clarified in condition 2 to ensure that organic solid waste is only stored within the solid waste storage area.
	Category 83 – From 780,000 skins to 1,600,000 skins	Increased the assessed production capacity to 1,600,000. It has also been clarified that category 83 refers to all skins that are processed at the premises – combined fellmongering and salting. The delegated officer understands that this number of skins aligns with the 50,000 tonnes HSCW assessed production capacity for category 15. The licence holder should note that only skins from animals slaughtered on the premises may be processed at the premises.
	Category 55 – Add to the licence Additionally: Condition 1, Table 1, row 1 – remove <i>All sheep awaiting slaughter must only be held in the covered and uncovered lairage yards areas.</i>	See section 8 – Decision – Holding of sheep outside of lairage yards. Additionally, emissions relating to the operation of the lairage yards on the premises are regulated under existing provisions of category 15; therefore, category 55 is not required to be included on the licence.

	Summary of licence holder's comments submitted in August 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
2	<p>Collection of manure in covered lairage yards – condition 1, Table 1, Row 1</p> <p>Remove requirement to collect weekly. Manure is removed as required. The covered yards are above a cement pad with manure remaining there until removed.</p>	<p>The delegated officer has removed the requirement that manure must be collected on a known basis. The roof on these lairage yards lowers the risk of rainfall falling on the manure and potentially causing increased odour emissions. However, a condition has been added that all manure must be contained within the concrete base to ensure that the manure remains undercover in this area.</p>
3	<p>Collection of manure in uncovered lairage yards and associated stormwater dam – condition 1, Table 1, Rows 2 and 3</p> <p>Remove requirement to collect weekly. Manure is removed as required. The uncovered yards are used infrequently, with manure removed as required.</p> <p>Clarified that these yards are bunded on the uphill, northern side.</p> <p>Clarified that runoff from uncovered yards enters stormwater dam 1, which is a clay lined pond.</p>	<p>The delegated officer considers that there is an increased risk of odour and contaminated stormwater from the generation of manure within the uncovered lairage yards, particularly during the winter months when rainfall is highest.</p> <p>The delegated officer has amended this condition such that manure must be collected weekly during the winter (highest rainfall) months.</p> <p>Added the bunding to the description of the uncovered lairage yards.</p> <p>A standard freeboard condition (and definition) has been added to prevent overtopping of the dam and reduce the risk of dam failure during periods of high or extended rainfall.</p> <p>Additionally, a condition has been added to ensure solids are screened from the runoff prior to entering the dam, to reduce the risk of odour and reduce the amount of sludge in the dam; therefore, ensuring the dam's capacity is maintained.</p>
4	<p>Management of renderable material – condition 1, Table 1, Row 4 and Condition 2, Table 2, Row 1</p> <p>If rendering material is unlikely to be processed within 24 hours, the rendering material will be diverted to an alternative facility and the CEO notified at the earliest onset.</p>	<p>The delegated officer has amended the existing conditions, without changing the intent, to reduce ambiguity. Irrespective of whether the rendering facility has a failure or breakdown, renderable material must only be stored onsite for up to 24 hours prior to being rendered or removed from the premises.</p> <p>The existing condition to notify the CEO in the event of a plant breakdown or failure has been included under notification requirements within the records and reporting conditions. 'Immediately' has been clarified to mean within 7 days.</p> <p>Additionally, the licence holder is required to record the annual amount of renderable material removed from the premises.</p>
5	<p>Odour from rendering operations – Condition 1, Table 1, Row 5</p> <p>Remove specific operational conditions – the rendering plant will be managed to ensure no offensive gases leave the site boundary.</p>	<p>The delegated officer has considered the licence holder's comments, and additional comments made in a meeting on 15 August 2023. Some of the existing conditions have been condensed to ensure gases from the rendering facility pass through the odour emission control equipment prior to being released to atmosphere.</p>

	Summary of licence holder's comments submitted in August 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
6	<p>Biomass boiler system – Condition 1, Table 1, Rows 6, 7 and 8</p> <p>Bio boiler will be operated in a manner which does not generate dust, noise and odour.</p> <p>Remove reference to hammer mill woodchip size.</p> <p>Remove hammer mill operating hours as they are restrictive.</p> <p>LPG boilers may be required in the event no woodchips are available.</p> <p>Clarified there are no bucket elevators, hammer mill is located outside, LPG boiler are within an enclosed shed, and most augers are undercover in an enclosed shed.</p> <p>Provided size of ash bins and capacity of blowdown vessel.</p> <p>Conditions 16 and 17 – remove requirement to sample point source emissions to air as this is very expensive.</p>	<p>The delegated officer has considered the licence holder's comments, and additional comments made in a meeting on 15 August 2023.</p> <p>Conditions have been updated to reflect current infrastructure, including location, on the premises.</p> <p>The delegated officer has amended the hammer mill woodchip size to specify that it should not be less than 20 mm. The delegated officer considers it important to include a minimum woodchip size to prevent sawdust being produced which may increase dust emissions.</p> <p>The delegated officer has removed the operating timeframes for the hammer mill. The licence holder is to note that the <i>Environmental Protection (Noise) Regulations 1997</i>.</p> <p>The delegated officer has removed other conditions that may not be enforceable, outcome-based or clear.</p> <p><i>Sheep manure</i> has been replaced with the <i>organic material</i> to include all waste types that are stored within the solid waste storage area.</p> <p>The requirement to only operate the LPG boilers due to failure or maintenance of the biomass boilers has been removed to allow the boilers to be used in the event that woodchips are not available.</p> <p>The delegated officer has removed the requirement to sample air emissions from the boiler system stacks. Monitoring results submitted by the licence holder show fairly consistent results, with slight increase in particulate matter for 2023 results. A standard condition has been added to the licence to replace this monitoring, requiring the licence holder to ensure that dark smoke is not emitted from the stacks (including the LPG fired boiler stack). A definition for dark smoke has been included on the licence.</p>
7	<p>Fellmongering and skin salting – Condition 1, Table 1, row 9</p> <p>Clarified that fellmongering and skin salting are two separate processes with fellmongering wastewater being directed to the onsite wastewater treatment system. Any wastewater from the salting process is directed to the salt wastewater tank.</p>	<p>Table 1 has been updated.</p>

	Summary of licence holder's comments submitted in August 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
8	<p>Wastewater treatment – Condition 1, Table 1, row 11</p> <p>Remove requirement that all wastewater must be directed through the contrashear screen and dissolved air floatation (DAF) unit prior to being directed to the aerobic pond. All wastewater is directed to the wastewater treatment system (WWTS). Not all wastewater is directed to the contrashear and DAF.</p> <p>Clarified location of metering device to measure incoming volume of wastewater to the WWTS. Rainwater from the northwest entering the maturation cell is unmetred.</p>	<p>The delegated officer has considered the licence holder's comments and has amended the conditions to state that all wastewater must be directed through the wastewater treatment system.</p> <p>The delegated officer notes that uncontaminated stormwater currently enters one of the wastewater treatment ponds. While the delegated officer understands that this is to reduce the risk of erosion of the pond embankments, the licence holder should note that it is beneficial to exclude as much uncontaminated stormwater as possible from the ponds as this reduces holding capacity of the ponds and increases the amount of wastewater irrigated.</p> <p>Additionally, following the licence holder's comments in the meeting on 15 August 2023 regarding desludging of ponds, the delegated officer has added standard notification requirements to the licence.</p>
9	<p>Wastewater irrigation – Condition 1, Table 1, row 12</p> <p>Remove restriction of irrigation during winter months.</p> <p>Remove restriction that sheep may not be held or grazed within irrigation areas.</p> <p>Clarified location of flow meters and provided a map of irrigation infrastructure.</p>	<p>See section 8 – Decision – Irrigation of wastewater during winter months and Holding sheep outside lairage yards.</p>
10	<p>Surface water sampling – Condition 14, Table 8</p> <p>Clarified that Mill Brook has not flowed for the past 8 years at location SW1 (upstream). SW1 will be sampled upstream where the water starts if the waterway isn't flowing.</p>	<p>A note has been added to the surface water quality monitoring condition to require the licence holder to take the upstream (SW1) sample at the next most appropriate location and record the GPS location at the time of sampling.</p>
11	<p>Soil monitoring – Condition 15, Table 9</p> <p>The 4th depth up to 1 m is unnecessary. This is due to the 3 other sampling depths being adequate.</p>	<p>The delegated officer has removed the requirement to sample soil from 70 to 100 cm below the ground surface. The delegated officer may reassess and amend soil monitoring requirements following submission of soil monitoring results.</p>

	Summary of licence holder's comments submitted in August 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
12	<p>Maps in licence</p> <p>Remove all maps from the licence as they are commercially sensitive. Licence holder provided one map.</p>	<p>Maps are required in the licence to specify the premises boundary, location of infrastructure, irrigation areas and monitoring points and to facilitate the department in determining compliance with licence conditions.</p> <p>The licence holder was advised to provide justification, in accordance with the <i>Freedom of Information Act 1992</i>, for any maps they required to be removed due to commercially sensitive information. No justification has been provided by the licence holder.</p> <p>The delegated officer considers the map provided by the licence holder to be insufficient for the purposes of ensuring conditions of the licence are clear and enforceable. The map does not contain a north arrow or visible scale, and does not clearly show the premises boundary, monitoring locations or location of all infrastructure referred to in the licence.</p> <p>The delegated officer has amended some maps to remove labelled infrastructure not referred to in licence conditions; however, all maps remain in the licence.</p>

Table 6: Summary of licence holder's comments on draft licence that was provided to licence holder on 30 August 2023

Summary of licence holder's comments submitted in September 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
<p>Prescribed premises categories – assessed production capacities:</p> <p>Remove the wording “Not more than” for each category.</p> <p>It is our understanding we can exceed these figures as a once off.</p>	<p>In accordance with the department's document <i>Guideline: Industry Regulation Guide to Licensing</i> (2019), production capacity is defined as the rate at which a product is produced as relevant to the description of the prescribed premises category.</p> <p>Emissions and discharges from the premises have been assessed at the production capacities specified on the licence. It is noted that the licence holder requested for the assessed production capacity of categories 15 and 16 to be decreased (see Table 5, 1). To ensure emissions and discharges do not significantly increase beyond what has been assessed, the words “not more than” were added to the replacement licence.</p>

Summary of licence holder's comments submitted in September 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
<p>Uncovered lairage yards and associated pond – condition 1, Table 1, Rows 2 and 3</p> <p>Change wording of (a) to “manure generated in this area must be collected as required to reduce solids entering the first flush pond. Manure to be stored in the solid waste storage area.” These yards are not used very often.</p> <p>Remove requirement that runoff must be directed through a solids screen. Solids will be removed as required to reduce solids entering the first flush pond. There is no need to screen solids when the manure is being removed.</p> <p>Change name of stormwater dam 1 to “first flush pond”, and change labelling.</p>	<p>Department's comments regarding the collection of manure and screening of solids is detailed in Table 5, 3.</p> <p>The labelling of stormwater dam 1 has been updated to first flush pond. The licence holder should note that all runoff generated within the uncovered lairage yards, at any time of the year, must be directed to this pond.</p>
<p>Rendering Operations – condition 1, Table 1, Row 5</p> <p>Not all conveyors are enclosed or over concrete flooring.</p> <p>Remove (a), (b) and (c) and add “Fowl gas collection and odour source points hooded are extracted to the emissions control infrastructure.”</p>	<p>Dust, odour and noise emissions from the rendering operations have not been reassessed as part of this licence replacement process. As described in Table 5, 5, existing conditions were condensed; however, their intent has not been changed. The remaining conditions are for the control of odour and noise emissions from rendering operations, as was previously assessed by the department. The delegated officer does not consider the licence holder's proposed wording to be a sufficient replacement for the existing conditions as the wording is not clear or enforceable; and does not capture the intent of the existing conditions.</p> <p>The licence holder has not provided any additional information on the non-enclosed conveyors or indicated the flooring that the conveyors are positioned over. It is not known how many conveyors are referred to, or whether they are located inside or outside the building. However, considering the rendering facility is enclosed, the word enclosed has been removed for conveyors located within the building; but any conveyors outside of the building must be enclosed.</p>

Summary of licence holder's comments submitted in September 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
<p>Biomass boiler system – feedstock delivery and storage area – condition 1, Table 1, Row 6</p> <p>Change infrastructure description to “Feedstock delivery and storage area consisting of concrete pad.”</p> <p>Remove (a) and (b) and add “Receiving and moving woodchips must not generate dust emissions.”</p>	<p>The licence holder has previously provided information that the walking floor is located undercover, and most augers are undercover in an enclosed shed. It is unclear, and no justification has been provided, on why the licence holder wants the description of the infrastructure amended to only refer to a concrete pad. The conditions for the biomass boiler system in the replacement licence have been transferred, but not reassessed from the existing licence. They were added to the existing licence during an amendment in October 2018, following completion of installation of the two biomass boilers under works approval W5807/2015/1. Reference to the concrete pad has been added to the licence infrastructure description; however, reference to the roofed area has not been removed.</p> <p>No justification has been provided for the replacement of sections (a) and (b). Dust, odour and noise emissions from the biomass boiler system have not been reassessed as part of this licence replacement process, with sections (a) and (b) being reworded, but the intent remaining the same as existing conditions on the licence.</p>
<p>Biomass boiler system – biomass boiler shed – condition 1, Table 1, Row 7</p> <p>In description remove reference to “positioned within an enclosed building”.</p> <p>Remove reference to “consisting of two (2) Unicofort Global G400 4,640 kW_{thermal} biomass boilers, each fitted with a multiclone to collect flyash”.</p> <p>Fly ash system is inside the shed.</p> <p>Change (a) to “Not to cause an air emission, generate smoke for greater than 20 minutes per day, dust emission or odour emission at the boundary of the site.”</p>	<p>No justification has been provided for the removal of reference to an enclosed building. Dust, odour and noise emissions from the biomass boiler system have not been reassessed as part of this licence replacement process. Existing conditions have been transferred, which may include updated wording; however, the intent remains the same.</p> <p>The delegated officer has considered the licence holder's comments regarding reference to specific biomass boilers and considers that the specific biomass boiler manufacturer reference can be removed as it does not alter the risk of emissions. However, the multiclone is considered emission control infrastructure and reference to it will remain on the licence. It is noted that, as per the front page of the licence, category 67 fuel burning is limited to not more than 2,960 kg of woodchips burnt per hour. The licence holder should also note that under section 53 of the EP Act there are restrictions as to changes on the premises, which may include installing, altering or replacing any fuel burning equipment unless it is done so in accordance with an approval.</p> <p>The delegated officer notes that the fly ash system is inside the shed. This is currently reflected within the licence.</p> <p>The delegated officer does not consider the licence holder's proposed wording for section (a) to be a sufficient replacement for the existing conditions as the wording is not clear or enforceable; and does not capture the intent of the existing conditions. As discussed in Table 5, 6, the delegated officer considers it important to include a minimum woodchip size to prevent sawdust being produced which may increase dust emissions.</p>

Summary of licence holder's comments submitted in September 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
Fellmongering and skin salting – condition 1, Table 1, Row 9 Remove “with a capacity of at least 32 kL”	No justification has been provided for the removal of this wording. The licence holder previously confirmed the capacity of this tank (32,000 L) when providing comments on the initial drafts. The minimum capacity has been decreased slightly to allow some flexibility in measurement; however, will remain on the licence.
Wastewater treatment and disposal (irrigation) – condition 1, Table 1, Row 11 Remove “with a maximum aperture size of 0.5 millimetres (mm)” in contra shear description. Change “three (3)” to “two (2)” in regard to mechanical aeration units within the aerobic pond. Remove sections (c), (f) and (g) – diversion of uncontaminated stormwater, pond surfaces kept clear and management of vegetation on inner pond embankments.	The maximum aperture size of the contra shear has been transferred, but not reassessed, from the existing licence. No further information on the contra shear infrastructure has been provided by the licence holder. No justification has been provided for the removal of the screen size and no alternative screen size has been provided. The number of mechanical aeration units within the aerobic pond has been updated in the licence. No justification has been provided for the removal of sections (c), (f) and (g). These are existing conditions which have been transferred to the replacement licence. Section (c): As discussed in Table 5, 8, the delegated officer considers it beneficial to exclude as much uncontaminated stormwater as possible from the ponds. Water Quality Protection Note (WQPN) 39 <i>Ponds for stabilising organic matter</i> (2009) also states that “overland stormwater runoff should be diverted around ponds to control erosion, and extreme rainfall events managed via spillways to prevent embankment erosion”. The delegated officer understands that this existing condition included an exception of stormwater being able to enter the ponds from the northwest portion of the main building, which has been transferred to the new licence. Given the above, the condition has not been removed from the licence. Section (f): Aerobic ponds rely on sunlight, atmospheric oxygen (including aeration) to assist pond microbes to stabilise wastewater. WQPN 39 states that “the pond surface should be kept free of surface scums and land based or aquatic plants to maximise air diffusion that is essential to aerobic pond microbes. Algal mats (which may result in algal blooms) can decay and cause operational problems. Given the above, the condition has not been removed from the licence. Section (g): Integrity of wastewater ponds must be maintained to prevent leaching of potential harmful contaminants into the surrounding environment (WQPN 26 <i>Linners for containing pollutants, using synthetic membranes</i> (2013)). Trees, or other vegetation, should not be established near ponds as they can limit light needed for pond micro-organisms, impede air flow, and roots may damage pond embankments or liners (WQPN 39). Given the above, the condition has not been removed from the licence.

Summary of licence holder's comments submitted in September 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
<p>Wastewater irrigation areas – condition 1, Table 1, Row 12</p> <p>Remove section (c) – that irrigation must not occur during the months of May to August. The winter irrigation plan will be submitted before next winter.</p> <p>In section (f) remove “to prevent localised concentration of nutrients”.</p> <p>In section (i) remove “during periods of rainfall or”.</p> <p>Remove (j) – no stock held in irrigation areas.</p> <p>Change (k) to “irrigation areas must be harvested to demonstrate a controlled depletion of nutrients. Dry tonnages of biomass and crop type recorded.”</p>	<p>Regarding (c) – see section 8 – Decision – Irrigation of wastewater during winter months.</p> <p>It is noted that no justification has been provided for the request to remove or alter sections (f), (i), (j) or (k).</p> <p>Regarding (f) and (i) – see section 8 – Decision – Irrigation of treated wastewater – existing licence conditions, and the following:</p> <ul style="list-style-type: none"> - Wording has been removed within (f) as the delegated officer considers the removal of these words does not change the intent of the condition. - (i) has remained unchanged. The licence holder has not provided any justification for why this existing condition should be removed, nor any strategies for managing soil moisture or plant/crop water requirements during periods of rainfall. <p>Regarding (j) – see section 8 – Decision – Holding of sheep outside of lairage yards.</p> <p>Regarding (k) – see section 8 – Decision – Cropping within irrigation areas, and the following:</p> <ul style="list-style-type: none"> - The delegated officer does not consider the licence holder's proposed wording to be a sufficient replacement for the new condition as it is not considered to be clear or enforceable.
<p>Wastewater loading limits – condition 3, Table 3</p> <p>Increase total nitrogen loading limit from 280 to 300 kg/ha/annual period.</p>	<p>It is acknowledged that the licence holder has submitted some information on the cropping of kikuyu; however, this information is not sufficient to determine site appropriate nutrient loading rates for TN, or TP. The nutrient offtake strategy, required to be submitted by the licence holder, will be used to reassess the existing nutrient loading rates in the licence and determine site specific loading rates.</p>
<p>Wastewater monitoring – condition 13, Table 6</p> <p>Change <i>Escherichia coli</i> testing from monthly to annually.</p>	<p>The delegated officer has amended the monitoring to require <i>E.coli</i> to be monitored annually.</p>
<p>Soil monitoring – condition 16, Table 9</p> <p>Remove soil sampling at 0-20 cm.</p> <p>Change soil sampling at “40-70 cm” to “40-60 cm”.</p>	<p>See section 8 – Decision – Monitoring of soil quality</p>

Summary of licence holder's comments submitted in September 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
<p>Monitoring of processes – condition 17, Table 10</p> <p>For livestock received for slaughter – monthly and yearly totals are provided, not in batches.</p> <p>For sheep/lambs slaughtered at the premises – tonnage will be provided rather than total number of animals slaughtered. Monthly and yearly figures.</p> <p>Remove the requirement to monitor the following:</p> <ul style="list-style-type: none"> - Renderable material removed from premises (tonnes) - Fellmongering and salting skins (number) - LPG boiler and afterburner inputs (litres) - Bio boiler outputs – ash (tonnes) <p>Do not understand why the above are required.</p>	<p>Livestock received for slaughter – the licence has been updated to specify monthly and annual.</p> <p>For sheep/lambs slaughtered – the licence already specifies that the total tonnage of sheep/lambs slaughtered at the premises is to be provided. However, the licence has been updated to clarify this.</p> <p>Renderable material removed from the premises – see section 8 – Decision – Monitoring of inputs and outputs.</p> <p>Fellmongering and salting skins – the annual total of number of skins is required to be monitored and reported to ensure compliance with the assessed production capacity of category 83.</p> <p>LPG boiler and afterburner inputs (LPG usage) – this was an existing condition that was transferred to the replacement licence. As part of the replacement of the licence a condition was removed that restricted use of the LPG boilers to when the biomass boilers failed or were offline for maintenance (Table 5, 6). Reporting on the inputs to the LPG boilers will enable to the department to determine how often (and for approximately how long) the LPG boilers have been used, as it is understood these are only required in emergency situations, as was the intent of the existing condition. The delegated officer has removed the requirement to report on the input for the afterburner. The licence requires all gases existing the rendering facility to pass through odour emission control equipment, which includes the afterburner. Compliance with this condition ensures the afterburner is in use while material is being rendered. As the amount of renderable material is already required to be reported, the delegated officer agrees that the inputs to the afterburner are not required to be monitored and reported.</p> <p>Bio boiler outputs – ash – this was an existing condition that was transferred to the replacement licence. The licence requires ash to be directed to the solid waste storage area, which is for the storage of organic solid waste (including manure, screening solids, SYSDAF cake, paunch contents, waste meat meal, ash and fly ash). As the amount of organic solid waste removed from the premises is already required to be monitored and reported, the delegated officer has removed the requirement to monitor and report on the amount of ash produced by the bio boilers.</p>

Summary of licence holder's comments submitted in September 2023 (Condition references refer to the draft documents submitted to the licence holder)	Department's response
<p>Annual reporting requirements – condition 24, Table 11</p> <p>Remove requirement to report on monthly groundwater and surface water used at the premises. Irrigation figures should be all that's required.</p> <p>Remove requirement to provide a summary, including dates, that the biomass boilers were offline due to breakdowns. Do not understand why this is required.</p>	<p>Groundwater and surface water used at the premises – this is an existing condition that was transferred from the existing licence. The delegated officer has considered that the premises is not within an area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i>, however, the premises is located within the Albany Waterways Management Area, declared under the <i>Waterways Conservation Act 1976</i>. The Albany Waterways Management Programme focuses on reducing nutrient inputs. Given the above, the delegated officer has removed the requirement to report on monthly groundwater and surface water used at the premises.</p> <p>Summary of biomass boilers being offline due to breakdown or maintenance – this is required, together with reporting on the amount of renderable material removed from the premises, to determine compliance with the requirement in the licence that all animal waste material must not be stored for more than 24 hours from slaughter of the animal.</p>
<p>Maps – Schedule 1</p> <p>Maps are over descriptive. What is the legal requirement for maps?</p>	<p>See Table 5, 12</p>
<p>Place all new/extra reporting requirements outside of the licence. There is some misunderstanding from us as why these are required. We think we currently have all monitoring covered and trying to remove these extra items at a later date will be difficult.</p>	<p>As detailed in this decision report, the replacement licence process included a partial review of the licence to ensure the risks to human health and the environment from the discharge of wastewater to land on the premises, as previously assessed by the department, have not materially changed. A review of this risk is detailed in section 7 with new conditions that have been included on the licence being detailed in section 8.</p> <p>As stated several times within section 8, the licence holder can apply for an amendment to the licence. Justification, which may include management plans, monitoring results and other information, for any amendments requested must be submitted to support the application.</p>

Appendix 2: Licence holder loading rates calculator

Irrigation areas ¹ : size, volume irrigated, irrigation days				Annual period (as defined by your licence) ²												Volume irrigated during annual period (kL) ³	
	Size (ha)			January	February	March	April	May	June	July	August	September	October	November	December		
EXAMPLE irrigation area:	25	volume irrigated	kL	20,000	20,000	18,000	15,000	0	0	0	0	15,000	18,000	20,000	25,000	151,000	
		days of irrigation	days/month	29	28	30	25	0	0	0	0	20	25	30	27		
Irrigation Area 1:		volume irrigated	kL														
		days of irrigation	days/month														
Irrigation Area 2:		volume irrigated	kL														
		days of irrigation	days/month														
Irrigation Area 3:		volume irrigated	kL														
		days of irrigation	days/month														
Wastewater quality ⁴	EXAMPLE sampling date:			20/01/2022	15/02/2022	17/03/2022	19/04/2022	12/05/2022	12/06/2022	9/07/2022	15/08/2022	12/09/2022	15/10/2022	13/11/2022	7/12/2022		
	EXAMPLE total nitrogen			mg/L	13.2	21.3	17.6	19.2	42.4	25.1	30.4	40.3	34.8	38.7	44.6	47.3	
	EXAMPLE BOD			mg/L	4.8	12.1	6.1	4.9	4.8	4.1	3.3	5.2	4.4	5.2	5.1	7.5	
	Sampling date:																
	For wineries to indicate sampling period: ⁵																
	Total nitrogen			mg/L													
	Total phosphorus			mg/L													
Biochemical oxygen demand			mg/L														
Nutrient and BOD loadings ⁶				January	February	March	April	May	June	July	August	September	October	November	December	kg/ha/annual period ⁷	
EXAMPLE total nitrogen loadings				10.6	17.0	12.7	11.5					20.9	27.9	35.7	47.3	183.5	
EXAMPLE BOD loadings				kg/ha/month	3.8	9.7	4.4	2.9				2.6	3.7	4.1	7.5	38.8	
				kg/ha/day	0.13	0.35	0.15	0.12				0.13	0.15	0.14	0.28		
Irrigation Area 1	Total nitrogen			kg/ha/month													
	Total phosphorus			kg/ha/month													
	Biochemical oxygen demand			kg/ha/month													
				kg/ha/day													
Irrigation Area 2	Total nitrogen			kg/ha/month													
	Total phosphorus			kg/ha/month													
	Biochemical oxygen demand			kg/ha/month													
				kg/ha/day													
Irrigation Area 3	Total nitrogen			kg/ha/month													
	Total phosphorus			kg/ha/month													
	Biochemical oxygen demand			kg/ha/month													
				kg/ha/day													
Explanatory notes and calculations:																	
White cells should be filled in where applicable.																	
NOTE 1 - Where there is irrigation to more than 3 areas, additional copies of this sheet should be completed.																	
NOTE 2 - This sheet should be completed for your annual period as defined by your licence. E.g. If your annual period is from 1 October to the 30 September in the following year, for the 2022-2023 annual period, you should include data from January - September 2023, and October - December 2022.																	
NOTE 3 - Volume irrigated during the annual period (kL), for each irrigation area is the sum of the monthly volumes irrigated to that area. E.g. For the example shown: Volume irrigated during annual period = 20,000 (Jan) + 20,000 (Feb) + 18,000 (Mar) + 15,000 (Apr) + 15,000 (Sep) + 18,000 (Oct) + 20,000 (Nov) + 25,000 (Dec) = 151,000 kL. Noting that for the example there was no irrigation during the months of May, June, July or August.																	
NOTE 4 - The sampling and analysis of your wastewater quality should be undertaken in accordance with your licence conditions. For sampling less often than monthly, i.e. quarterly, 6-monthly, or annually: for months where no sampling is required, wastewater quality should be taken to be equivalent to the most recent sample taken. E.g. Quarterly sampling during Feb, May, Aug and Nov - total nitrogen concentrations were analysed to be 7, 11, 8 and 13 mg/L respectively in the wastewater. For March and April, as February was the most recent sample taken, total nitrogen concentration is estimated to be 7 mg/L. Similarly, for June and July, as May was the most recent sample, total nitrogen concentration is estimated to be 11 mg/L. There will be no sampling date associated with non-sampling months. If your licence requires you to monitor loading rates for additional parameters (e.g. inorganic nitrogen, reactive phosphorus etc.) additional copies of this sheet should be completed for the additional parameters.																	
NOTE 5 - For wineries to indicate sampling period - this row is only required to be completed if your licence condition specifies a sampling period e.g. pre-vintage, peak vintage, late vintage, post vintage, non-vintage. Indicate which sampling date corresponds with which period.																	
NOTE 6 - Parameter loading (TN, TP or BOD) each month per hectare for each irrigation area (kg/ha/month): $\frac{\text{monthly concentration of parameter (TN, TP or BOD) in mg/L} \times \text{monthly volume of wastewater irrigated to irrigation area (kL)}}{\text{size of irrigation area}}$ E.g. Using the example shown, for total nitrogen for January: $13.2 \text{ mg/L} \times 20,000 \text{ kL} / 1,000 = 264 \text{ kg/month}$. $264 / 25 \text{ ha} = 10.6 \text{ kg/ha/month}$ (for January). Loading of parameter (BOD) each day per hectare for each irrigation area (kg/ha/day): $\text{BOD loading (kg/ha/month)} \div \text{number of days of irrigation during that month}$. E.g. Using the example shown, for BOD for October: $3.7 \text{ kg/ha/month} / 25 \text{ days of irrigation during October} = 0.15 \text{ kg/ha/day}$ (for October)																	
NOTE 7 - To calculate annual loading of parameter (TN, TP or BOD) per hectare (kg/ha/annual period): sum of monthly loadings (kg/ha/month). You should calculate an annual loading (kg/ha/annual period) for each parameter for each irrigation area.																	

* To request an electronic copy of this spreadsheet please contact info@dwer.wa.gov.au