Application for Licence

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

Licence Number	L9345/2022/1
Applicant	Brownes Food Operations Pty Ltd
ACN	146 849 881
File number	DER2022/000352
Premises	Brownes Whey Meeking 238 Roccis Road MEEKING LOT 2970 ON PLAN 94319, LOT 2159 ON PLAN 126867, LOT 2618 ON PLAN 141289, LOT 3146 ON PLAN 85002, LOT 2160 ON PLAN 126868, LOT 2972 ON PLAN 84329 and LOT 2161 ON PLAN 126869.
Date of report	21 November 2022
Decision	Licence granted

Steve Checker
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Date: 2022.11.21 07:18:57 +08'00'

Steve Checker
MANAGER WASTE INDUSTRIES
REGULATORY SERVICES
Officer delegated under 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the operation of the premises. As a result of this assessment, licence L9345/2022/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) has considered and given due regard to its regulatory framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Application summary and overview of premises

On 25 July 2022, the applicant submitted an application for a licence to the department under section 57 of the *Environmental Protection Act 1986* (EP Act).

The application is to seek a licence relating to discharge of whey at the premises. The premises is approximately 13 km northwest of Darkan.

The premises relates to the category and assessed production and design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in licence L9345/2022/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in licence L9345/2022/1.

The Applicant current produces milk and cheese from its processing facility under Licence L4437/1988/12 and discharges whey to land under Licence L9134/2018/1 at a separate premises in West Arthur. Licence L9134/2018/2 was renewed on 22 June 2022 for five years with an expiry date of 20 June 2027. To minimise the operational risk associated with the application of whey to one single premises, this Licence Application has been submitted to allow for the discharge of whey at a second separate premises if required. In the short to medium term, it is not anticipated that whey production will increase under L4437/1988/12 but having a second premises option for discharges of whey allows flexibility. It may eventuate that the discharge of whey to the Meeking premises only occurs in a very limited capacity.

The Applicant has submitted an Application with a Production and Design Capacity (P&DC) of 10,000 kL per annual period and it is estimated that the actual throughput of whey to land will be 8,000 kL per annual period, which is consistent with the throughput for L9134/2028/2. The Applicant has provided a copy of the Lease agreement with the landowner to allow discharge of whey and the lease expires 1 July 2027 which will be the proposed expiry date for the new Licence.

The operational infrastructure and activities that will apply at the Premises are the same as under L9134/208/2. The Applicant intends to undertake whey spreading operations as follows:

- Whey will be transported to the Premises in 48,000 L tankers;
- Tankers will then unload into one of two 50,000 L existing onsite storage tanks;
- Whey will be transferred into a 15,000 L Spreader and irrigated to land;
- The Premises comprises an area of 1,519 ha, and the Applicant has dedicated 578 ha of farmland on the Premises for irrigation – currently used as broad acre agriculture which

includes cereal cropping and livestock (sheep). Of this 578 ha available area, whey will be applied to a 200 ha area and at a proposed rate of once every three years. Figure 2 provides an overview of the Premises infrastructure and whey irrigation area.

3. 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.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this decision report are detailed in Table 1 below. Table 1 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Operation			
Dust	*Vehicle movements – tanker truck, spreader and tractor*	*Air / windborne pathway*	*The use of the Spreader and Tractor is a normal agricultural activity and whey operations are not significantly in excess of normal farming practice.* *The Tanker speed will be reduced when irrigating which will limit dust lift off.*
Noise	*Vehicle movements – tanker truck, spreader and tractor*	*Air / windborne pathway*	*The use of the Spreader and Tractor is a normal agricultural activity and proposed operation is not significantly in excess of normal farming practice. The Tractor speed will be reduced when irrigating which will limit additional noise.* *The Tanker trucks that access the premises to deliver whey are limited in speed.* *Majority of whey discharged at the premises is only over a few months of the year.*
Spills	*Storage tanks and transfer points*	*Direct discharge to land and groundwater*	*All unloading and loading operations will occur with secured milk transfer procedures and the activity requires personnel to be in attendance at all times.* *If a spill or leak occurs, it can be switched off immediately.*
Odour	*Storage tanks and*	*Air /*	*Whey is delivered in a sealed Tanker.*

Emission	Sources	Potential pathways	Proposed controls
	irrigation operations	*windborne pathway*	*Irrigation occurs on a campaign basis and is not a regular practice.* *Stored in a 50,000 kL sealed tank.* *Fresh whey is not generally associated with odour issues.* *Significant separation distance (1700 m) from whey spreading area to nearest sensitive receptor.* *Whey is not be stored for more than 24 hours prior to irrigation.*
Leachate	*Irrigation of Whey*	*Seepage to soil and groundwater*	*Compliance with premises Whey Management Plan.* *Compliance with loading rate targets/limits.* *578 ha of available land to discharge whey at the Premises. Whey will be applied over a 200 ha area within this available land.* *Whey application over a 200 ha area each year and will occur once every three years.* *Whey discharge is undertaken systematically to ensure an even spread of whey over the irrigation area.* *Whey quality monitoring.* *Avoiding irrigation on steep slopes. Buffers around the irrigation area to mitigate emissions to sensitive receptors.* *As a second option to discharge whey it may eventuate that the premises only receives small volumes of whey over the five years of proposed operations.*

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020), the Delegated Officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 2 and Figure 1 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental Siting* (DWER 2020)).

Table 2: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Residential Premises	*1. 870 m southeast from Premises boundary* *1700 m from whey area.*

	2. 2000 m east from Premises boundary 3600 m from whey area. *3. 2500 m north from Premises boundary 2600 m from whey area.* *4. 3300 m west from Premises boundary 3300 m from whey area.*
Environmental receptors	**Distance from prescribed activity**
Threatened Flora	*2 species potentially occurring onsite.* *Dwarf Bee orchid – Diuris micrantha* *Keighery's Eleocharis – Eleocharis keigheryi*
Threatened Fauna	*Fauna potentially occurring onsite.* *Curlew Sandpiper* *Forest red-tailed black-cockatoo* *Malleefowl* *Eastern Curlew* *Baudin's Black-cockatoo* *Carnay's Black Cockatoo* *Woylie* *Chuditch* *Re-tailed Phascogale*
Hydrography	*Two Minor surface water creek lines within Premises boundary – western and eastern portions*
Indigenous Heritage	*1.3 km west of the northern boundary*
Groundwater	*REWI Act Surface water – Murray River System within the top northwest corner of premises* *4 bores depth – 1.21-10.3 mbgl northern creek line on premises*

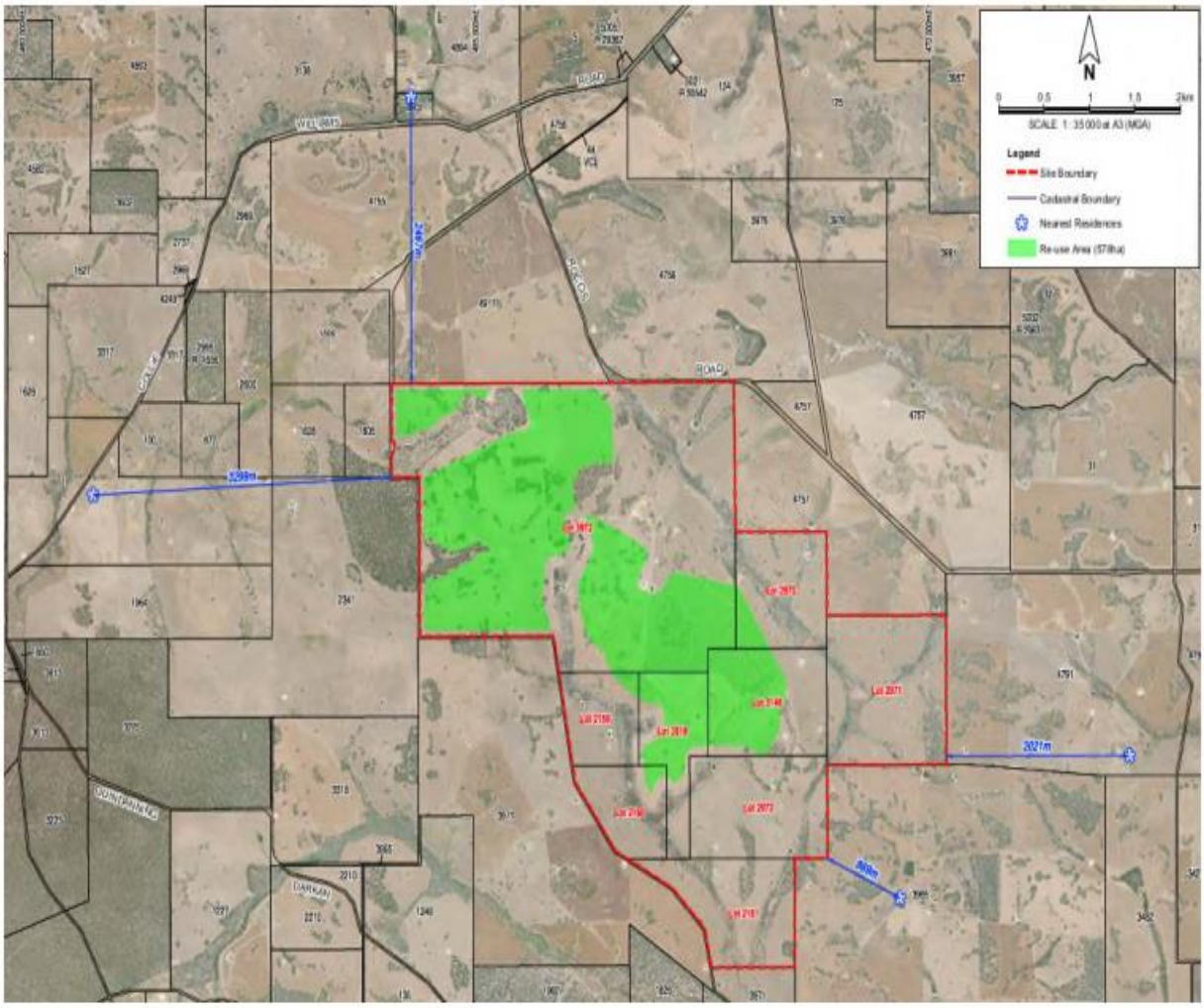

Figure 1: Distance to sensitive residential receptors

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant'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 applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

Licence L9345/2022/1 that accompanies this decision report authorises emissions associated with the operation of the premises i.e. Liquid waste facility.

The conditions in the issued licence, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 3: Risk assessment of potential emissions and discharges from the premises during operation

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Operation								
Unloading, loading, storage and disposal (irrigation) of Whey *Vehicle movements*	*Dust*	*Air / windborne pathway causing impacts to health and amenity*	*Residence:* *1.870m southeast from Premises boundary and 1700m from whey area.* *2. 2000m east from Premises boundary and 3600m from whey area.* *3. 2500m north from Premises boundary and 2600m from whey area.* *4. 3300m west from Premises boundary and 3300m from whey area.*	*Refer to Section 3.1*	*C = Slight* *L = Unlikely* ***Low Risk***	*Y*	*N/A*	*N/A*
	Noise			*Refer to Section 3.1*	*C = Slight* *L = Unlikely* ***Low Risk***	Y	*N/A*	*N/A*
	Odour			*Refer to Section 3.1*	*C = Slight* *L = Unlikely* ***Low Risk***	*Y*	*N/A*	*N/A*
	Spills	*Overland runoff potentially causing ecosystem disturbance or seepage impacting soils and groundwater*	*4 bores depth – 1.21-10.3mbgl northern creek line on premises* *Two Minor surface water creek lines*	*Refer to Section 3.1*	*C = Slight* *L = Unlikely* ***Low Risk***	*Y*	*Condition 1, 2, 4 and 5*	*N/A*
	Overland runoff from	*Overland runoff potentially causing*		*Refer to*	*C = Moderate*		*Condition 1, 2, 3, 4, 5, 6, 7*	*Refer to section 3.3*

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
	from Irrigation to land	*ecosystem disturbance or seepage impacting soils and groundwater*	*within Premises boundary – western and eastern portions* *2 species potentially occurring onsite.* *Dwarf Bee orchid – Diuris micrantha* *Keighery's Eleocharis – Eleocharis keigheryi* *Fauna potentially occurring onsite.* *Curlew Sandpiper* *Forest red-tailed black-cockatoo* *Malleefowl* *Eastern Curlew* *Baudin's Black-cockatoo* *Carnaby's Black Cockatoo* *Woylie*	*Section 3.1*	*L = Possible* ***Medium Risk***		*and 8* ***Condition 11***	*Consistent with L9134/2028/2 the licence has an Annual Environmental Report condition that requires an assessment and interpretation of monitoring data and a comparison to historical data. This will ensure any risks and impacts to human health, or the environment are assessed during operations.*

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
			Chuditch *Re-tailed Phascogale*					

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

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

3.3 Detailed risk assessment Leachate – Irrigation of whey

3.3.1 Description of Irrigation of whey

Whey is to be irrigated to land (crops and livestock pasture) annually until 27 September 2025 (Planning Approval expiry). The Applicant has nominated a maximum P&DC of 10,000 kL of whey disposed per annual period but expected throughput is 8,000 kL based on whey manufacture. The Premises has a dedicated area of 578ha for the discharge of whey. Whey will be irrigated via a Spreader evenly over land. Table 4 outlines the Annual whey spreading volumes from 2018 to 2022 produced from the processing facility under L4437/1988/12 while Table 5 outlines expected monthly whey production volumes for the Premises.

Table 4 Annual whey volumes

Year	Whey volume
2018/2019	10.8 ML
2019/2020	6.6 ML
2020/2021	4.5 ML
2021/2022	3.5 ML

Table 5 Expected whey production by month

Month	% Total annual whey	Volume whey (ML)
July	2	0.2
August	5	0.5
September	15	1.5
October	25	2.5
November	25	2.5
December	15	1.5
January	5	0.5
February	2	0.2
March	1	0.1
April	1	0.1
May	2	0.2
June	2	0.2
Total		**10**

3.3.2 Identification and general characterisation of emission

Whey quality is typically high in nutrient, BOD, TN, TP, salt – TDS, TSS and oil and grease concentrations. It is also acidic with a pH of between 4.0 and 4.4. If the soil subject to irrigation already exhibits high concentrations of P the soils ability to adsorb P will be diminished and P may desorb into the environment and groundwater causing eutrophication. Table 6 outlines the whey quality discharge at the premises. The anticipated volume is 8,000 kL per annual period to be discharged over a 578ha area will be undertaken on paddocks dedicated to pasture with the application predominately occurring over the Spring season (per Table 5 volumes). Figure 2 provides an overview of the Irrigation area at the Premises.

Table 6 Whey quality

Sample date	TN (mg/L)	TP (mg/L)	pH	BOD (mg/L)	TDS (mg/L)
23/9/2019	1,400	450	4.3	47,000	54,000
25/11/2019	1,600	380	4.2	50,000	54,000
22/09/2020	1,300	310	4.5	44,000	n/a
8/10/2020	1,200	340	5.2	35,000	n/a
28/10/2020	1,200	310	4.4	n/a	n/a
9/11/2020	1,400	350	4.4	n/a	n/a
30/11/2020	1,400	330	4.1	n/a	n/a
18/05/2021	1,400	310	4.5	51,000	n/a
25/05/2021	1,300	340	4.3	51,000	n/a
21/09/2021	1,400	320	4.2	47,000	n/a
21/10/2021	1,400	330	4.3	53,000	n/a
Median	***1,400***	***330***	***4.3***	***50,000***	***54,000***
Design quality	**1,400**	**350**	**4.2**	**50,000**	**54,000**

3.3.3 Description of potential adverse impact from the emission

Wastewater discharges produced from sewage treatment, from food-based industries, or from agricultural waste products have the potential to be a useful resource for irrigating a wide range of crops on a sustainable basis. Wastewater discharges from these sources typically contain high concentrations of nutrients that can help sustain plant growth, and natural biogeochemical processes that take place in soils can help decompose or immobilise other contaminants present in these discharges. Potential environmental impacts from wastewater irrigation schemes are generally minimised when the following nationally recognised management principles are applied to a given scheme:

- Evapotranspiration by plants in the irrigated area should drive both the volume and timing of wastewater applications to land. Wherever possible, nutrients and the applied water should be utilised within the crop root-zone and there should be minimal seepage

of nutrients and other chemical constituents from the wastewater past the root-zone into groundwater;
- Applications of wastewater should not exceed the soil's capacity to provide suitable growing conditions for the irrigated plants, or cause long-term changes to soil structure that may adversely affect the capacity of the soil to continue to support plant growth and a healthy soil-fauna; and
- Whey should not be applied to soils which are unsuitable for organic waste and where there is a higher risk of issues such as nitrate leaching in area prone to flooding, have excess drainage, high water tables and shallow depths to rocks.

Therefore, the principal components of a sustainable wastewater irrigation scheme are:

- The annual loads of nitrogen and phosphorus applied in wastewater do not exceed the uptake of these nutrients by vegetation in the irrigated area. This generally means that wastewater is irrigated to a sufficiently large land area such that nutrients are taken up by the crop and removed from the area in harvested biomass;
- The irrigated area should be sufficiently large to enable the applied wastewater to be fully utilised by the crop. This generally means that irrigation does not take place in the southern part of the State during winter months when rainfall exceeds the rate of evapotranspiration and when there is a significant risk that nutrients will be leached into groundwater. Wastewater produced during winter is often stored for use during warmer months, and sufficient land area should be available to enable both the stored and ongoing production of wastewater to be discharged; and
- The chemical composition of the wastewater will not cause adverse effects on soil quality and structure in the irrigated area.

Information provided in the NSW DEC 2004 wastewater disposal guidelines suggests that the whey should be considered to be a high-strength effluent on the basis of its nutrient, BOD and salt content (Table 3.1 page 19 from the Guideline) and therefore its disposal needs to be carefully managed to prevent damage to the soil profile in the irrigation areas and to prevent groundwater contamination by nutrients and salts.

The US EPA 2006 guidelines for the land application of wastewater suggest that the ongoing application of wastewater with a comparable N, P and BOD levels to whey can cause clogging of soil pore spaces with biofilms and the development of anaerobic conditions in soils, limiting both plant growth and the infiltration of water. It is important that sufficient drying periods are allowed between each application of wastewater to allow organic matter to be removed by soil microorganisms and to allow aerobic conditions to be maintained. Anaerobic conditions in the soil are also likely to increase the mobilisation of P due to the reductive dissolution of iron oxide minerals in the soil which generally bind most of the P in the soil profile.

3.3.4 Criteria for assessment

Relevant land and groundwater quality criteria include:

- National Environment Protection (Assessment of Site Contamination) Measure 1999;
- ANZECC & ARMCANZ (2000) – freshwater and marine waters criteria; and
- NSW EPA 1998 *On-site Sewage Management for Single Households: Environment & Health Protection Guidelines*;
- NSW DEC 2004 *Environmental Guidelines: Use of Effluent by Irrigation*. Technical guidelines produced by the NSW Department of Environment and Conservation;
- US EPA 2006 Process Design Manual, Land Treatment of Municipal Wastewater Effluents. *US EPA Technical Report EPA 625/R-06/016*; and
- Department of Water and Environmental Regulation's Water Quality Protection Note 22

Irrigation with Nutrient Rich Wastewater (WQPN 22).

3.3.5 Applicant controls

The P&DC for the Premises is 10,000 kL per annual period; however, the Applicant expects to discharge only 8,000 kL of whey in the annual period based on current volumes. Table 4 outlines the annual whey spreading volumes from 2018 to 2022 produced from the processing facility under L4437/1988/12 which has been irrigated to land. The Premises has allocated a 578 ha parcel of land for irrigation. Of this 578 ha area, whey will be irrigated over a 200 ha area.

The Applicant has prepared a Whey Management Plan (WMP) for the spreading of whey at the premises, which discusses how spreading will be managed to minimise environmental and human health impact.

Soil sampling was undertaken at the Premises in January 2022. Eight (8) soil sample locations were selected from with the irrigation area and samples were collected from topsoil (0-0.1m) and sub-soil (0.4-0.5m). The soils were analyses for several parameters including Phosphorus Buffering Index (PBI). PBI is a measurement of soil tendency to chemically adsorb phosphorus and the higher the PBI indicating that the phosphorus binds strongly to the soil particles and thus less available for plant uptake. Soils with a high PBI present a lower risk of nutrient leaching, and generally require higher level of phosphorus application to achieve the same level of plant available phosphorus compared with lower PBI soils. Table 7 outlines PBI categories for PBI in Australia and Table 8 provides the PBI results from the eight soil samples collected in January 2022.

Table 7 PBI Classifications

PBI Category	Classification
<15	Extremely low
15-35	Very very low
36-70	Very low
71-140	Low
141-280	Moderate
281-840	High
>840	Very high

Table 8 Premises Soil Test Results

Sample location	Sample depth (mbgl)	PBI	PBI Classification
S1	0.1m	122	Low
	0.4m	140	Low
S2	0.1m	91	Low
	0.4m	112	Low
S3	0.1m	54	Very low
	0.4m	50	Very low

S4	0.1m	121	Low
	0.4m	126	Low
S5	0.1m	129	Low
	0.4m	72	Low
S6	0.1m	208	Moderate
	0.4m	120	Low
S7	0.1m	95	Low
	0.4m	59	Very low
S8	0.1m	127	Low
	0.4m	155	Moderate

The results from the PBI soil samples provided in Table 8 indicate that the soils on the Premises have a low capacity to retain phosphorus with the soil profile. These results indicate a satisfactory capacity for retaining nutrients deposited to soil through the irrigation of whey compared to many of the common soil types within Western Australia.

Nutrient loading to the soil within the Premises irrigation areas aims to apply nutrients at such a rate that they will be utilised by the existing vegetation to minimise leaching of nutrients below the root zone. Noting the proposed P&DC of 10ML/year and whey quality outlined in Table 6 the total nutrient loading requiring disposal through irrigation is summarised in Table 9 – along with the average nutrient load over the available 578ha irrigation area.

Table 9 Total Annual Nutrient loading requiring disposal at 10ML/year

Parameter	**Total Annual Application (kg/yr)**	**Average Application rate on 578ha (kg/ha/yr)**
Total Nitrogen (TN)	14,000	24
Total Phosphorus (TP)	3,500	6
Biochemical Oxygen Demand (BOD)	50,000	86

WQPN 22 provides an overview to determine the vulnerability categories of the properties and corresponding maximum recommended nutrient application rates. Under this guidance, vulnerability categories for the Premises are B and C. The applicable WQPN nutrient application criteria for receiving environment risk categories in provided in Table 10.

Table 10: WQPN 22 Nutrient application criteria

RISK CATEGORY	MAXIMUM INORGANIC NITROGEN (AS N)	MAXIMUM REACTIVE PHOSPHORUS (AS P)
	APPLICATION RATE (KG/HA/YR)	APPLICATION RATE (KG/HA/YR)
A	140	10
B	180	20
C	300	50
D	480	120

A preliminary estimate of the land area required to ensure that a particular crop takes up all of the nutrients applied in a disposal area is given by the following formula (NSW EPA, 1998; Appendix 6):

$$A = \frac{C \times Q}{L_x}$$

Where
- A = land area (m^2)
- C = concentration of N or P in wastewater (mg/L)
- Q = treated wastewater flow rate (L/d)
- L_x = critical loading rate (uptake rate) for N or P for a specific crop ($mg/m^2/d$)

From Table 6 above, the whey quality concentrations are 1400 mg/L for Nitrogen (N) and 330 mg/L for Phosphorus (P). The P&DC is 10,000 kL/year and is proposed to be disposed over 578ha. A plant critical loading uptake rate of 36 $mg/m^2/day$ for nitrogen has been assumed for N, and a value 4 $mg/m^2/day$ was assumed for P (NSW EPA, 1998; Appendix 6). Applying these values in the above equation gives the required land areas for the uptake of N and P from the applied whey for at the Premises as 106 ha and 226 ha respectively. That is, assuming the N and P concentrations for the whey, there should be enough land area for the pasture to uptake the nutrient N if plant biomass is removed from the irrigation areas while the area required for nutrient P is slightly smaller than required (i.e., 226h a is required but only 200 ha has been allocated for irrigation).

The Applicant proposes the following target application rates in Table 11 at the Premises – compared against guidelines.

Table 11: Target Whey Application rates

Guideline	**TN**	**Area required**	**TP**	**Area required**	**BOD**	**Area required**
WQPN Category B	180 kg/ha/yr	78ha	20 kg/ha/yr	175 ha	25 kg/ha/day	17 ha in November
WQPN Category C	300 kg/ha/yr	46ha	50 kg/ha/yr	70 ha	25 kg/ha/day	17 ha in November

Soil Dynamics[1]	108.8 kg/ha/yr	129 ha	22.4 kg/ha/yr	156ha	n/a	n/a
Target Loading	**70 kg/ha/yr**	**200 ha**	**17.5 kg /ha/yr**	**200 ha**	**2.5 kg/ha/day**	**200 ha**

Note 1: As part of the Licence Application for L9134/2018/2 an analysis was conducted by Soil Dynamic Consultants to recommend whey application rates using the whey quality data from the Processing facility under L4437/1998/12.

An application of 10 ML of whey over 200 ha area corresponds to a hydraulic loading of 50 kL/ha or 5mm per year and a maximum annual nutrient application of 70 kg/ha of Nitrogen and 17.5 kg/ha of Phosphorus.

3.3.6 Key Findings

The Delegated Officer has reviewed the information regarding irrigation of whey and has found:

1. *The Applicant has applied for a licence for the irrigation of whey for five (5) years to 2027. A lease has been provided to authorise whey irrigation for this time period.*
2. *The Premises P&DC is 10,000 kL per annual period to 2027 but throughput for irrigation of whey will likely be less at 8,000 KL per annual period.*
3. *Table 4 outlines the production of whey volumes over the past four years – noting volumes have decreased each year.*
4. *The Premises has a total area of 1519 ha and of this 578 ha is available to irrigate whey.*
5. *N, P and BOD levels in whey are extremely high compared to most irrigated wastewater streams and irrigation must be managed carefully to ensure even distribution of nutrients and BOD which can cause clogging of soil pore spaces with biofilms and the development of anaerobic conditions in soils, limiting both plant growth and the infiltration of water. Irrigation of this waste is expected to be acceptable provided sustainable loading rates are met over the entirety of the proposed irrigation area.*
6. *The Applicant proposed that whey is to be irrigated over a 200 ha area systematically to ensure an even spread of whey over the irrigation area. It is proposed whey will be irrigated once every three years over the same 200 ha area to allow proper drying and reduction of potential high BOD impacts.*
7. *Whey irrigation over the 200 ha area corresponds with a whey application rate of 50 kL/ha and a maximum nutrient application of 70 kg/ha/yr of N, 17.5kg/ha/yr of P and 2.5 kg/ha/yr BOD and the annual hydraulic loading to the area is 5mm total irrigation depth.*
8. *There should be enough land area for the pasture to uptake the nutrient N if plant biomass is removed from the irrigation areas while the area required for nutrient P is slightly smaller than required (i.e., 226ha is required but only 200ha has been allocated for irrigation). However, it is proposed whey will be irrigated once every three years over the same 200ha area.*
9. *The PBI of the soils range from 50 to 208 with an average of around 100 in both the top and subsoil samples. At these PBI values the soils have a satisfactory capacity to retain Phosphorus and other nutrients.*
10. *DPIRD advise the area identified for the application of whey totals 583 ha and at the planned application rate of 50 kL/ha there is enough land identified to*

ensure that whey is only applied once in three years.

11. *Consistent with L9134/2018/2 whey monitoring will be included in the Licence as a means to monitor impacts to the environment.*
12. *Consistent with L9134/2018/2 an Annual Environmental Report will be included in the Licence as a means to monitor impacts to the environment.*
13. *It may eventuate that whey is not discharged at the Premises regularly as it is a secondary option to L9134/2018/2.*
14. *Planning approval has been granted for a maximum of three years from the period of approval and then shall become void. Accordingly, DWER issue the Licence consistent with the above planning approval time of three (3) years. Furthermore, DWER notes Shire Planning advice 'Footnote' in that the Shire is prepared to consider a new application seeking permanent approval after the initial 3-year approval period has lapsed, contingent on the applicant demonstrating compliance with the Whey Management Plan. This will likely require a new licence application.*

3.3.7 Consequence

When irrigation of whey (high concentration of BOD, TN and TP) occurs, the Delegated Officer has determined that the impact of irrigation will be mid level on-site impacts, low level off-site impacts, minimal off-site wider scale impacts with Specific Consequence Criteria (for Environment) are at risk of not being met. Therefore, the Delegated Officer considers the consequence of irrigation to be **Moderate.**

3.3.8 Likelihood of Risk Event

The Delegated Officer has determined that the likelihood of irrigation could occur at some time. Therefore, the Delegated Officer considers the likelihood of Risk Event to be **Possible**.

3.3.9 Overall rating of irrigation of whey

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix and determined that the overall rating for the risk of irrigation is **Medium**.

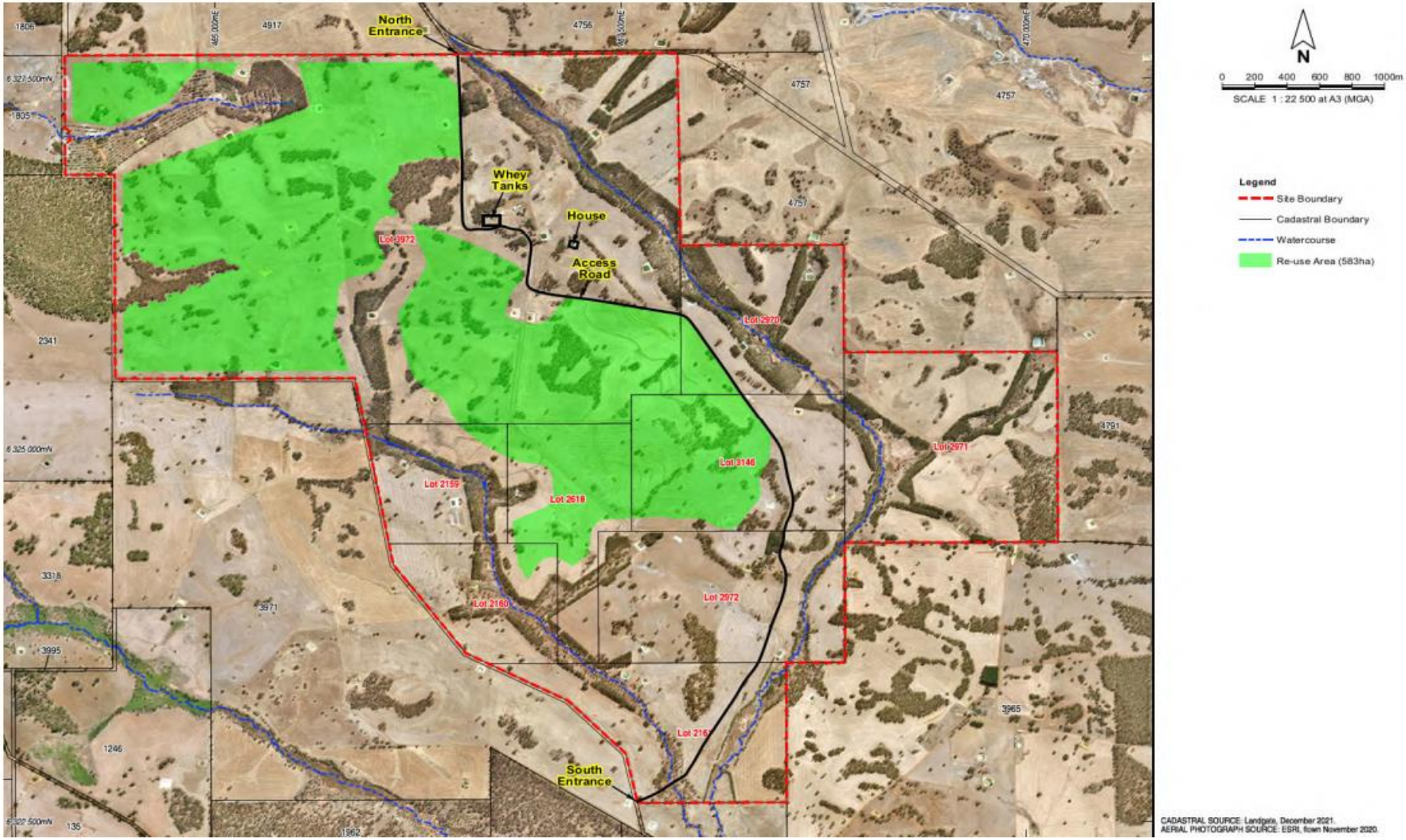

Figure 2 Whey irrigation area

4. Consultation

Table 12 provides a summary of the consultation undertaken by the department.

Table 12: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 29/09/2022	*None received*	*N/A*
Local Government Authority Shire of Williams advised of proposal on 3/10/2022	*The Shire of Williams replied on 10/10/2022*	*Refer to Appendix 2*
Department of Primary Industries and Regional Development (DPIRD) advised of proposal 3/10/2022	*DPIRD replied on 13/10/2022*	*Refer to Appendix 2*
Department of Health (DoH) advised of proposal on 3/10/2022	*DoH replied on 13/10/2022*	*Refer to Appendix 2*
Applicant was provided with draft documents on 24 October 2022	*Applicant provided comments on 7 November 2022.* *Refer to Appendix 1*	*Refer to Appendix 1*

5. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Department of Environment Regulation (DER) 2016, *Guidance Statement: Environmental Siting*, Perth, Western Australia.
2. DER 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
3. DER 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. DWER, June 2019. *Guideline: Industry Regulation Guide to Licensing.* Department of Water and Environmental Regulation, Perth.
5. DWER, June 2019. *Guideline: Decision Making.* Department of Water and Environmental Regulation, Perth.
6. DWER, June 2019. *Guideline: Odour emissions.* Department of Water and Environmental Regulation, Perth.

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment	Department's response
Condition 5(a)	It is considered that a load-based licence condition would be preferrable as it would allow for fluctuations in concentrations in nutrients in the whey to be accounted for, without exceeding the (a) conditioned nutrient loading. This would be consistent with Browne's licence at their Brunswick operations, other wastewater irrigation licences. A volumebased condition does not necessarily limit the application of nutrients which pose an environmental risk. Proposed: During each annual period, apply an irrigation loading of not more than - 70kg/ha/yr of nitrogen - 17.5 kg/ha/yr of phosphorus - 2.5kg/ha/day of BOD be applied to separate irrigation areas of no more than 200ha within the area shown in green shading in Schedule 1: Map of Irrigation area.	Change accepted.
Condition 7 Table 5	In the past, there was no whey spread in November so it would be good if there was some flexibility in this condition. Proposed: Once during September to November period.	Change accepted.
Condition 11	If samples are collected and sent at the end of the reporting period, it is at times difficult to have results returned and annual report prepared in 30 days from the end of the reporting period Proposed:	Change accepted. Amended Annual Audit Compliance Report under condition 10 from 30 days to 60 days to allow submission of both Reports at the same time.

Condition	Summary of applicant's comment	Department's response
	The licence holder must submit to the CEO by no later than 60 calendar days after the end of each annual period, an Annual Environmental Report	

Appendix 2: Summary of Stakeholder comments on Application

Stakeholder	Summary of Stakeholder comment	Department's response
Shire of Williams	The Shire of Williams is in receipt of your correspondence concerning the Referral of a Licence Under the *Environmental Protection Act 1986* - Your Ref: L9345/2022/1. An application from Brownes Food Operations Pty Ltd for development approval for whey spreading on the subject property was dealt with in accordance with the Shire of Williams Town Planning Scheme No.2. This involved public notification of the application and advice to neighbours. At the Council Meeting held on the 21 September 2022, the following resolution was passed: *That Council:* *1. Determine that the proposed 'liquid waste disposal' use may be consistent with the objectives and purpose of the Rural zone and thereafter follow the advertising procedures of Clause 2.6 of the Shire of Williams Town Planning Scheme No.2 in considering the application for planning consent.* *2. Note that the application for liquid waste disposal/whey spreading on Lots 3972, 2970, 2971, 2159, 2618, 3146, 2160 and 2972 was advertised for public comment until the 15 September 2022 and at the closing date no submissions were received.* *3. Approve the application for liquid waste disposal (whey spreading) on Lots 3972, 2970, 2971, 2159, 2618, 3146, 2160 and 2972 subject to the following conditions:* *(i) The Whey Management Plan (WMP) prepared by Integrity Ag & Environment (dated the 28 June 2022) shall form part of this approval. Development shall be implemented in accordance with the processes and procedures outlined in the Whey Management Plan including and not limited to:* *(a) Prior to spreading, whey shall be transferred from delivery tankers into on-site sealed storage tanks;* *(b) All whey shall be spread within 24 hours of being delivered to*	DWER notes Shire of William Planning advice, specifically *This approval is valid for a maximum of 3 years from the date of this planning consent. Following the 3-year period this approval shall expire and become void.* Accordingly, DWER issue the Licence consistent with the above planning approval time of three (3) years. The Planning Approval is dated 27 September 2022, so the three (3) year approval expires 27 September 2025 – this is the Licence expiry date. Furthermore, DWER notes Shire Planning advice 'Footnote' in that the *The Shire is prepared to consider a new application seeking permanent approval after the initial 3-year approval period has lapsed, contingent on the applicant demonstrating compliance with the Whey Management Plan.* DWER advises this new Planning Approval would be required to be submitted to DWER to allow an amendment to the Licence to extend the authority to operate beyond three (3) years.

Stakeholder	Summary of Stakeholder comment	Department's response
	site; *(c) The whey spreading area shall be in accordance with Figure 1 (contained in WMP); and* *(d) Ongoing environmental monitoring to be in accordance with Table 18 (contained in WMP).* *(ii) This approval is valid for a maximum of 3 years from the date of this planning consent. Following the 3-year period this approval shall expire and become void.* *(iii) If the development the subject of this approval is not substantially commenced within a period of 2 years, the approval shall lapse and be of no further effect.* *Footnote:* *The Shire is prepared to consider a new application seeking permanent approval after the initial 3-year approval period has lapsed, contingent on the applicant demonstrating compliance with the Whey Management Plan.*	
DPIRD	DPIRD does not object to the application for the irrigation of whey and would like to make the following comments: • The area identified for the application of whey totals 583ha and is under single ownership. At the planned application rate of 50kL/ha there is enough land identified to ensure that whey is only applied once in three years. • Most of the applications will be on pasture during Spring when the pasture is rapidly growing and have a relatively high nutrient requirement. • The Phosphorus Buffering Index (PBI) of the soils range from 50 to 208 with an average of around 100 in both the top and subsoil samples. At these PBI values the soils have a satisfactory capacity to retain Phosphorus and other nutrients. • The average annual application rate of 24kg/ha of Nitrogen (N) and 6kg/ha of Phosphorus (P) is in line with or slightly below the amount normally applied when using fertilizer. • The application of whey to the identified area does not pose an	DWER notes the DPIRD advice: Licence condition 5 regulates nutrient application rates for the annual period. The Licence does not have any soil monitoring requirements. It is noted that Planning Approval is only for three (3) years from the date of Approval (27/9/2022) and then it becomes void. Accordingly, the Licence will only be issued to 27 September 2025 – which is less than years. The Shire of Williams has acknowledged it is prepared to consider a new application seeking permanent approval. If approved the licence holder will (most likely) be required to apply for a new licence. At this time DWER would request soil samples be submitted to assess the impacts from the previous (three) years of whey discharges to land. This assessment will form the basis of the new licence.

Stakeholder	Summary of Stakeholder comment	Department's response
	unacceptable risk to the environment or future agricultural production of the property. • DPIRD recommends that soil samples be taken at least every third year to monitor for any potential increase in the amount of nutrients in the soil.	
DoH	There is no objection to the proposal, subject to the following conditions: 1. Proponent to adhere to the condition of the Whey Management Plan, Plank Road and Roccis Road, Meeking (prepared by Integrity Ag and Environment 2022). 2. The irrigation area must have no run-off, seepage or pooling. 3. The application of Whey should not occur during rainfall events or when heavy rains are forecast. 4. Whey should not be applied when strong winds will carry mist and/or odours beyond the buffer area or property boundary. 5. Additional setback requirement: a. Private drinking water bores >100m b. Agricultural, stock and domestic non-drinking water supply bores >50m 6. Slope of the irrigation area/land shall be 0 to 6%, if it is >6 to 12% soil conservation practices are necessary to minimise erosion. 7. Take measures to reduce fly breeding. 8. An incident management plan for application of Whey should be developed to ensure rapid clean-up of spills both during transport and at the end-use site.	DWER notes the DoH advice: Licence condition 5 regulates DoH comment 2. Licence condition 5 regulates DoH comment 3. Licence condition 5 regulates DoH comment 5. Licence condition 5 regulates DoH comment 6. Licence condition 4 regulates DoH comment 7. Buffer distances at the Premises regulate DoH comment 4. The *Environmental Protection (Unauthorised Discharges) Regulations 2004* regulate spills for DoH comment 8.

Appendix 3: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)					
Application type					
Works approval	☐				
Licence	☒	Relevant works approval number:		None	☐
		Has the works approval been complied with?	Yes ☐ No ☐		
		Has time limited operations under the works approval demonstrated acceptable operations?	Yes ☐ No ☐ N/A ☐		
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?	Yes ☐ No ☐		
		Date report received:			
Renewal	☐	Current licence number:			
Amendment to works approval	☐	Current works approval number:			
Amendment to licence	☐	Current licence number:			
		Relevant works approval number:		N/A	☐
Registration	☐	Current works approval number:		None	☐
Date application received		25 July 2022			
Applicant and premises details					
Applicant name/s (full legal name/s)		Brownes Food Operations Pty Ltd			
Premises name		Brownes Whey Meeking			
Premises location		238 Roccis Road (Lot 3972 on DP147866) Lot 2970 on DP94319 Lot 2159 on DP126867 Lot 2618 on DP141289 Lot 3146 on DP85002 Lot 2160 on DP126868 Lot 2972 on DP84329 Lot 2161 on DP126869			
Local Government Authority		Shire of Williams			
Application documents					
HPCM file reference number:		DER2022/000352			
Key application documents (additional to application form):		Application Whey Management Plan			
Scope of application/assessment					

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)	
Summary of proposed activities or changes to existing operations.	Operation of whey liquid waste Discharge of whey to agricultural land

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 61: Liquid waste facility: premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.	.10ML/year	*Is there a proposed change to the previously assessed production or design capacity?*

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes ☐ No ☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	Certificate of title ☐ General lease ☒ Expiry: 1 July 2027 Mining lease / tenement ☐ Expiry: Other evidence ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☒ No ☐ N/A ☐	Approval: Planning Approval Granted Expiry date: 27/09/2022 Expires on 27/09/2025
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☐ No ☒	CPS No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	Application reference No: N/A Licence/permit No: N/A No clearing is proposed.

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)		
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☐ No ☒	Application reference No: Licence/permit No: Licence / permit not required.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☐ No ☒	Name: N/A Type: Proclaimed Groundwater Area/Surface Water Area Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☐ Regional office: Swan Avon / Mid-West Gascoyne / Kwinana Peel / North West / South West / Goldfields / South Coast
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	Name: N/A Priority: P1 / P2 / P3 / N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☐ Note: If the proposed activity is not listed as a compatible land use with the PDWSA please consult with the relevant regional office (Regulatory Services - Water) and Water Source Protection (Science and Planning).
Is the Premises subject to any other Acts or subsidiary regulations (e.g. *Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx*)	Yes ☐ No ☒	If Yes include details here.
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	If Yes include details of which EPP(s) here.
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	If Yes, include details here, e.g. Site is subject to SO_2 requirements of Kwinana EPP.

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)		
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☐ No ☒	If Yes include details here. Classification: N/A / possibly contaminated – investigation required (PC–IR) / not contaminated – unrestricted use (NC–UU) / contaminated – restricted use (C–RU) / remediated for restricted use (RRU) / contaminated – remediation required (C–RR) / decontaminated (Decon) Date of classification: N/A