Application for a DWER License: Gearings Meat Works

September 2025

Contents

1. Introduction

This application is for a licence to operate an existing abattoir that is looking to expand beyond the DWER abattoir threshold capacity.

2. History and Background

Gearing Meat Works is a small, multispecies abattoir currently operating in Greenough, just outside of Geraldton. The abattoir has recently been sold, and the new owners (Gearings) have continued operations at the site. Prior to the recent sale, the abattoir operated as Hagan Brothers Abattoir.

A lack of regional processing capacity combined with strong demand for kill space from producers in the Mid-West region mean that the owners are currently looking to expand their throughput to accommodate the demand and grow their business.

The abattoir is currently run at a capacity that is under the DWER licencing threshold (Table 1). The proposed expansion will increase their throughput to a level that will exceed that threshold.

This license application will outline the existing abattoir infrastructure, and address the changes required to accommodate the increase in production.

DWER prescribed premise category description	**Production/Design Capacity**
Category 15: Abattoir	1000 tonnes or more per year
Category 83: Fellmongering	1000 skins or hides or more per year

Table 1 shows the production/design capacity of Cat 15 and 83.

3. Environmental Siting Information

3.1 Location and Elevation

The site is located at 35528 Brand Highway, Rudd's Gully. The abattoir infrastructure sits at the rear of the property.

The site slopes towards the highway. The elevation varies from 18mAHD to the northeast of the site, to 8mAHD to the southeast of the site[1].

3.2 Climate

Climate data for the subject site is provided in tables 2, and figures 1 and 2 below. As seen in Figure 1, based on the data, evaporation exceeds rainfall for all months of the year.

Wet Winter (south)		
Descriptor	**Value (mm)**	**Source**
Annual Rainfall	413	SILO
Annual Evaporation*	2419	SILO
Winter** Rainfall	342	SILO
Winter** Evaporation*	764	SILO
1:20 ARI Wet Winter** Rainfall	483	SILO
1:20 ARI Wet Year Rainfall	535	SILO
*Class A Pan Evaporation ** Winter is defined as May-October inclusive		

Table 2 shows the rainfall and evaporation statistics for a wet winter for the site (Source: SILO data)

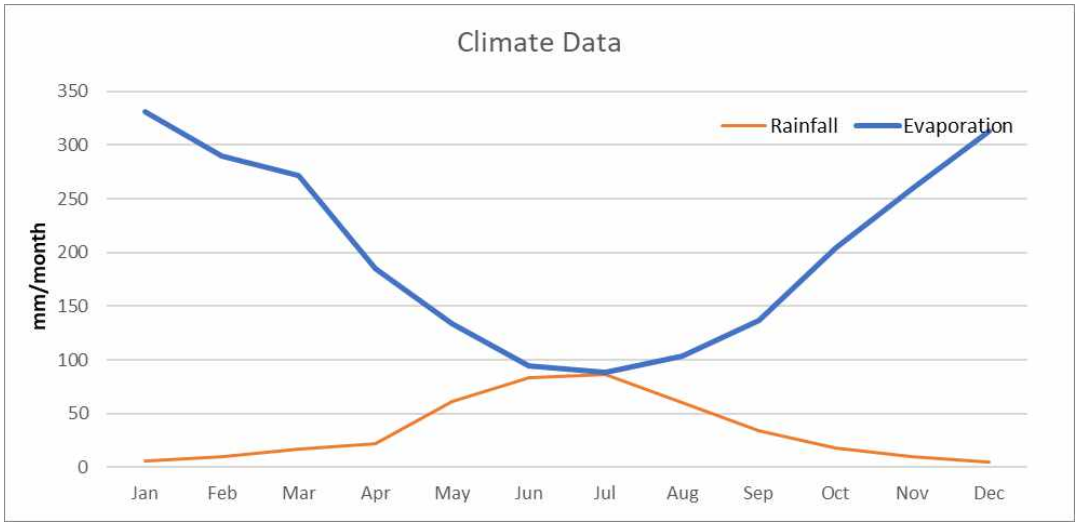
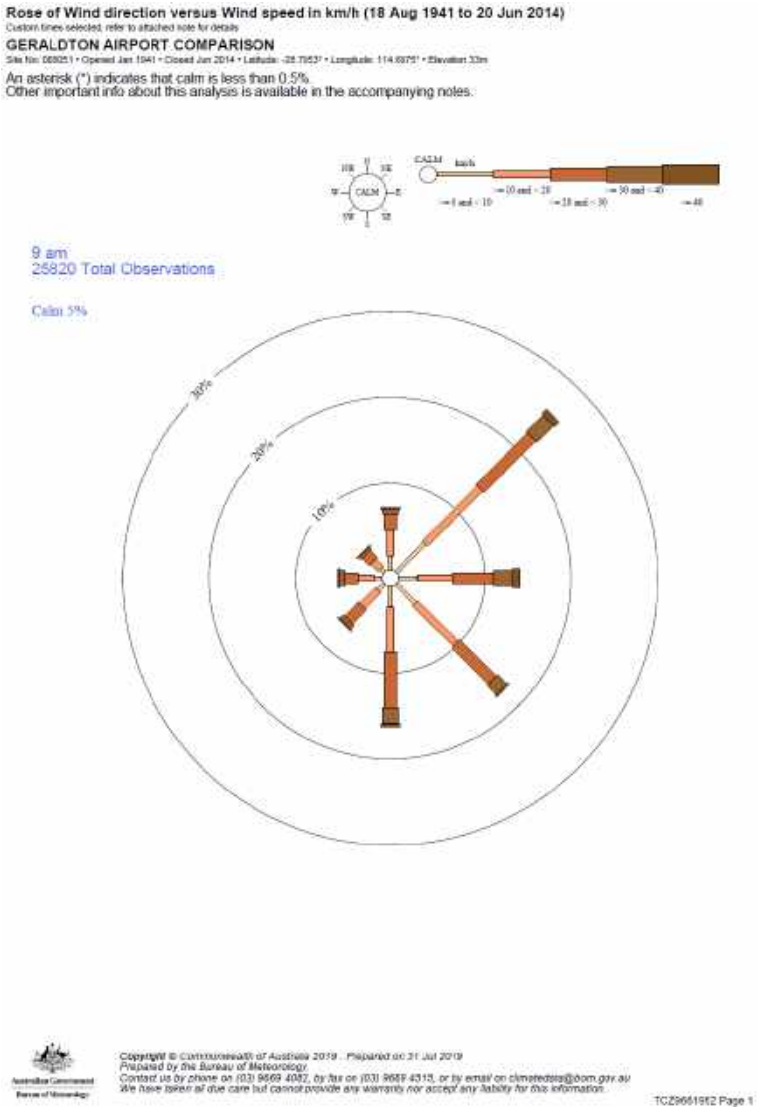


Figure 1 shows the monthly rainfall and evaporation statistics for the site (Source: SILO data)

[1] 2 Metre Contours (DPIRD-072), accessed via: https://catalogue.data.wa.gov.au/dataset/dpird-2-metre-contours



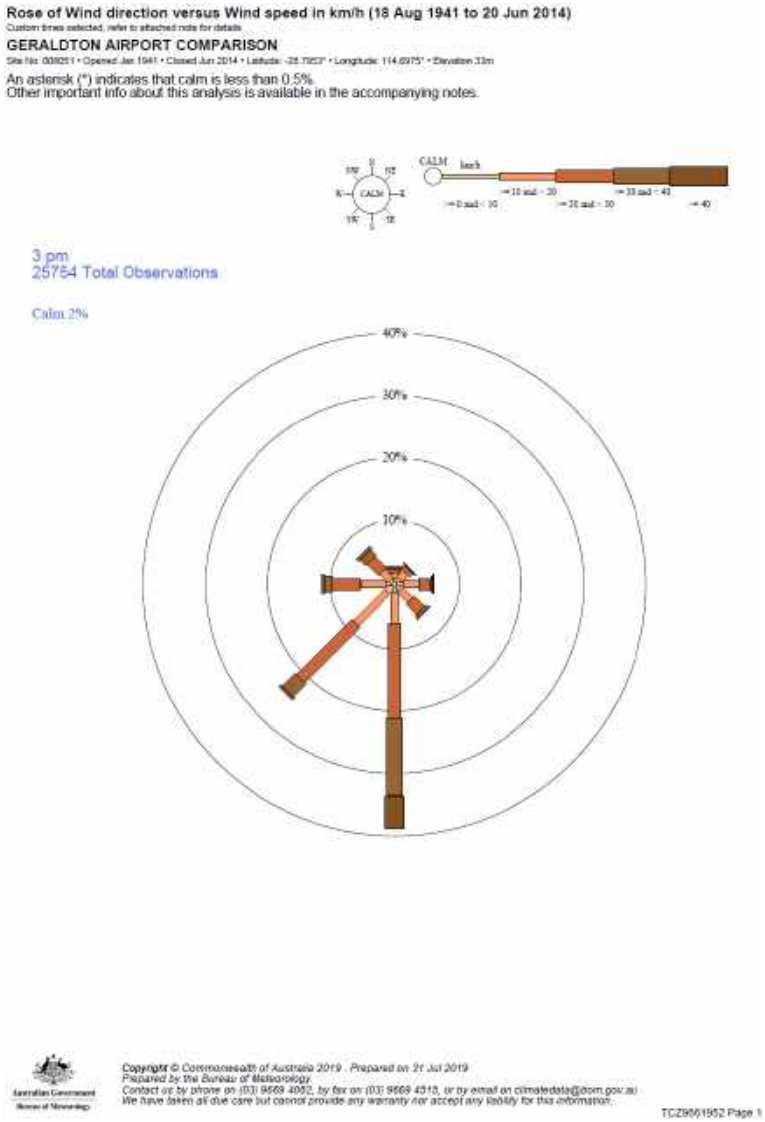


Figure 2 shows the wind rose for Geraldton Airport - 9am and 3pm. Accessed via http://www.bom.gov.au/climate/averages/wind/selection_map.shtml

3.3 Geology and Soils

According to DPIRD soil-landscape mapping resources[2,3,4], the site falls into the Geraldton Coastal Zone and is representative of the Tamala South Soil-Landscape system. Descriptions of the zone, system and relevant subsystem are presented in Table 3 below.

Zone[2]	Geraldton Coastal Zone (Soil-Landscape Zone: 221)	Dunes with alluvial plains and sand sheets. Low hills of Pleistocene Tamala Limestone, Recent calcareous and siliceous dunes.
System[3]	Tamala South System (Soil-Landscape Symbol: 221Ta)	Rises and low hills with relict dunes and some limestone outcrop on coastal limestone north of Jurien Bay. Yellow deep sands common, with yellow/brown shallow sands and calcareous shallow and deep sands. Banksia woodlands and heathlands
Sub-system[4]	Tamala South 5 Grey-Brown Sand Phase (Map Unit Symbol: 221Ta_Tb)	Mid to lower slopes of Tamala Limestone ridges and some isolated rises. Calcareous deep and shallow sands.

Table 3 shows the soil-landscape zone, system and subsystems of the abattoir site. This information is derived from DPIRD's Soil Landscape Mapping resources.

3.4 Surface Water

The site sits within the Greenough River catchment area[5]. The closest surface waterway to the site is the Greenough River, which sits approximately 0.85km to the west of the abattoir. The Greenough River and its tributaries are proclaimed under the Rights in Water Irrigation Act 1914.

The site does not sit within a Public Drinking Water Source Area (PDWSA). The closest PDWSA is located approximately 30km south-east of the site[6].

[2] As per DPIRD's Soil Landscape Mapping – Zones (DPIRD-017), available from DataWA: https://catalogue.data.wa.gov.au/dataset/soil-landscape-land-quality-zones
[3] As per DPIRD's Soil Landscape Mapping – Systems (DPIRD-064), available from DataWA: https://catalogue.data.wa.gov.au/dataset/soil-landscape-mapping-systems
[4] As per DPIRD's Soil Landscape Mapping – Best Available (DPIRD-027) dataset. Available from: https://catalogue.data.wa.gov.au/dataset/soil-landscape-mapping-best-available
[5] As per DWER's Hydrographic Catchments - Catchments (DWER-028) dataset. Available from: https://catalogue.data.wa.gov.au/dataset/hydrographic-catchments-catchments
[6] As per DWER's Public Drinking Water Source Areas (DWER-033), available from DataWA: https://catalogue.data.wa.gov.au/dataset/public-drinking-water-source-areas

3.5 Groundwater

The site sits within the Arrowsmith groundwater area. The Arrowsmith groundwater area is proclaimed under the Rights in Water Irrigation Act 1914[7].

According to the Water Resource Information Management System (WRIMS), there are two aquifers that underlie the site; the Perth – Superficial Swan aquifer (Level 1) and the Perth-Cattamarra Coal Measures North (Level 2): both are within the Dongara sub-area[8].

In September of 2025, Harrington Drillers dropped a bore to determine groundwater depth (Figure 3). On the 8/9/2025, groundwater depth exceeded 4m.

HARRINGTON DRILLING

BORE LOG SHEET

BORE LOCATION: 35528 Brand Hwy, Greenough WA 6532

DATE: 08/09/2025

DRILLER: Wayne Harrington

Log Table

Depth	Soil Description	Notes
0-1m	Dark brown fine sand	
1-3m	Soft crumbly limestone	
3-4m	Fine white limestone (dry)	Hole to 4m is dry

Figure 3 shows the bore being constructed by Harrington Drilling in September 2025.

[7] As per DWER's RIWI Act, Groundwater Areas (DWER-034), available from DataWA: https://catalogue.data.wa.gov.au/dataset/riwi-act-groundwater-areas

[8] As per DWER's WRIMS - Groundwater Resources (DWER-084), available from DataWA: https://catalogue.data.wa.gov.au/dataset/wrims-groundwater-resources

4. Planning Considerations

4.1 Zoning and Surrounding Land Uses

The abattoir sits within the City of Greater Geraldton's local government area. The site is zoned 'Rural' under the City's Local Planning Scheme No. 1, and it also sits within the Geraldton Airport Special Control Area 3 (see figure 4 below).

Figure 4 shows the local planning scheme zones and areas for the subject site and surrounds. Created using the PlanWA mapping platform, available from: https://espatial.dplh.wa.gov.au/PlanWA/Index.html?viewer=PlanWA

The surrounding land is zoned as 'Rural', with sections along the highway and local road zoned as 'Primary distributor road' and 'Local road' respectively.

4.2 Environmentally Sensitive Areas

There are no environmentally sensitive areas intersecting or in close proximity to the site[9], and no clearing of native vegetation is proposed.

[9] As per DWER's Clearing Regulations - Environmentally Sensitive Areas (DWER-046), available from DataWA: https://catalogue.data.wa.gov.au/dataset/clearing-regulations-environmentally-sensitive-areas-dwer-046

4.3 Contaminated Sites

According to DWER's Contaminated Sites database, there are no contaminated sites located on the subject site or adjacent to it[10].

4.4 Separation Distances

The Environmental Protection Authority's 'Separation Distances between Industrial and Sensitive Land Uses (GS 3)' 2005 document outlines separation distances for abattoirs. For an abattoir with no rendering, a separation distance of between 500 and 1000m is required depending on size.

Although this abattoir does not achieve the required separation distance (Figure 5), it is a small abattoir when compared to other abattoirs across WA and has operated at this location for approximately 45 years. Since the Gearings have taken ownership, there have been no complaints, and to their knowledge there have been no complaints prior to the change in ownership.

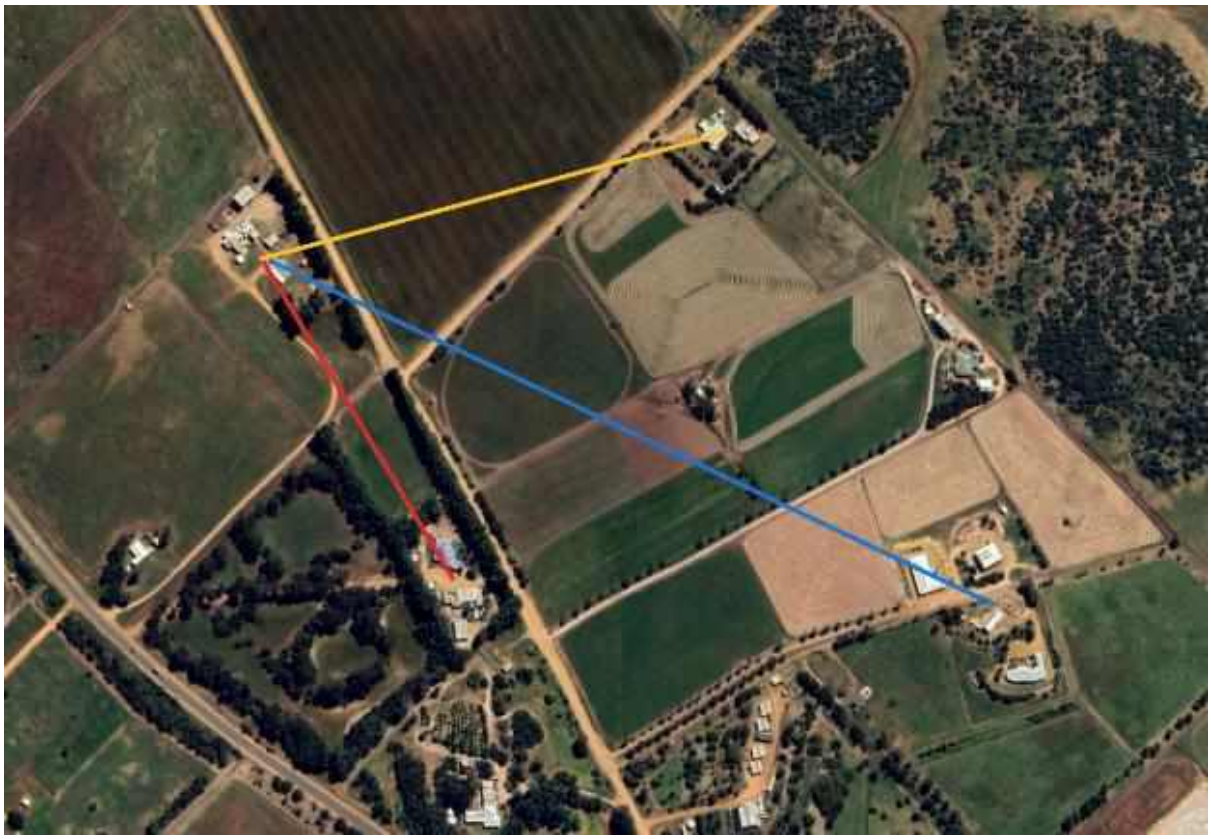


Figure 5 shows distance to the 3 closest neighbours (yellow 450m, blue 750m, red 350m).

[10] DWER's Contaminated Site database, accessed 04/07/25. Available from: https://www.wa.gov.au/service/environment/environment-information-services/find-known-contaminated-site

4.5 Cultural Heritage

A search conducted using DPLH's Aboriginal Cultural Heritage Inquiry System showed that there were no cultural heritage sites intersecting the subject site, using the ACH Registerd, Lodged, Historic and Heritage Survey Area layers. The closest cultural heritage site was for the Greenough River (ACH-00024761), located approximately 500m to the west of the property[11].

4.6 Bushfire Prone Areas

The Department of Fire and Emergency Services' (DFES) Bushfire Prone Areas[12] mapping platform was used, and the site was found to be not currently designated as bush fire prone (see figure 6 below).

Figure 6 shows that the subject site does not have any bushfire prone areas intersecting it. Bushfire Prone Areas mapping platform available at: https://maps.slip.wa.gov.au/landgate/bushfireprone/

4.7 Fresh Water Supply

A combination of scheme water and bore water are used for the abattoir's operations. All hot water is scheme water. Bore water is used for washdown of the abattoir; carcass washing; livestock drinking water; and lairage.

[11] Search conducted via DPLH's ACHIS database. Available via: https://espatial.dplh.wa.gov.au/ACHIS/index.html?viewer=ACHIS

[12] Search conducted using DFES's Bushfire Prone Areas mapping platform, available from: https://maps.slip.wa.gov.au/landgate/bushfireprone/

5. Current Infrastructure and Production

Refer to Appendix 1 for an annotated aerial view of the current abattoir site.

5.1 Current Throughput

Current throughputs, with approximate liveweights, dressing percentages and approximate Hot Standard Carcase Weights (HSCW) are as outlined in table 4.

Species	**Numbers (head)**	**Production: Approximate Liveweight (tonnes LW)**	**Approximate Dressing Percentages (%)**	**Production: Approximate Hot Standard Carcase Weight (tonnes, HSCW)**
Lambs (lw 40kg)	6709	268	40%	107
Sheep (lw 55kg)	2051	113	40%	45
Goats (lw 30kg)	753	23	30%	7
Pigs (70kg)	496	35	40%	14
Cattle (480kg)	100	48	46%	22
Total, tonnes HSCW		384		195

Table 4 shows the throughputs for past 12 months.

5.2 Processing Floor and Cool Rooms

The abattoir building includes the processing floor and three cool rooms; a hot carcass coolroom, a cold carcass coolroom and a beef coolroom. Maximum capacities of the coolrooms are provided in Table 5 below.

Cool Room	**Maximum Capacity**
Hot Carcass Coolroom	80 lambs/sheep
Cold Carcass Coolroom	115 lambs/sheep
Beef Coolroom	26 beef

Table 5 shows the maximum capacities for the abattoir's cool rooms.

The abattoir floor is constructed of concrete. Floor drains with grates and underground pipes are used to transfer wastewater from the abattoir to the wastewater ponds.

Wastewater is created from washdown of the processing floor and coolrooms, and from carcass washing.

5.3 Lairage

The lairage has a raised wood floor, with a layer of concrete underneath. Wastewater (washdown water) from the lairage is conveyed to the existing ponds via pipes.

5.4 Skins and Skins Shed

Skins are processed on a daily basis. Approximately 150 skins are processed per week and then transported offsite to a buyer in Perth.

The skins shed is constructed with a concrete floor. Wastewater from this shed is currently conveyed to the existing pond system via an open drain running along the front of the shed.

5.5 Current Waste Management

5.5.1 Current Liquid Waste Infrastructure

There are currently two ponds used to deal with wastewater from the abattoir. Wastewater is gravity fed from the abattoir, lairage and skins shed to the first pond via a series of underground pipes. From there, the wastewater flows through to the second pond, where it is held and evaporates.

The current dimensions of the two ponds are:

- *Two 10x10m ponds*
- *Anaerobic pond is 4 m deep.*
- *Facultative/Aerated pond is 2.5m deep.*

As part of the expansion, it is proposed that the two current ponds will be refurbished and a new evaporation pond will be constructed. Details outlined in section 6.

5.5.2 Current Solid Wastes

5.5.2.1 Paunch, Abattoir Solids and Manure

Pauch and other solid wastes from the abattoir (including heads) are transported offsite to the Meru Waste Disposal Facility (DWER licence number L917/2018/1). At the evisceration stage of processing, paunch and any solids are placed into six wheelie bins, before daily transportation to the Meru Waste Disposal Facility. Approximately 600kg of waste is delivered to the Meru facility per week.

The manure from the holding yards is currently shovelled up and bagged for offsite removal.

5.5.2.2 Skins

Skins are processed onsite in tumblers before being put onto pallets and transported offsite to a buyer in Perth.

5.6 Access and Impacts to Traffic

Currently a maximum of one truck accesses the site per week. This truck is only partially filled. Other vehicles include cars with trailers. Access to the site is via Brand Highway, which runs along the front of the property,

6. Proposed Expansion

Increases in throughput are outlined in Table 6 below. The numbers in Table X represent a proposed expansion over a period of time, and not an immediate increase.

The abattoir will be operated Mondays to Fridays, from 3am to 9.30am.

Species	**Numbers (head)**	**Production: Approximate Liveweight (tonnes LW)**	**Approximate Dressing Percentages (%)**	**Production: Approximate Hot Standard Carcase Weight (tonnes, HSCW)**
Lambs (lw 40kg)	13000	520	40%	208
Sheep (lw 55kg)	13000	715	40%	286
Goats (lw 30kg)	832	25	30%	7.5
Pigs (lw 70kg)	988	69	40%	27.6
Cattle (lw 480kg)	520	249	46%	114.5
Total, tonnes		1578		643.6

Table 6 shows the numbers, approximate liveweight, dressing percentage and hot standard carcass weight for the different species.

To facilitate this expansion, the following changes are proposed:

- Construction of a new evaporation pond to replace the existing pond infrastructure
- Refurbishing existing ponds

The lairage and holding yards won't be changed but will have more stock going through them.

There will be an increase in the quantity of solid waste according to the throughput increase.

6.1 Expanded Capacity: Liquid Wastes

It is proposed that the two existing ponds will be refurbished and a new pond constructed to accommodate the liquid wastes produced at the abattoir. Key inputs for the pond system will be:

- Washdown water from the abattoir
- Blood
- Lairage

While previously the skins shed was a source of washdown water, the cleaning of this area will be via dry sweeping post expansion. This is to reduce salt loading to the treatment ponds and volume of wastewater generated.

6.1.1 Liquid Waste Infrastructure

6.1.1.1 Existing ponds

The size of the two ponds already constructed will not change.

6.1.1.2 Pond Sizing – New Evaporation Pond

A wastewater generation ratio of 4 kL/tHSCW was used due to the absence of site-specific data. This wastewater ratio is common for smaller, domestic supply facilities (Malcolm, Tony, & Christobel, 2008).

The location of the new evaporation pond is shown in Appendix 1. The water balance for the new evaporation pond is shown is Appendix 2. The evaporation pond will have an area of 1452m^2 and a depth of 0.9m (volume of 1015m^3).

6.1.1.3 Construction and Liners

New evaporation pond

Red Dust Holdings will be constructing the new evaporation pond. Red Dust Holdings will also install the pond liner, a 1.5mm HDPE.

Refurbished ponds

Red Dust Holdings will be refurbishing the existing 2 ponds. Red Dust Holdings will install the pond liners, a 1.5mm HDPE.

6.2 Expanded Capacity: Solid Wastes

6.2.1 Paunch and Abattoir Solids

It is proposed that the paunch and other solid wastes will continue to be taken to the Meru Waste Facility (DWER licence number L917/2018/1).

The quantity of solid wastes has been estimated using the current 12 month throughputs and current 12 month waste estimations as stated above.

> Current 12 month throughput, liveweight: 384 tonnes-lw
>
> Current 12 month delivery to Meru: (600kg * 52)/1000 = 31.2tonnes
>
> Tonnes solid waste per tonne liveweight: 31.2/384 = 0.08tonnes
>
> Proposed 12 month throughput, liveweight: 1578tonnes-lw
>
> Proposed 12 month delivery to Meru: (1578 * 0.08) = 126.3tonnes

6.2.2 Skins

The quantity of skins has been estimated by comparing the current ratio of 12 month throughputs to 12 month skin production, then applying the ratio to the proposed 12 month throughputs.

150 skins/wk * 52 weeks = 7800 skins/yr

Current 12 month throughput, head: = 10109 hd/yr

7800 skins / 10109 hd = 0.77 skins/hd

Therefore, for each throughput (head), 0.77 skins are produced.

Proposed 12 month throughput, head: = 28340 hd/yr

28340 hd/yr * 0.77 skins/hd = 21822 skins/yr

21822 skins/yr / 52 weeks = 420 skins/week

After the expansion, approximately 420 skins will be processed per week. These will continue to be taken offsite.

6.3 Access and Impacts to Traffic

As the trucks currently entering and departing the property are partially filled, it is anticipated that after the expansion those trucks will be full and therefore the number of truck movements will not significantly change.

References

Malcolm, W., Tony, F., & Christobel, F. (2008). *Reveiw of abattoir water usage reduction, recycling and reuse*. Sydney: Meat & Livestock Australia.

APPENDIX 1 - annotated aerial view of the current abattoir site. The pink box denotes the location of the new evaporation pond.

APPENDIX 2 – Water balance for the new evaporation pond

Site Details				Notes
Catchment Area 1	A_{C1}	0	m^2	Evaporation pond sizing for Gearing abattoir in Geraldton. Annual abattoir throughput is 644 tHSCW/year, with a wastewater production ratio of 4 kL/tHSCW.
Catchment Area 2	A_{C2}	0	m^2	
Catchment Area 3	A_{C3}	0	m^2	Design Method B - average annual rainfall with 48-hour summer storm in January in the first year, followed by an average year.
Irrigation Area	A_I	0	m^2	
Wastewater Production	Q_O	7.08	m^3/day	Pond volume is calculated on a 2-year cycle starting in May, with the third year showing expected water balance for an average year.The first year uses average rainfall inputs and a 48hr 1:20 ARI summer storm event in January.
Pond Depth Safety Factor	K_{PA}	10%	[-]	
Pond Area Safety Factor	K_{PD}	10%	[-]	50 years of SILO data is additional safety net in the calculator given the reduction in rainfall over the past 20 years. A default 10% pond safety factor is applied to cater for any solids buildup in the pond.
Pond Freeboard	F	0.20	m	
Dam Evaporation Factor	K_E	1.00	[-]	Pond depth is does not include the thickness of the liner. Construction should ensure that the liner thickness does impact the design depth of the pond.

Climate Data

	Symbol	Formula	Units	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Days in Month	D		days	31	30	31	31	30	31	30	31	31	28	31	30	365
Design Precipitation Rate (year 1)	P		mm/month	63	83	85	61	33	18	10	5	105	11	17	22	512
Design Precipitation Rate (year 2)	P		mm/month	63	83	85	61	33	18	10	5	5	11	17	22	512
Mean Pan Evaporation	E_P		mm/month	134	95	89	104	137	205	261	314	331	291	273	186	2419
Average Winter Precipitation	P_W		mm/cycle	63	83	85	61	33	18							0
Wet Year Precipitation & Summer Storm	$P_{W,max}$		mm/cycle	63	83	85	61	33	18			100				0

Pond Balance

Year 1 of 3 (wet year)				May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
Precipitation	Q_P	$A_P \times (P/1000)$	m^3/month	83	109	112	80	44	24	13	6	139	14	23	29	
Waste Inflow	Q_M	$Q_O \times D$	m^3/month	219	212	219	219	212	219	212	219	219	198	219	212	
Pond Evaporation	Q_E	$K_E \times (E_P/1000) \times A_P$	m^3/month	177	125	117	137	181	271	344	414	437	384	360	245	
Total Pond Water	V_P	$Q_P + Q_M + Q_I - Q_E - Q_O$	m^3	125	321	535	698	773	746	627	438	360	188	70	66	
Pond Depth	D_{POND}	V_P/A_P	m	0.09	0.24	0.41	0.53	0.59	0.56	0.48	0.33	0.27	0.14	0.05	0.05	
Year 2 of 3																
Precipitation	Q_P		m^3/month	83	109	112	80	44	24	13	6	7	14	23	29	
Waste Inflow	Q_M		m^3/month	219	212	219	219	212	219	212	219	219	198	219	212	
Pond Evaporation	Q_E		m^3/month	177	125	117	137	181	271	344	414	437	384	360	245	
Total Pond Water	V_P		m^3	191	387	601	764	839	812	693	504	294	122	4	0	
Pond Depth	D_{POND}		m	0.14	0.29	0.46	0.58	0.64	0.61	0.52	0.38	0.22	0.09	0.00	0.00	
Year 3 of 3																
Precipitation	Q_P		m^3/month	83	109	112	80	44	24	13	6	7	14	23	29	1221
Waste Inflow	Q_M		m^3/month	219	212	219	219	212	219	212	219	219	198	219	212	5166
Pond Evaporation	Q_E		m^3/month	177	125	117	137	181	271	344	414	437	384	360	245	6387
Total Pond Water	V_P		m^3	125	321	535	698	773	746	627	438	228	56	0	0	0
Pond Depth	D_{POND}		m	0.09	0.24	0.41	0.53	0.59	0.56	0.48	0.33	0.17	0.04	0.00	0.00	

Outputs

Minimum dimensions - excluding safety factors and freeboard.				
Minimum Pond Area	A_P	$\sum Q_P + \sum Q_M - \sum Q_E = 0$	1320	m^2
Minimum Pond Depth	$D_{POND,max}$	Maximum value of D_{POND}	0.64	m
Minimum Pond Volume	$V_{P,max}$	Maximum value of V_P	839	m^3

Final Dimensions				
Required Pond Area	Area	$A_P \times (1+K_{PA})$	1452	m^2
Pond Depth Including Freeboard	Depth	$D_{POND,max} \times (1+K_{PD}) + F$	0.90	m
Required Pond Volume	Volume	Area x Depth	1015	m^3