



Works Approval Number	W6116/2018/1
Works Approval Holder	PM Wishart and CJ Wishart
Registered business address	8593 Bremer Bay – Boxwood Hill Road Boxwood Hill WA 6338
File Number	DER2017/2216
Duration	16 April 2018 to 15 April 2021
Date of issue	16 April 2018
Prescribed Premises	Category 68: Cattle feedlot
Premises	Parnaroo Cattle Feedlot Part Lot 1543 on Plan 207523 Borden-Bremer Bay Road Boxwood Hill WA 6338 Legal description - Kent Location 1543 on Volume CT2044, Folio 26 As defined by the coordinates in Table 4 of the Works Approval

This Works Approval is granted to the Works Approval Holder, subject to the following conditions, on 16 April 2018, by:

Date signed: 16 April 2018

Paul Byrnes

**Manager, Licensing (Process Industries)
Regulatory Services (Environment)**

an officer delegated under section 20
of the *Environmental Protection Act 1986* (WA)

Explanatory notes

These explanatory notes do not form part of this Works Approval.

Defined terms

Definition of terms used in this Works Approval can be found at the start of this Works Approval. Terms which are defined have the first letter of each word capitalised throughout this Works Approval.

Department of Water and Environmental Regulation

The Department of Water and Environmental Regulation (DWER) is established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the *Environmental Protection Act 1986* (WA) (EP Act). The Department also monitors and audits compliance with licences and works approvals, takes enforcement action and develops and implements licensing and industry regulation policy.

Works Approval

Section 52 of the EP Act provides that an occupier of any premises commits an offence if any work is undertaken on, or in relation to, the premises which causes the premises to become, or to become capable of being, Prescribed Premises, except in accordance with a works approval.

Section 56 of the EP Act provides that an occupier of Prescribed Premises commits an offence if Emissions are caused or increased or permitted to be caused or increased, or Waste, noise, odour or electromagnetic radiation is altered or permitted to be altered from Prescribed Premises, except in accordance with a works approval or licence.

Categories of Prescribed Premises are defined in Schedule 1 of the *Environment Protection Regulations 1987* (WA) (EP Regulations).

This Works Approval does not authorise any activity which may be a breach of the requirements of another statutory authority including, but not limited to, the following:

- conditions imposed by the Minister for Environment under Part IV of the EP Act;
- conditions imposed by DWER for the clearing of native vegetation under Part V, Division 2 of the EP Act;
- any requirements under the *Waste Avoidance and Resource Recovery Act 2007*;
- any requirements under the *Environmental Protection (Controlled Waste) Regulations 2004*; and
- any other requirements specified through State legislation.

It is the responsibility of the Works Approval Holder to ensure that any action or activity referred to in this Works Approval is permitted by, and is carried out in compliance with, statutory requirements.

The Works Approval Holder must comply with the Works Approval. Contravening a Works Approval Condition is an offence under s.55 of the EP Act.

Responsibilities of Works Approval Holder

Separate to the requirements of this Works Approval, general obligations of Works Approval Holders are set out in the EP Act and the regulations made under the EP Act. For example, the Works Approval Holder must comply with the following provisions of the EP Act:

- the duties of an occupier under s.61; and
- restrictions on making certain changes to Prescribed Premises unless the changes are in accordance with a Works Approval, Licence, closure notice or environmental protection notice (s.53).

Strict penalties apply for offences under the EP Act.

Reporting of incidents

The Works Approval Holder has a duty to report to the Department all Discharges of Waste that have caused or are likely to cause Pollution, Material Environmental Harm or Serious Environmental Harm, in accordance with s.72 of the EP Act.

Offences and defences

The EP Act and its regulations set out a number of offences including:

- Offence of emitting an Unreasonable Emission from any Premises under s.49.
- Offence of causing Pollution under s.49.
- Offence of dumping Waste under s.49A.
- Offence of discharging Waste in circumstances likely to cause Pollution under s.50.
- Offence of causing Serious Environmental Harm (s.50A) or Material Environmental Harm (s.50B).
- Offence of causing Emissions which do not comply with prescribed standards (s.51).
- Offences relating to Emissions or Discharges under regulations prescribed under the EP Act, including materials discharged under the *Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)*.
- Offences relating to noise under the *Environmental Protection (Noise) Regulations 1997 (WA)*.

Section 53 of the EP Act provides that a Works Approval Holder commits an offence if Emissions are caused, or altered, from a Prescribed Premises unless done in accordance with a Works Approval, Licence or the requirements of a closure notice or an environmental protection notice.

Defences to certain offences may be available to a Works Approval Holder and these are set out in the EP Act. Section 74A(b)(iii) provides that it is a defence to an offence for causing Pollution, in respect of an Emission, or for causing Serious Environmental Harm or Material Environmental Harm, or for discharging or abandoning Waste in water to which the public has access, if the Works Approval Holder can prove that an Emission or Discharge occurred in accordance with a Works Approval.

This Works Approval specifies the Emissions and Discharges, and the limits and Conditions which must be satisfied in respect of specified Emissions and Discharges, in order for the defence to offence provision to be available.

Authorised Emissions and Discharges

The specified and general Emissions and Discharges from the Works authorised through this Works Approval are authorised to be conducted in accordance with the Conditions of this Works Approval.

Amendment of Works Approval

The Works Approval Holder can apply to amend the Conditions of this Works Approval under s.59 of the EP Act. An application form for this purpose is available from DWER.

The CEO may also amend the Conditions of this Works Approval at any time on the initiative of the CEO without an application being made.

Duration of Works Approval

The Works Approval will remain in force for the duration set out on the first page of this Works Approval or until it is surrendered, suspended or revoked in accordance with s.59A of the EP Act.

Suspension or revocation

The CEO may suspend or revoke this Works Approval in accordance with s.59A of the EP Act.

Definitions and interpretation

Definitions

In this Works Approval, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
Activity Boundary	refers to the part of the Premises containing all feedlot infrastructure and includes everything within the Controlled Drainage Area as well as the Sediment Basin, the Evaporation Pond, storage sheds, yards and feed lanes
ARI	means average recurrence interval
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the <i>Environmental Protection Act 1986</i> Locked Bag 33 Cloisters Square PERTH WA 6850 info@dwer.wa.gov.au
Condition	means a condition to which this Works Approval is subject under s.62 of the EP Act.
DWER	Department of Water and Environmental Regulation
EP Act	means the <i>Environmental Protection Act 1986</i> (WA).
EP Regulations	means the <i>Environmental Protection Regulations 1987</i> (WA).
Hydraulic Conductivity	describes the ease with which a fluid (usually water) can move through the pore spaces or fractures. It depends upon the intrinsic permeability of the material and the density and viscosity of the fluid. Hydraulic conductivity is expressed in metres per second (m/s).
Premises	refers to the premises to which this Works Approval applies, as specified at the front of this Works Approval and as shown on the map in Schedule 1 to this Works Approval.
Works	refers to the Works described in Table 2: Infrastructure and equipment requirements table, at the locations shown in Schedule 1 of this Works Approval to be carried out at the Premises, subject to the Conditions.
Works Approval Holder	refers to the Occupier of the Premises being the person to whom this Works Approval has been granted, as specified at the front of this Works Approval.

Interpretation

In this Works Approval:

- (a) the words 'including', 'includes' and 'include' will be read as if followed by the words 'without limitation';
- (b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (c) where tables are used in a Condition, each row in a table constitutes a separate Condition;
- (d) any reference to an Australian or other standard, guideline or code of practice in this Works Approval means the version of the standard, guideline or code of practice in force at the time of granting of this Works Approval and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the Works Approval; and
- (e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act.

Conditions

Infrastructure and equipment

1. The Works Approval Holder must install and undertake the Works for the infrastructure and equipment:
 - (a) specified in Column 1; and
 - (b) to the requirements specified in Column 2.
 of Table 2 below and as shown in Schedule 1.
2. The Works Approval Holder must not depart from the requirements specified in Column 2 of Table 2 except:
 - (a) where such departure does not increase risks to public health, public amenity or the environment; and
 - (b) all other Conditions in this Works Approval are still satisfied.
3. Subject to Condition 2, within 30 days of the completion of the Works specified in Column 1 of Table 2, the Works Approval Holder must provide to the CEO a report confirming each item of infrastructure or component of infrastructure specified in Column 1 of Table 2 below has been constructed with no material defects and to the requirements specified in Column 2.
4. Where a departure from the requirements specified in Column 2 of Table 2 occurs and is of a type allowed by Condition 2, the Works Approval Holder must provide to the CEO a description of, and explanation for, the departure along with the certification required by Condition 2(b).

Table 2: Infrastructure and equipment requirements table

Column 1	Column 2
Infrastructure / Equipment	Requirements (design and construction) (refer Infrastructure Map in Schedule 1)
Feedlot pens	<ul style="list-style-type: none"> • Floor of the pens constructed to include a 4% slope away from the feed trough; • the compacted clay liner on the pen floor(s) to achieve an hydraulic conductivity of equal to or less than $1 \times 10^{-9} \text{m/s}$; • Clay liner to be overlaid with 300mm of compacted gravel; and • A 3m wide concrete apron to be constructed around feed and water troughs.
Effluent Drainage Channels	<ul style="list-style-type: none"> • The capacity of the Effluent Drainage Channels to be capable of handling a 1 in 20 year ARI rainfall event; • Effluent Drainage Channels to be 3m wide; • Effluent Drainage Channels to include a 0.75% fall towards the Sediment Basin; • Effluent Drainage Channels to be located on the lower side of each row of pens and outside of the laneway accessed by cattle; and • All Effluent Drainage Channels to be constructed with compacted clay liners which can achieve an hydraulic conductivity of $1 \times 10^{-9} \text{m/s}$ or less.
Sediment Basin	<ul style="list-style-type: none"> • The Sediment Basin to be constructed with wooden slats at lower end of the basin for the purpose of minimizing the amount of solids being transferred to the Evaporation Pond; • The capacity of the basin to be capable of handling 1 in 20 year ARI rainfall events; and • The basin to be lined with a compacted clay liner which can achieve an hydraulic conductivity of $1 \times 10^{-9} \text{m/s}$ or less.

Column 1	Column 2
Infrastructure / Equipment	Requirements (design and construction) (refer Infrastructure Map in Schedule 1)
Evaporation pond	<ul style="list-style-type: none"> Pond to be lined with a compacted clay liner which can achieve a hydraulic conductivity of 1×10^{-9}m/s or less; Constructed to include an engineered spillway; which is lined with 300mm compacted clay with a hydraulic conductivity of equal to or less than 1×10^{-9}m/s; and Capacity of the pond sufficient so as to spill no more frequently than 1 in every 20 years.
Stockpile Pad	<ul style="list-style-type: none"> The Stockpile Pad to be constructed with dimensions 1,200m²; The Stockpile Pad to be lined with a compacted clay liner which can achieve a hydraulic conductivity of 1×10^{-9}m/s or less; The Stockpile Pad to be located within the Controlled Drainage Area; and The Stockpile Pad constructed with a 4% slope to allow leachate from stored manure and carcasses as well as any contaminated incident stormwater to be directed to the Effluent Drainage Channels.
Controlled Drainage Area	<ul style="list-style-type: none"> Designed to prevent the ingress of uncontaminated stormwater; Designed to fully contain all the key infrastructure including the feedlot pens, Effluent Drainage Channels, Sediment Basin, the Evaporation Pond and access roads and feed lanes used to move cattle on the Premises; and Designed to ensure that all runoff and potential spills and leaks within the controlled Drainage Area are directed to the sedimentation system and then to the holding pond.

Emissions

5. The Works Approval Holder must not cause any Emissions from the Works authorised through this Works Approval except for specified Emissions and general Emissions described in Column 1 of Table 3, subject to the exclusions, limitations or requirements specified in Column 2, of Table 3.

Table 3: Authorised Emissions table

Column 1	Column 2
Emission type	Exclusions/Limitations/Requirements
General Emissions (excluding Specified Emissions)	
Emissions which arise from undertaking the Works set out in Table 2.	<p>Emissions excluded from General Emissions are:</p> <ul style="list-style-type: none"> Unreasonable Emissions; or Emissions that result in, or are likely to result in, Pollution, Material Environmental Harm or Serious Environmental Harm; or Discharges of Waste in circumstances likely to cause Pollution; or Emissions that result, or are likely to result in, the Discharge or abandonment of Waste in water to which the public has access; or Emissions or Discharges which do not comply with an Approved Policy; or Emissions or Discharges which do not comply with prescribed standard; or Emissions or Discharges which do not comply with the conditions in an Implementation Agreement or Decision; or Emissions or Discharges the subject of offences under regulations prescribed under the EP Act, including materials discharged under the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.

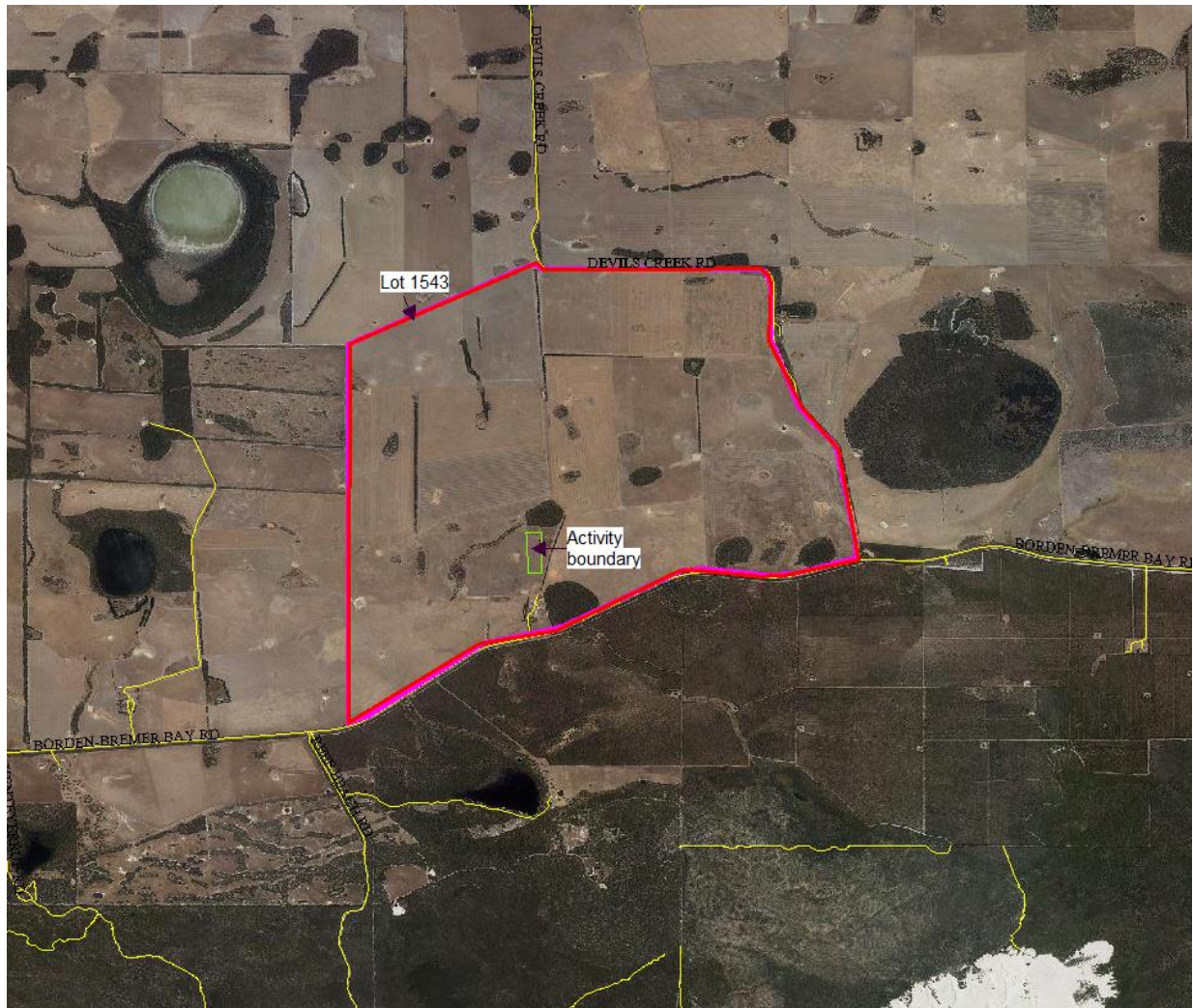
Record-keeping

6. The Works Approval Holder must maintain accurate Books including information, reports and data in relation to the Works and the Books must:
 - (a) be legible;
 - (b) if amended, be amended in such a ways that the original and subsequent amendments remain legible or are capable of retrieval;
 - (c) be retained for at least 3 years from the date the Books were made;
 - (d) be available to be produced to an Inspector or the CEO.
7. The Works Approval Holder must comply with a Department Request within 14 days from the date of the Department Request or such other period as agreed to by the Inspector or the CEO.

Schedule 1: Maps

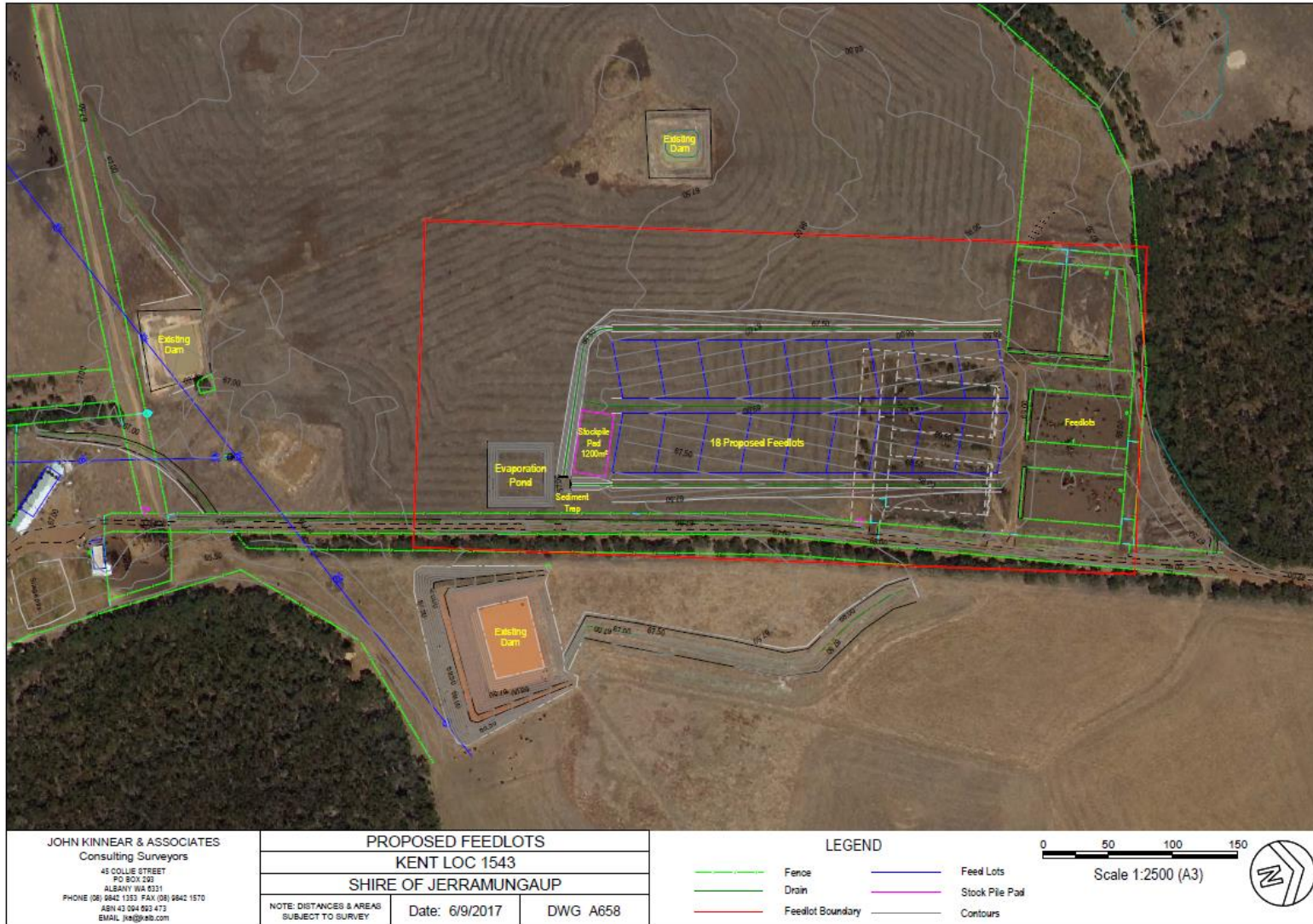
Locality map

The general locality of the Premises is shown below.



Infrastructure map

Proposed infrastructure layout and location for the cattle feedlot



Premises boundary

The boundary of the Premies is defined by the coordinates inTable 4.

Table 4: Activity boundary coordinates for the proposed cattle feedlot

Easting	Northing
119°03'51.58" E	34°22'57.89" S
119°04'00.78" E	34°22'59.18" S
119°03'55.63" E	34°23'16.05" S
119°03'48.39" E	34°23'15.31" S



Application for Works Approval

Division 3, Part V *Environmental Protection Act 1986*

Works Approval Number W6116/2018/1

Applicant PM Wishart and CJ Wishart

File Number DER2017/2216

Premises Parnaroo Cattle Feedlot
Part Lot 1543 on Plan 207523
Borden-Bremer Bay Road
Boxwood Hill WA 6338

Legal description -
Part Kent Location 1543 Volume CT2044, Folio 26
As defined by the coordinates in Schedule 1 of the
Works Approval

Date of Report 16 April 2018

Status of Report Final`

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1. Definitions of terms and acronyms

In this Decision Report, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ARI	means average recurrence interval
Cattle Feedlot Guidelines	refers to both the <i>National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition 2012)</i> and the <i>National Beef Cattle Feedlot Environmental Code of Practice (2nd Edition 2012)</i> , Meat & Livestock Australia
Delegated Officer	an officer delegated under section 20 of the EP Act
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
Hydraulic Conductivity	describes the ease with which a fluid (usually water) can move through the pore spaces or fractures. It depends upon the intrinsic permeability of the material and the density and viscosity of the fluid. Hydraulic conductivity is expressed in metres per second (m/s).
mBGL	means metres below ground level
mg/L	means milligram per litre
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
SCU	means Standard Cattle Units, equivalent to an animal with a live weight of 600kg

2. Purpose and scope of assessment

On 12 December, 2017, PM Wishart and CJ Wishart (the Applicant) lodged a works approval application for the construction of a cattle feedlot. It is to replace the existing feedlot on site at Part Lot 1543, Borden-Bremer Bay Road, Boxwood Hill. This report assesses the application and makes a recommendation to grant the application, subject to conditions.

The Decision Report presents an assessment of the activities associated with the construction and operation of the cattle feedlot, with a maximum design capacity of 1,800 animals, equivalent to 1,300 SCU.

2.1 Application details and background

The Applicant proposes to construct 18 new cattle feedlot pens and decommission the existing feedlot on site as outlined in Figure 1. The premises will become prescribed and requires a works approval to be granted before construction commences and either a licence or registration (most likely) at the operational stage. Table 2 lists the prescribed premises category relevant to the application. Documentation that forms the application (the Application) is listed in Appendix 1.

Table 2: Prescribed premises

Classification of premises	Description	Design capacity
Category 68	Cattle feedlot: premises on which the watering and feeding of cattle occurs, being premises – (a) situated 100 metres or more from a watercourse; and (b) on which the number of cattle per hectare exceeds 50.	1,300 SCU

3. Overview of Premises

3.1 Infrastructure

The feedlot will be located on a portion of Kent Location 1543 (2,200ha), as depicted in Figure 2. Infrastructure for the feedlot pens includes:

- **Feedlot Pens:** Eighteen cattle feedlot pens will be constructed with the pens in two rows. The total area for each pen will be 1,485m² which provides for a carrying capacity of 100 cattle per pen. The pens will be constructed with a compacted clay liner with a hydraulic conductivity of equal to or less than 1x10⁻⁹ m/s. The clay liner will be overlaid with 300mm of compacted gravel.
- **Effluent Drainage Channels:** Within the feedlot, all pens will have a 4% slope away from the feed troughs and towards the Effluent Drainage Channels. This allows gravity to channel all contaminated runoff, including spills and incident rainwater, to the effluent Evaporation Pond.

Channels will be 3m wide and located on the lower side of each pen with a fall of 0.75% towards the Sediment Basin. The channels will be lined with a compacted clay liner with a hydraulic conductivity of equal to or less than 1x10⁻⁹m/s. The channels will be located outside of all areas where there is cattle traffic so that the drains are not damaged. The Effluent Drainage Channels have been designed to cope with a 1 in 20 year ARI.

- **Sediment Basin:** A basin with a capacity of 535m³ will be located prior to the Evaporation Pond. Effluent will flow from the pens via the drainage channels to the Sediment Basin which will be lined with 300mm of compacted clay to achieve an hydraulic conductivity of equal to or less than 1x10⁻⁹m/s.

- **Evaporation Pond:** The effluent Evaporation Pond will be 33m x 45m x 3m depth. The pond will be lined with 300mm compacted clay to achieve a hydraulic conductivity of equal to or less than $1 \times 10^{-9} \text{m/s}$. A spillway will be constructed at the lowest point of the pond and engineered to allow for a 3.5 ha catchment area. The spillway will be constructed the same as the pond, with 300mm compacted clay to achieve a hydraulic conductivity of equal to or less than $1 \times 10^{-9} \text{m/s}$.
- **Controlled Drainage Area:** The pens and all associated infrastructure will be contained within a Controlled Drainage Area totaling 3.5ha to ensure a closed loop system. The Controlled Drainage Area will prevent ingress of uncontaminated stormwater runoff by using diversion drains upslope of the feedlot.

Stockpile Pad: A Stockpile Pad with an area of $1,200 \text{m}^2$ will be constructed for the storage and stockpiling of manure. The size of the Stockpile Pad has been designed to cater for 1,300 tonnes of manure, which is the expected production based on a design capacity of 1,800 head of cattle for 8 months of the year. Manure will be scraped from the pens and stockpiled on the pad, prior to being used as fertiliser and spread on the surrounding paddocks, generally in late autumn.

The pad will be lined with a compacted clay liner with hydraulic conductivity of equal to or less than $1 \times 10^{-9} \text{m/s}$. The pad is located within the Controlled Drainage Area and immediately outside the Effluent Drainage Channels and it will be constructed with a 4% slope to allow all leachate and incident stormwater to be directed to the channels.

- **Carcasses Burial:** Carcasses will be placed on a designated area of the Stockpile Pad and covered with 500mm manure to facilitate composting, reduce odour emissions and prevent disturbance by feral animals.
- **Feed Lanes x 2 –** for the transport of cattle:

One Feed Lane will be 12m wide and located between the pens and another 6m wide Feed Lane will be located at the bottom of the pens to direct the cattle into the undercover cattle yards.

All Feed Lanes will have a floor of 200mm of compacted gravel with a slope of 4% so that all effluent will be gravity feed towards the Effluent Catch Drains.

- **Storage Dam:** A storage dam will be located outside of the feedlot drainage area and used to collect fresh water to be used during operation of the feedlot.

Existing Infrastructure:

- Undercover cattle yards are located 400m south east of the proposed pens, and
- A storage shed is located approximately 300m south of the proposed pens.

3.1.1 Operations and pen design:

The Applicant plans to operate the cattle feedlot for approximately eight months each year. Cattle are to be grain fed for approximately 13 weeks then consigned to market.

The feedlot pens will have a stocking density of 100 cattle per pen, equivalent to $15 \text{m}^2/\text{head}$ of cattle or $20.54 \text{m}^2/\text{SCU}$. One B-train load of cattle every ten days will move to or from the feedlot during the months of January to August.

Each feedlot pen is to have a 33m feed trough. A water trough will be located at the rear of the pen and cleaned twice a week. Both the feed and water troughs will be located on concrete aprons as these are the areas most frequented by cattle. The pens will be lined with compacted clay to achieve a hydraulic conductivity of less than $1 \times 10^{-9} \text{m/s}$ and the clay liner will be overlaid with 300mm compacted gravel to prevent cattle damaging the clay liner. Each pen will be constructed with a 4% slope towards the Effluent Drainage Channels located at the rear of the pens.

3.1.2 Effluent system:

The main components of the effluent system include the Effluent Drainage Channels, the Sediment Basin and the Evaporation Pond.

- The Effluent Drainage Channels will collect effluent, consisting of urine and some manure as well as spilt water and feed and contaminated stormwater runoff from the feedlot pens.
- The channels will direct the effluent into the Sediment Basin through a concrete weir with adjustable wooden slats which allow the majority of solids to settle out of the effluent stream. These solids are removed from the basin approximately twice a year and stored on the Stockpile Pad.
- The effluent will then be channeled into the Evaporation Pond which is designed to spill no more frequently than 1 in 20 years. This is consistent with the Cattle Feedlot Guidelines. The reduction in solids to the Evaporation Pond reduces the organic loading which helps reduce the potential for odour emissions and the desludging frequency of the Evaporation Pond.

3.1.3 Solid wastes:

Solid wastes will mainly be generated by scraping manure from the feedlot pens, clearing the Effluent Drainage Channels and from desludging events of the Sediment Basin and the Evaporation Pond. All solids will be placed on the Stockpile Pad and allowed to mature in windrows prior application to land.

Manure will be cleaned from the pens in between batches of cattle (approximately once every 13 weeks). A box scraper and under-fence cleaner attached to a front end loader will be used to clean the pens.

Deceased animals will be composted on a portion of the Stockpile Pad. They will be placed on a bed of straw and covered with a minimum of 500mm of manure to encourage breakdown of the carcasses.

3.1.4 Nutrient application rate of solid waste to land

Solid wastes, consisting of a mixture of manure stockpiles and matured carcasses, will be applied to re-use areas as a partial fertilizer replacement. The feedlot pens and associated infrastructure will occupy approximately 3ha of land leaving 2,100ha of land available as re-use areas. The Applicant also has access to approximately 2,500ha of adjacent and nearby properties where solid wastes can be applied.

The Cattle Feedlot Guidelines recommend that the nutrient application rate of feedlot wastes should not exceed the rate at which the constituents of the effluent and manure (in particular nitrogen, phosphorus and some salts) are sustainably used by plants and removed from the area. DWER considers the application rate of manure equivalent to **20 kg P/ha/year** is more than adequate for broadacre or grazing related agricultural activities. As manure typically has about 1.0% P and 25% moisture, an annual application rate of **2.6 tonnes/ha of manure** would be sustainable.

Table 3: Typical nutrient composition of types of manure

Parameter	Pen	Aged	Compost
Dry matter (%)	74	63	74
Total nitrogen (% db)	2.5	2.2	2.1
Total phosphorus (% db)	1.0	0.8	1.3
Potassium (% db)	1.9	1.9	2.5
Sodium (% db)	0.3	0.3	0.4
Sulfur (% db)	0.4	0.5	0.5
Zinc (mg/kg db)	280	220	254

Source: ch 5, Beef Cattle Feedlots: Waste management and utilization, MLA, 2015

Note 1: Phosphorus is the rate-limiting nutrient. Maximum manure application assumes no additional phosphorus fertilisers.

The Applicant has estimated that, at full production, 1,300 tonnes of manure will be produced over a period of eight months. Based on the recommended application rate of 2.6 tonnes of manure per hectare per year, a minimum of 500 hectares of re-use area will be required.

The Applicant will rotate the application of solid waste between paddocks and proposes to manage waste on site with a *Waste Management Plan*, to be reviewed annually by a National Feedlot Accreditation Scheme auditor.

Key Finding:

The Delegated Officer has assessed the nutrient application rate of solid waste to land and considers that the area of land available is significantly larger than the minimum area required.

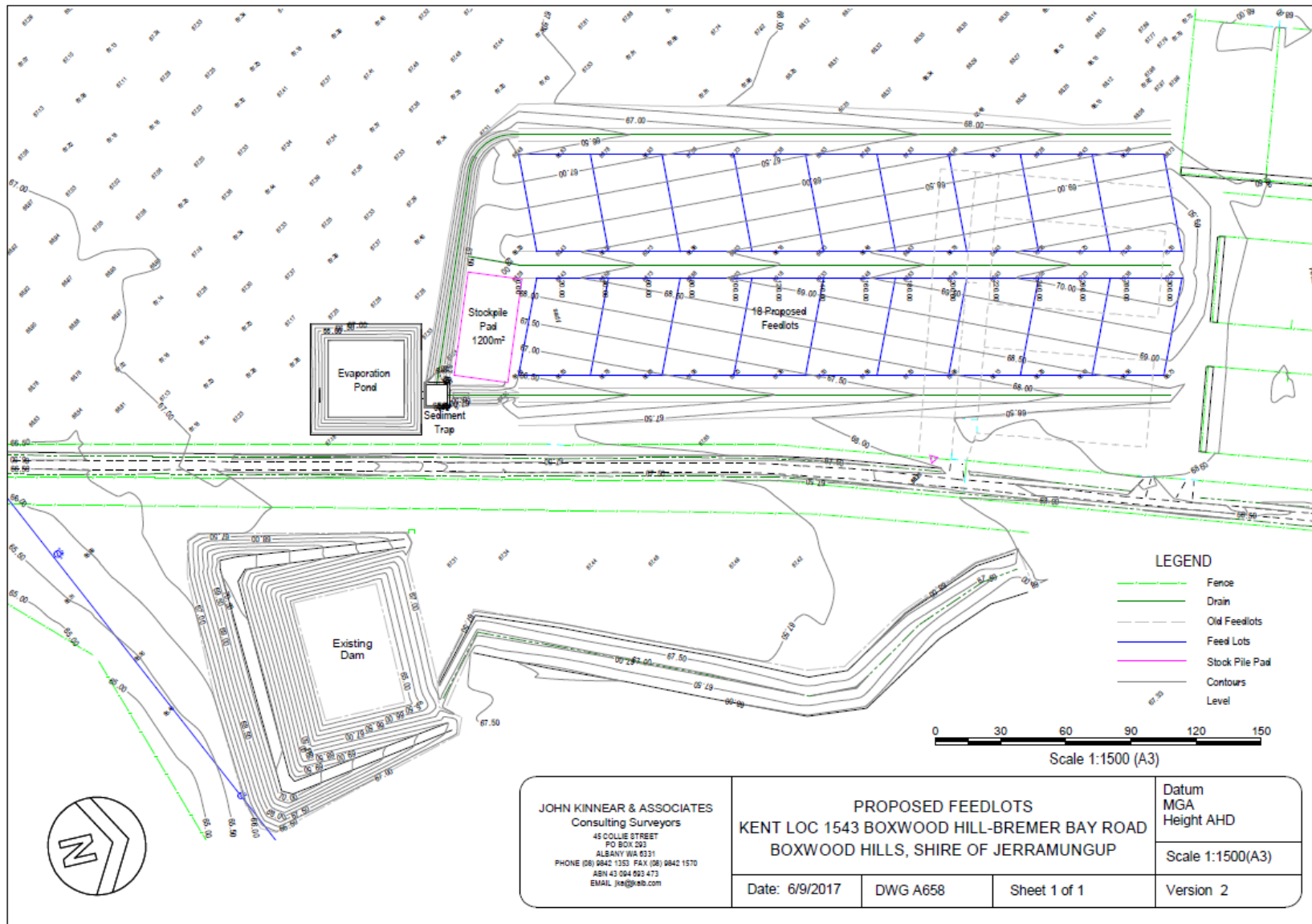


Figure 1: Proposed feedlot infrastructure (Applicant supplied)

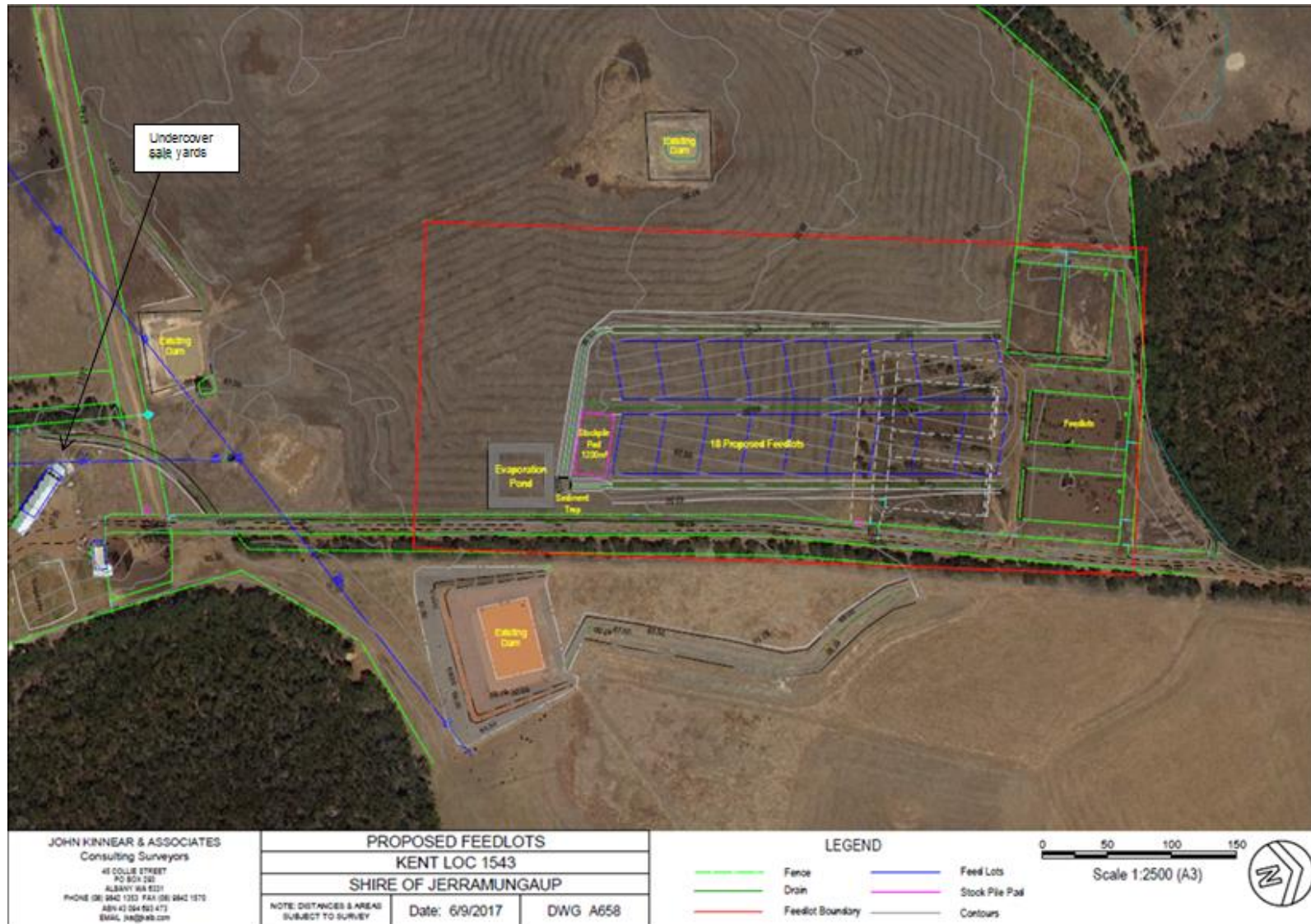


Figure 2: Proposed feedlots showing existing dams and undercover sale yards (Applicant supplied)

4. Legislative context

4.1 Other relevant approvals

4.1.1 Planning approvals

Feedlots are included under the definition for “Animal Husbandry – Intensive” in the Shire’s Local Planning Scheme No. 2. The Applicant applied to the Shire of Jerramungup to modify the feedlot and increase the carrying capacity to 1,800 animals. DWER requested the Shire to comment on the proposal on 13 February 2018 and received a response on 13 March 2018 noting that the Shire was likely to approve the proposal, given that it is an improvement to an existing approved feedlot.

4.2 Part V of the EP Act

4.2.1 Applicable regulations, standards and guidelines

The overarching legislative framework of this assessment is the EP Act and EP Regulations. The guidance statements which inform this assessment are listed in Appendix 1.

5. Location and siting

The feedlot will be located approximately 28km west of Bremer Bay in the Shire of Jerramungup. It will be located on land with a low gradient of 1% from north to south, as shown in Figure 3. Soil in the area is duplex gravel over shallow clay with medium to heavy clay at depth.

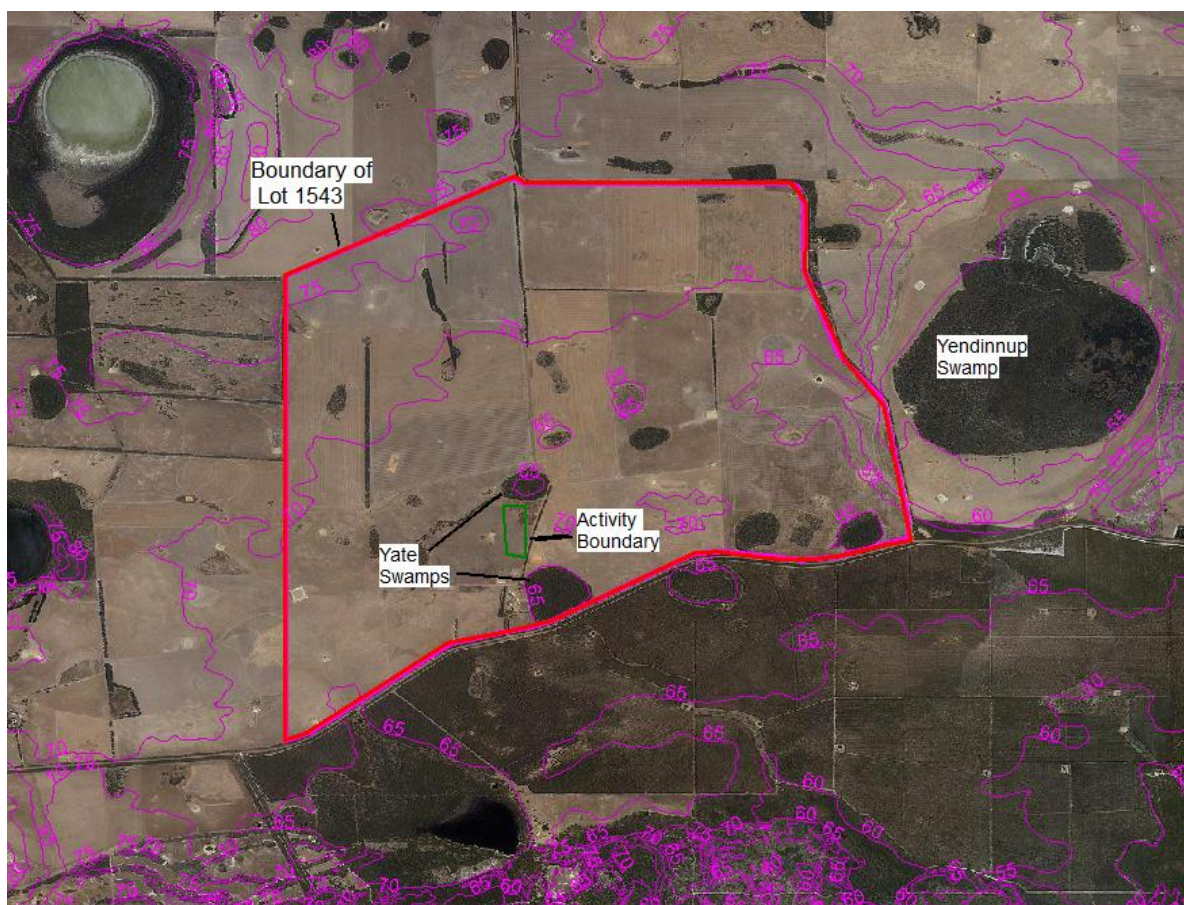


Figure 3: Elevation contours around the proposed feedlot (DWER generated)

5.1.1 Groundwater and surface water systems

Groundwater in the area is approximately 18mBGL. The salinity of the groundwater, based on data from nearby bores, generally exceeds 7,000mg/L. There are no bores located within 2km of the proposed feedlot. The proposed feedlot is approximately 24km distant from the proclaimed *Bremer Bay Groundwater Area* or the *Bremer Bay Water Reserve Public Drinking Water Source Area* (PDWSA).

The Yendinnup Swamp is located approximately 3km east of the proposed feedlot, as depicted in Figure 3. This wetland is listed as having regional significance. Advice received from the Regulation Services (Water) Branch of DWER notes that the proposed feedlot will be located on a separate catchment area so any discharges during operations are not expected to impact on the swamp.

There are two Yate Swamps, listed as minor wetlands with no regional significance. These wetlands are located in the vicinity of the proposed feedlot with one Yate Swamp located 150m north and the other Yate Swamp located 150m south of the proposed feedlot (refer to Figure 3). The Yate Swamps are listed as perched wetlands, where surface water runoff feeds the swamps and pool in the area due to the duplex soils. Given the depth to groundwater is approximately 18mBGL, it is expected the Yate Swamps are not linked to the underlying groundwater.

Key finding: Contaminated stormwater runoff

- 1. The Delegated Officer considers that the Yendinnup Swamp will not be impacted by contaminated stormwater runoff from the proposed feedlot as it is located in a separate catchment area.*
- 2. The Delegated Officer considers that the Yate Swamps are in close proximity to the proposed feedlot and surface water management is critical to ensure that the proposed drainage system is sufficient to prevent contaminated stormwater runoff impacting on the swamps.*

5.1.2 Odour emissions and separation distances

Feedlots can be a source of fugitive odour emissions which have the potential to impact on nearby residential amenity. The National Feedlot Guidelines provide an S-factor calculation, which can be used to determine a reasonable separation distance between a cattle feedlot and an odour sensitive site. The Applicant has provided calculations in accordance with the S1 calculation method which recommended a separation distance of 562m. The Delegated Officer has accepted the Applicant's odour assessment and determination of the recommended separation distance.

The closest rural dwelling to the proposed feedlot is approximately 4km west.

Key finding:

The Delegated Officer considers that the Application is for a small cattle feedlot in a remote rural area. Based on the recommended separation distance, there is sufficient separation distance between its proposed location and the nearest residential dwellings.

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W6116 proposed Parnaroo cattle feedlot

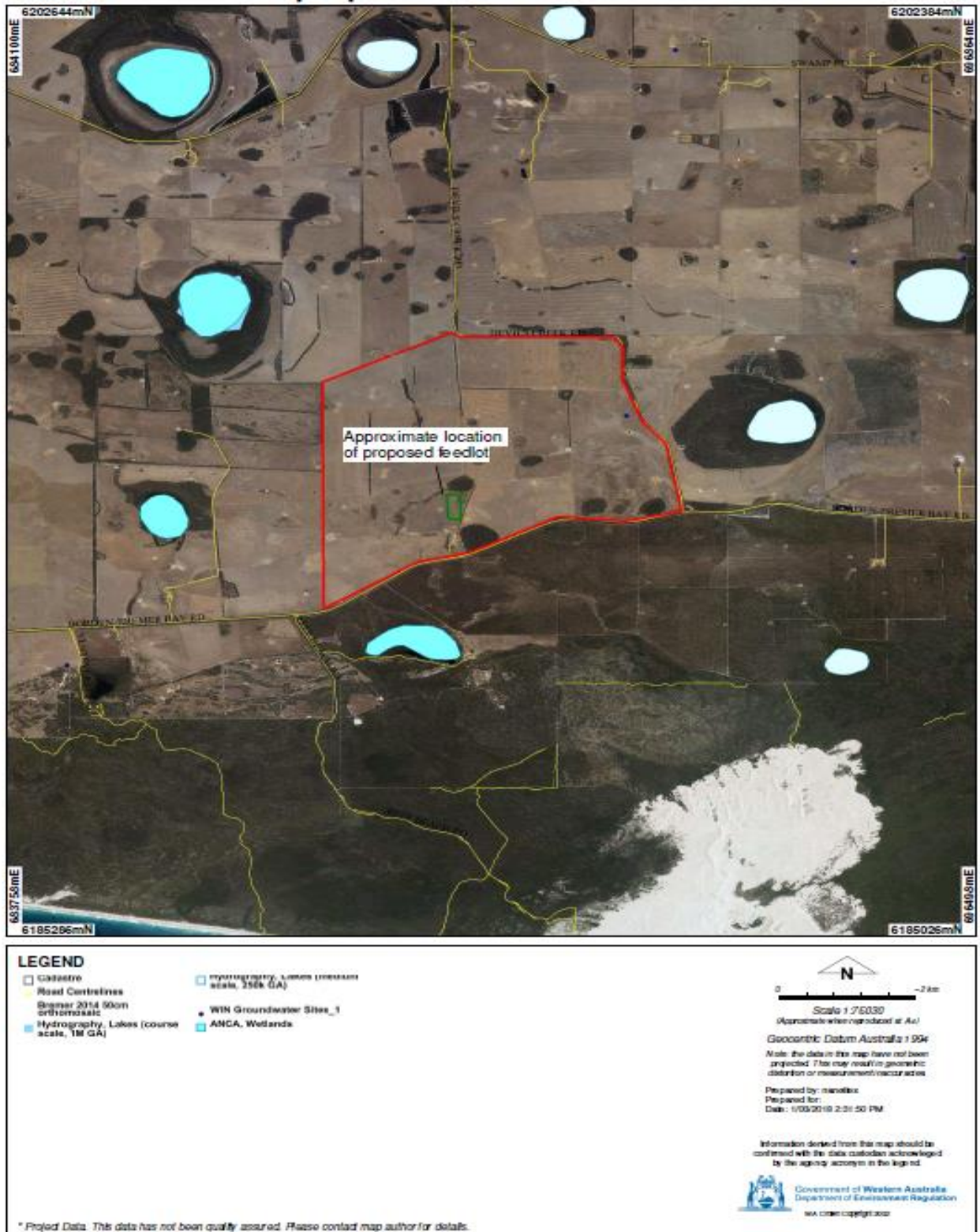


Figure 4: Location of the proposed feedlot and surrounding sensitive areas (DWER generated)

6. Risk assessment

6.1 Determination of emission, pathway and receptor

Typical emissions from a cattle feedlot include:

- Odour emissions;
- Solid and liquid wastes (mainly manure and carcasses);
- Potentially contaminated stormwater runoff;
- Noise; and
- Fugitive dust from the movement of vehicles and/or animals.

Table 4: Identification of emissions, pathway and receptors during construction and operation

Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Construction of feedlot						
Construction activities	Vehicle movements on unsealed access roads and construction of infrastructure	Noise and dust	Residential receptors - closest is 4 km east.	Air / wind dispersion	Amenity impact	No The Delegated Officer considers that the separation distance from the proposed location of the feedlot to the closest single rural dwelling is sufficiently large for there to be no adverse impact. The <i>Environmental Protection (Noise) Regulations 1997</i> apply.
Operation of feedlot						
Feedlot	Pens where cattle are housed	Odour emissions	Residential receptors - closest is 4 km east.	Air / wind dispersion	Amenity impact	No
		Noise and fugitive dust				No
	Contaminated stormwater runoff	Nearby Yate Swamps	Overland flow	Contribute to eutrophication and algal blooms which can impact on ecosystem function of the swamps	Yes	Spills, breach of containment and contaminated storm water runoff during an extreme rainfall event could impact on nearby Yate Swamps. See Section 7.2
Collection, conveyance treatment and	Effluent Drainage	Overflow from containment infrastructure	Nearby Yate Swamps	Infiltration through soil		

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
storage of waste materials	Channels Sediment Basin and Evaporation Pond	Seepage through clay liners	Groundwater	Seepage / infiltration through soil	Groundwater contamination	Yes	Infiltration to the underlying groundwater could occur. See Section 7.3
	Controlled Drainage Area Stockpile Pad (manure and carcasses)	Odour emissions	Residential receptors - closest is 4 km east.	Air / wind dispersion	Amenity impact	No	The Delegated officer considers that the separation distance from the proposed location of the feedlot to the closest single rural dwelling is sufficiently large for there to be no adverse impact.
Solid waste application to land	Mechanical spreading of manure and composted carcasses to land	Contaminated stormwater runoff from reuse area	Nearby Yate Swamps	Overland flow Seepage through soil	Contribute to eutrophication and algal blooms which can impact on ecosystem function of the swamps	Yes	The application of manure and composted carcasses could impact on the nearby Yate Swamps. See Section 7.4

7. Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in **Table 5** below.

Table 5: Risk rating matrix

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost Certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with **Table 6** below.

Table 6: Risk criteria table

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the risk / opportunity occurring.		The following criteria has been used to determine the consequences of a risk occurring:		
			Environment	Public Health* and Amenity (such as air and water quality, noise, and odour)
Almost Certain	The risk event is expected to occur in most circumstances	Severe	<ul style="list-style-type: none"> on-site impacts: catastrophic off-site impacts local scale: high level or above off-site impacts wider scale: mid level or above Mid to long term or permanent impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are significantly exceeded 	<ul style="list-style-type: none"> Loss of life Adverse health effects: high level or ongoing medical treatment Specific Consequence Criteria (for public health) are significantly exceeded Local scale impacts: permanent loss of amenity
Likely	The risk event will probably occur in most circumstances	Major	<ul style="list-style-type: none"> on-site impacts: high level off-site impacts local scale: mid level off-site impacts wider scale: low level Short term impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are exceeded 	<ul style="list-style-type: none"> Adverse health effects: mid level or frequent medical treatment Specific Consequence Criteria (for public health) are exceeded Local scale impacts: high level impact to amenity
Possible	The risk event could occur at some time	Moderate	<ul style="list-style-type: none"> on-site impacts: mid level off-site impacts local scale: low level off-site impacts wider scale: minimal Specific Consequence Criteria (for environment) are at risk of not being met 	<ul style="list-style-type: none"> Adverse health effects: low level or occasional medical treatment Specific Consequence Criteria (for public health) are at risk of not being met Local scale impacts: mid level impact to amenity
Unlikely	The risk event will probably not occur in most circumstances	Minor	<ul style="list-style-type: none"> on-site impacts: low level off-site impacts local scale: minimal off-site impacts wider scale: not detectable Specific Consequence Criteria (for environment) likely to be met 	<ul style="list-style-type: none"> Specific Consequence Criteria (for public health) are likely to be met Local scale impacts: low level impact to amenity
Rare	The risk event may only occur in exceptional circumstances	Slight	<ul style="list-style-type: none"> on-site impact: minimal Specific Consequence Criteria (for environment) met 	<ul style="list-style-type: none"> Local scale: minimal to amenity Specific Consequence Criteria (for public health) met

[^] Determination of areas of high conservation value or special significance should be informed by the Guidance Statement: Environmental Siting.

* In applying public health criteria, DWER may have regard to the Department of Health's, Health Risk Assessment (Scoping) Guidelines

"on-site" means within the Activity boundary, as defined in Table1 of Works Approval.

7.1 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the Risk treatment, as set out in Table 7 below:

Table 7: Risk treatment

Risk Rating	Acceptability	Treatment
Extreme	Unacceptable.	Risks will not be tolerated. DWER may refuse application.
High	Acceptable subject to multiple regulatory controls.	Risk event will be tolerated and may be subject to multiple regulatory controls. This may include both outcome-based and management conditions.
Medium	Acceptable, generally subject to regulatory controls.	Risk event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.
Low	Acceptable, generally not controlled.	Risk event is acceptable and will generally not be subject to regulatory controls.

7.2 Risk Assessment - Containment failure resulting in overland flow of wastewater

7.2.1 Description of risk event

Discharge of effluent (via leakage, breach of containment and contaminated stormwater runoff) can occur. Areas at risk include the feedlot pens and waste storage areas including the Effluent Drainage Channels, the Sediment Basin, the Evaporation Pond, the Stockpile Pad and the Controlled Drainage Area. Containment failure resulting in overland flow can impact on the nearby Yate Swamps.

7.2.2 Identification and general characterisation of emission

Overland flow of contaminated runoff, high in nutrients such as nitrogen and phosphorus, could lead to eutrophication of the Yate Swamps and degradation of the associated ecosystem. Discharges can be of varying nutrient loading, volumes and duration based on the cause of the risk event such as malfunction or accident, overtopping of the basin/pond, spills or a breach of containment during an extreme rainfall event. There are no point source emissions of wastewater associated with the operation of the premises.

7.2.3 Criteria for assessment

Any impact to the environmental quality of surface water bodies can be compared against the Australian and New Zealand (ANZECC) *Guidelines for Fresh and Marine Water Quality*.

7.2.4 Applicant controls

Table 8: Potential sources of overland flow of wastewater and proposed Applicant controls (from Application)

Site infrastructure	Proposed Applicant controls
Feedlot pens	<ul style="list-style-type: none"> The proposed pen layout will use the natural contours to improve pen drainage; Pens will be constructed on a 4% slope to allow wastewater and stormwater to gravity feed into the Effluent Drainage Channels at the rear of the pens; Feed and water troughs, located at opposite ends of the pens, will be constructed with a three metre concrete apron to facilitate cleaning of the area and prevent damage to the

Site infrastructure	Proposed Applicant controls
	<ul style="list-style-type: none"> pen liners in high-traffic areas; • Water troughs will be cleaned twice per week; • Pens cleaned every 10 to 13 weeks when cattle are removed for sale and prior restocking; and • Pens cleaned with a box scraper and under fence cleaner attached to a front end loader and the manure is removed and placed on the Stockpile Pad.
Effluent Catch Drains	<ul style="list-style-type: none"> • Catch Drains will be three metres wide and located on the lower side of each row of pens; • Catch Drains designed to handle rainfall of a 1 in 20 year ARI; • Catch Drains constructed with a fall of 0.75% to facilitate gravity feed of effluent; • Catch Drains located away from areas traversed by cattle to avoid damage to drains; • Catch Drains regularly cleaned to prevent build-up of manure; and • Catch Drains lined with compacted clay to facilitate cleaning with a box scraper.
Sediment Basin and Evaporation Pond	<ul style="list-style-type: none"> • The capacity of the Sediment Basin will be designed to cope with the number of cattle, as recommended by the Cattle Feedlot Guidelines; • The Settlement Basin will be constructed with a concrete weir with adjustable slats to prevent solids transferring to the Evaporation Pond; • Solids removed from the Sediment Basin twice a year and placed on the Stockpile Pad; • Capacity of Evaporation Pond sufficient so as to spill no more frequently than 1 in every 20 years; and • Evaporation Pond constructed to include an engineered spillway.
Stockpile Pad	<ul style="list-style-type: none"> • The size of the Stockpile Pad will be 1,200m² which has been designed to cater for the maximum number of cattle held on the premises at any one time; • Stockpile Pad will have a slope of 4% to allow leachate and incident stormwater to gravity feed towards the Effluent Catch Drains; and • Carcasses places on a designated part of the Stockpile Pad and covered with 500mm of solid manure to prevent disturbance by feral animals.
Controlled Drainage Area	<ul style="list-style-type: none"> • Size of Controlled Drainage Area will be 3.5ha; • Drainage Area will be constructed to allow gravity to feed any spillages and contaminated stormwater runoff to the Evaporation Pond; and • Diversion bunds will be constructed upslope to direct non-contaminated stormwater away from the Controlled Drainage Area.

7.2.5 Consequence

Based on the nutrient content of effluent generated on site, there is the potential that containment failure and stormwater runoff could impact on the nearby swamps. However, the Delegated Officer considers that any off-site impacts on a local scale would be minimal as, in the event of overflow or spillages, all runoff will be contained within the Controlled Drainage Area and directed to the Evaporation Pond. Therefore, the Delegated Officer has determined the consequence of containment failure to be **minor**.

7.2.6 Likelihood of consequence

There are no planned discharges to land expected during normal operating conditions. As a result, the likelihood of impact from containment failure or contaminated stormwater runoff is considered to only occur in exceptional circumstances. Therefore, the Delegated Officer considers that the likelihood of overland flow of wastewater is **Rare**.

7.2.7 Overall rating

The Delegated Officer has compared the consequence and likelihood ratings described above through the Risk Rating Matrix in Table 5 and determined that the overall rating for the risk of discharges to land impacting on the nearby swamps is **Low**.

7.2.8 Key Findings

The Delegated Officer has reviewed the information regarding the risk of containment failure resulting in overland flow of wastewater and has found:

1. There are no planned discharges to land expected during normal operations;
2. Pens and associated infrastructure will be contained within a Controlled Drainage area which will contain spills and / or stormwater runoff and prevent them from entering the surrounding environment; and
3. The Sediment Basin and Evaporation Pond will be constructed to contain extreme rainfall events, in accordance with recommended guidelines.

7.3 Risk Assessment – Seepage from waste storage areas resulting in contamination of groundwater

7.3.1 Description of risk event

Seepage of effluent can occur due to malfunctions or faults in the clay liners, resulting in raw effluent seeping through the soil to the underlying groundwater. Areas at risk include the Effluent Drainage Channels, the Sediment Basin, the Evaporation Pond and the Stockpile Pad.

7.3.2 Identification and general characterisation of emission

Seepage of effluent can occur through the clay liners, causing raw effluent to move through the sandy soils and seep through to the underlying groundwater. Desludging of the Sediment Basin is proposed twice a year where this event can damage the clay liner. The effluent will be high in nutrients and can result in contamination of the groundwater.

The groundwater beneath the proposed feedlot is located approximately 18mBGL.

7.3.3 Criteria for assessment

The Delegated Officer considers the *Australian and New Zealand (ANZECC) Guidelines for Fresh and Marine Water Quality* appropriate to assess any potential seepage to the underlying groundwater.

7.3.4 Applicant controls

The Applicant's controls to reduce and manage seepage from the pens, Sediment Basin, the Evaporation Pond and the Effluent Drainage Channels are set out in Table 9.

Table 9: Potential sources of seepage and proposed Applicant controls (from Application)

Site infrastructure	Proposed Applicant controls
Feedlot pens	<ul style="list-style-type: none"> • Pens will be constructed on a 4% slope to allow wastewater and stormwater to gravity feed into the catch drains at the rear of the pens; • Feed and water troughs, located at opposite ends of the pens, will be constructed with a three metre concrete apron to facilitate cleaning of area; • The compacted clay liner on the floor of the pens will be overlaid with 300mm of compacted gravel to protect the liner; and • The compacted clay liner will have an hydraulic conductivity equal to or less than 1×10^{-9} m/s.
Effluent Catch Drains	<ul style="list-style-type: none"> • Catch Drains constructed with a fall of 0.75% to facilitate gravity feed of effluent; • Catch Drains will be located away from areas traversed by cattle to avoid damage to drains; • Catch Drains regularly cleaned with a box scraper to prevent build-up of manure;

Site infrastructure	<ul style="list-style-type: none"> • Proposed Applicant controls
	<ul style="list-style-type: none"> • Catch Drains will be lined with compacted clay to facilitate cleaning of the drains; and • The liner will consist of approximately 300mm of compacted clay with an hydraulic conductivity of equal to or less than $1 \times 10^{-9} \text{m/s}$.
Sediment Basin and Evaporation Pond	<ul style="list-style-type: none"> • The Sediment Basin and the Evaporation Pond will be lined with 300mm of compacted clay with an hydraulic conductivity of equal to or less than $1 \times 10^{-9} \text{m/s}$; • Desludging of the Sediment Basin will occur twice a year to prevent a build-up of sludge; and • Desludging of the Evaporation Pond will occur on a regular basis.
Stockpile Pad	<ul style="list-style-type: none"> • The Stockpile Pad will have a 300mm gravel layer over a compacted clay liner; and • The compacted clay liner will have an hydraulic conductivity equal to or less than $1 \times 10^{-9} \text{m/s}$.

7.3.5 Consequence

Based on the nutrient content of effluent generated on site, there is the potential that seepage could impact on the underlying groundwater. However, the Delegated Officer considers that on-site impacts would be minimal, based on the depth to groundwater. Therefore, the Delegated Officer has determined the consequence of contamination to the underlying groundwater is **Slight**.

7.3.6 Likelihood of consequence

Areas where waste and effluent will be stored will be lined with compacted clay with a hydraulic conductivity equal to or less than $1 \times 10^{-9} \text{m/s}$. Therefore, it is expected that seepage would only occur in exceptional circumstances. Hence, the Delegated Officer considers the likelihood of contamination to the underlying groundwater is **Rare**.

7.3.7 Overall rating

The Delegated Officer has compared the consequence and likelihood ratings described above through the Risk Rating Matrix in Table 5 and determined that the overall rating for the risk of discharges to land impacting on the underlying groundwater is **Low**.

7.3.8 Key findings

The Delegated Officer has reviewed the information regarding the potential for seepage of effluent from waste storage areas and has found:

1. *The depth to groundwater is 18m BGL, which is sufficient to ensure that any seepage through the soil will not contaminate the groundwater.*
2. *The Sediment Basin, Evaporation Pond, Feedlot pens, Stockpile Pad and Effluent Drainage Channels will be constructed with a compacted clay liner with an hydraulic conductivity equal to or less than $1 \times 10^{-9} \text{m/s}$.*

7.4 Risk to the environment from the application of solid wastes to land

7.4.1 Description of Risk Event

The application of solid wastes to land, including composted manure and matured carcasses, could result in contaminated stormwater runoff impacting on the nearby Yate Swamps.

7.4.2 Identification and general characterisation of emission

Composted manure and carcasses will be nutrient rich. Contaminated runoff entering the

nearby wetlands could increase the phosphorous loading on the swamps, causing eutrophication and degradation of the associated ecosystem.

7.4.3 Criteria for assessment

Any impact to the environmental quality of surface water bodies can be compared against the Australian and New Zealand (ANZECC) *Guidelines for Fresh and Marine Water Quality*.

7.4.4 Applicant controls

The Applicant's controls to manage contaminated stormwater runoff impacting on the nearby Yate Swamps include:

- The spreading of manure and composted carcasses will be managed by a *Waste Management Plan* that will be reviewed annually by a National Feedlot Accreditation Scheme auditor;
- There is a large area of land available for the spreading of composted manure/carcasses which will ensure that nutrient application rates are not exceeded.

7.4.5 Consequence

Based on the nutrient-rich characteristics of the solid waste, the Delegated Officer has determined that contaminated stormwater runoff could impact on the surrounding environment, in particular the Yate Swamps, causing minimal on-site impact. Therefore, the Delegated Officer considers the consequence to be **Slight** provided that Specific Criteria for the environment are met, as recommended in the Cattle Feedlot Guidelines.

7.4.6 Likelihood of consequence

Given the large area of land available for the application of solid wastes, the Delegated Officer considers that the risk event will probably not occur in most circumstances. Therefore, the likelihood is considered to be **Unlikely**.

7.4.7 Overall rating

The Delegated Officer has compared the consequence and likelihood ratings described above through the Risk Rating Matrix in Table 5 and determined that the overall rating for the risk of discharges to land impacting on the nearby swamps is **Low**.

7.4.8 Key findings

The Delegated Officer has reviewed the information regarding the potential for contaminated stormwater runoff to impact on the nearby Yate Swamps and has determined:

1. *It is important that contaminated surface water runoff is managed by control measures such as diversion banks and buffer areas to ensure that runoff does not enter the nearby Yate Swamps.*
2. *The Cattle Feedlot Guidelines provide recommendations and guidance on the sustainable application of nutrient rich solid waste to land in order to protect surrounding surface waters.*

7.5 Summary of risk assessment and acceptability

Table 10: Risk assessment summary

	Emission		Pathway and Receptor	Applicant controls	Impact	Risk Rating	Acceptability with treatment (conditions on instrument)
	Type	Source					
1.	Risk of containment failure (operation)	Failure / overtopping of effluent infrastructure, spills, leaks and contaminated surface water runoff.	Release of effluent into the surrounding environment which can impact on the nearby Yate Swamps	Infrastructure, siting, location and management controls	Damage to the surrounding environment	Minor consequence Rare Low risk	Risk event is acceptable and will not be subject to regulatory controls. A Registration, Category 68 will be issued for the operation of the feedlot. The Applicant will be guided by the Cattle Feedlot Guidelines
2.	Pond seepage (operation)	Ruptures to the clay liners on containment infrastructure	Seepage to the underlying groundwater	Infrastructure and management controls	Contamination of the underlying groundwater can impact on the surrounding environment and nearby wetland	Slight consequence Rare Low risk	
3.	Application of nutrient rich solid wastes to land	Manure and composted carcass stockpiles	Release of effluent into the surrounding environment which can impact on the nearby Yate Swamps	Management	Damage to the surrounding environment	Slight consequence Unlikely Low Risk	

8. Regulatory controls

DWER will determine controls, as detailed in Table 11, having regard to the adequacy of controls proposed by the Applicant. The conditions of the Works Approval will be set to give effect to the determined regulatory controls.

8.1 Works Approval controls

8.1.1 Construction requirements for the proposed feedlot

The Works Approval Holder must locate the Works generally in accordance with the Site Plans, as detailed in the Application. The design and construction requirements are to be in accordance with the information supplied with the Application and are required to address operational risks including containment failure and seepage.

The Works Approval will include the requirement that, on completion of the Works, the Applicant is to provide to the CEO an assurance that the works have been completed as per the requirements in Table 11.

Table 11: Infrastructure requirements for the feedlot - as detailed in Figure 1

Infrastructure	Requirements (design and construction)
Feedlot pens	<ul style="list-style-type: none"> Floor of the pens constructed to include a 4% slope away from the feed trough and towards the Effluent Drainage Channels; the compacted clay liner on the pen floor(s) to achieve a hydraulic conductivity of equal to or less than $1 \times 10^{-9} \text{m/s}$; Clay liner to be overlain with 300mm of compacted gravel; and A 3m wide concrete apron to be constructed around feed and water troughs.
Effluent Drainage Channels	<ul style="list-style-type: none"> The capacity of the Effluent Drainage Channels to be capable of handling a 1 in 20 year ARI rainfall event; Effluent Drainage Channels to be 3m wide; Drainage channels to include a 0.75% fall towards the Sediment Basin; Drainage channels for each feedlot pen to be minimum 3m wide; Drainage channels to be located on the lower side of each row of pens and outside of the laneway accessed by cattle; and All drainage channels to be constructed with compacted clay liners which can achieve a hydraulic conductivity of equal to or less than $1 \times 10^{-9} \text{m/s}$.
Sediment Basin	<ul style="list-style-type: none"> The Sediment Basin to be constructed with wooden slats at lower end of the basin for the purpose of minimizing the amount of solids being transferred to the Evaporation Pond; The capacity of the basin to be capable of handling a 1 in 20 year ARI rainfall event; and The basin to be lined with a compacted clay liner which can achieve a hydraulic conductivity of equal to or less than $1 \times 10^{-9} \text{m/s}$.
Evaporation Pond	<ul style="list-style-type: none"> Pond to be lined with a compacted clay liner with hydraulic conductivity of equal to or less than $1 \times 10^{-9} \text{m/s}$; Constructed to include an engineered spillway which is lined with 300mm compacted clay with an hydraulic conductivity of equal to or less than $1 \times 10^{-9} \text{m/s}$; and Capacity of the pond sufficient so as to spill no more frequently than 1 in every 20 years.
Stockpile Pad	<ul style="list-style-type: none"> The Stockpile Pad to be constructed with dimensions 1,200m²; The Stockpile Pad to be lined with a compacted clay liner which can achieve a hydraulic conductivity of $1 \times 10^{-9} \text{m/s}$ or less;; The Stockpile Pad is to be located within the Controlled Drainage Area; and The Stockpile Pad constructed with a 4% slope to allow leachate from stored manure and carcasses as well as any contaminated incident stormwater to be directed to the Effluent Drainage Channels
Controlled Drainage Area	<ul style="list-style-type: none"> Designed to prevent the ingress of uncontaminated stormwater; Designed to fully contain all the key infrastructure including the feedlot pens, Effluent Drainage Channels, Sediment Basin, the Evaporation Pond and access roads and feed lanes used to move cattle on the Premises; and Designed to ensure that all runoff and potential spills and leaks within the controlled Drainage Area are directed to the sedimentation system and then to the holding pond.

9. Determination of Works Approval conditions

The conditions in the issued Works Approval in Attachment 1 have been determined in accordance with the Guidance Statement: Setting Conditions. Table 12 provides a summary of the conditions to be applied to this works approval.

Table 12: Summary of conditions to be applied

Condition Ref	Grounds
Environmental Compliance Condition 1	Environmental compliance is a valid, risk-based condition to ensure appropriate linkage between the licence and the EP Act.
Notification of Material Change Conditions 2 and 3	These conditions are valid, risk-based and enable flexibility in operations.
Infrastructure and Equipment Condition 4	This condition is valid, risk-based and contain appropriate controls.
Emissions Condition 5	This condition is valid, risk-based and consistent with the EP Act.
Information / Record keeping Conditions 6 and 7	These conditions are valid and are necessary administrative and reporting requirements to ensure compliance.

DWER notes that it may review the appropriateness and adequacy of controls at any time and that, following a review, DWER may initiate amendments to the works approval under the EP Act.

10. Applicant's comments

The Applicant was provided with the draft Decision Report and draft Works Approval on 29 March 2018. The Applicant provided comments on the draft documents which have been noted in Appendix 2. DWER has assessed the Applicant's responses and updated the Report and Works Approval accordingly.

11. Conclusion

This assessment of the risks associated with activities on the premises has been undertaken with due consideration of a number of factors, including the documents and policies specified in this Decision Report (and summarised in Appendix 1).

Based on this assessment, it has been determined that the Issued Works Approval will be granted for a period of three years.

Following completion of all construction works, the Applicant is to provide an assurance to the CEO confirming works have been carried out in accordance with the requirements of the Works Approval. The Applicant may submit an Application for a Category 68 Registration to operate the cattle feed.

Paul Byrnes

**Manager, Licensing (Process Industries)
Regulatory Services (Environment)**

Delegated Officer
under section 20 of the *Environmental Protection Act 1986*

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	Application and supporting information for W6116/2018/1 on 12/12/2017	The Application	DWER records (A1583582)
2.	Email from the Department of Primary Industries and Regional Development on behalf of applicant confirming design capacity details	The Application	DWER records (A1591840)
3.	Response from the Applicant titled "Resolution of outstanding matters for Parnaroo Cattle Feedlot"	The Application	DWER records (A1651916)
4.	<i>National Guidelines for Beef Cattle Feedlots in Australia</i> , 3 rd Edition, Meat & Livestock Australia, June 2012	Cattle Feedlot Guidelines	www.mla.com.au
5.	<i>National Beef Cattle Feedlot Environmental Code of Practice</i> , 2 nd Edition, Meat & Livestock Australia, June 2012		
6.	<i>Beef cattle feedlots: waste management and utilisation</i> , Meat & Livestock Australia, September 2015	<i>Beef cattle feedlots: waste management and utilisation</i>	www.mla.com.au
7.	DER, July 2015. <i>Guidance Statement: Regulatory principles</i> . Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
8.	DER, October 2015. <i>Guidance Statement: Setting conditions</i> . Department of Environment Regulation, Perth.	DER 2015b	
9.	DER, November 2016. <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.	DER 2016a	
		DER 2016b	
10.	DER, November 2016. <i>Guidance Statement: Decision Making</i> . Department of Environment Regulation, Perth.	DER 2016c	
11.	Water Quality Protection Notre No. 22 (WQPN 22) <i>Irrigation with nutrient-rich wastewater</i> , Department of Water, July 2006	WQPN 22	

Appendix 2: Summary of Applicant's comments on risk assessment and draft conditions

Decision Report / Works Approval	Summary of Works Approval Holder comment	DWER response
Provide details of engineered spillway for Evaporation Pond	Spillway to be constructed at the lowest point of the Evaporation Pond, lined with a minimum of 300mm compacted clay which can achieve a hydraulic conductivity equal to or less than 1×10^{-9} m/s. Design of spillway in accordance with recommendations from Agriculture Victoria – “How to avoid dam construction failures”	Documents updated
Provide more details on the Controlled Drainage Area including the diversion of uncontaminated stormwater	Diversion bunds will be constructed upstream to divert uncontaminated stormwater away from the Controlled Drainage Area	
Provide more details on leachate collection system for the Stockpile Pad	Stockpile pad will be located immediately adjacent to the Effluent Drainage Channels and constructed with a 4% slope towards the channels to allow all leachate and incident stormwater to be directed to the channels	
Confirm details of floor cover for feed lanes	All feed lanes will include 200mm of compacted gravel	

Attachment 1: Issued Works Approval W6116/2018/1
