



pricemerrett

C O N S U L T I N G

BRM Farms Waste Management Plan

F8285



9478 Murray Valley Hwy
PO Box 313
KERANG VICTORIA 3579
Ph: (03) 5452 2490
Fax: (03) 5452 2566
E-mail: pmc@pricemerrett.com.au
www.pricemerrett.com.au

ABN: 62 903 527 353
ACN: 139 256 938

SURVEYING
ENGINEERING
IRRIGATION
PROJECT
MANAGEMENT

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Project Details

Project Name	BRM Farms Intensive Animal Production
Client	Ben & Rennae McInnes
Report Authors	Samantha Grainger, Mark Carter
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Author: Price Merrett Consulting Pty. Ltd.

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1 Background and Evaluation Guidelines

This Waste Management Plan (WMP) for BRM Farms provides guidance on waste management processes for the enterprise of Beef cows for their farms located at 57 Gibbon Road, Gunbower. This WMP is provided in support of the Planning Application and consent for Intensive Animal Production approval to the Campaspe Shire.

New guidelines have been introduced in 2018 by the State Government that aims to provide clarity around land use terms for intensive animal production. Under these guidelines cattle feedlots comes under intensive animal production and the Victorian Code for Cattle Feedlots can be referred to for best practice measures in order to provide sustainable and ethical cattle production. Intensive animal production is considered a section 2 use and requires consent from Council.

The calculations in this report have been assessed using;

- Victorian Code for Cattle Feedlots 1995;
- Dairy Gains - Effluent System Design; Effluent and Manure Management Database for the Australian Dairy Industry 2008 course as completed by Mark Cater and Nathan Walle (Price Merrett Consulting); and
- the Guidelines for Victorian Dairy Feedpads and Freestalls.

Further consultation with the McInnes has confirmed the updated cattle numbers in regards to those identified in the previous application as well as the use associated with the differing sections of the farm.

1.1 Owners Details

Owner's name:	Ben and Rennae McInnes
Trading Name:	BRM Farms Pty Ltd
Address of feedlot:	57 Gibbon road, Gunbower
Managers Address:	462 Richards road, Gunbower
Mailing address:	PO Box 101, Gunbower Vic 3566
Telephone number:	Ben McInnes 0408 871 217
	Rennae McInnes 0438 231 849
Managers Name:	Ben McInnes

1.1.1 Identification of Person Responsible For

Development and implementation of plan:	Ben and Rennae McInnes
Review of plan:	Yearly and as required
Providing Resources and personnel:	BRM Farms Pty Ltd
Monitoring and Maintenance	Ben McInnes
Notifying appropriate authorities in the event of an emergency situation impacting on the environment:	Ben McInnes
Waste Management report:	Available to all staff Staff should be familiar with Plan Copy kept in prominent place for review

1.2 Site Details and Assessment

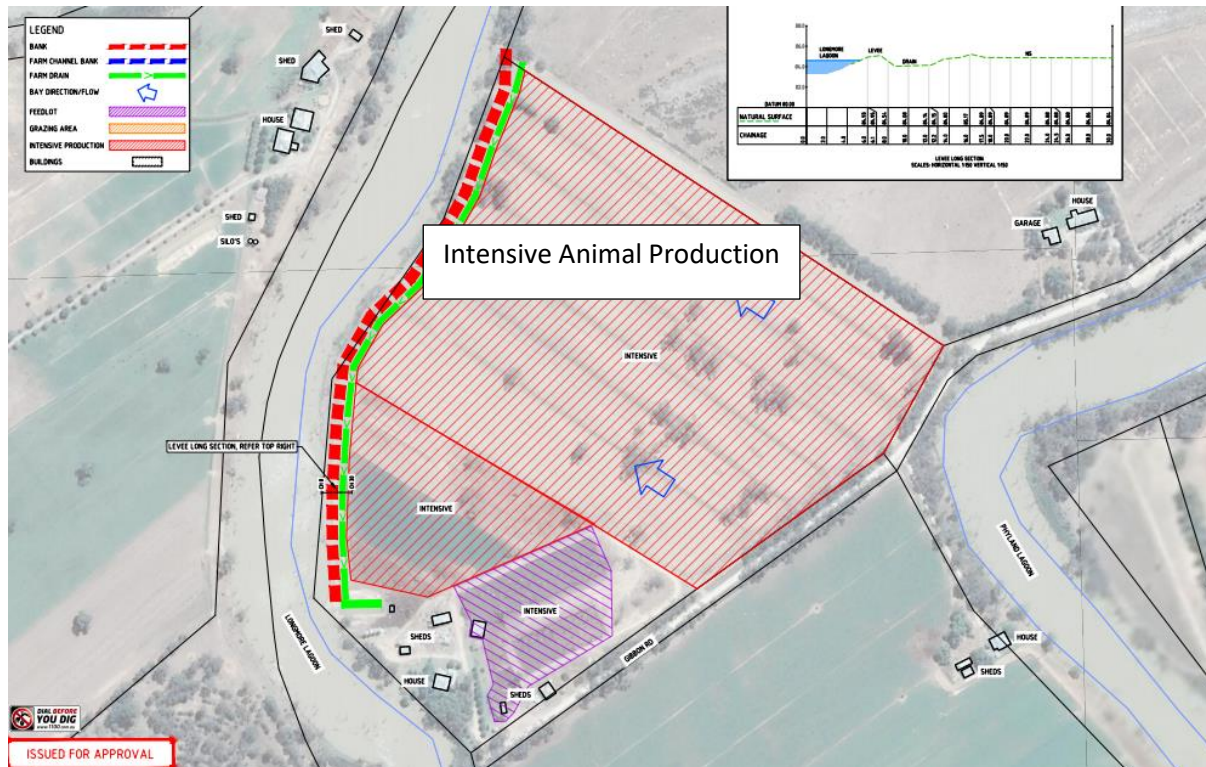


Figure 1: Land use areas

1.2.1 Land Subject to Waste Management Plan

Address	Lot
57 Gibbon Road Gunbower	42 – E\PP3378

1.2.2 Local Approval Authority

Campaspe Shire Council	
Date of local authority site approval:	TBA
Number of cattle approved	300+
Approval Category	Intensive Animal Production

1.2.3 Climate

Summary statistics for all years

Move mouse over highest daily rainfall to view dates.

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	27.2	25.0	24.3	25.2	34.9	35.0	36.0	38.1	35.6	35.3	28.0	26.9
Median	21.4	11.7	15.5	19.8	31.4	30.0	33.4	35.0	30.2	24.5	22.0	16.6
Highest Daily	72.4	65.5	97.0	56.1	49.0	47.0	43.9	40.6	42.2	98.2	79.0	73.2

Average annual rainfall:	386mm
Direction of prevailing winds:	North-east summer South-west winter

2 Operation

2.1 Cattle Numbers

Address	Land use	Cattle Numbers
57 Gibbon Road Gunbower	Intensive Animal Production	Feedlot 300
		Paddocks variable
462 Richards Road Gunbower	Grazing Animal Production	600
Patho Properties	Grazing Animal Production	variable

The farms are located at Gibbons Road and Richards Road which are approximately 4km south east of the township of Gunbower in Victoria, north of the Murray Valley Highway. The Murray River is approximately 4.6km to the north east and the Gunbower Creek and associated lagoons are adjacent to the farm.

Site 1 at **57 Gibbon Road** consists of the existing stock containment pens where a maximum of 300 head of cattle are fed and their entire diet is supplemented from outside the area. This Waste Management Plan is prepared under the guidelines of the Victorian Code for Cattle Feedlots in regards to this area, and the acceptable setbacks are calculated in Section 2.3.1.

Cattle kept in the adjacent paddocks at the feedlot will have access to seasonal grazing and be fed under intensive conditions, when grazing is reduced. Portable feeders and hay rings should be kept 100m away from the waterway and moved regularly. The cattle should be regularly alternated to the Patho Blocks and the other properties so that the unsuitable conditions which produce odour and dust can be managed.

Site 2 at **462 Richards Road** runs 600 head of cattle, but provides meaningful grazing for part of the year, in between cropping and hay production, where cattle are held in paddocks with supplementary feed being provided under seasonal conditions. Cows are generally less than 400kg at this site and the grain ration in their diet is gradually increased to tolerate the last 60 days in the feedlot to fatten them for the saleable 400kg store sale market. This site is considered grazing animal production.

Patho properties are used to graze cattle and offer additional area to rotate cattle to take pressure off the Gibbons Road site.



Figure 2: Site layout

2.2 Ration Formulation

The feedlot ration is comprised of the following ingredients:

Ingredient Name	R1	R2	R3
Wheat - Disc milled	470.00	580.00	690.00
Barley Hay	330.00	240.00	100.00
Barley Straw	100.00	100.00	110.00
Canola Meal	70.00	40.00	30.00
McInnes Supp 4%	20.00	30.00	40.00
Vegetable Oil			15.00
Limestone	10.00	10.00	15.00
Total	1,000.00	1,000.00	1,000.00

2.3 Separation Distances

2.3.1 Feedlot Pen Area

Receptor type	Direction	Separation Distance	Topography	Vegetation
18 Lavender Road	NW	450m	Flat	Scattered trees
106 Gibbon Road	SE	330m	Flat	Remnant roadside vegetation
133 Gibbon Road	E	560m	Flat	Scattered paddock trees
Property Boundary	S	25m	Flat	Remnant roadside vegetation
Water course	W	124m	Flat	Grassed
Public Road	S	30m	Flat	Remnant roadside vegetation
Gunbower	NW	4000m	Flat	Treed

Under the Victorian Code for Cattle Feedlots 1995, the Code adopts the use of Standard Cattle Units (SCU) so as to compare feedlots and incorporate different size cattle and turnout weights.

The pens are graded, compacted and well managed. The Standard Cattle Units (SCU) allows feedlots to be compared on a similar basis. A conversion factor allows adjustments in the cattle numbers of head a feedlot can carry where stock produced are heavier or lighter than the reference weight of 600kg ie. 1 SCU = 1 x 600kg beast. A conversion factor of 0.74 is adapted to the 400kg beast which is generally turned off this farm.

Therefore the revised operation of 300 head of cattle in the feedlot with an approximate turnout weight of 400kg is $(0.74 \times 300) = 222$ SCU's assuming the pens are full every day of the year.

Separation distances are calculated from the Code and incorporate conditions relating to the site and the calculated SCU.

Site factors are:

S1 = 21 from Table 4.1
 S2 = 1 from Table 4.2
 S3 = 1.0 from Table 4.3
 S4 = 1.0 from Table 4.4

Composite S = S1 x S2 x S3 x S4
 = 21

Distance D = \sqrt{VN}
 = $21\sqrt{222}$

Factors	Gibbon Road
Number of head	300
Standard Cattle Units (SCU) 400kg turnoff live weight – 0.74	222
Stocking Intensity Factor (S1)	21
Receptor Factor (S2) – isolated house	1
Terrain Factor (S3) - Flat	1
Vegetation (S4) – No tree cover	1
For a Class C Feedlot	312m

Setbacks according to the Guidelines for Victorian Dairy Feedpads and Free stalls and the VCCF															
Guideline		57 Gibbon Road													
Effluent ponds: <ul style="list-style-type: none">• 300 metres from a neighbouring house• 50 metres from the property boundary• 60 metres from irrigation channels and drains (required by Goulburn Murray Water)• 1 metre above the highest seasonal water table .		<ul style="list-style-type: none">• Highest seasonal water table reading is 1.7m below surface.• 60m from boundary• Effluent Pond to sensitive receptors: Neighbouring Houses<ul style="list-style-type: none">• 18 Lavender Road – 360m• 106 Gibbon Road - 350m• 133 Gibbon Road – 540m													
<u>Distance from land application of liquid wastes to:</u> <table><tr><td>Site boundary</td><td>20m</td></tr><tr><td>Public area</td><td>100m</td></tr><tr><td>Watercourse bore or spring</td><td>100m</td></tr><tr><td>Off-site residence</td><td>200m</td></tr><tr><td>Flood prone land</td><td>200m</td></tr></table>		Site boundary	20m	Public area	100m	Watercourse bore or spring	100m	Off-site residence	200m	Flood prone land	200m	<table><tr><td>20m</td></tr><tr><td>100m</td></tr><tr><td>>312m</td></tr></table>	20m	100m	>312m
Site boundary	20m														
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100m															
>312m															
<u>Distance from solid waste spreading areas to:</u> <table><tr><td>Site boundary</td><td>20m</td></tr><tr><td>Public area</td><td>100m</td></tr><tr><td>Watercourse, bore spring</td><td>200m</td></tr><tr><td>Off-site residence</td><td>200m</td></tr><tr><td>Flood prone land</td><td>200m</td></tr></table>		Site boundary	20m	Public area	100m	Watercourse, bore spring	200m	Off-site residence	200m	Flood prone land	200m	NA – no solid waste spread onsite			
Site boundary	20m														
Public area	100m														
Watercourse, bore spring	200m														
Off-site residence	200m														
Flood prone land	200m														
<u>Distance from feedlot works areas to:</u> <table><tr><td>Calculated setbacks</td><td>312m</td></tr></table>		Calculated setbacks	312m	<ul style="list-style-type: none">• 18 Lavender Road – 450m• 106 Gibbon Road - 332m• 133 Gibbon Road – 560m											
Calculated setbacks	312m														
Waterway	200m	120m													

Boundary	50m	25m
Distance of feeders and hay rings to waterway:	100m	>100m Achievable

2.3.2 Liquid Effluent Disposal Area

Receptor type	Direction	Separation Distance	Topography	Vegetation
18 Lavender Road	NW	450m	Flat	Scattered trees
106 Gibbon Road	SE	330m	Flat	Remnant roadside vegetation
133 Gibbon Road	E	500m	Flat	Scattered paddock trees
Property Boundary	S	30m	Flat	Grassed
Water course	W	350m	Flat	Grassed
Public Road	S	40m	Flat	Grassed and remnant trees

2.3.3 Risk Assessment

The separation distances are adhered to between all neighbours to ensure odours and runoff from these areas do not adversely impact upon the environment or community amenity. Minimum distances to public roads and waterways are observed and careful monitoring should be considered as required setbacks are not met.

The timing of odorous activities can be controlled and these should be scheduled to occur when dispersion will be enhanced as a result of prevailing meteorological conditions (e.g., hot windy day) result in faster dispersion of odours than stable atmospheric conditions (e.g., an overcast, cool day with no wind). (Victorian Guidelines Feedpads and Freestalls)



Figure 3: Existing Setback Distances at 57 Gibbon Road from works area to dwellings.

As cattle in the feedlot can be fed in an intensive manner outside the feedlot environment this further reduces the overall SCU inside the feedlot and concurrently reduces the required setback as the stocking density is reduced. Cattle outside the feedlot can graze with supplementary feed.

2.3.4 Recent Strategies to reduce Odour & Dust

- ❖ *Increasing the frequency of pen cleanout should address any concerns and issues with odour and 4 times per year should be achieved. (Dependant on favourable weather conditions).*
- ❖ *Maximum 300 head of cattle in the feedlot pens site. Cattle can be intensively fed in the paddocks adjacent to the feedlot, and environmental conditions carefully monitored so as not to cause impacts on neighbouring residents. Cattle should be directed to Patho property to reduce numbers at this site when required.*
- ❖ *The manure harvested through pen cleaning is to be removed by contractor and composted off site.*
- ❖ *Manure stockpiles will only be constructed onsite short term, till removed by contractor.*
- ❖ *Operator will regularly move Intensive feeding equipment in paddocks to reduce concentration of cattle waste.*

- ❖ *Sprinklers will be re-installed to prevent dust in dry conditions.*

2.3.5 Recent Management Improvements

- ❖ *Property owner has purchased trees to be planted along the bank of the lagoon to provide a visual buffer.*
- ❖ *Installation of an internal fence along the extent of the frontage on Gibbon Road to contain cattle movements between properties. Further fencing upgrades at the stock containment pen site have been completed so that roadway users and 106 Gibbon Road are no longer exposed to stray cattle.*
- ❖ *Fencing off of all the lagoon banks so cattle cannot access water and cause erosion and impaction to the bank profile, or excrete raw effluent into the waterway when cattle enter the water.*
- ❖ *By restricting cattle access to the lagoon banks and waterway, water quality and turtle nesting habitat should be protected.*
- ❖ *Neighbours will be informed via email when odour causing operations such as pen cleaning will be conducted.*
- ❖ *A diary will be updated regularly to assist in recording incidents and complaints in order to identify the source of any issues. Management strategies can then be implemented to rectify the problems that arise.*

3 Waste Management Plan

3.1 Waste Generation

The amount of total manure dry matter produced from a feedlot per year can be calculated from the MLA Beef Cattle Feedlots, Waste Management and Utilisation, Sep 2015. (From this calculation it is estimated that 133 tons of manure are removed annually however this is based on mature cattle, and not considered an entirely accurate estimate for these animals which are less than 400kg).

Manure generated on the pad comprises layers formed over time. The lowest layer is called the 'interface layer' which contains a mixture of manure and soil. On top of the interface layer is the 'manure layer' which is removed on a regular basis to:

- optimise cattle performance and welfare
- present animals for pre-slaughter inspection in a clean condition
- provide a safe work environment for staff (particularly pen riders)
- minimise odour levels

- minimise dust during hot, dry conditions
- promote good pen drainage
- promote good integrity of the pen surface
- minimise costs of pen maintenance

Stockpiles will only contain one pen cleaning prior to removal.

This volume should be monitored and changes to the Waste Management plan made when required.

Contact details for contractor to remove manure:

Lipps Natural Resources Pty Ltd	PH: 0428 571 149
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3.1.1 Feedlot Effluent Pond

Generally after rainfall events the pond is partially filled and the water is allowed to evaporate throughout the year. Monitoring of pond capacity during and after rainfall events should be undertaken to ensure sufficient volume during wetter than average periods.

Excess water is then pumped onto paddocks adjacent to paddocks. Historically this has only occurred once in 15 years. 15Ha are available adjacent to the effluent pond to pump out if required.

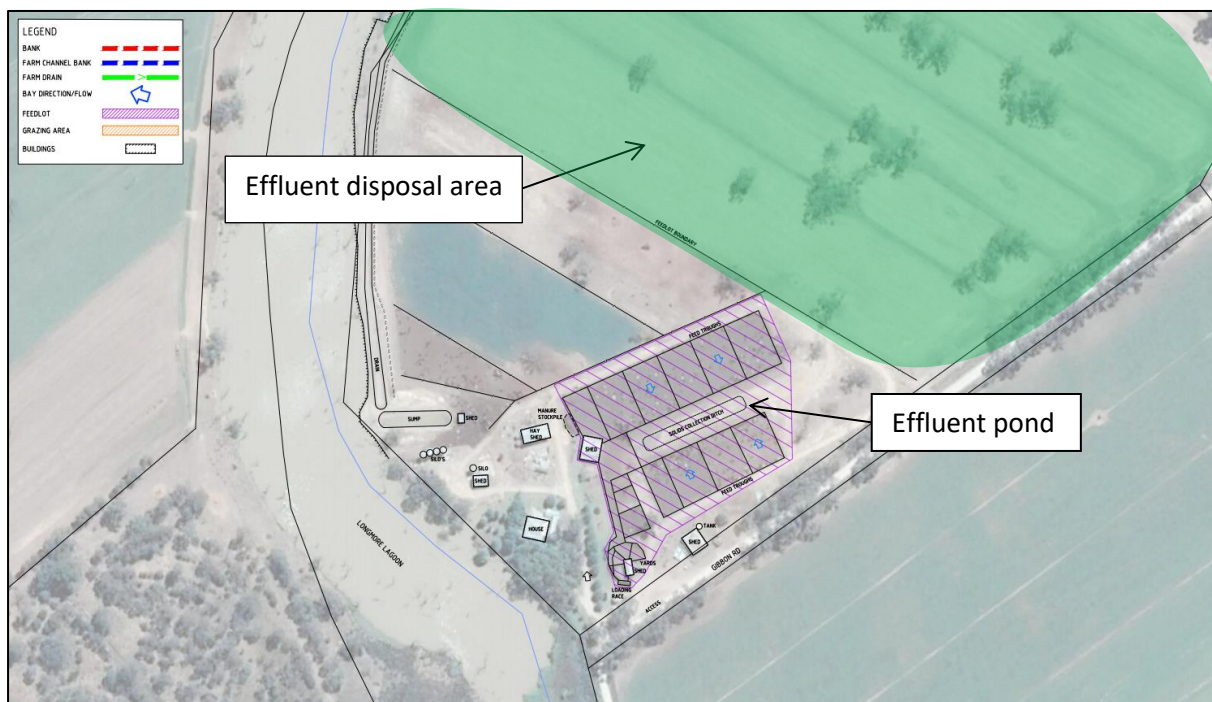


Figure 4: Site Plan 57 Gibbon Road

3.2 Cleaning and Maintenance routines

Activity	Frequency	Method Used
Pen cleaning	4 times per year	Front end loader
Under fence	At each pen cleaning or as required	Front end loader
Wet patch elimination	As required	Back-fill with gravel and compacted with loader tyres
Repair to potholes	As required	Back-fill with gravel and compacted with loader tyres
Feed residue removal	As required (weekly if needed)	Shovelled/scraped from feed bunks into pens for removal with manure
Spilt feed	As required (weekly if needed)	Shovelled/scraped from feed bunks into pens for removal with manure

3.2.1 Risk Assessment

Pen cleaning and maintenance as per waste management plan conditions (weather permitting). This maintenance should keep odour and dust to a minimum.

3.3 Retention Pond

The person responsible for the management and maintenance of the effluent pond is the feedlot owner and manager

Effluent pond volume	0.15ML
Desludging History	Once in 15 years
Bank Maintenance program	Banks have not needed maintaining. Monitoring of effluent level after weather events

3.3.1 Risk Assessment

The effluent pond was sized as per the guidelines. Spill frequency should not exceed a 1 in 10 year rain event. The pond will be deslugged when dry to maintain pond volume.

3.3.2 Settled Manure Volume

A settling Manure Volume can be calculated from the centralised sedimentation pond which collects all rainfall runoff from the cattle pens and animal handling area. Calculations are derived from the VCCF 1995. The below volumes have been previously calculated by Agriculture Victoria in their 2016 report on the Gibbon Road feedlot, and were found to accurately represent the volume of the pond, in line with data obtained by Price Merrett Consulting.

$$V = (D \times M \times A_p \times F_s) / 1000$$

V= storage volume

D = nominal pack depth (mm) – 200

M = proportion of manure loss during rain periods (3% pen slop) – 30

Ap = area of pens m² @ 8,055 m²

Fs = safety factor (1.25) to allow in variation in cleaning intervals.

Therefore $200 \times 30 \times 8055 \times 1.25 / 1000 = 60,400$ litres or **0.06 ML**.

$V = 200 \times 30 \times 14,500 \times 1.25 / 1000 = 108,750$ litres or 0.11 ML

The existing capacity of the sedimentation pond = **0.15 ML** which is more than adequate.

The drainage system which services the extended feedlot pens at present collects any irrigation water or rainfall runoff and directs it to the reuse sump located north west of the feedlot. The overall capacity of the sump is estimated at **0.75ML**. This infrastructure prevents any runoff from entering the nearby lagoon. **See Figure 10 for location.**

3.3.3 Settled Manure Volume for constructed steel pens

V=Storage volume = $(D \times M \times A_p \times F_s)/1000$

D = nominal pack depth =200mm

M = Proportion of Manure lost during rain periods = 30

Ap = area of pens (m²) = 8,055m²

Fs = Safety factor (1.25)

V = 0.06 ML

Volume available= 0.15ML

The existing capacity of the sedimentation pond = 0.15ML and is adequate for the feedlot pens as well as stormwater runoff. This volume is managed through evaporation or alternatively a portable pump can be used to directly apply the liquid effluent component to nearby pastures. Generally this only occurs after large rainfall events when pond fills and nutrient levels are diluted.

Adjacent to the constructed feedlot pens are the extended feedlot pens. This area is contained by wire fencing rather than steel which is used to reduced stocking intensity within the pens and ensures cattle all have equal access to feed in water troughs and feeders. These extended pens spread the available area out for cattle and no access to the lagoon water or banks is permitted. The associated re-use system is able to be pumped to the paddocks to the east of the pens, through a connected pipe network.

3.3.4 Runoff Storage- Feedlot pens

The runoff storage capacity provided in the retention pond is calculated as follows:

$$Q = [(A_p + A_b) \times (R_f \times R_o)] \times F_s + [A_s \times R_f] / 100$$

Where:

Q = Volume (cubic metres)

Ap = Area of pens (m²)

Ab = Balance catchment area (m²)

Rf = 1 in 10 year annual catchment yield data, or 80% of the 1 in 20 year 24 hr rainfall event, whichever is greater.

Ro = Runoff coefficient (0.3 – 400mm to 500mm rainfall)

Fs = Safety factor (1.25)

As = Area of storage dam

$$=[(8055 + 1000) \times (50 \times 0.3)] \times 1.25 + [900 \times 50] / 1000$$

$$=[9055 \times 15] \times 1.25 + 450$$

$$= 620\text{m}^3$$

In a 1 in 10 year storm event pond capacity may be reached therefore careful monitoring and immediate mitigation measures of pumping out will be required. Excavation and desludging during dry conditions should be undertaken.

3.3.5 Runoff Dispersal Area

The net area required for the direct dispersal of pen runoff, as an alternative to irrigation, is determined as follows-

$$Ad = Ac \times 5 \times (Rf / 400)$$

Where:

Ad = Dispersal Area (Ha)

Ac = Area of catchment (Ha) (ie the controlled drainage area)

Rf = 1 in 10 year annual rainfall occurrence (mm)

$$Ad = Ac \times 5 \times (Rf/400)$$

$$= 1 \times 5 \times (50/400)$$

Dispersal Area Ad = 0.6Ha

Available area for dispersal is 15Ha

3.4 462 Richards Road- Grazing Animal Production

This management of cattle at the Richards road farms falls within the Guidelines of Victorian Grazing and Intensive Animal Production where:

- Grazing animal production applies to farms where the animals' food is supplied seasonally from outside the immediate building, enclosure, paddock or pen,
- Grazing animal production when supplementary feeding is given to increase body weight and maintain animal health. Supplementary feed includes grain, pellets, hay and silage that may be grown on the farm and taken to the animals or purchased from a third party.
- Producers often grow food for their animals on another part of the farm and then cut and carry the prepared feed to the animals. This practice is not 'directly grazing, browsing or foraging'. When producers cut and carry, they are supplementary feeding.

❖ Setbacks of 100m from waterways and housing are recommended for feeding infrastructure

This site is considered Grazing Animal Production as cattle are grazed for part of the year in paddocks along with supplementary feeding in hay rings and grain feeders. It should be noted that the original dairy farm operated at this site was of 600 animals between milking herd and young

stock. There is approximately 90Ha at 462 Richards road. Stocking density for 600 head is therefore 6.6 head/ha.

Cattle numbers = 600. Standard Cattle Units $(600 \times 0.74) = 444$

Stocking density at the feedlot is sufficiently higher and offers more efficient management and easier handling. The additional benefit of operating the feedlot site and having access to the Richards Road site is that during wet conditions animals can be directed to the Richards Road site out of the mud in the feedlot thus improving animal welfare.

Manure from cattle left insitu and is incorporated into the soil prior to sowing of crop species for the purpose of making hay and silage.

The lagoon banks and water's edge is fenced off from cattle. The existing layout of the property was designed to suit an irrigated dairy farm supporting 600 cows and the evolution to a 600 cow grazing property is not expected to alter the environmental impacts. Cattle have a large area to occupy and feeding infrastructure can be located 100m away from waterways. Regular moving of feeders and hay rings is required to prevent concentration of waste and maintain soil structure.

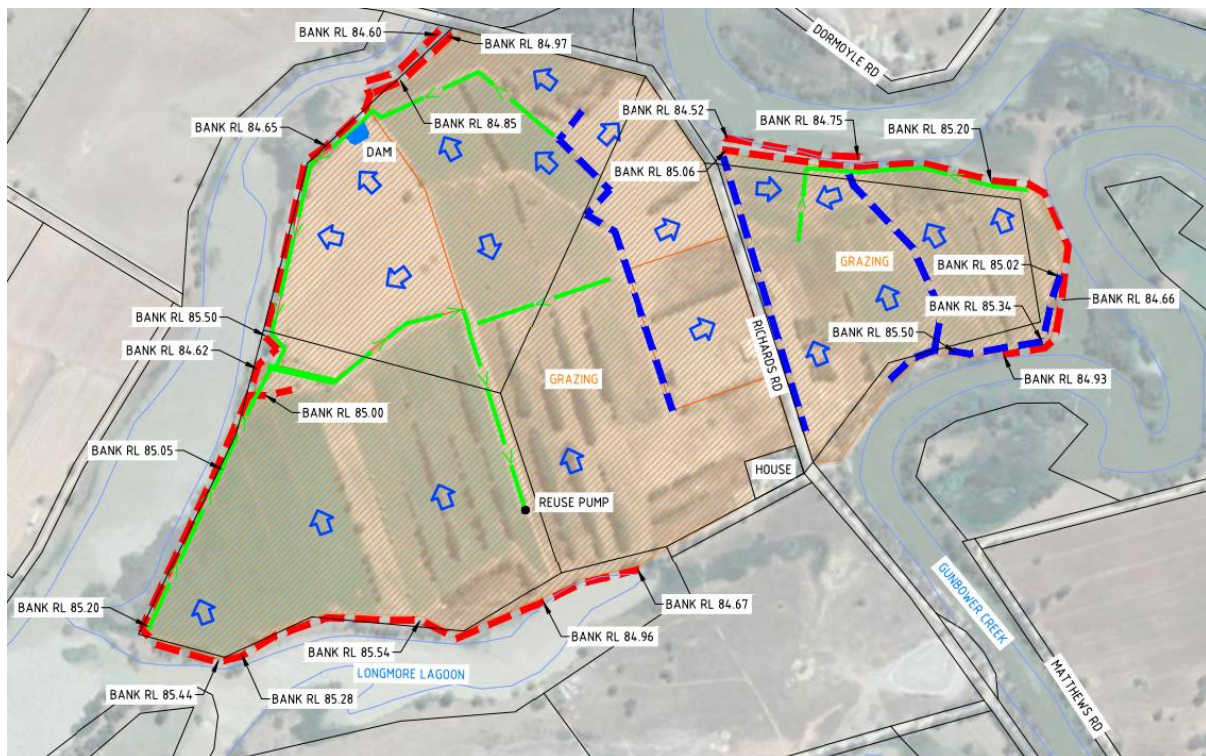


Figure 5: Richards Road property and re-use system

3.4.1 Drainage at 462 Richards Road

The re-use system is designed to capture all runoff at the site from the existing irrigation layout. No runoff is directed to flow into the Lagoon.

3.5 Effluent Irrigation Practices

The persons responsible for these activities are the feedlot manager and owner.

Paddock	Soil Type	Method	Frequency
Adjacent to feedlot	Gunbower association	Diluted with irrigation water through Pipe and riser flood irrigation	When required/Once per year

3.5.1 Risk Assessment

Liquid effluent can be added to irrigation water via pump out and diluted before irrigated onto paddocks through the existing pipe and riser system. The application will be done only when wind direction can take odours away from neighbouring houses. Irrigation will be such that run off will be avoided and not reach the re-use system.

3.6 Run off dispersal Management (if applicable)

When the effluent pond at the feedlot is pumped to the irrigation area through the pipe and riser system adjacent to the feedlot, monitoring to ensure good distribution across the grass paddock should be undertaken. Improved grass will be grazed by cattle.

3.6.1 Risk Assessment

This area is managed through grazing practices and therefore environmental impact will be kept to a minimum.

3.7 Carcase disposal method

Feedlot manager or designated staff member responsible for dead animal disposal to call for cartage.

All deaths are recorded as per recording guidelines in Management Plan. Carcasses can be removed daily from site via knackery truck.

3.7.1 Risk Assessment

As dead animals are removed from the site and not buried environmental impact is minimal.

3.8 Stormwater management

Clean stormwater is diverted around feedlot and away from ponds.

3.8.1 Risk Assessment

Contour banks are maintained to keep water away from ponds so risk to environment is minimal.

3.9 Community Amenity

The person(s) responsible for this are the feedlot manager and owner.

Wind direction is always taken in account before pen cleaning. Neighbours will be considered. Neighbours have been asked to notify feedlot manager of any inconvenience.

3.9.1 Risk Assessment

Utilisation of management practices will minimize risk of impacts on neighbours. Feedlot manager is to record any complaints as per the BRM Management Plan and take corrective actions to ensure against any future occurrence.

4 Pen Cleaning

Both the Victorian Grazing and Intensive Animal Production Guidelines 2018 and the Management of Dairy Effluent Guidelines 2008 outline the fundamental objectives of an effluent system, which encourages:

- All effluent from the feedlot, paddocks and tracks must be contained and reused (manure will be reused and collected to be composted for fertiliser by local contractor).
- Effluent must not enter surface waters (including billabongs, lagoons, creeks or rivers).
- Effluent must not enter ground water (either directly or through infiltration from seepage).
- Effluent must not contaminate land (nutrient overload).
- Offensive odours must not impact beyond property boundaries.

These objectives should be achieved via the following management practices:

- Pen cleaning should be undertaken a minimum of 4 times per year.
- Prior to pen cleaning operations, immediate effected neighbours should be notified as early as possible.
- Cleaning operations to be completed during weekdays.
- Weather conditions should be monitored and pen cleaning conducted when moisture levels are optimal with prevailing winds blowing away from dwellings will result in faster dispersion of odours than stable atmospheric conditions (e.g. an overcast, cool day with no wind).
- Manure stockpiling may be required for short term prior to collection. See Appendix 1 for engagement letter confirmation.

4.1 Manure Stockpiling

Where a manure stockpile is required at 57 Gibbon Road feedlot site prior to removal by contractor, the soil surface should be compacted. Runoff drains should be dug to divert drainage to effluent pond. The volume of the stockpile will only incorporate one pen cleaning and only short term (days) storage will be required. See Appendix 1 for engagement letter from contractor.

4.1.1 Risk Assessment

Manure is regularly removed from site four times per year so there is minimal environmental impact. It is removed from the site by a contractor for composting to be used as fertiliser as part of his own business. In the event that pen cleaning is required and manure is to be stockpiled for later pick up it should be located on a compacted surface with all drainage water directed to the effluent pond. The surface should be durable so that it can be trafficked all year round.

5 Monitoring

The implementation of a monitoring program recommends the evaluation of the following elements:

- Maintain rainfall record for water balance calculations
A rainfall record is a useful tool for performing calculations by the monitoring of local rainfall events.
- Monitor available storage in holding pond
Assess storage pond capacity is adequate after large rainfall events. Ensure effluent pond and reuse system are at minimum capacity prior to wet months of the year by utilising the water.
- Establishment of baseline soil conditions and at **5 year** intervals at feedlot
Management areas can be segregated as those having significantly different management, soil type, crop or pasture, stocking rate, irrigation rate.
- Each management area should have at least one soil monitoring point on a representative area. Topsoil and subsoil samples should be analysed annually to assess for nutrient deficiencies or excesses. Samples are selected from the same monitoring points over time for comparison.
- Levee bank infrastructure and drainage around property to ensure all runoff or irrigation water is to be retained onsite and cannot infiltrate into adjacent Longmore Lagoon.
- Continual visual and odour observation of all sites is essential to monitor the environmental conditions which can impact on neighbouring residences.

Elements to note include:

- Odour
- Ground cover
- Mud
- Wet patches
- Spilt feed
- Wind direction
- Fencing
- Pasture/Crop health
- Cattle health

Monitoring of the environmental conditions and procedures at the farms can be done with assistance from Agriculture Victoria and agronomist.

5.1 Q Fever

The risk from **Q fever** affecting staff is also a factor which should be implemented into the Management Plan through testing and reporting of any potential infection through checking of clinical history, antibody testing and skin testing conducted by qualified trained practitioner. Infected stock pass this disease through the respiratory route through inhalation of dust and can potentially be transferred person to person.

Vaccination of all on-site workers is recommended as an initial precaution, and a Q-Fever management Plan should be put into place as part of future risk management.

Taken from Health.vic website.

5.2 Monitoring Program

5.2.1 Lagoons and Surface Water

Goulburn Murray Water (GMW) conducts regular water quality testing of the lagoon as well as North Central Catchment Management Association (NCCMA). Parameters such as Blue Green Algae are tested in a number of key locations in the Gunbower Creek system as well as Coliban Water testing at the Cohuna Water Treatment Plant. Turbidity and nutrients regularly exceed guidelines due to inputs from surrounding agricultural land including farm runoff and stock access. Further water monitoring of lagoons by operator is not necessary, considering the large number of land users in the area.

Water temperatures in the creek and lagoons (when full) are considered cooler than unregulated systems however this is considered to be a low risk to biodiversity. Blue Green Algae and dissolved oxygen are also monitored regularly as part of environmental watering events.

5.2.2 Monitoring program and schedule

Item to be monitored	Monitoring Frequency	Analysis required
Liquid effluent utilization area	Annually	Soil testing when required
Pen surface	Annually	Compaction and surface condition. Gradient for runoff may need earthworks to prevent wet areas
Underground water	Annually	Bore water is monitored at least annually by local authorities for salinity and depth. The addition of on farm bores not essential as the water table is in excess of 3m and not considered a problem.
Surface water	Event based	Water testing of lagoons is completed by local authorities. Re-use system inspected for off-site flow and amended.
Manure waste volume	Seasonally	Contractor notified well in advance when optimum pack depth for pen

		cleaning is required so as to co-ordinate effectively timed removal.
Fence lines bordering the lagoons	Regularly	Regular inspection of is recommended to ensure cattle access to the waterways is prevented. Fences fixed immediately.
Inspection of banks and the re-use system	Regularly	Assessed and repaired immediately to prevent runoff entering waterway
Effluent pond capacity	Event based	Monitor capacity to ensure no effluent will overtop banks. Evaluate if pond requires pumping out or if cleaning out of pond to increase volume is required.

5.2.3 Risk Assessment

As local authorities regularly monitor bores in the area and the water table is in excess of 3m additional bore sites is not considered necessary. Corrective actions can be implemented if environmental harm is caused.

5.2.4 Recording

The person responsible for keeping the records as listed below are the feedlot manager and owner.

The following records are kept at the feedlot:

Interruption of delivery of feed supply	Back up feed supply on farm and
Water supply interruption	A back up pump installed/available
Disease outbreak	Local vets consulted to determine cause of death. Relevant authorities contacted if notifiable. Dead animals buried in mass grave onsite.
Effluent system Overflow	Pump available to distribute effluent to onsite pipe and riser irrigation to be diluted.

5.2.5 Response Strategy

In the event of a system overflow of the effluent pond into nearby waterways, whether through direct flow into lagoon or seepage, EPA, GMW and NCCMA will be contacted, and a directed response will be initiated.

Recording of the event and management procedures can be developed if unforeseen circumstances have led to the impact on the environment.

6 Odour, Noise and Dust Management

6.1 Odour

The stock containment area which was previously set up during drought conditions is utilised as a containment area to fatten cattle for sale. Pen cleaning is undertaken minimum 4 times per year

Whilst every considerable strategy is taken to minimise odours in the running of the feedlot, it is still a factor in the running of any livestock practice. Odours are generally emitted from the ponds, laneways and pen surfaces, and the distribution of effluent onto paddocks.

Activities taken to manage odour should be planned with consideration of weather events, days of the week and the quantities of effluent applied. There is no actual component of odour which can be measured, only the intensity and tolerance of individuals.

Fly control is also established with good pen cleaning practice, which minimises effluent build up and reducing moisture content of the ground surface during the warmer months when flies tend to breed the most.

Management practices:

- Regular pen cleaning program (minimum 4 times per year)
- Pen and drainage maintenance - no wet patches
- Dead stock management & daily disposal (removal)
- Removal of spoilt feed
- Odour dispersion modelling indicates that the prevailing wind direction is from the west.
- Ben and Rennae McInnes and staff should also put into consideration the practice of notifying neighbours via email well in advance of pen cleaning operations taking place and confirming a suitable schedule with them. If these operations produce considerable amounts of odour, and potentially offensive odours will be at their strongest during these practices.
- Feedlot owner should also keep an updated diary of the operation of pen cleaning. In the event of any potential follow-up being required it will be easy to refer back to likely cause of any issues.
- Pen cleaning operations are potentially best suited to days when wind blows with directions coming **from** an easterly direction so as not to direct odours towards nearby neighbours. It would also be beneficial to discuss with neighbours the impacts and operations which have the biggest negative effect on them and identify areas in which practices can be improved and altered.
- Pen cleaning operations are recommended to be undertaken in accordance with Victorian Code for Cattle Feedlots in order to minimise odour impact on nearby residents coming directly from the cattle pens. It is recommended that cleaning should take place minimum 4 times per year under suitable weather conditions ie. Not excessively windy, no rainfall, wind not blowing directly towards neighbouring properties.

6.2 Noise

Noise levels generated by the feedlot do not cause any material detriment to nearby residents or persons affected by transport of cattle and feed associated with the operation of the feedlot.

- Location of all equipment minimises likelihood of mechanical noise
- Loading and unloading of stock and livestock handling located within feedlot boundary work area away from road and other dwellings
- All machinery operations involved with any of the management practices are operated in accordance with the manufacturer's specifications and any noise suppression equipment installed is maintained.
- Noise levels generated on the feedlot do not exceed measures established by EPA
- Noise on adjacent properties from machine operations does not exceed ambient levels before 6am and after 10pm.
- All vehicles operating on-site and off-site have efficient exhaust mufflers.

6.3 Dust

Sprinklers:	<p>The installation of sprinklers within the pens has been implemented in order to minimise the spread of dust during summer and dry periods.</p> <p>Pens should not be made to wet as this can generate odour. Overuse of sprinklers in the past has led to pneumonia in cattle so animals and conditions are closely monitored.</p>
Dust is minimised by:	<ul style="list-style-type: none"> • Gravel roadways • Maintaining suitable pen stocking rate • Regular watering of roadways • Utilising sprinkler system to wet feedlot pens • Monitor wind direction and dust volumes to observe when sprinklers would be most effective in feedlot
Sprinklers and Heat:	<p>The sprays could also reduce summer temperatures and encourage cattle to eat more and put on more weight.</p>

It could also be considered to minimise cattle numbers during the driest times of the year, or spread the stock out as much as possible over the properties to reduce dust.

6.4 Ecology

The Environment around the Feedlot is maintained:

- No noxious weeds
- Spraying is done around drains to allow effluent to run freely
- Run off surface water is contained
- Trees are maintained around feedlot

- Minimise impacts on native flora and fauna
- No shelter is available for pests and animals
- Hazardous materials do not pose any risk of pollution.

6.5 Other Farm Waste

Other Farm Waste can include:

- Scrap metals/used wire
- Masonry- concrete, bricks and tiles
- Asbestos
- Empty chemical drums and used container/chemicals
- Oil and oil filters
- Tyres
- Dead stock
- Silage/feed wrapping and hay band/twine
- Treated timber
- Tree and plant waste
- Recyclables
- Household waste

The inappropriate disposal of farm waste may be an offence under the Environmental Protection Act 1970 and/or contravene a local municipal law. Disposal of wastes should only be done where permitted and where recycling can occur it is to be encouraged. Licensed commercial waste disposal companies may be an option for removing waste from farm.

7 Risk Assessment

Under the Planning Guidelines for the Intensive Livestock Agriculture Development risk can be measured by considering the probability of an event occurring and the likely consequences if the event were to actually take place.

Risk probabilities may range from almost certain to rare. (See Table 2- From Planning Guidelines; Intensive Agriculture Development).

Level	Descriptor	Description
A	Almost certain	Common or repeating occurrence
B	Likely	Known to occur, or 'it has happened'
C	Possible	Could occur, or "I've heard of it happening"
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

Table 1: Probability Table

Risk consequences may then range from severe to negligible (See Table 3).

Level	Description
1	Severe - Severe and/or permanent damage
2	Major - Serious and/or long-term impact
3	Moderate - Moderate and/or medium-term impact
4	Minor - Minor and/or short-term impact
5	Negligible

Table 2: Consequences

The risk probability and risk consequence score are then combined in a matrix to create an overall risk assessment matrix (See Table 4). This matrix may range from 1 (lowest risk) to 25 (highest risk).

Probability	A	B	C	D	E
Consequence					
1	25	24	22	19	15
2	23	21	18	14	10
3	20	17	13	9	6
4	16	12	8	5	3
5	11	7	4	2	1

	High Risk	Medium Risk	Low Risk
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Table 3: Risk Ranking Matrix

Risk	SURFACE WATER Impact to watercourses and wetlands	ODOUR Impact to community amenity	SOIL CONTAMINATION Degradation of soil through manure waste application
Adverse effect	Release of contaminants due to inadequate storage and handling of contaminants from: <ul style="list-style-type: none"> • Manure/effluent • Contamination from decomposing mortalities • Chemical and fuel spillages 	Nuisance to community and neighbour amenity resulting from odours produced at site.	Nitrogen and Phosphorous concentrations excessively high and lead to soil contamination and productivity decline.
Comments	Nitrogen and Phosphorous from organic residues can contaminate surface waters and lead to eutrophication. Decomposing mortalities may generate bacterial/viral contaminants if not properly managed.	Buffer/separation distances may be required to mitigate impacts from community amenity.	Monitoring of nutrient levels in the soils and correct alternate fertiliser application to balance levels may be required. Additional paddocks may be required for cropping to provide uptake of nutrients.
Initial Probability	Possible (C)	Likely (B)	Possible (C)
Initial Consequence	Moderate (3)	High (2)	Moderate (3)

Initial Risk	Medium (13)	Medium (13)	Medium (13)
Follow up needed	Yes	Yes	No
Management Strategy	<p>Organic Waste from cattle removed regularly in short term stockpiles.</p> <p>Mortalities collected by knackery and removed for further processing.</p> <p>Chemicals stored in a secured area on an impermeable base.</p> <p>Presence of infrastructure and banks along wetlands restricts contaminated water from site entering wetlands.</p>	<p>Monitoring of conditions when pens are cleaned and consulting neighbours prior to operation.</p> <p>Grazing on pasture encouraged a supplementary feeders and hay rings moved regularly.</p> <p>Vegetation/straw bale screen recommended to the north and south of the feedlot area to reduce impact on neighbours.</p> <p>Proximity of neighbours indicate regular pen cleaning (4 times per year) in order to reduce odour causing waste.</p> <p>Wet patches to be managed and filled (reduce odour).</p> <p>Mortalities removed daily.</p>	<p>Following the recent agreement with a private contractor, all solid manure waste will now be removed from the site during pen cleaning.</p> <p>No manure waste is applied to paddocks on site and short term stockpiles of manure are erected onsite per pen cleaning.</p>
Final Probability	Rare (E)	Unlikely (D)	Rare (E)
Final Consequence	Minor (4)	Minor (4)	Negligible (5)
Final Risk	Low (3)	Low (5)	Low (1)

Table 4: Displaying risk assessment data and responses

8 References

Victorian Code for Cattle Feedlots August 1995. Department of Agriculture Energy and Minerals

Guidelines for Victorian Dairy Feedpads and Freestalls 2010. Department of Primary Industries

Victorian Grazing and Intensive Animal Production Guidelines 2018. DEDJTR

Stock Containment Areas. 2018 Agriculture Victoria

NSW Health Q-Fever Fact Sheet

Gunbower Creek System – Environmental Water Management Plan. NCCMA 2015 V7

9 Appendix 1 – Contractor agreement



Ben McInnes
PO Box 101
Gunbower
Vic 3566

Dear Ben,

We would like to acknowledge and thank you for providing us with the opportunity to cart your cow manure, excess feed and straw off your farm. These products will assist us in the production of our natural compost product. We look forward to working with you and for future opportunities.

Kind Regards

Norman Lipp
Owner
Lipp's Natural Resources Pty Ltd
0428 571 149