Council

DEVELOPMENT APPLICATION P867 – PROPOSED ANIMAL HUSBANDRY-INTENSIVE (CATTLE FEEDLOT) AT NO. 144 (LOT 150) PICKLES ROAD, NARRIKUP

A – Development Application P867
B – Public Submissions
C – Agency Referral Responses

Meeting Date: 28 October 2025

Number of Pages: 89

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Denmark Office: 7/40 South Coast Highway Denmark, WA 6330 **(08) 9848 1309**
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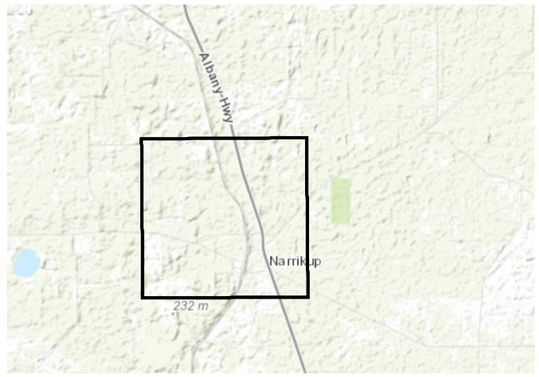
BIO DIVERSE SOLUTIONS



Overview Map Scale 1:200,000

Legend

- Subject Site
- Property Boundary
- Cadastre

ATTACHMENT A

Scale
1:15,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Overview Map: World Topographic Map Service, ESRI 2012
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CLIENT
MSC0744
Lot 150 Pickles Road
Narrikup, 6326

Figure 1: Location Plan

	QA Check	*Drawn by*
	AMT	**WAB**
STATUS	*FILE*	*DATE*
FINAL	**MSC0744**	**31/07/2025**

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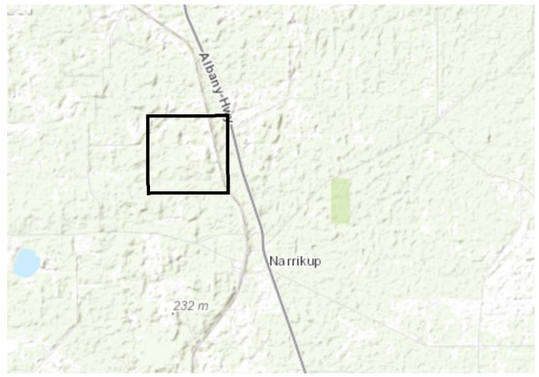

Overview Map Scale 1:200,000

Legend

- Proposed Pens
- Cadastre
- 2m Contours
- Contour drain
- Water Line
- Proposed 4m Wide Access Track
- Access Track
- Sedimentation Pond
- Rock Pitching
- Screening
- G Gate
- Trough
- Temp Hardstand Carcass Area - Bunded

Scale
1:7,250 @ A3
GDA MGA 2020 Zone 50

Data Sources
Overview Map: World Topographic Map Service, ESRI 2012

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Kayden McDonald
Lot 150 Pickles Road
Narrikup, 6326

Cattle Feedlot Site Plan

	QA Check	*Drawn by*
	KPK	**WAB**
STATUS	*FILE*	*DATE*
FINAL	**MSC0744**	**31/07/2025**

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BIO DIVERSE SOLUTIONS

Overview Map Scale 1:200,000

Legend

- Proposed Pens
- Cadastre
- 2m Contours
- Contour drain
- Water Line
- Access Track
- Sedimentation Pond
- Rock Pitching
- Screening
- G Gate
- Trough
- Temp Hardstand Carcass Area - Bunded

Scale
1:2,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Overview Map: World Topographic Map Service, ESRI 2012
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Cattle Feedlot Concept Plan

	QA Check	Drawn by
	KPK	WAB
STATUS	FILE	DATE
FINAL	MSC0744	18/07/2025

CATTLE FEEDLOT ENVIRONMENTAL ASSESSMENT & OPERATIONS PLAN

BIO DIVERSE SOLUTIONS

Lot 150 Pickles Road

Narrikup, WA 6326

Final

28/07/2025

BUSHFIRE | ENVIRONMENTAL | WATER | GIS

DOCUMENT CONTROL

Title: Cattle Feedlot Environmental Assessment & Operations Plan – Lot 150 Pickles Road, Narrikup
Author (s): A. Tucker, W. Bennett & K. Kinnear
Reviewer (s): M. Gray & G. Penter
Job No.: MSC0744
Client: Kayden McDonald

REVISION RECORD

Revision	Summary	Prepared By	Reviewed By	Date
Draft v.1	Internal QA review	A. Tucker, W. Bennett & K. Kinnear	M.Gray	23/07/2025
Draft v.1	Approval Review	A. Tucker	G. Penter	24/07/2025
Draft v.1	Draft released to client for review	A. Tucker	K. McDonald	24/7/2025
Final v.1	Final released to client	A. Tucker		28/7/2025

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1 Introduction, Scope and Background Information

Kayden McDonald ("The Client") commissioned Bio Diverse Solutions (Environmental Consultants) to prepare an Environmental Assessment and Operations Plan (EAOP) for a proposed 499 head cattle feedlot at Lot 150 Pickles Road, Narrikup within the Shire of Plantagenet (SOP). The client is proposing to construct and implement the cattle feedlot and requires documentation for a Development Application with the Shire of Plantagenet. The purpose of this document is to assess the environmental values for the site, assess the suitability of the proposed facility and provide supporting ongoing management of the facility.

The scope of BDS work included:

- Search all publicly available databases (i.e. DBCA, DWER) pertaining to the site, such as Environmentally Sensitive Areas (ESA's), Acid Sulfate Soils, Flora, Fauna, Soils, Contaminated Sites, Wetlands, Groundwater and Surface water resources within the proposed area and assess setback distances (buffers);
- Undertake site assessment including soil testing by Great Southern Geotechnics to confirm desktop findings, assess soil and landscape conditions during winter; and
- Preparation of Environmental Assessment/ Management Report, which will include the assessment of Environmental Impacts, risks to adjacent land uses and aversion of risk from the proposed cattle feedlot aligned to SoP guidelines/local policy. This will include detail on ongoing site management to avoid environmental harm from the facility.

1.1 Location and Development Proposal

The "subject site" is defined as Lot 150 Pickles Road, Narrikup in the Shire of Plantagenet (see Figure 1). The property is 154.7 hectares in total and is zoned as "Rural" under the Shire of Plantagenet Local Planning Scheme No. 5. It is proposed that the cattle feedlot will be developed on a 10.0 ha portion of the property.

The cattle feedlot development will consist of:

- 5 pens, a total of 10.0 ha in size, designed to hold up to a maximum of 499 cattle;
- Water supply and feed infrastructure;
- Sedimentation ponds for capture and holding of effluent runoff;
- A biosolid stockpile area for carcass management;
- Contour drains to capture and direct surface runoff from pens;
- Vegetated screening to the west; and
- Vehicle access tracks.

A conceptual site plan of the proposed area is shown in Figure 2.

Figure 1: Location Plan

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BIO DIVERSE SOLUTIONS

Overview Map Scale 1:200,000

Legend

- Proposed Pens
- Cadastre
- 2m Contours
- Contour drain
- Water Line
- Access Track
- Sedimentation Pond
- Rock Pitching
- Screening
- Gate
- Trough
- Temp Hardstand Carcass Area - Bunded

Scale
1:2,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Elevation Data: World Topographic Map Service, ESRI 2012
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Figure 2: Cattle Feedlot Concept Plan

	QA Check	Drawn by
	KFK	WAB
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FINAL	MSC0744	18/07/2025

1.2 Alignment to Legislation, Policy and Guidelines

In assessing the proposed cattle feedlot facility, Bio Diverse Solutions has prepared this report aligned to the following legislation:

- *Biosecurity and Agriculture Management Act 2007* (BAM Act);
- *Environmental and Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- *Environmental Protection Act* 1986 (EP Act);
- *Environmental Protection Regulations 1987* (EP Regulations);
- *Public Health Act 2016;*
- Department of Agriculture (now Department of Primary Industries and Regional Development) *Guidelines for the Environmental Management of Beef Cattle Feedlots in Western Australia (2002);*
- Water Quality Protection Note No.33 (2010) Nutrient and irrigation management plans – DWER;
- Shire of Plantagenet Health Local Law 2008; and
- Shire of Plantagenet Town Planning Scheme No. 5 Policy No. 31.1 – Feedlots (2015).

1.3 Existing Land Uses

The subject site is situated in the locality of Narrikup and is approximately 3.2 km north of the Narrikup townsite and 13 km south of the Mount Barker town site. Currently the subject site is being utilised for cattle grazing/general agriculture. There is a single residential dwelling located on the property. The adjacent surrounding properties are also zoned as "Rural". Refer to Figure 3 below showing photographs of the existing land use.

a) View to the west of cattle feeding on the proposed feedlot location.

b) View of paddocks and fenced native vegetation adjacent to the proposed cattle feedlot.

c) View of exiting dams and tank water supply.

d) View of existing shed infrastructure on site.

Figure 3: Site photographs

1.4 Adjacent Land Uses, Tenure and Sensitive Receptors

The subject site is located within an agricultural area, with residential agricultural properties to the west, east and south. The northern boundary of the property is bordered by private property Lot 6061 which has blue gum plantation and native vegetation areas. To the east is private property Lot 151, to the south is Lot 3068 and Lot 153, to the west is Lot 1443. These rural zoned lots are all similar land uses, being used for grazing and interspersed with remnant native vegetation areas. Pickles road is a SOP maintained Road Reserve located to the south of the subject site. The subject site is accessed by a battle axe road from the north of Pickles Road. Refer to adjacent land use photographs Figure 4 and Figure 10: Buffer Distance Mapping (Appendix A).

a) View to the north of Blue Gum Plantation (LHS of photograph).

b) View adjacent property to the south east of the subject site.

c) View south/south west of access (battle axe) from Pickles Road and grazed paddocks to the south of the subject site.

Figure 4: Surrounding land use photographs

Two reserves exist in proximity to the subject site, the Lake Barnes Road Nature Reserve, approximately 3 km to the north west and the Lake Eyrie Nature Reserve, a conservation class wetland, approximately 4 km to the south west. These are both zoned "Environmental Conservation Reserve". The Narrikup townsite is located approximately 3.2 km to the south east.

The closest residence/sensitive receptor to the proposed cattle feedlot is located 890 m to the north. Additional neighbouring residences are approximately 1.4 km to the north west and south. The remaining buildings in adjoining private property are all outbuildings. Refer to Figure 10: Buffer Distance Mapping, Appendix A.

1.5 Climate

1.5.1 Rainfall and Temperature

The closest open Bureau of Meteorology (BoM) site is Mt Barker (009581). The average annual temperature in Mt Barker ranges from 6.1–26.4°C. The average summer temperature ranges between 24.3-26.4°C, whilst average winter temperatures range between 6.1-7.2°C. The annual mean rainfall for Mt Barker is 721.7 mm (BoM, 2025a). On average the months of June to August are the months with the highest rainfall (Figure 5). There was higher than average rainfall recorded in the months of August 2024 and January, March and April 2025 (Figure 5). The total rainfall in the year previous to the site soil testing event in June 2025, (July 2024 – June 2025) was 652.4 mm which is 69.3 mm below average and equates to 9.60% decrease in average rainfall.

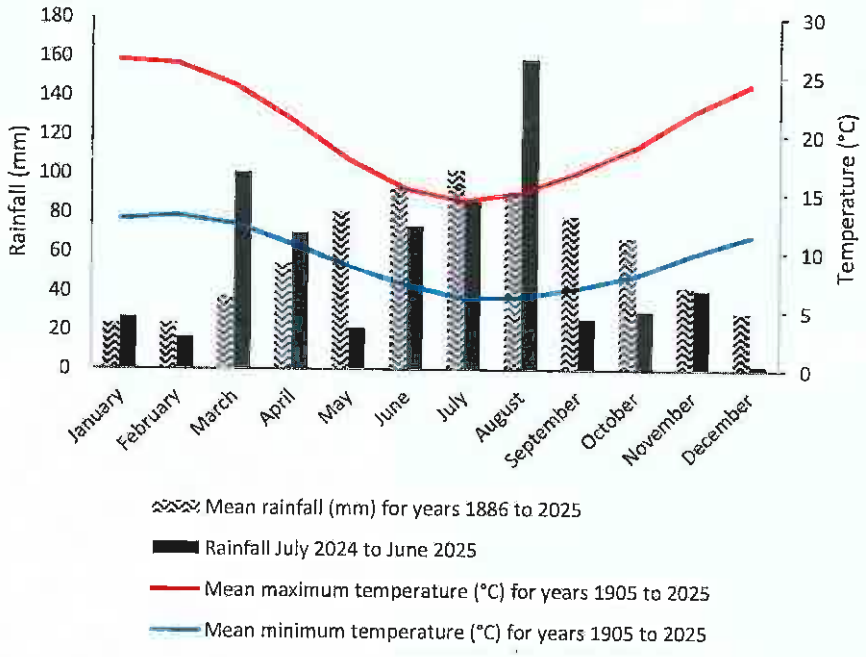

Figure 5: Temperature and Rainfall Data for Mt Barker BoM Weather Station No. 009581

1.5.2 Prevailing Winds

The closest open Bureau of Meteorology (BoM) site that records wind direction and speed is Albany Airport (009741). Although Albany Airport is 25 km to the south of the subject site, the wind conditions are considered similar, however, the sea breeze influence is considered to likely be significantly less pronounced. The Albany Airport experiences a varied wind climate with a bias towards an easterly, south-easterly wind direction in summer and a westerly, north-westerly wind direction in winter, with the windiest part of the day in summer being the afternoon and in the mornings in winter time (BOM, 2025b). On average the prevailing winds during the summer months are easterlies in the mornings, swinging to south-easterlies in the afternoons, autumn months are north-westerlies in the mornings, swinging to south-westerlies and south-easterlies in the afternoons, winter months are north-westerlies in the mornings and afternoons, and spring months are westerlies in the mornings, swinging to south-westerlies in the afternoons. Winds in summer, winter and spring are typically strong, blowing more than 20 km/hr. High velocity winds have the effect of dissipating odours through mixing within the air stream. Light winds which have a greater capacity to transport odours offsite, occur less than 7% of the time in summer and spring and less than 15% of the time in autumn and winter. The wind data for Albany Airport for different times of the day is further described in Table 1 and the wind roses for each season are shown in Appendix B.

Table 1: Prevailing Wind Directions and Speed Data for Albany Airport Weather Station 009741

Season	Prevailing Wind		Details
	9am (% of time)	3pm (% of time)	
Summer (January)	Easterly (24%)	South-easterly (31%)	Summer mornings are calm 5% of the time. The most prevalent winds are from the east at 24% of the time (11.5% 20-30 km/hr). Winds from the south-west and south-east occur 14% of the time, and winds from the south occur 13% of the time. Summer afternoons are rarely calm. The most prevalent winds are from the south-east at 32% of the time (19% 20-30 km/hr). Winds from the south and south-west occur 22% and 21% of the time.
Autumn (April)	North-westerly (20%)	South-westerly (15%) to South-easterly (19%)	Autumn mornings are calm 14% of the time. The most prevalent winds are from the north-west at 20% of the time and the west at 15% of the time. Winds from the south-west, south and south-east occur relatively infrequently at 5% of the time. Autumn afternoons are calm for 3% of the time. The most prevalent winds are from the south-west at 19% of the time (8% 10-20 km/hr). Winds from the south-east occur 18% of the time.
Winter (July)	North-westerly (37%)	Westerly (27%) to North-westerly (24%)	Winter mornings are calm 11% of the time. The most prevalent winds are from the north-west at 39% of the time (19% 10-20 km/hr). Winds from the north occur 22% of the time. Winds from the east and south-east occur relatively infrequently at 2% and 1% of the time. Winter afternoons are calm for 4% of the time. The most prevalent winds are from the west at 26% (9.5% 20-30 km/hr) and north-west at 24% (9.1% 20-30 km/hr) of the time. Winds from the north occur 16% of the time. Winds from the east and south-east occur relatively infrequently at 3% and 4% of the time.
Spring (October)	Westerly (22%)	South-west (25%), West (18%) to South-easterly (15%)	Spring mornings are calm for 6% of the time. The most prevalent winds are from the west at 22% of the time (9% 10-20 km/hr). Winds from the south-west occur 12% of the time. Winds from the south and south-east occur less common at 7% of the time. Spring afternoons are calm for 1% of the time. The most prevalent winds are from the south-west at 25% of the time (12.5% 20-30 km/hr). Winds from the south occur 18% of the time (10% 10-20 km/hr). Winds from the south-east occur 17% of the time (10.5% 20-30 km/hr).

Percentages are based on the number of days that wind direction was recorded over the total number of observation days at weather station 009741 between 1965 and 2014.

1.6 Topography

The property is in a gently undulating landscape in the Narrikup area. The subject site has a south-southwestern aspect with the lowest point approximately 134 m AHD in the southwestern boundary and the highest point approximately 142 m AHD at the north-northwestern boundary (Figure 11, Appendix A). The proposed pens have a gradient/slope of 1:50.

1.7 Geology and Soils

Database searches show the survey area lies within the Redmond System (242Re). The Redmond System is described as *"Undulating plateau with scattered depressions, in the east of the Albany Sandplain Zone. Sandy gravel, pale deep sand, non-saline wet soils and grey sandy duplex. Marri-jarrah forest, swamp yate-paperbark-sheoak woodland and heath."* (DPIRD, 2022a).

The Albany Sandplain Zone is described as "Gently undulating plain dissected by a number of short rivers flowing south. Eocene marine sediments overlying Proterozoic granite and metamorphic rocks. Soils are sandy duplex soils, often alkaline and sodic, with some sands and gravels." (DPIRD, 2022b). The soil type within the subject site is mapped as the Trent Subsystem (242ReTR) with the Boulongup Subsystem (242ReBO) and Caldyanup Subsystem (242ReCA) soils adjacent (Figure 3). The Trent Subsystem is described as "*Flat topped hills; <40 m relief; gently sloping flanks. Gravelly yellow duplex*

soils and laterite on crests: Jarrah-Marri forest. Leached sands with iron pan on flanks; Jarrah-Sheoak woodland." (DPIRD, 2022c).

Refer to Figure 11: Soil Landscape Mapping, Appendix A.

The DPIRD Phosphorous Risk Export mapping (DPIRD, 2017) places the subject site as a low risk of phosphorous export (10-30% of map unit has a high to extreme phosphorous export risk). This indicates a high ability of the soils to retain nutrients (nitrogen and phosphorous) within the soil profile.

1.8 Surface Water Hydrology

The property lies within the Denmark Coast Catchment area and the Hay River Subcatchment (DWER, 2018a, 2018b). There are no surface waterways within the subject site, with the nearest waterway, Sleeman Creek, approximately 540 m to the west-southwest. The Sleeman Creek flows drains from the South Coast Significant Wetland Lake Barnes (DBCA, 2017) approximately 2.6 km northwest of the subject site, into the Hay River approximately 6.1 km downstream of the subject site.

To the south of the property in adjacent grazed land is another minor tributary flowing to the south west, refer to Figure 6 below and Figure 10: Buffer Mapping, Appendix A.

a) View to the west, north west of Sleeman Creek from access track into subject site.

b) View of minor creek flowing to the southwest (note orientation of photograph on Solocator incorrect).

Figure 6: Surrounding creek lines to the south.

1.9 Hydrogeology and Groundwater

Australian Geoscience Mapping and Department of Water and Environmental Regulation 250K Hydrogeological mapping (DWER, 2001) places the subject site within one hydrogeological zone which is described as:

Geology Type: P_n
Geology Time: Proterozoic
Aquifer Description: Fractured and weathered rocks – local aquifer, very minor or no groundwater resources.
Geology Description: Granitoid gneiss, minor metamorphic rock and quartzite, generally weathered to clay.

Refer to Figure 12: Hydrogeological Mapping, Appendix A.

There are no groundwater bores in or within the vicinity of the subject site. The subject site is not situated within a Priority Drinking Water Source Area (PDSWA; DWER, 2018c). The nearest PDSWA being the Priority 2 Marbellup Brook Catchment Area approximately 11 km south of the subject site.

Water for the cattle feedlot operations will be sourced from an onsite storage dam which is fed by an existing groundwater bore. As the subject site is not in a surface or groundwater protection area, licenses are not required for the use of water for stock purposes.

1.10 Acid Sulfate Soils

There are no areas within the subject site mapped as containing Acid Sulfate Soils.

1.11 Remnant Vegetation

The property lies within the Southern Jarrah Forest JAF02 IBRA subregion. Hearn et al (2002) describes the IBRA region as *"Duricrusted plateau of Yilgarn Craton characterised by Jarrah-Marri forest on laterite gravels and, in the eastern part, by Wandoo-Marri woodlands on clayey soils. Eluvial and alluvial deposits support Agonis shrublands. In areas of Mesozoic sediments, Jarrah forests occur in a mosaic with a variety of species-rich shrublands."*

Most of the property has been historically cleared of native vegetation for the purpose of agriculture. Pockets of remnant Jarrah-Marri forest vegetation of varying sizes have been retained. The remnant vegetation is in predominantly good condition. It should be noted that no remnant vegetation is proposed to be cleared for the development of the cattle feedlot. See Figure 7 for example photographs of the remnant vegetation to the south of the proposed cattle feedlot pens.

Figure 7: Photographs of remnant Jarrah-Marri forest to the south of the proposed cattle feedlot pens.

2 Site Assessment

Site soil assessment of the proposed pens was undertaken on 26th June 2025 by (Great Southern Geotechnics). Kathryn Kinnear, Alexandra Tucker and William Bennett of Bio Diverse Solutions were present during testing and the assessment phase included ground truthing of desktop findings and site soil investigations of the proposed infrastructure.

2.1 Site Soil Testing

Site soil testing was conducted on the 26th June 2025 by Great Southern Geotechnics and Bio Diverse Solutions. Testing involved drilling of bore holes to 2500mm, in-situ soil analysis, photographic recording, logging of soil types and measuring of water table. In total, nine test holes were constructed to 2.5 m depth and left open for a minimum of 1 hour to identify any water table present. The soil investigation report for the site is shown in Appendix C, and test pit locations are shown in Figure 6.

Soils across the subject site were found to be generally consistent, comprising of topsoil (sand with silt) overlying a mix of sandy duplex soils with clay and gravel. The only water table encountered was within TP4 and was at 1100 mm from ground level after 1 hour. The final design of the proposed cattle feedlot pens has been altered to accommodate this high groundwater table. A summary of the site soils as classified by Great Southern Geotechnics is found in Table 2.

Table 2: Soil testing results (GSG, 2025)

Test Pit	Depth (mm)	Soil Type	Soil Description
TP1	0-130	Sand with silt	Dark grey, fine to medium grained. Contains roots and root fibres (topsoil).
	130-560	Sand with silt	Grey, fine to medium grained.
	560-1200	Sandy gravel	Brown, fine to course, sub-rounded to angular gravel. Fine to medium grained sand.
	1200-2300	Sandy clay	Low to medium plasticity, grey mottled red and orange. Fine to medium grained sand.
	2300-2500	Sandy clay	Medium to high plasticity, brown. Fine to medium grained sand. **No water table encountered.**
TP2	0-60	Sand with silt	Dark grey, fine to medium grained. Contains roots and root fibres (topsoil).
	60-260	Gravelly sand	Light brown, fine to medium grained. Fine to coarse, sub-rounded to sub-angular gravel.
	260-1050	Clayey sand	Low to medium plasticity, light brown/orange mottled red. Fine to medium grained sand.
	1050-2500	Clayey sand	Low to medium plasticity, light brown/grey mottled red and orange. Fine to medium grained sand. **No water table encountered.**
TP3	0-170	Gravelly sand with silt	Dark grey, fine to medium grained sand. Fine to medium, sub-rounded to sub-angular gravel. Contains roots and root fibres (topsoil).
	170-500	Sandy gravel	Light brown, fine to coarse, sub-rounded to sub-angular gravel. Fine to medium grained sand.
	500-1300	Clayey sand	Low to medium plasticity, light brown/orange mottled red. Fine to medium grained sand.
	1300-2500	Sandy clay	Low to medium plasticity, light brown/grey mottled red and orange. Fine to medium grained sand. **No water table encountered.**

Table 2 cont.

Test Pit	Depth (mm)	Soil Type	Soil Description
TP4	0-100	Sand with silt	Dark grey, fine to medium grained sand. Contains roots and root fibres (topsoil).
	100-700	Sand with silt	Grey, fine to medium grained sand.
	700-1400	Sandy gravel	Brown/orange, fine to coarse, sub-rounded to angular gravel. Fine to medium grained sand.
	1400-1900	Sandy gravel	Brown, fine to coarse, sub-rounded to sub-angular gravel. Fine to medium grained sand.
	1900-2500	Sandy clay	Medium to high plasticity, grey mottled orange and red. Fine to medium grained sand.
	1100		**Water table.**
TP5	0-100	Sand with silt	Dark grey, fine to medium grained sand. Contains roots and root fibres (topsoil).
	100-250	Sandy gravel	Light brown, fine to coarse, sub-rounded to sub-angular gravel. Fine to medium grained sand.
	250-850	Clayey sand	Low to medium plasticity, light brown/orange. Fine to medium grained sand.
	850-2500	Clayey sand	Low to medium plasticity, grey mottled red and orange. Fine to medium grained sand.
			No water table encountered.
TP6	0-120	Gravelly sand with silt	Dark brown. Fine to medium grained sand. Fine to coarse, sub-rounded to sub-angular gravel.
	120-630	Sandy gravel	Brown, fine to coarse, sub-rounded to sub-angular gravel. Fine to medium grained sand.
	630-1050	Sandy clay	Low to medium plasticity, light brown/orange mottled. Roots and root fibres. Fine to medium grained sand.
	1050-2500	Silty clay with sand	Low to medium plasticity, light grey/white mottled red. Fine to medium grained sand.
			No water table encountered.
TP7	0-120	Sand with silt	Dark brown. Fine to medium grained sand. Contains roots and root fibres (topsoil).
	120-550	Sand	Light brown, fine to medium grained sand.
	550-900	Sandy gravel with clay	Low to medium plasticity, light brown and grey. Fine to coarse, sub-rounded to sub-angular gravel. Fine to medium grained sand
	900-1600	Sandy clay trace gravel	Low to medium plasticity, light brown mottled orange and red. Fine to medium grained sand. Fine to medium, sub-rounded to sub-angular gravel.
	1600-2500	Silty clay with sand	Low to medium plasticity, light grey/white mottled red. Fine to medium grained sand.
			No water table encountered.
TP8	0-150	Sand with silt	Dark grey, fine to medium grained sand.
	150-1000	Sand	Grey, fine to medium grained sand.
	1000-2220	Sand with silt	Dark brown, fine to medium grained sand.
	2220-2500	Clay	High plasticity, grey mottled orange gravel.
			No water table encountered.

Table 2 cont.

Test Pit	Depth (mm)	Soil Type	Soil Description
TP9	0-150	Sand with silt	Dark grey, fine to medium grained sand. Contains roots and root fibres.
	150-400	Gravelly sand	Light brown/grey, fine to medium grained sand. Fine to medium, sub-rounded to sub-angular gravel.
	400-840	Sandy gravel	Brown/orange, fine to coarse, sub-rounded to sub-angular gravel. Fine to medium grained sand.
	840-1300	Sandy clay	Medium to high plasticity, light brown mottled orange and red. Fine to medium grained sand.
	1300-2500	Clayey sand	Low to medium plasticity, grey mottled orange and red. Fine to medium grained sand. **No water table encountered.**

The site soils were found to be conducive to the proposed cattle feedlot operations and 5 pens have been designed to maximise the sandy duplex soils with clay and gravels encountered from test pits 1-3 and test pits 5-9. Test pit 4 encountered high-water table, and as such has a reduced pen area in the lower areas around this site.

BIO DIVERSE SOLUTIONS

Overview Map Scale 1:200,000

Legend

- Property Boundary
- Development Footprint
- Proposed Feedlots
- Cadastre
- Soil Testing Locations
- 2m Contours

Scale
1:3,000 @ A3
GDA MGA 2020 Zone 50

CLIENT
Kayden MaDonald
Lot 150 Pickles Road
Nannup, 6389

Figure 8: Test Pit Locations

	Cd Check: KPK	Drawn by: WAB
STATUS: FINAL	FILE: MSC8744	DATE: 17/07/2025

2.2 Buffer Distances

In order to minimise the impact on surrounding land users, the *SoP Town Planning Scheme No. 5 Policy No. 13.1* and the *SoP Health Local Law 2008* stipulate minimum buffer distances from sensitive areas for feedlots. Table 3 and Table 4 summarises the level of compliance with these buffer recommendations for the proposed cattle feedlot. Figure 10, Appendix A shows the mapping associated with Table 3 below.

Table 3: Buffer Distance Compliance to SoP Town Planning Scheme No. 5 Policy No. 13.1

Shire of Plantagenet Town Planning Scheme Policy No. 13.1 (SoP, 2015)				
Description	**Minimum buffer distance (m)**	**Actual buffer distance against proposed cattle feedlot (m)**	**Additional Comments**	**Buffer met (Y/N)**
Groundwater table (wet season) – minimum depth separation	1.5	2.5	Winter site soil testing of 9 site test pits, indicated only one (TP4) encountered the ground water table above 2.5 m. The cattle feedlot has been redesigned to exclude this area.	Y
Banks of water courses that flow intermittently	50	220	Nearest water course that flows intermittently is a seasonal surface water flood route to the west in the neighbouring property (Figure 10).	Y
Property boundary	50	134-620	The property boundary to the north and west are both approximately 130 m away. (Figure 10).	Y
Private water supply bores and dams	100	>1000	None in a 1 km vicinity (Figure 10).	Y
Banks of permanent streams and rivers	100	550	Nearest major watercourse is Sleeman Creek to the west and south. (Figure 10).	Y
Conservation wetlands (as identified by DoW)	200	4000	Nearest conservation class wetland is Lake Eyrie to the west. (Figure 10).	Y
Boundary of wetland vegetation around estuaries and lakes	200	2600	Nearest wetland vegetation is around Lake Barnes to the north-west. (Figure 10).	Y
Neighbouring isolated residence or public amenities	1000	885	The nearest neighbouring residence is 885 m (Figure 10) to the north on Lot 5908 (346) Lake Barnes Road. The proposed cattle feedlot does not meet this minimum buffer distance and a letter of neighbours' consent is provided Appendix D.	N
Gazetted townsites	5000	3200	The proposed cattle feedlot does not meet this minimum buffer distance and further discussion with SoP Planning Officers may be required. (Figure 10).	N

Table 4: Buffer Distance Compliance to SoP Health Local Law 2008

Shire of Plantagenet Health Local Law (SoP, 2008)				
Description	**Minimum buffer distance (m)**	**Actual Buffer Distance against proposed cattle feedlot (m)**	**Additional Comments**	**Buffer met (Y/N)**
Townsite boundaries	5000	3200	The proposed cattle feedlot does not meet this minimum buffer distance and further discussion with SoP Planning Officers may be required.	N
Isolated rural dwellings, dairies and industries	1000	885	The nearest neighbouring residence is 885 m to the north on Lot 5908 (346) Lake Barnes Road. The proposed cattle feedlot does not meet this minimum buffer distance and a letter of neighbour's consent is provided Appendix D.	N
Public roads and Recreation areas	100	844	Nearest road is Newman Road to the east (844 m), Pickles Road to the south east (1450 m), and Albany Highway to the east (1400 m).	Y
Neighbouring rural property boundaries	50	134 - 620	Nearest neighbouring property boundaries are to the west and north.	Y
Major water course and water impoundments	300	540 - 571	Nearest major watercourse is Sleeman Creek to the west and south.	Y
Bores, wells or soaks used for drinking, stock or irrigation	300	300	Nearest water body used for stock is a surface water fed dam to the west on the neighbouring agricultural property Lot 1443 (336).	Y
Minor water courses	100	N/A	N/A	N/A

3 Operations and Site Management Plan

3.1 Objectives

The EAOP identifies the specific operating procedures and provides an environmental management plan that establishes a commitment to environmental performance at the proposed cattle feedlot at Lot 105 Pickles Road.

The objectives of this EAOP are to:

- Comply with applicable environmental and planning legislation;
- Identify and manage environmental risk;
- Ensure all environmental safeguards are implemented correctly; and
- Monitor, review and record environmental impacts and compliance.

3.2 General Operations

3.2.1 Feedlot Activities

The operation of the facility generally involves receival of cattle, ration feeding for a minimum of 35 days and dispatch of stock.

3.2.2 Operating Hours

The feedlot operates 24/7, however it is intended that the livestock delivery and departures will occur in daylight hours to facilitate safe supervision of loading and unloading.

3.2.3 Access

Access to the property is via Pickles Road off Spencer Road and Albany Highway. Suitable hardstand access tracks already exist from Pickles Road through the entry to the property and around existing infrastructure. Additional hardstand access tracks will be constructed within the property to provide suitable access to the proposed feedlot facility as shown on the concept plan (Figure 2).

3.2.4 Machinery and Equipment

The operation of the facility requires the use of specialised equipment and machinery typical of feedlot operations and other general equipment not specific to the feedlot, including:

- Transport, access and maintenance machinery including trucks, all-terrain vehicles, tractors and forklifts;
- Ramps for loading/unloading of stock;
- Pens and fences; and
- General maintenance equipment.

3.2.5 Water Supply

Water for the feedlot facility is provided from a groundwater production bore located in the east of the property. Groundwater is pumped to an existing holding dam and from there it will be gravity fed/piped to the newly established feedlot.

3.2.6 Effluent Management

The effluent management system for the proposed feedlot has been designed in accordance with the West Australian Guidelines for the Environmental Management of Beef Cattle Feedlots (DoA, 2002).

The key components of the drainage system for this development are:

- Diversion channels constructed around the feedlot complex to capture all effluent and surface water runoff into sedimentation ponds;
- Flow to the sedimentation ponds is achieved using a gravity setting; and

- Runoff is retained in the sedimentation ponds for sufficient time to allow the majority of the entrained solids to settle out.

3.3 Solid Waste Management

Management of solid waste in the form of manure, carcasses and sludge from ponds is necessary to prevent contamination of downstream waterways/waterbodies, the environment and minimise injury/disease to the cattle.

3.3.1 Manure

Manure will be collected from the feedlot pens on a regular basis to avoid build up and will be stockpiled in biosolid storage areas (manure stockpiles). There may be multiple manure stockpiles to minimise transporting time during collection, however all manure stockpiles will be located within the controlled drainage area, ensuring rainfall runoff from stockpiles is directed to the sedimentation ponds. The interval between manure collections and stockpiling will vary depending on cattle numbers and manure build-up at any one time. The stockpiles of manure will be removed off site on a regular basis by a licensed third-party operator.

3.3.2 Carcasses

Once a carcass has been identified, it is removed as soon as possible from the pens and stockpiled in the bunded carcass hardstand temporary storage area (see Figure 2). Carcasses will be transported off site on a regular basis as required and disposed of appropriately at a licensed facility.

3.3.3 Pond Sludge

If any effluent runoff is encountered, this is to be contained into the proposed sedimentation ponds, the organic matter within the effluent settles out and forms a sludge layer at the base of the pond. This sludge will be removed once its volume has reached approximately 10% of the ponds capacity or if a strong odour is detected from the ponds. The sludge will be removed using an excavator and stockpiled in the manure stockpile area. The sludge (and manure) will be transported off site by a licensed operator once stockpile(s) have reached capacity. It is probable that the sedimentation ponds only require desludging every few years.

3.3.4 Wind and shade management

A windbreak is to be developed along the western and northern boundary of the pens as shown in the Concept Plan (Figure2). The windbreak is to be layered with shrub/scrub species and fast growing trees to provide protection to the stock in winter and shade in summer months. A conceptual design of a windbreak to be implemented is shown in Figure 9. This it to be implemented once the fencing and drainage is constructed around the pens.

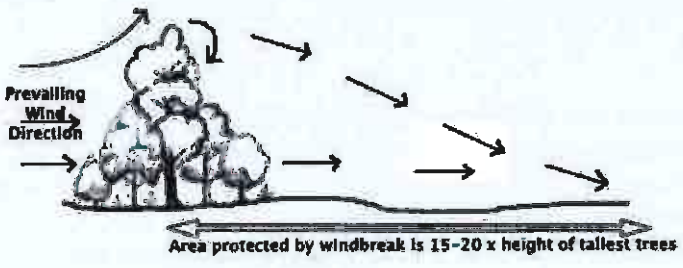

Figure 9: Conceptual design of a windbreak

The windbreak will also contribute to lessening any odour or noise from the pens to adjacent receptors.

4 Operational Procedures

Small feedlots when adequately located and managed, present few management issues. The management considerations for a cattle feedlot are solid waste, effluent, dust, odour, noise, visual and environmental incident management and staff training. The following procedures will assist with effectively managing these risks.

4.1 Solid Waste Management

4.1.1 Objective

To sustainably manage solid waste from the feedlot facility to prevent contamination of waterways/waterbodies, groundwater and to prevent disease and injury to the livestock.

4.1.2 Procedures

1. The feedlot manager shall undertake monthly inspections of the pen floors to schedule cleaning.
2. The feedlot manager shall schedule pen cleaning at a time that does not interfere with livestock receival and processing. Material removed from the pens will be stored in manure stockpiles and removed off site by licensed third party operators as described in section 3.3.1.
3. Solids from the sedimentation ponds shall be removed once they reach 10% of the pond's capacity, stored in manure stockpiles and removed off site by licensed third party operators as described in section 3.3.3.
4. In the event of livestock death, immediate action will be taken to remove the dead animal to the hardstand carcass storage area where it will be removed off site a licensed disposal facility as soon as practical.
5. In the event of mass livestock death or notifiable disease, the feedlot manager shall consult with the Department of Primary Industries and Regional Development (DPIRD) to determine the appropriate management strategy and follow their instructions.
6. The feedlot manager shall ensure that all solid waste removal from the site is only undertaken by an approved and licensed third party operator.
7. The feedlot manager shall require any vehicles removing solid waste from the site are appropriately sealed to avoid any potential leakage and covered to prevent dust.
8. The feedlot manager shall ensure that all solid wastes are stored in their designated areas to prevent runoff causing potential contamination to waterbodies/waterways and the environment.

4.2 Effluent Management

4.2.1 Objective

To sustainably manage effluent (liquid waste) from the feedlot facility to prevent contamination of groundwater, waterways/waterbodies and to prevent disease and injury to the livestock.

4.2.2 Procedures

1. The feedlot manager shall undertake minimum monthly inspections of the drainage system to ensure it is operating as intended; ensuring that there is no ponding, sediment build up in the drains or scouring.
2. The feedlot manager shall conduct monitoring of the sediment depth in the sedimentation ponds following rainfall events to determine the depth of deposited material and the rapidity with which it dries.
3. The feedlot manager shall ensure the sedimentation ponds are operating as intended with water levels consistent with rainfall frequency and intensity.
4. The feedlot manager shall ensure all fuels, oils and chemicals used on site are stored in an approved manner.
5. In the event of a fuel, oil or chemical spill, all efforts will be made by all workers to immediately contain and clean up the spill (see section 4.8.3).

4.3 Dust Management

4.3.1 Objective

To ensure that the feedlot operations are conducted in a manner that minimises the potential for dust generation and impacts on local air quality.

4.3.2 Procedures

Dust emissions are anticipated to be minimal during the operation of the feedlot facility. The feedlot manager shall ensure operations are conducted in a responsible manner that minimises dust generation as far as practicable, by:

1. Ensuring that non-essential work is suspended in high or extreme wind events.
2. The unsealed tracks with the feedlot facility will be routinely inspected to ensure they are adequately maintained to minimise wheel dust generation. Any identified damage/issues to tracks will be repaired as soon as practicable.
3. A vegetated wind break will be planted and maintained on the western side of the feedlot facility as identified in the concept plan (Figure 2). A cross section conceptual design for the wind breaks are shown in Figure 9.
4. The feedlot manager shall maintain the existing screen of mature vegetation around the feedlot facility which will assist in dampening any dust generated at the facility.
5. The feedlot manager shall monitor site dust and keep a detailed record of any complaints received. This record shall be provided to relevant authorities if requested.

4.4 Odour Management

4.4.1 Objective

To ensure that the feedlot operations are conducted in a manner that does not cause or permit the emission of potentially offensive odour beyond the boundary of the property.

4.4.2 Procedures

1. The feedlot manager shall ensure that solid wastes are managed in accordance with section 4.1 to minimise the footprint of the solid waste and the amount of solid waste stored on-site.
2. The feedlot manager shall ensure that the effluent runoff is managed in accordance with section 4.2 to minimise the spread of waste within the runoff and ensure that it is directed to the sedimentation ponds.
3. The feedlot manager shall ensure that all wastes to be transported off site are transported in a suitably enclosed system to ensure negligible odour generation occurs.
4. The feedlot manager shall ensure that any leakage/spill of odour generating materials are immediately cleaned up.
5. The feedlot manager shall maintain the existing screens of mature vegetation and plant additional trees to the west of the pens which will assist in creating a turbulent airflow, which will help to disperse any odours generated on site.
6. The feedlot manager shall monitor site odours and keep a detailed record of any complaints received. This record shall be provided to relevant authorities if requested.

4.5 Noise Management

4.5.1 Objective

To ensure that the feedlot operations are conducted in a manner that minimises the potential for noise generating activities to impact on the local amenity.

4.5.2 Procedures

1. The feedlot manager shall ensure livestock delivery and departure occurs in daylight hours to facilitate safe induction and processing into/from the feedlot.
2. The feedlot manager shall ensure cleaning and maintenance operations occur within daylight hours.

3. The feedlot manager shall monitor site noise and keep a detailed record of any complaints received. This record shall be provided to relevant authorities if requested.

4.6 Visual Amenity Management

4.6.1 Objective

To ensure that the feedlot operations are conducted in a manner that minimises the potential for the feedlot appearance to impact on the local amenity.

4.6.2 Procedures

1. The feedlot manager shall maintain existing and planted vegetated shelter belts to ensure the views of the operating facility are minimised.
2. The feedlot manager shall ensure minimum setbacks to the facility are maintained.
3. The feedlot manager shall keep a detailed record of any complaints received. This record shall be provided to relevant authorities if requested.

4.7 Complaints Management

4.7.1 Objective

To ensure that any complaint that is received regarding the feedlot facility is recorded, investigated and options for avoiding reoccurrence are considered.

4.7.2 Procedures

1. The feedlot manager shall make available a telephone number for complaints and ensure that it is operational during operating hours.
2. All details of any complaint received and subsequent investigation will be recorded and kept by the feedlot manager.
3. The feedlot manager is responsible for investigating any complaint received and assessing options for avoiding recurrence.
4. The feedlot manager will ensure that the record of a complaint and investigation will be kept for at least four (4) years after the complaint was made and make the records available to relevant authorities if requested.

4.8 Environmental Incident Management

4.8.1 Objective

To ensure all incidents with the potential to impact adversely on the environment are investigated and documented and that options for avoiding recurrences are implemented.

4.8.2 General Procedures

1. The feedlot manager is responsible for reporting all incidents that may result in an adverse impact on the environment.
2. In the event of an environmental incident resulting in an emergency situation, immediate action should be taken and the feedlot manager shall immediately contact the appropriate service to arrange assistance (i.e ambulance, fire service, police etc).
3. The feedlot manager will notify all relevant authorities of incidents of pollution, environmental hazard or other activities potentially harmful to the environment within 24 hours of occurrence of the incident.
5. All incidents with the potential to impact adversely on the environment shall be investigated by the feedlot manager and options for avoiding recurrence are implemented.
6. A record summary of environmental incidents, causes and corrective actions shall be kept by the feedlot manager and provided to relevant authorities if requested.

4.8.3 Spill Management Procedures

This should be the methodology employed should a spill from fuel or chemical occur.

Dealing with minor spills

A small spill is considered to be a spill of five (5) litres or less providing the product is not concentrated. For concentrated products of any quantity the spill must be treated as a large spill.

1. **Assess safety.** Make sure that people are kept clear, and that you have the right training and equipment to deal with the spill.
2. **Stop the source.** Providing it is safe to do so, stop the spill at its source. This may involve righting an overturned container or sealing holes or cracks in containers.
3. **Contain and clean up the spill.** The spill should be mopped up immediately.
4. **Record the spill.** Record when, what, how and where the spill occurred, clean up measures undertaken and the names of any witnesses. Also, make note of what changes can be made when handling, transporting or storing chemicals to ensure a similar incident does not happen again.

Dealing with large spills

A large spill is considered to be anything over five (5) litres or concentrated chemicals of any volume.

1. **Assess safety.** Make sure that people are kept clear, and that you have the right training and equipment to deal with the spill.
2. **Consult the Material Safety Data Sheet (MSDS).** The MSDS will have instructions on how to deal with specific chemical spills.
3. **Put on protective clothing.** If necessary, put on gloves and goggles, a mask and an apron.
4. **Stop the source.** Providing it is safe to do so, stop the spill at its source. This may involve righting an overturned container or sealing holes or cracks in containers.
5. **Contain and control the flow.** The spill should be prevented from filtrating into the ground or entering the stormwater system. The outer edge of the spill should be dammed with rags, blankets, sand, sands bags, mops and/or absorbent booms.
6. **Clean up the spill.** Promptly cover the spill using absorbent materials such as the correct absorbent granules for the product (Note that some strong acids will react with some types of granules and sawdust), sand and rags, being mindful not to splash the spill. Using a dustpan or spade, the absorbent granules or sand must then be scooped up and placed into a container. This waste material is not to be buried or thrown into the environment. The method of disposing this waste will depend on the amount and the type of chemical that was spilt. The Department of Environment Controlled Waste Section will advise on the appropriate disposal of hazardous substances. There are several contractors that will dispose of contaminated substances and soils. All contact phone numbers can be found below.
7. **Notify the appropriate authority.** If the spill does enter a stormwater drain or open ground, the Department of Environment and your local council must be notified. Please refer to the phone numbers listed below. If there is a hazard to health or property, call Fire and Rescue on 000 immediately.
8. **Record the incident.** Record what, how and where the spill occurred and the names of any witnesses. Also, make note of what changes can be made when handling, transporting or storing chemicals to ensure a similar incident does not happen again.

Emergency contacts

All hours' phone numbers	
Life/property emergencies: Ambulance, Fire or Police	000
Pollution emergencies - Department of Water and Environment Regulation	1300 784 782
Poisons Information Centre	13 11 26
Water Corporation – Emergencies and water service difficulties	13 13 75
ChemCentre WA	9422 9800

Business hours' phone numbers

Department of Fire and Emergency Services	9395 9300
Department of Water and Environmental Regulation	6364 7000
WorkSafe	1300 307 877
Shire of Plantagenet	9892 1111

4.9 Staff Training

4.9.1 Objective

To ensure all employees, contractors and sub-contractors are aware of and are trained in and comply with the appropriate operational procedures and are aware of their responsibilities with respect to environmental management.

4.9.2 General Procedures

1. The feedlot manager shall ensure all employees and contractors undergo induction training to ensure they are aware of their responsibilities with respect to environmental management.
2. The feedlot manager shall ensure that all site staff have received the appropriate training at the commencement of their employment.
3. The feedlot manager shall ensure that all staff have read and are familiar with this operational plan.
7. The feedlot manager shall keep staff informed of any updates to the operational plan.
8. A record of staff training shall be kept by the feedlot manager.

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6 Appendices

Appendix A – Maps

Appendix B -- Albany Airport Wind Roses

Appendix C -- Geotechnical Investigation Report – Lot 150 Pickles Road, Narrikup (GSG, 2025)

Appendix D – Neighbours consent letter

Appendix A

Maps

Albany Office: 28 Hercules Crescent Albany, WA 6330 (08) 9842 1575
Bunbury Office: 7/40 South Coast Highway Dunbury, WA 6230 (08) 9849 1399
Esperance Office: 2A/113 Dempster Street Esperance, WA 6450 (08) 9072 1342
Perth Office: Suite 2/73 Troy Terrace, Jolimont WA 6014 (08) 9842 1575

BIO DIVERSE SOLUTIONS

Overview Map Scale 1:200,000

Legend

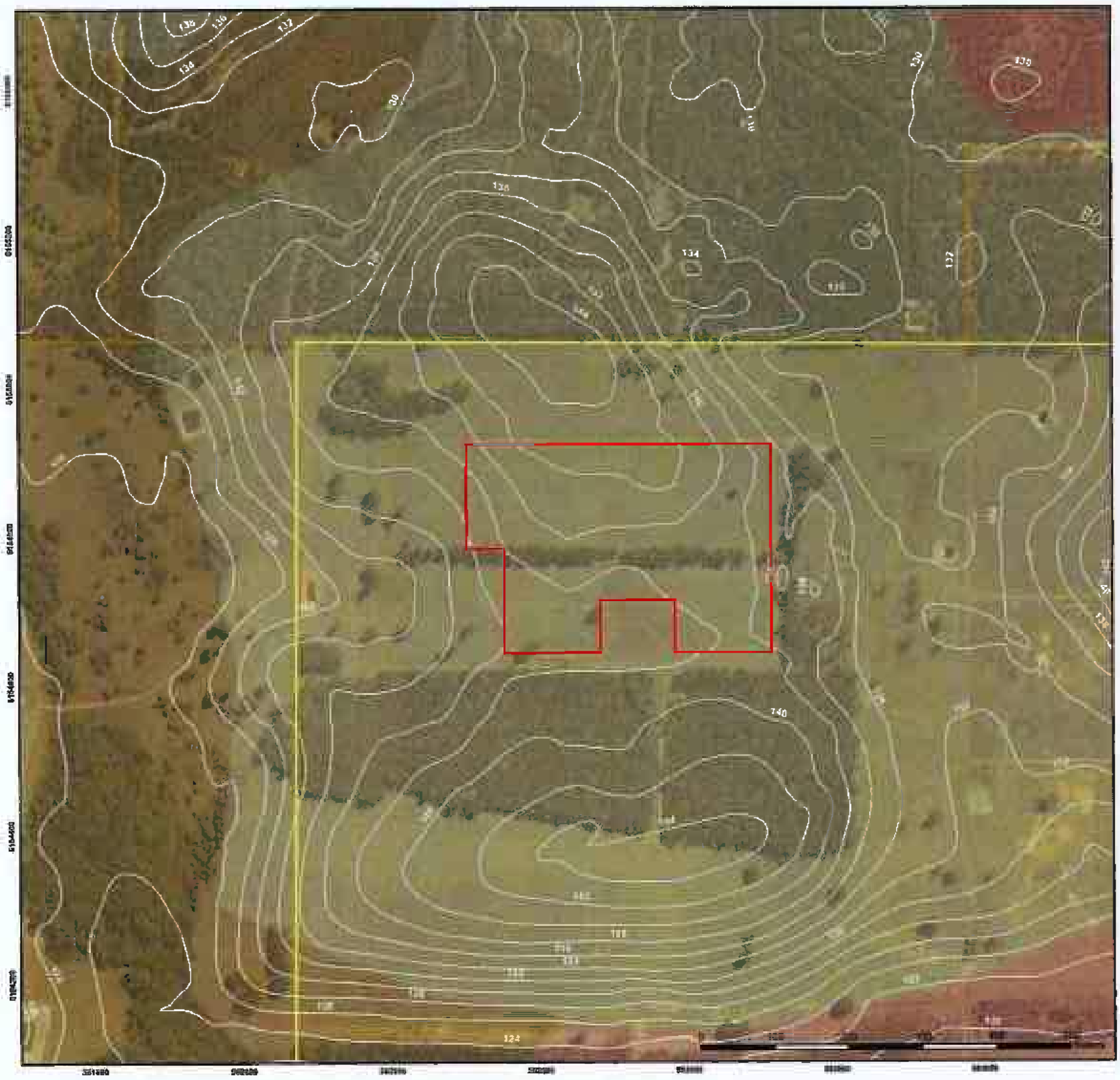
- Subject Site
- Property Boundary
- Cadastre
- Buffer
- Setback distances
- Watercourse
- Neighbouring Isolated Residence

Scale
1:10,000 @ A3
GDA MGA 2020 Zone 50

CLIENT
Kayden McDonald
Lot 150 Pickles Road
Narrikup, 6326

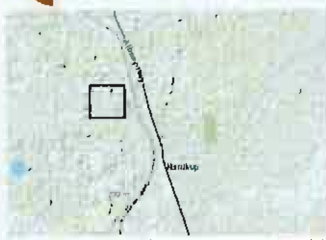
Figure 10: Buffer Distances

	QA Check: KPK	Drawn by: WAB
STATUS: FINAL	FILE: MSC0744	DATE: 18/07/2025



Albany Office: 29 Hercules Crescent Albany, WA 6330 (08) 9842 1575
Denmark Office: 1/40 South Coast Highway Denmark, WA 6333 (08) 9848 1309
Esperance Office: 2A/113 Dempster Street Esperance, WA 6450 (08) 9072 1382
Perth Office: 23/34 2775 Troy Terrace, Jolimont WA 6014 (08) 9849 1570

BIO DIVERSE SOLUTIONS



Overview Map Scale 1:200,000

Legend

- Property Boundary
- Subject Site
- Cadastre
- 2m Contours

Soil Landscape Mapping Best Available (DPIRD 027)

- 242ReBO
- 242ReCA
- 242ReTR

Scale
1:5,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Overview Map: World Topographic Map Service, ESRI 2012
Cadastral, Roads and Aerial Imagery Data © 2025 Western Australian Land Information Authority
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Lot 150 Pickles Road
Narrikup, 6326

Figure 11: Soil Landscape Map

	QA Check	Drawn by
	KPK	WAS
STATUS	**FILE**	**DATE**
FINAL	MSC0744	17/07/2025

Albany Office: 28 Hercules Crescent Albany, WA 6330 (08) 9842 1378
Denmark Office: 7/40 South Coast Highway Denmark, WA 6333 (08) 9848 1388
Esperance Office: 2A/113 Dempster Street Esperance, WA 6450 (08) 9072 1382
Perth Office: Suite 2/13 Troy Terrace, Jolimont WA 6014 (08) 9842 1378

BIO DIVERSE SOLUTIONS

Overview Map Scale 1:200,000

Legend

- Subject Site
- Property Boundary
- Cadastre
- Watercourse

250k Map Series Hydrogeology

- P_n
- P_no
- TP

Scale
1:10,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Overview Map: Topographic Map Service, ESRI 2012
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Nornikup, 6328

Figure 12: Hydrogeological Map

	QA Check	Drawn by
	KPK	WAB
STATUS	FILE	DATE
FINAL	MSC0744	17/07/2025

Appendix B

Albany Airport Wind Roses

Rose of Wind direction versus Wind speed in km/h (12 Apr 1965 to 25 Feb 2014)

Custom times selected, refer to attached note for details

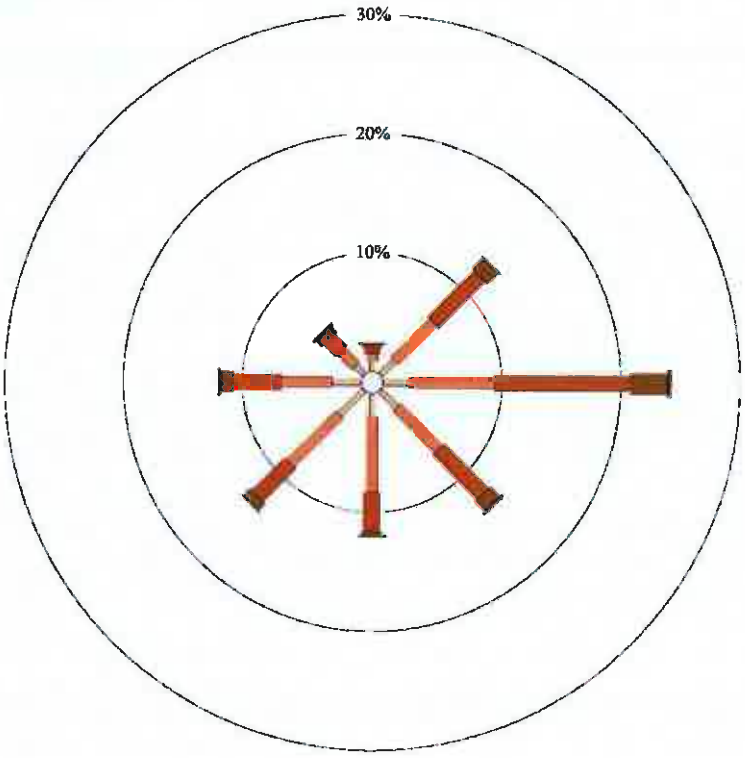
ALBANY AIRPORT COMPARISON

Site No: 009741 • Opened Jan 1942 • Still Open • Latitude: -34.9414° • Longitude: 117.8022° • Elevation 68m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.

9 am Jan
1515 Total Observations

Calm 5%



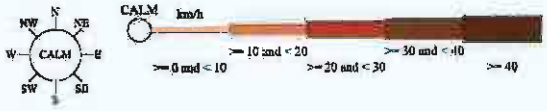
Rose of Wind direction versus Wind speed in km/h (12 Apr 1965 to 25 Feb 2014)

Custom times selected, refer to attached note for details

ALBANY AIRPORT COMPARISON

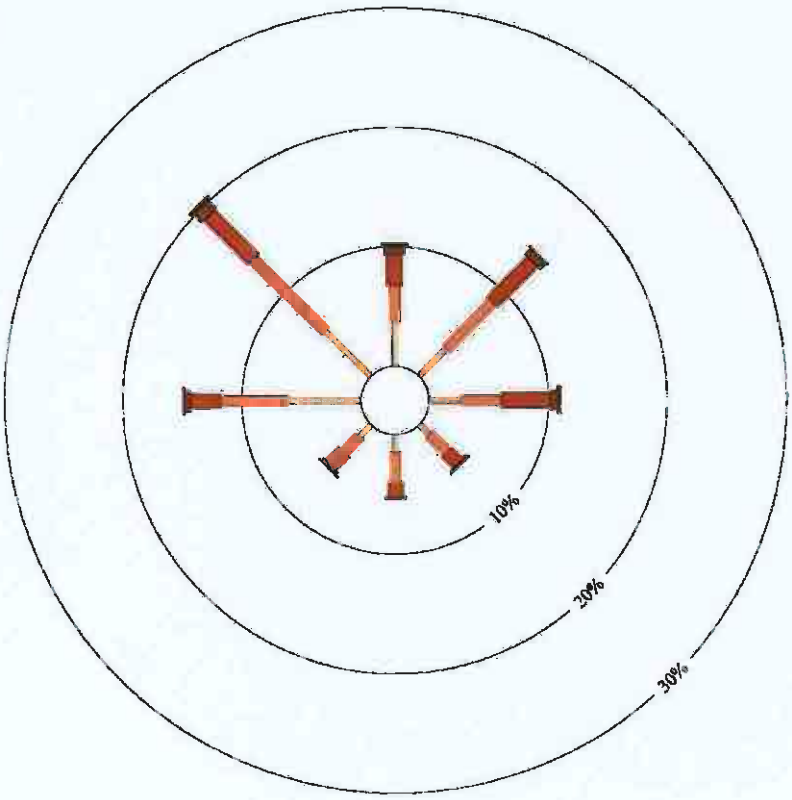
Site No: 009741 • Opened Jan 1942 • Still Open • Latitude: -34.9414° • Longitude: 117.8022° • Elevation 68m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



9 am Apr
1436 Total Observations

Calm 14%



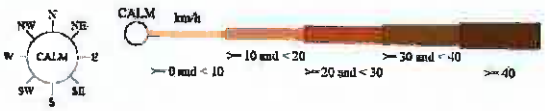
Rose of Wind direction versus Wind speed in km/h (12 Apr 1965 to 25 Feb 2014)

Custom times selected, refer to attached note for details

ALBANY AIRPORT COMPARISON

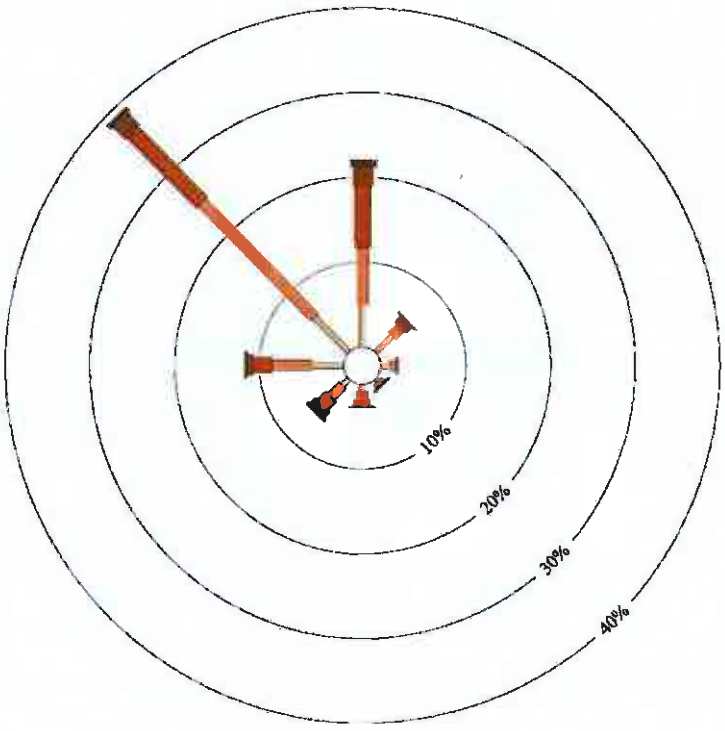
Site No: 009741 • Opened Jan 1942 • Still Open • Latitude: -34.9414° • Longitude: 117.8022° • Elevation 68m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



9 am Jul
1518 Total Observations

Calm 11%



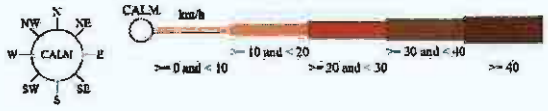
Rose of Wind direction versus Wind speed in km/h (12 Apr 1965 to 25 Feb 2014)

Custom times selected, refer to attached note for details

ALBANY AIRPORT COMPARISON

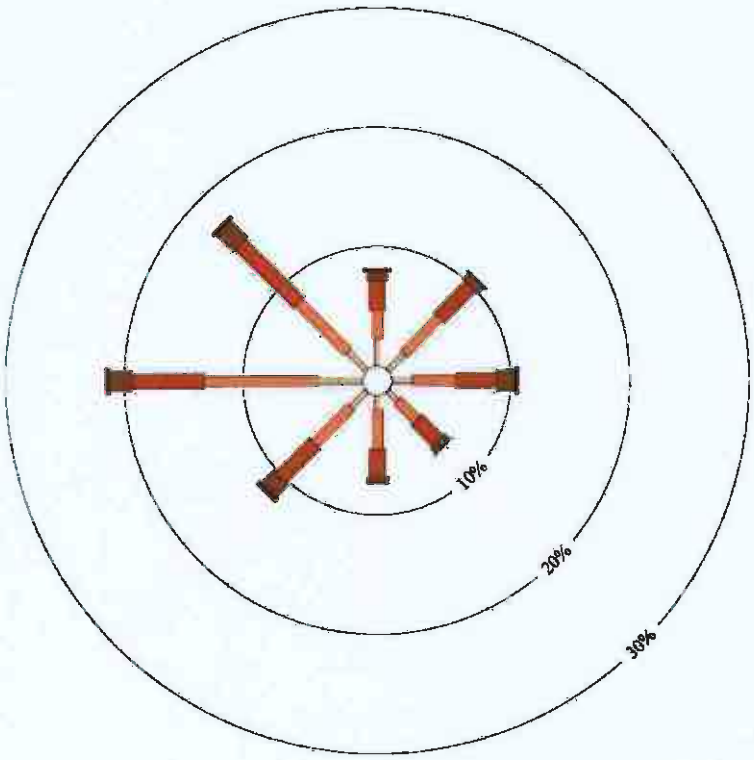
Site No: 009741 • Opened Jan 1942 • Still Open • Latitude: -34.9414° • Longitude: 117.8022° • Elevation 68m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



9 am Oct
1519 Total Observations

Calm 6%



Rose of Wind direction versus Wind speed in km/h (12 Apr 1965 to 25 Feb 2014)

Custom times selected, refer to attached note for details

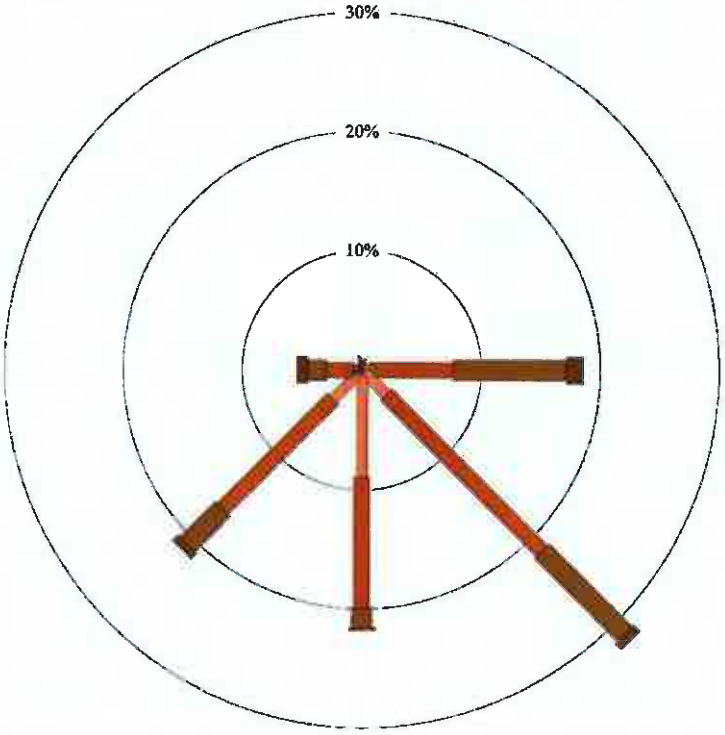
ALBANY AIRPORT COMPARISON

Site No: 009741 • Opened Jan 1942 • Still Open • Latitude: -34.9414° • Longitude: 117.8022° • Elevation 68m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.

3 pm Jan
1515 Total Observations

Calm *



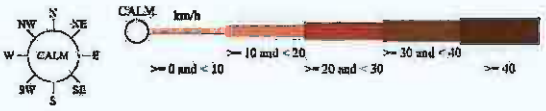
Rose of Wind direction versus Wind speed in km/h (12 Apr 1965 to 25 Feb 2014)

Custom times selected, refer to attached note for details

ALBANY AIRPORT COMPARISON

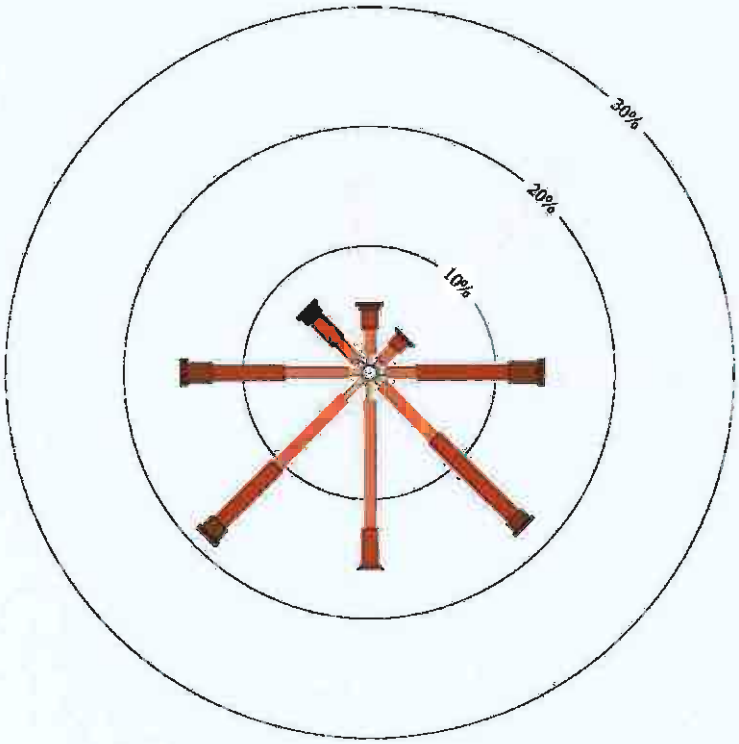
Site No: 009741 • Opened Jan 1942 • Still Open • Latitude: -34.9414° • Longitude: 117.8022° • Elevation 68m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



3 pm Apr
1432 Total Observations

Calm 3%



TCZ7951428 Page 1

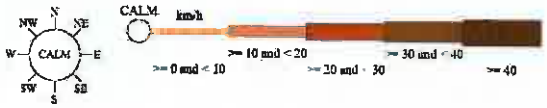
Rose of Wind direction versus Wind speed in km/h (12 Apr 1965 to 25 Feb 2014)

Custom times selected, refer to attached note for details

ALBANY AIRPORT COMPARISON

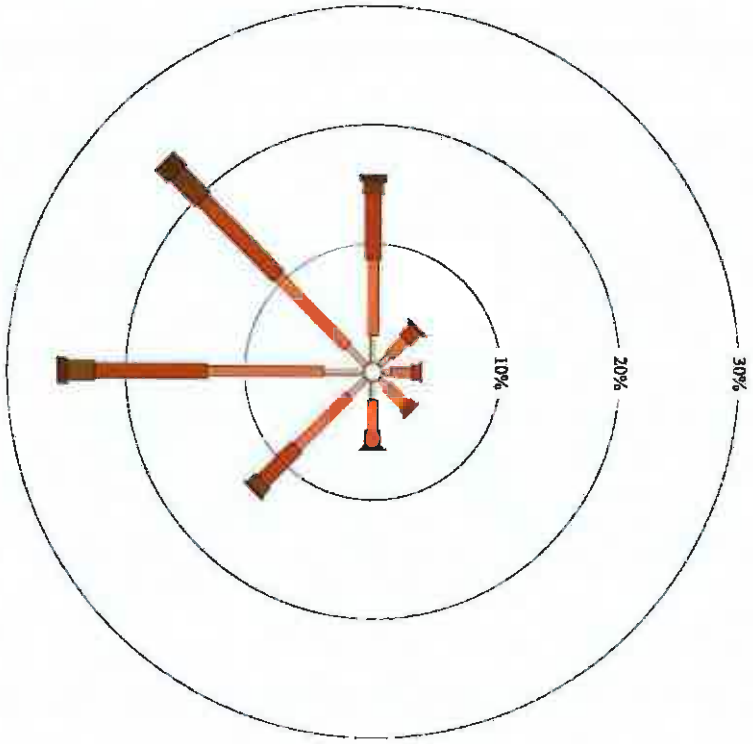
Site No. 009741 • Opened Jan 1942 • Still Open • Latitude: -34.9414° • Longitude: 117.8022° • Elevation 68m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



3 pm Jul
1517 Total Observations

Calm 4%



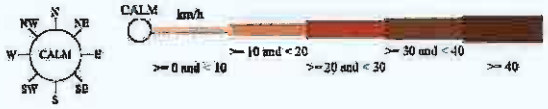
Rose of Wind direction versus Wind speed in km/h (12 Apr 1965 to 25 Feb 2014)

Custom times selected, refer to attached note for details

ALBANY AIRPORT COMPARISON

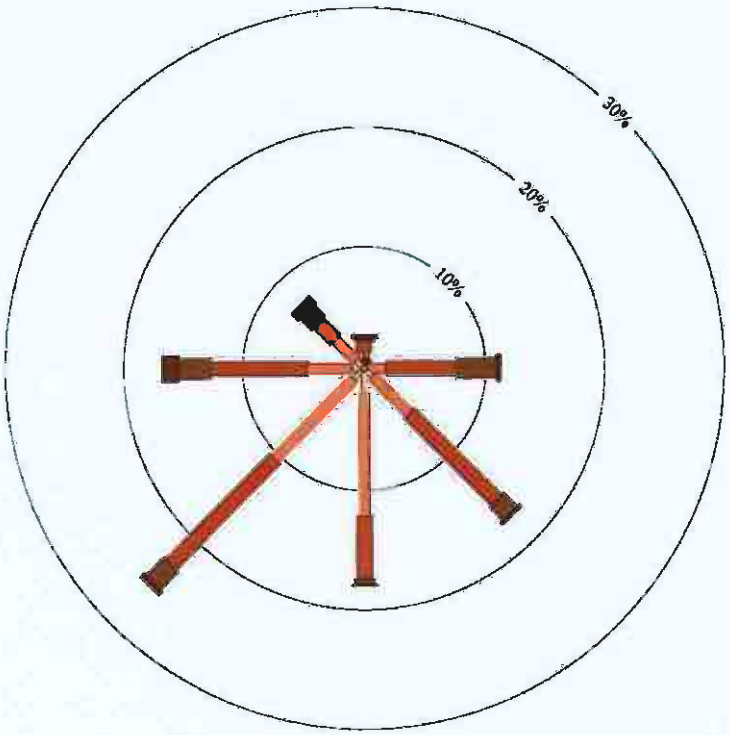
Site No: 009741 • Opened Jan 1942 • Still Open • Latitude: -34.9414° • Longitude: 117.8022° • Elevation 68m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



3 pm Oct
1516 Total Observations

Calm 1%



Appendix C

Geotechnical Site Investigation Report – Lot 150 Pickles Road, Narrikup (GSG, 2025)

GREAT SOUTHERN GEOTECHNICS

CONSTRUCTION MATERIALS TESTING

Site Investigation

Report 11578/1-R1

Wednesday, 23 July 2025

Bio Diverse Solutions

150 Pickles Rd, Narrikup WA

Qu-1617

This report relaces that previously issued as Report 11578/1
Incorrect test depth noted.

Presented By: M.Coffey
Great Southern Geotechnics Pty Ltd
5a 209 Chester Pass Rd, Albany WA

GREAT SOUTHERN GEOTECHNICS

1.0 INTRODUCTION

As authorised by Bio Diverse Solutions
an investigation for the proposed cattle feedlot located at 150 Pickles Rd, Narrikup WA
was conducted on the 26/6/25.

2.0 GENERAL

The intent of the investigation was to determine the following:

- Depth of groundwater if encountered
- Determination of in-situ soil types including plasticity, Colour, Particle characteristics, Secondary and o other minor components

3.0 SITE INVESTIGATION

Site conditions and test pit locations were recorded and are displayed in Appendix A - Maps.
Test pits logs/ soil profiles are noted in Appendix B - Test Pit Logs

The field investigation consisted of 9 Boreholes excavated on-site to depths of up to 2.5 meters using a Kubota KX41-3V mini excavator with a 300mm Auger.

Test pits were spread across the extent of the proposed development and pre-selected by the client.

All soil layers encountered were visually assessed and classified on-site.

Samples gathered from site were the taken back to Great Southern Geotechnics Albany Laboratory for further testing.

IMPORTANT NOTE: The test pits have been spread so that they are representative of the subsurface materials across the intended reconstruction area, however, soil conditions may change dramatically over short distances and our investigations may not locate all soil variations across the site.

4.0 LABORATORY TESTING

No laboratory testing required.

This report and associated documentation was undertaken for the specific purpose described in the report and shall not be relied on for other purposes.

This report was prepared solely for the use by Bio Diverse Solutions any reliance assumed by other parties on this report shall be at such parties own risk.

Appendix A

Maps

Figure 1

Test Pits 1 to 9

Test Pit Locations

Appendix B

Test Pit Logs

GREAT SOUTHERN GEOTECHNICS	Report No 11578/1-R1	Test Pit No. 1	Sample No. 11578G1	Sheet 6 of 23

Client:	Bio Diverse Solutions	**Date Commenced**	26/06/2025	**Operator/Contractor:**	GSG
Project:	150 Pickles Rd, Narrikup WA	**Logged By**	M.Coffey	**Equipment Type:**	Kubota KX41-3V
Location:	Proposed Building Envelope			**Excavation Method :**	300mm Auger
				Position:	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 130	130	**(Topsoil) SAND with silt:** Dark grey, fine to medium.	M	MD				
		Contains roots and root fibres.						
130 - 560	430	**SAND with silt:** Grey, fine to medium.	M	MD				
560 - 1200	640	**Sandy GRAVEL:** Brown, fine to coarse, sub-rounded to sub-angular.	M	VD	MC			
		Fine to medium grained sand.						
1200 - 2300	1100	**Sandy CLAY:** Low to medium plasticity, grey mottled red and orange.	M	VSt				
		Fine to medium grained sand.						
2300 - 2500	200	**Sandy CLAY:** Medium to high plasticity, brown.	M	St				
		Fine to medium grained sand.						

Samples Taken			
	Target Depth	✓	2500
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.1

Excavation

Spoil

GREAT SOUTHERN GEOTECHNICS	Report No 11578/1-R1	Test Pit No. 2	Sample No. 11578G2	Sheet 8 of 23

Client:	Bio Diverse Solutions	**Date Commenced**	26/06/2025	**Operator/Contractor:**	GSG
Project:	150 Pickles Rd, Narrikup WA	**Logged By**	M.Coffey	**Equipment Type:**	Kubota KX41-3V
				Excavation Method :	300mm Auger
Location:	Proposed Building Envelope			**Position:**	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water lable encountered.		
0 - 60	60	**(Topsoil) SAND with silt:** Dark grey, fine to medium.	M	MD				
		Contains roots and root fibres.						
60 - 260	430	**Gravelly SAND:** Light brown, fine to medium.	M	MD				
		Fine to coarse, sub-rounded to sub-angular gravel.						
260 - 1050	790	**Clayey SAND:** Low to medium plasticity, light brown / orange mottled red.	M	St				
		Fine to medium grained sand.						
1050 - 2500	1450	**Clayey SAND:** Low to medium plasticity, light brown / grey mottled red and orange.	M	St				
		Fine to medium grained sand.						

Samples Taken	Target Depth	✓	2500
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.2

Excavation

Spoil

GREAT SOUTHERN GEOTECHNICS	Job No: 11578 Client: Bio Diverse Solutions Project: 150 Pickles Rd, Narrikup WA	Sheet 9 of 23

GREAT SOUTHERN GEOTECHNICS	Report No 11578/1-R1	Test Pit No. 3	Sample No. 1157863	Sheet 10 of 23

Client:	Bio Diverse Solutions	Date Commenced	26/06/2025	Operator/Contractor:	GSG
Project:	150 Pickles Rd, Narrikup WA	Logged By	M.Coffey	Equipment Type:	Kubota KX41-3V
Location:	Proposed Building Envelope			Excavation Method :	300mm Auger
				Position:	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 170	170	**(Topsoil) Gravelly SAND with silt:** Dark grey, fine to medium.	M	MD				
		Fine to medium, sub-rounded to sub-angular gravel.						
		Contains roots and root fibres.						
170 - 500	330	**Sandy GRAVEL:** Light brown, fine to coarse, sub-rounded to sub-angular.	M	D				
		Fine to medium grained sand.						
500 - 1300	800	**Clayey SAND:** Low to medium plasticity, light brown / orange mottled red.	M	St				
		Fine to medium.						
1300 - 2500	1200	**Sandy CLAY:** Low to medium plasticity, light brown / grey mottled red and orange.	M	St				
		Fine to medium grained sand.						

Samples Taken	Target Depth	✓	2500
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.3

Excavation

Spoil

GREAT SOUTHERN GEOTECHNICS	Report No 11578/1-R1	Test Pit No. 4	Sample No. 11578G4	Sheet 12 of 23

Client:	Bio Diverse Solutions	**Date Commenced**	26/06/2025	**Operator/Contractor:**	GSG
Project:	150 Pickles Rd, Nornikup WA	**Logged By**	M.Coffey	**Equipment Type:**	Kubota KX41-3V
				Excavation Method :	300mm Auger
Location:	Proposed Building Envelope			**Position:**	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						Water teble noted at 1.1m below existing ground level.		
0 - 100	100	**(Topsoil) SAND with silt:** Dark grey, fine to medium.	M	MD				
		Contains roots and root fibres.						
100 - 700	600	**SAND with silt:** Grey, fine to medium.	M	MD				
700 - 1400	700	**Sandy GRAVEL:** Brown / orange, fine to coarse, sub-rounded to sub-angular.	M	VD	MC			
		Fine to medium grained sand.						
1400 - 1900	500	**Sandy GRAVEL:** Brown, fine to coarse, sub-rounded to sub-angular.	W	D				
		Fine to medium grained sand.						
1900 - 2500	600	**Sandy CLAY:** Medium to high plasticity, grey mottled orange and red.	W-M	St				
		Fine to medium grained sand.						

Samples Taken			
	Target Depth	✓	2500
	Cave In		
	Refusal		
Comments	Near Refusal		
Water table level taken 1hr after completion of test pit.	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.4

Excavation

Spoil

GREAT SOUTHERN GEOTECHNICS	**Job No:** 11578 **Client:** Bio Diverse Solutions **Project:** 150 Pickles Rd, Narrikup WA	**Sheet** 13 **of** 23

GREAT SOUTHERN GEOTECHNICS	Report No 11578/1-R1	Test Pit No. 5	Sample No. 11578G5	Sheet 14 of 23

Client:	Bio Diverse Solutions	Date Commenced	26/06/2025	Operator/Contractor:	GSG
Project:	150 Pickles Rd, Narrikup WA	Logged By	M Coffey	Equipment Type:	Kubota KX41-3V
Location:	Proposed Building Envelope			Excavation Method :	300mm Auger
				Position:	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 100	100	**(Topsoil) SAND with silt:** Dark grey, fine to medium.	M	MD		No water table encountered.		
		Contains roots and root fibres.						
100 - 250	150	**Sandy GRAVEL:** Light brown, fine to coarse sub-rounded to sub-angular.	M	D				
		Fine to medium grained sand.						
250 - 850	600	**Clayey SAND:** Low to medium plasticity, light brown / orange, fine to medium.	M	St				
850 - 2500	1650	**Clayey SAND:** Low to medium plasticity, grey mottled red and orange, fine to medium.	M	St				

Samples Taken			
	Target Depth	✓	2500
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.5

Excavation

Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	Job No: 11578 Client: Bio Diverse Solutions Project: 150 Pickles Rd, Narrikup WA	Sheet 15 of 23

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet
11578/1-R1	6	11578G6	16 of 23

Client:	Bio Diverse Solutions	**Date Commenced**	26/06/2025
Project:	150 Pickles Rd, Narrikup WA	**Logged By**	M.Coffey
Location:	Proposed Building Envelope	**Operator/Contractor:**	GSG
		Equipment Type:	Kubota KX41-3V
		Excavation Method :	300mm Auger
		Position:	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 120	120	**(Topsoil) Gravelly SAND with silt:** Dark brown, fine to medium. Fine to coarse, sub-rounded to sub-angular gravel.	M	MD		No water table encountered.		
120 - 630	510	**Sandy GRAVEL:** Brown, fine to coarse, sub-rounded to sub-angular gravel. Fine to medium grained sand.	M-W	D				
630 - 1050	420	**Sandy CLAY:** Low to medium plasticity, light brown / orange mottled. Contains roots and root fibres. Fine to medium grained sand.	M	St				
1050 - 2500	1450	**Silty CLAY with sand:** Low to medium plasticity, light grey / white mottled red. Fine to medium grained sand.	M	St				

Samples Taken			
	Target Depth	✓	2500
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented
F - Firm	MD - Medium Dense	L - Low	
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented
VSt - Very Stiff	VD - Very Dense	H - High	
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented
		EH - Extremely High	

General

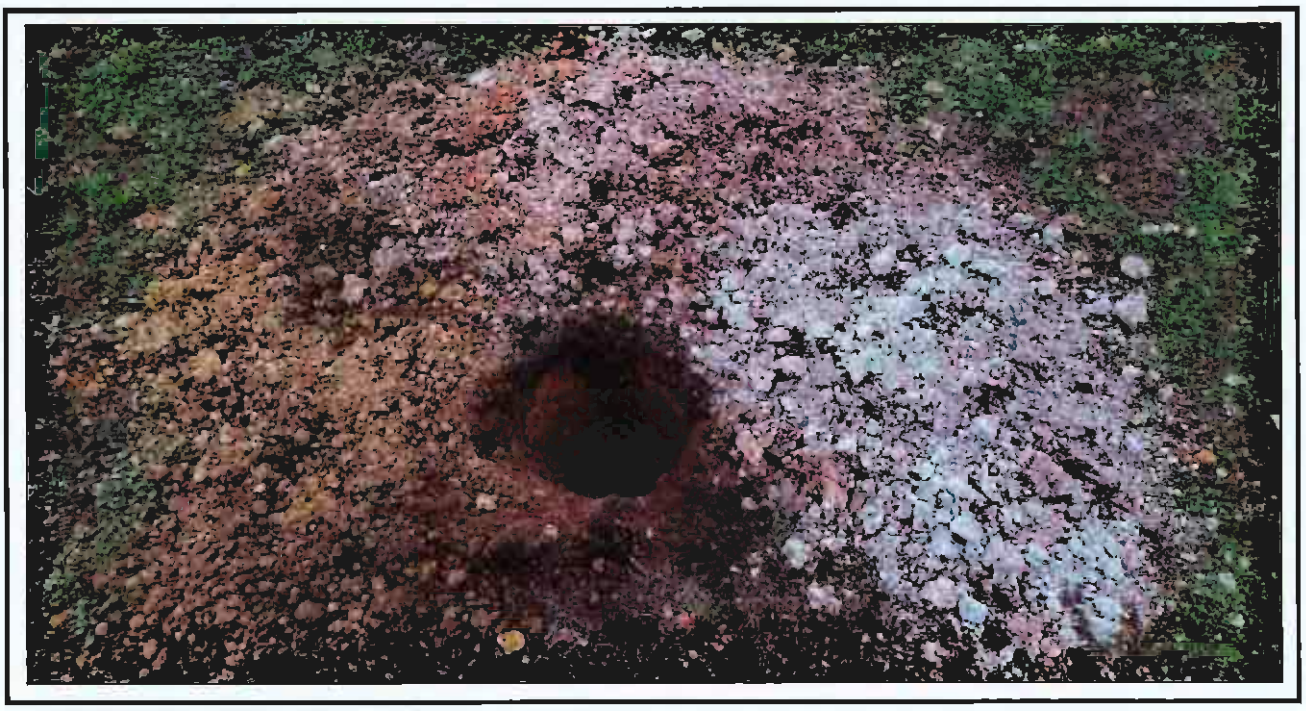
D - Dry M - Moist W - Wet

N/A - Not Applicable

N/D - Not Determined

Test Pit No.6

Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS	Report No 11578/1-R1	Test Pit No. 7	Sample No. 11578G7	Sheet 18 of 23

Client:	Bio Diverse Solutions	**Date Commenced**	26/06/2025	**Operator/Contractor:**	GSG
Project:	150 Pickles Rd, Narrikup WA	**Logged By**	M.Coffey	**Equipment Type:**	Kubota KX41-3V
				Excavation Method :	300mm Auger
Location:	Proposed Building Envelope			**Position:**	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 120	120	**(Topsoil) SAND with silt:** Dark brown, fine to medium.	M	MD				
		Contains roots and root fibres						
120 - 550	430	**SAND:** Light brown, fine to medium.	M	MD				
550 - 900	350	**Sandy GRAVEL with CLAY:** Low to medium plasticity, light brown and grey.	M	St				
		Fine to coarse, sub-rounded to sub-angular.						
		Fine to medium grained sand.						
900 - 1600	700	**Sandy CLAY trace gravel:** Low to medium plasticity, light brown mottled orange	M	St				
		and red, fine to medium.						
		Fine to medium sub-rounded to sub-angular gravel.						
1600 - 2500	900	**Silty CLAY with sand:** Low to medium plasticity, light grey / white mottled red.	M	St				
		Fine to medium grained sand.						

Samples Taken	Target Depth	✓	2500
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.7

Excavation

Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	Job No: 11578 Client: Bio Diverse Solutions Project: 150 Pickles Rd, Narrikup WA	Sheet 19 of 23

GREAT SOUTHERN GEOTECHNICS	Report No 11578/1-R1	Test Pit No. 8	Sample No. 1157868	Sheet 20 of 23

Client:	Bio Diverse Solutions	Date Commenced	26/06/2025	Operator/Contractor:	GSG
Project:	150 Pickles Rd, Narrikup WA	Logged By	M.Coffey	Equipment Type:	Kubota KX41-3V
Location:	Proposed Building Envelope			Excavation Method :	300mm Auger
				Position:	Refer to site plan

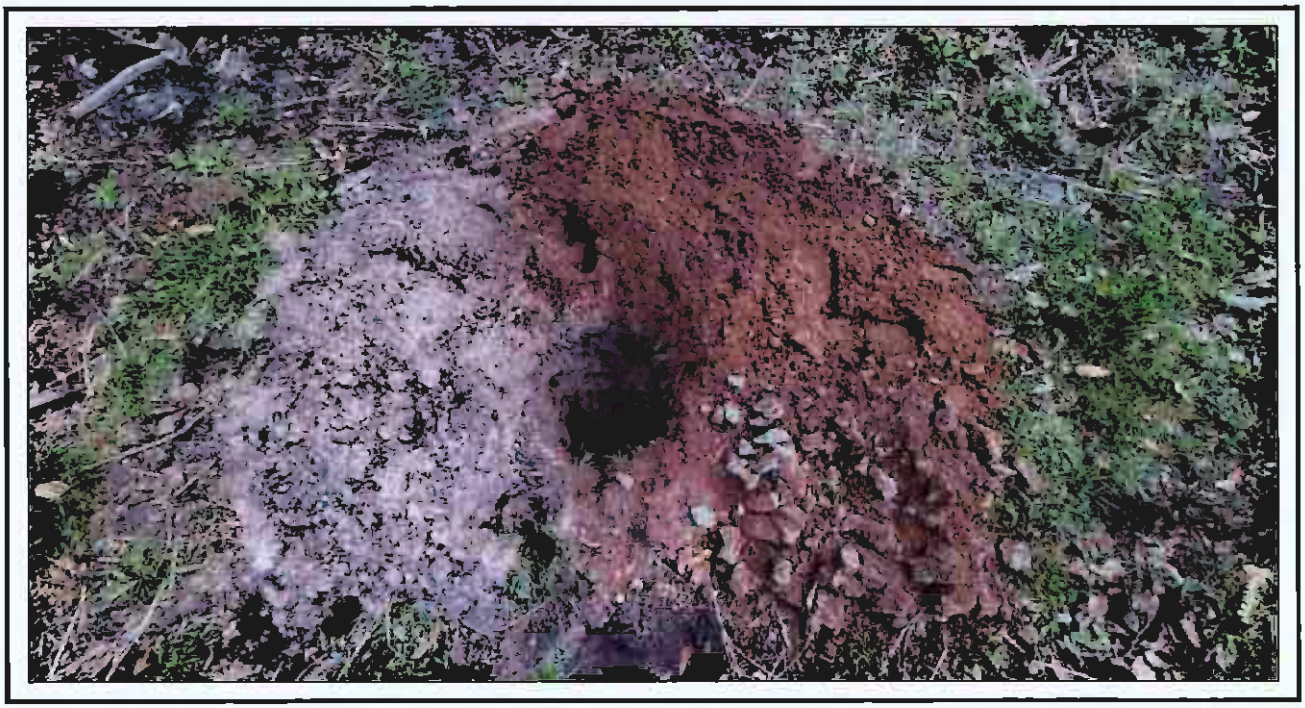
Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 150	150	**(Topsoil) SAND with silt:** Dark grey, fine to medium.	M	MD		No water table encountered.		
150 - 1000	850	**SAND:** Grey, fine to medium.	M	MD				
1000 - 2220	1220	**SAND with silt:** Dark brown, fine to medium.	M	VD	WC			
2220 - 2500	280	**CLAY:** High plasticity, grey mottled orange.	M	VSt				

Samples Taken			
	Target Depth	✓	2500
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.8

Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS	Job No: 11578 Client: Bio Diverse Solutions Project: 150 Pickles Rd, Narrikup WA	Sheet 21 of 23

GREAT SOUTHERN GEOTECHNICS	Report No 11578/1-R1	Test Pit No. 9	Sample No. 1157869	Sheet 22 of 23

Client:	Bio Diverse Solutions	**Date Commenced**	26/06/2025	**Operator/Contractor:**	GSG
Project:	150 Pickles Rd, Narrikup WA	**Logged By**	M.Coffey	**Equipment Type:**	Kubota KX41-3V
				Excavation Method :	300mm Auger
Location:	Proposed Building Envelope			**Position:**	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 150	150	**(Topsoil) SAND with silt:** Dark grey, fine to medium.	M	MD				
		Contains roots and root fibres.						
150 - 400	250	**Gravelly SAND:** Light brown / grey, fine medium.	M	MD				
		Fine to medium sub-rounded to sub-angular gravel.						
400 - 840	440	**Sandy GRAVEL:** Brown / orange, fine to coarse sub-rounded to sub-angular.	M	VD	WC			
		Fine to medium grained sand.						
840 - 1300	460	**Sandy CLAY:** Medium to high plasticity, Light brown mottled orange and red.	M	St				
		Fine to medium grained sand.						
1300 - 2500	1200	**Clayey SAND:** Low to medium plasticity, grey mottled orange and red.	M	St				
		Fine to medium grained sand.						

Samples Taken			
	Target Depth	✓	2500
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.9

Excavation

Spoil

GREAT SOUTHERN GEOTECHNICS	Job No: 11578 Client: Bio Diverse Solutions Project: 150 Pickles Rd, Narrikup WA	Sheet 23 of 23

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

COLOURS

BLACK – BROWN (bk)	BLUE (bl)	ORANGE (or)
BROWN (br)	BLUE – GREEN (bl/gr)	RED (rd)
GREY – BROWN (gy/br)	GREEN (gr)	RED – BROWN (rd/br)
GREY (gy)	YELLOW (yl)	PINK (pk)
BLUE – GREY (bl/gy)	YELLOW – BROWN (yl/br)	PURPLE (pr)

MOISTURE CONDITION OF SOIL

TERM	DESCRIPTION
Dry	Cohesive soils; hard and friable or powdery, well dry of plastic limit. Granular soils; cohesionless and free-running.
Moist	Soil feels cool, darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.
Wet	Soil feels cool, darkened in colour. Cohesive soils usually weakened and free water forms on hands when handling. Granular soils tend to cohere and free water forms on hands when handling.

PARTICLE SHAPES

ANGULAR | SUB-ANGULAR | SUB-ROUNDED | ROUNDED

PARTICLE SIZES

BOULDERS	COBBLES	COARSE GRAVEL	MEDIUM GRAVEL	FINE GRAVEL	COARSE SAND	MEDIUM SAND	FINE SAND	SILT	CLAY
>200mm	63–200mm	20–63mm	6–20mm	2.36–6mm	0.6–2.36mm	0.2–0.6mm	0.075–0.2mm	0.002–0.075mm	<0.002mm

GRAIN SIZE

SOIL TYPE (ABBREV.)	CLAY (CL)	SILT (SI)	←	SAND (SA)	→	←	GRAVEL (GR)	→	COBBLES (CO)
SIZE	< 2µm	2–75µm	Fine 0.075–0.2mm	Medium 0.2–0.6mm	Coarse 0.6–2.36mm	Fine 2.36–6mm	Medium 6–20mm	Coarse 20–63mm	63–200mm
SHAPE & TEXTURE	Shiny	Dull	← angular or sub angular or sub rounded or rounded →						
FIELD GUIDE	Not visible under 10x	Visible under 10x	Visible by eye	Visible at < 1m	Visible at < 3m	Visible at < 5m	Road gravel	Rail ballast	Beaching

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

CLASSIFICATION CHART

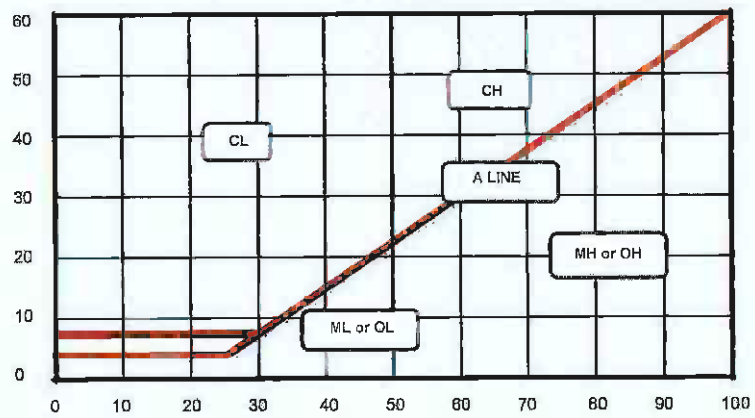
FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60mm and basing fractions on estimated mass)				GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% of material less than 63 mm is larger than 0.075 mm	GRAVELS More than 50% of coarse fraction is larger than 2.36mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	GP	Poorly Graded gravels and gravel-sand mixtures, little or no fines, uniform gravels
		GRAVELS WITH FINES (Appreciable amount of fines)	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	GM	Silty gravels, gravel-sand-silt mixtures
			'Dirty' materials with excess of plastic fines, medium to high dry strength	GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction is smaller than 2.36mm	CLEAN SANDS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	SW	Well graded sands, gravelly sands, little or no fines
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength '	SP	Poorly graded sands and gravelly sands; little or no fines, uniform sands
		SANDS WITH FINES (Appreciable amount of fines)	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	SM	Silty sands, sand-silt mixtures
			'Dirty' materials with excess of plastic fines, medium to high dry strength	SC	Clayey sands, sand-clay mixtures

FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm	IDENTIFICATION PROCEDURES ON FRACTIONS <0.2mm				
		DRY STRENGTH	DILATANCY	TOUGHNESS	
	SILTS AND CLAYS Liquid limit less than 50	None to low	Quick to slow	None	ML — Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with low plasticity. Silts of low to medium Liquid Limit.
		Medium to high	None to very slow	Medium	CL, CI — Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays.
		Low to medium	Slow	Low	OL — Organic silts and organic silt-clays of low to medium plasticity.
	SILTS AND CLAYS Liquid limit greater than 50	Low to medium	Slow to none	Low to medium	MH — Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, silts of high Liquid Limit.
		High to very high	None	High	CH — Inorganic clays of high plasticity.
		Medium to high	None to very slow	Low to medium	OH — Organic clays of high plasticity

HIGHLY ORGANIC SOILS	Readily identified by colour, odour, spongy feel and frequently by fibrous texture	Pt	Peat and other highly organic soils

PLASTICITY CHART

For laboratory classification of fine grained soils



GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

PLASTICITY

DESCRIPTIVE TERM	OF LOW PLASTICITY	OF MEDIUM PLASTICITY	OF HIGH PLASTICITY
Range Of Liquid Limit (%)	≤ 35	> 35 ≤ 50	> 50

DESCRIPTION OF ORGANIC OR ARTIFICIAL MATERIALS

PREFERRED TERMS	SECONDARY DESCRIPTION
Organic Matter	Fibrous Peat/ Charcoal/ Wood Fragments/ Roots (greater than approximately 2mm diameter)/ Root Fibres (less than approximately 2mm diameter)
Waste Fill	Domestic Refuse/ Oil/ Bitumen/ Brickbats/ Concrete Rubble/ Fibrous Plaster/ Wood Pieces/ Wood Shavings/ Sawdust/ Iron Filings/ Drums/ Steel Bars/ Steel Scrap/ Bottles/ Broken Glass/ Leather

CONSISTENCY – Cohesive soils

TERM	VERY SOFT	SOFT	FIRM	STIFF	VERY STIFF	HARD
Symbol	VS	S	F	St	VSt	H
Undrained Shear Strength (kPa)	< 12	12 – 25	25 – 50	50 – 100	100 – 200	> 200
SPT (N) Blowcount	0 – 2	2 – 4	4 – 8	8 – 15	15 – 30	> 30
Field Guide	Exudes between the fingers when squeezed	Can be moulded by light finger pressure	Can be moulded by strong finger pressure	Cannot be moulded by fingers. Can be indented by thumb nail	Can be indented by thumb nail	Can be indented with difficulty with thumb nail

CONSISTENCY – Non-cohesive soils

TERM	VERY LOOSE	LOOSE	MEDIUM DENSE	DENSE	VERY DENSE	COMPACT
Symbol	VL	L	MD	D	VD	CO
SPT (N) Blowcount	0 – 4	4 – 10	10 – 30	30 – 50	50 – 100	> 50/150 mm
Density Index (%)	< 15	15 – 35	35 – 65	65 – 85	85 – 95	> 95
Field Guide	Ravels	Shovels easily	Shovelling very difficult	Pick required	Pick difficult	Cannot be picked

MINOR COMPONENTS

TERM	TRACE	WITH
% Minor Component	Coarse grained soils: < 5% Fine grained soils: <15%	Coarse grained soils: 5 – 12% Fine grained soils: 15 – 30%
Field Guide	Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary components	Presence easily detectable by feel or eye, soil properties little different to general properties of primary component

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

GEOLOGICAL ORIGIN

	TYPE	DETAILS
TRANSPORTED SOILS	Aeolian Soils	Deposited by wind
	Alluvial Soils	Deposited by streams and rivers
	Colluvial Soils	Deposited on slopes
	Lacustrine Soils	Deposited by lakes
	Marine Soils	Deposited in ocean, bays, beaches and estuaries
FILL MATERIALS	Soil Fill	Describe soil type, UCS symbol and add 'FILL'
	Rock Fill	Rock type, degree of weathering, and word 'FILL'.
	Domestic Fill	Percent soil or rock, whether pretrucible or not.
	Industrial Fill	Percent soil, whether contaminated, particle size & type of waste product, ie brick, concrete, metal

STRENGTH OF ROCK MATERIAL

TERM	SYMBOL	IS(50)	(MPA)	FIELD GUIDE TO STRENGTH
Extremely Low	EL	≤0.03		Easily remoulded by hand to a material with soil properties.
Very Low	VL	>0.03	≤0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxle sample by hand. Pieces up to 3 cm thick can be broken by finger pressure.
Low	L	>0.1	≤0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium	M	>0.3	≤1.0	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
High	H	>1	≤3	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High	VH	>3	≤10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High	EH	>10		Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

ROCK MATERIAL WEATHERING CLASSIFICATION

TERM	SYMBOL	DEFINITION
Residual Soil	RS	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported
Extremely Weathered Rock	XW	Rock is weathered to such an extent that it has 'soil' properties, i.e. it either disintegrates or can be remoulded, in water.
Distinctly Weathered Rock	DW	Rock strength usually changed by weathering. Rock may be highly discoloured, usually be iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathering products in pores.
Slightly Weathered Rock	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh Rock	FR	Rock shows no sign of decomposition or staining.

ATTACHMENT B

Schedule of Public Submissions & Responses

Development Application P867 – Proposed *Animal Husbandry – Intensive* (Cattle Feedlot) on No. 144 (Lot 150) Pickles Road, Narrikup

No.	Submission	Officer Comment
1	[Support] I hope this message finds you well. My name is [redacted], and I own the property located at [redacted], Narrikup, 6326. I am writing to confirm my understanding regarding the cattle feedlot proposed, which Mr McDonald has brought to my attention. He has informed me that my residence is the closest to the proposed feedlot and that the project complies with the required buffer zone regulations. Having considered the information, I wish to state that I have no objections to the feedlot development going ahead. I recognise the importance of such initiatives for the local farming community and am confident that the relevant guidelines and standards will be adhered to. Should you require any further details or clarification from me, please do not hesitate to get in touch. Thank you for your time and attention.	Support noted. It was confirmed by phone call 20/10/25 to this submitter that the proposal does not meet minimum buffer requirements (1000m). The submitter confirmed their support.
2	[Support] As a neighboring property to the proposed feedlot, I am in full support of the project. Can see no issues with any part of the proposal. It would only benefit residence with employment opportunities and marketing of livestock opportunities. Please contact me if you want to discuss this further.	Support noted.
3	[Objection] As the Owner of [redacted] Narrikup I am Opposed to the proposed or any Feedlot on the Neighbouring Property, I am Also Opposed to a Feedlot within the 5000mtr "Buffer Zone" to my 2nd Property in the Narrikup Townsite. In the Proposal it states that the Feedlot is 3000 mtrs from the Townsites western boundary, this is incorrect, If you follow the roads/track around it is 3000 mtrs however Smell, Noise and Flies don't follow roads they travel "As The Crow Fly's " which puts the town boundary at 2.100 mtrs and the centre of town, The town hall is 3000 mtrs.	Objection noted. References to distance from Narrikup townsite in the proposal are incorrect, as stated in this submission.

	Also I have a current Shire building approval for construction 720 mtrs from the proposed feedlot, I have already cleared the area at cost, also the site is directly downwind of prevailing winds West/Nth West from the feedlot and will make my plans of eventually building a future dwelling there unbearable.	Approval has been issued for a rural outbuilding on Lot 151 only, not a dwelling. It is acknowledged that the owner of Lot 151 may intend to apply for approval to build a house in future and this is taken into account as part of planning assessment.
	I am still dealing with the Mess, Slurry, Effluent from the Illegal Feedlot, as addressed by Council Officer, that Mr McDonald had directly on my boundary, Numerous Photos, Videos and Statements, taken by Shire Officer are already in Shire possession. I cannot put a dam on my preferred sight because the groundwater is contaminated 300 mtrs downhill on my property from the Illegal feedlot (Shire has Ag-Dept water test/report) , and it is killing a huge area of Natural bush and covered a large area of my property in about 300ml of silt and weeds. I originally contacted the shire in March/ April 2025 after trying to get Landowner and Mr Mc Donald to do something about it after I lost a pregnant cow and nearly another, they were suspected of being poisoned from drinking the contaminated water running onto my property, The Shire finally were able to get the cattle out of the feedlot by the end of July however the effluent is still constantly running onto my Property. I was told by Shire Officer that Mr McDonald also had to drain the effluent pit that is constantly overflowing and running directly on to my Property and was to Clean up the Hillside and Fenceline and "Seed / Revegetate" the site of the Illegal Feedlot to stop future runoff Poisoning and Polluting my property however very little if anything has been done and with every rainfall more Effluent runs onto my property killing more Bush and contaminating more of my Land. (Recent Photo's Supplied) This Is the reason I don't think Mr McDonald is fit to run a Cattle feedlot due to his lack of respect for the Rules/Regulations, His Neighbour's, The Environment or the stock, having seen many dead cattle in the Illegal Feedlot on a weekly basis sometimes staying in amongst the rest of the cattle for 3-4 days. Originally I was told Mr McDonald wouldn't be able to run stock there again because of the disregard he had for the rules etc but last conversation I had with Shire Rep I was told Mr McDonald was now going to lease 100 acres off the owner and the Shire was going to allow him to "Run 100-150 Cattle on the 100 acres" I tried to explain that you cannot run that many cattle on 100 acres, this land will maybe support 25 cows and calves all year round with supplementary feeding on 100 acres, the only way he could run that many cattle was in a feedlot. Question 1, is that 150 head feedlot, additional to the 499 head that this Approval is for ???, making it a 649 head feedlot and who Checks Numbers?.	The Shire has responded to reports of unauthorised land use and taken action to have this use ceased, which has now occurred. Remediation of the site remains to be completed. The adjoining landowner affected by this matter is entitled to take civil action to seek remediation of their land – the Shire is unable to direct this occur. The Shire's Compliance Officer is continuing to monitor this situation with regard to continuing run-off and pumping out of detainment ponds related to the unauthorised feedlot. The proposal before the Shire is for a feedlot for 499 cattle. The proposal has been referred to DPIRD for

		advice regarding stocking rates. DPIRD advised that the design capacity of the feedlot is 4000 cattle.
	If this Proposal is approved I Would like a condition put that It can Not go any further ahead until the Illegal feedlot Site and Fence Line is cleaned up and Revegetated to stop future pollution of my property.	The proposal for the feedlot is for the portion of the site that the proposal relates to. Under planning approval requirements other stocking may occur on the property at appropriate rates. This may change DWER license requirements and the applicant will need to seek advice. The existing compliance matter is treated separately to this application now that stocking has ceased.
	Also Due to an Increase in Trucks / Traffic, that they Fence off my section of Driveway and put their own section of Driveway down, as they are currently using a Part of the driveway that is on my Property, and due to the increase of Trucks etc that they improve the Sleeman Creek Crossing to handle the load, Before the feedlot is Running.	Three battleaxe legs run adjacent to each other north of Pickles Rd and access tracks appear to move between these. As this is private land, this is a civil matter to be resolved between landowners. If approved, it will be necessary for the proponent to demonstrate that they have legal and practical access established.
	Question 2, Why wasn't everybody in the townsite in the 5000mtr "Buffer Zone" mailed this proposal ? Stating that "If they couldn't smell the illegal Feedlot, they won't smell this one" is ludicrous.	The proposal is a discretionary 'D' use and public advertising is not a mandatory requirement. Advice was sent to adjoining and near landowners inviting comment.
	Question 3, Have the Catchment group been informed of this proposal	The proposal was referred to the Department of Water & Environmental Regulation for comment.
	Photo's Taken Sunday 7-9-2025 *[serious of photos of unauthorised feedlot site/ property boundary show spill from drainage ponds into Lot 151]*	Photos noted and referred for compliance investigation.
4	[Support] I am writing to express my full support for the cattle feedlot operation located on Pickles Road in Narrikup.	Support noted. The existing/ previous feedlot is an unauthorised land use. Noted that landowner has not observed impacts from previous feedlot.

	From my understanding, the feedlot is fully accredited and adheres to high operational standards. It not only provides additional employment opportunities but also introduces healthy competition to the cattle market at the Mt Barker Regional Saleyards. Living approximately 2.5 km from the feedlot, I have not encountered any noise or unpleasant odors associated with its operation. Furthermore, upon reviewing maps, the feedlot is situated about 2.9 km from the center of Narrikup, indicating a considerable distance from the community. I believe that the feedlot contributes positively to the local economy while maintaining ethical business practices. Thank you for considering my perspective on this matter.	While the benefits of agricultural development are noted, this application must consider whether this is an appropriate location and proposal that manages off-site impacts. Distance of 2.9km does not meet minimum requirements of TPP 13 which seeks 5km separation distance of feedlots from townsites.
5	[Support] I live on [redacted] Narrikup. I am fully aware of the feedlot that Kayden McDonald runs on 144 Pickles Road. I have never experienced any noise or smell from the operating feedlot. I think it's a great operation for the community supplying extra work to the community.	Support noted. The existing/ previous feedlot is an unauthorised land use. Noted that landowner has not observed impacts from previous feedlot. While the benefits of agricultural development are noted, this application must consider whether this is an appropriate location and proposal that manages off-site impacts.
6	[Objection] Thankyou for the opportunity to contribute to this application. As the closest neighbour to this application I am a little concerned, particularly as there is trouble with this property providing enough water for the stock it currently runs as I have been asked to help through dry times with the current stock load. Adding more stock will heighten the current problem despite having spent a lot of money on a ground water system. Sludge pond overflows on the topographical map promote effluent flow onto my property and not contained on the subject property, the way to overcome this is to move the yards further south such that an overflow will track towards his own property. Overflow from the western pond will contaminate the Sleeman Creek.	Objection and comments noted. Concerns about water supply availability noted. The proposal includes contour drains and sedimentation ponds. Detailed design has not been submitted to demonstrate capacity of this system and the risk of overflow is therefore unknown. Relocation of the feedlot closer to the Sleeman Creek is not supported due to increased environmental risks. Relocation of the feedlot closer to the Narrikup

	Moving the proposed yards toward the southern boundary would also provide access to the dams along the Sleeman Creek, unfortunately this is closer to Narrikup townsite despite the fact is already 2000m metres short of the current recommendations. Whilst there is need to encourage more efficient use of land by increasing stock densities it has to be done with very considerable fore though because once approved it's there forever. Therefore, if the feedlot were relocated to the southeast quadrant of the property and the owner is prepared to guarantee a permanent water supply not relying on neighbours I would not object.	townsite is not advised due to expected separation distances in TPP 13 and relevant state policies. Based on this comment it is understood that this submission objects to the feedlot in the proposed location.
7	[Neutral] Thank you for your letter regarding the proposed feedlot at 144 Spencer rd, Narrikup. We are the owners of [redacted] Narrikup Lot 3068, the proposed feedlot is 1230m from our residence which is consistent and compliant with the shire's minimum distance of 1000m from an isolated rural dwelling. Having invested in building a residence and a business in the shire of Plantagenet we would expect the distancing regulations for ourselves to be upheld for this proposal, and any other further proposals that maybe generated from this proposal. You stated in the proposal that the proposal is not consistent and non-compliant for other distancing, this is a matter for the Shire of Plantagenet to manage.	Comments noted – no position of objection or support is stated. The Shire's assessment of this proposal notes that the expected buffer distances have not been met in some instances; however, it is noted that the existing residence on 3 Pickles Road is further from the proposed feedlot site than the 1000m minimum requirement to an isolated rural residence.
8	[Support] [1st letter dated 17/07/25] As owners of a neighbouring property located at [redacted], directly opposite the cattle feedlot at 144 Pickles Road, we wish to express our strong support for the continued development and operation of this facility. We firmly believe the feedlot brings substantial economic, employment, and industry benefits to the Narrikup community and the broader Great Southern region. Operations such as this not only create direct employment opportunities but also stimulate local service providers and associated agricultural sectors, contributing positively to the sustainability and growth of our local economy. In our experience, Kayden McDonald has been an approachable, respectful, and highly amenable neighbour. He communicates proactively, keeping us informed of any potential issues or changes that	Support noted. This and other comments relating to the importance of supporting agricultural development as a key component of employment and economic growth in our district are noted and supported. The Shire and State Government have policies in place to ensure that intensive agricultural development can co-exist with other land uses, and is located and managed in a way that it doesn't

	may affect surrounding properties. This level of transparency and consideration is rare and greatly appreciated. We have not experienced any negative impacts as a result of the feedlot's operation—there have been no issues with dust, odour, or noise affecting our property. On the contrary, Kayden should be commended for the professionalism with which he manages his operations, ensuring minimal disruption and a focus on best practices. We view this feedlot as an asset to our shire and the livestock industry and are proud to support it moving forward. _____ [2nd letter dated 11/09/2025] After being personally approached by Mr. Kayden McDonald on 17/07/2025 to ask if we had any concerns with his feedlot, we advised him we had none and subsequently provided a written letter of support (Attachment 1). Since then, I have now received an unauthorised photocopy of a letter in my mailbox, of which I also attach a copy (Attachment 2), and feel it is my duty as a community member to write to you again in support of the proposed feedlot development. While I do not know Mr. McDonald personally, I have had dealings with him as a neighbour since moving into my property in 2019. In that time, the feedlot has not caused us any undue concern. There has been no increase in dust, noise, or disruption, certainly no more than what my own children and livestock contribute to the environment around our property. I must also express my deep disappointment at the conduct of some members of our local community. Circulating unauthorised correspondence that was clearly intended only for immediate neighbours is divisive and unfair. It undermines community spirit and creates an environment of malice and bias, which is not reflective of the values that our district should be upholding. Importantly, Mr. McDonald should not be facing the risk of business disruption or loss of income as a result of unfair bias or community-driven hostility. No local enterprise, particularly one showing such initiative, deserves to be jeopardised in this way. In the current economic climate, it is vital that we stand together to support local initiatives that drive growth, create jobs, and strengthen our regional economy. Mr. McDonald's project represents exactly this: a young person demonstrating due diligence, bringing employment opportunities, contributing	compromise other community needs and objectives, as well as the rights of neighbouring landowners. Comments not supported. The existing feedlot on the subject site was unauthorised and was required to be closed as it could not obtain approvals in its form, considering its location, setbacks, buffers and lack of appropriate water and effluent management. The Shire provided information to adjoining landowners about this proposal. This information is therefore within the public domain and is not required to be held in confidence. The Shire can provide this information to other persons upon enquiry. The information that has been shared has been prepared by the Shire and is factually correct. It is noted that the applicant also approached and notified other landowners in the area (including this submitter) who were not notified directly by the Shire. As above this industry is broadly supported; however, any proposal for intensive agricultural development is required to demonstrate that it is in a location that does not cause land use conflict, compromise long term community objectives and that management practices avoid environmental harm.

	hundreds of thousands of dollars to our local saleyards, and providing ongoing support to multiple workers in our district. Ventures such as this should be welcomed, not undermined. So many of our young people are already forced to travel away from home to find work. At this point in time, our community is shrinking rather than growing, and it is essential that we support endeavours that strengthen and keep our community alive. We need to see expansion and diversification in local industry, so that businesses can open, grow, and thrive here in Plantagenet. I want to see a community in which my children and their children have the option to stay, live, and work locally, because there are real, sustainable employment opportunities available to them. I sincerely urge the Council to give this matter the thorough and balanced consideration it deserves. Please ensure that any decision is based on due diligence, fairness, and the long-term benefit to the community, rather than on the narrow views or questionable tactics of a small few. This is a wonderful venture that will benefit our district as a whole, and I strongly encourage the Shire of Plantagenet to support it.	

ATTACHMENT C

Schedule of Agency Referral Responses

Development Application P867 – Proposed *Animal Husbandry – Intensive* (Cattle Feedlot) on No. 144 (Lot 150) Pickles Road, Narrikup

No.	Received from	Submission	Officer Comment
1	Department of Water & Environmental Regulation	Thank you for providing the above proposal for the Department of Water and Environmental Regulation (DWER) to consider. DWER has identified that the proposal has the potential for impact on environment and water resource values and management and offers the following advice. ***Environmental Protection Act 1986*** The Department of Water and Environmental Regulation (DWER) regulates emissions and discharges from the construction and operation of prescribed premises through a works approval and licensing process, under Part V of the *Environmental Protection Act 1986* (EP Act). The categories of prescribed premises are outlined in Schedule 1 of the *Environmental Protection Regulations 1987*. Environmental Protection Regulations 1987 - [08-l0-00].pdf The EP Act requires a works approval to be obtained before constructing a prescribed premises and makes it an offence to cause an emission or discharge from an existing prescribed premises unless they are the holder of a works approval or licence (or registration) and the emission is in accordance with any conditions to which the licence or works approval is subject. The provided development referral request was reviewed in relation to works approval and licence requirements under Part V Division 3 of the EP Act. Based on the proposed activities, the following operations may cause the premises to become Prescribed Premises as per for the purposes of Part V Division 3 of the *Environmental Protection Act* (EP Act), if it has the capability to meet or exceed the design capacity of the relevant category under Schedule 1 of the EP Regulations for: Cattle feedlot: premises on which the watering and feeding of cattle occurs, being premises – Situated less than 100m from a watercourse: and	Comments supported – the application has not provided sufficient information to demonstrate that these concerns have been adequately addressed. DWER's position does not support approval of the proposal in its current form. Based on this advice the applicant has been advised that they will need a license approval from DWER.

		On which the number of cattle per hectare exceeds 50. Production or design capacity of 500 animals or more Cattle feedlot: premises on which the watering and feeding of cattle occurs, being premises – Situated 100m or more from a watercourse: and On which the number of cattle per hectare exceeds 50. Production or design capacity of 500 animals or more The triggers for a prescribed premise relate to the production or design capacity of the proposal. While the application is for 499 cattle, the capacity of the proposed 10-hectare feedlot is 4000 cattle, based on the maximum stocking density of 1 standard cattle unit (SCU) per 25 square meters. Given this, the proposal will require licensing under Part V of the *Environmental Protection (EP) Act 1986*. Information regarding licences and works approvals for cattle feedlots is contained within DWER's Industry Regulation fact sheet – Cattle feedlot. IR-FS-15_Cattle_feedlot_v1.0.pdf It is an offence under the EP Act to cause an emission or alter the nature or volume of waste, noise or odour from the Prescribed Premises, unless done so in accordance with a works approval or licence or a registration (for operation) is held for the premises. The Applicant is therefore advised to refer to the information and Industry Regulation Guide to Licensing available at http://www.der.wa.gov.au/our-work/licences-and-works-approvals and / or if they have queries relating to works approvals and licenses to contact DWER at info@dwer.wa.gov.au or 6364 7000. **Industry Guidelines** To mitigate the risk of environmental harm, proposals should clearly demonstrate that operations, and management adhere to the National Beef Cattle Feedlot Environmental Code of Practice (Meat and Livestock Australia, June 2012). b.flt.0338_b.flt.0355_b.flt.0431_2nd_edition.pdf, and the National Guidelines for Beef Cattle Feedlots in Australia (Meat and Livestock Australia, June 2012) National-guidelines-for-beef-cattle-feedlots-in-Australia-third-edition.pdf. A proposal report should accompany cattle feedlot development applications and adequately address all relevant sections of the Code of Practice. It is noted that the applicant submitted a Cattle Feedlot Environmental Assessment and Operations Plan with the development application. Although addressing relevant aspects	SPP 2.5 requires planning decision-makers to consider the ultimate design capacity of the facility, which advice from the Department of Water & Environmental Regulation identifies as 4000 cattle. The subject proposal is for a feedlot that is designed to cater for a larger number of cattle than is indicated by the application and requires licensing as a prescribed premises by the Department. It is unfeasible for the Shire to maintain a compliance regime to monitor the movement of cattle to and from the site. Advice that the proposal has not sufficiently demonstrated consistency with relevant industry codes of practice is noted and supports the assessing officer's position to recommend refusal. Compliance with relevant industry codes is an agreed way of demonstrating that the objectives of planning policy are being met.

		of cattle feedlot operation, the plan lacks sufficient detail for several aspects, making it difficult to determine environmental risk. DWER recommends that the following issues be addressed: <u>Water Resources</u> The proposed property is located within the Wilson Inlet Management Area, under the *Waterways Conservation Act 1976*. Waterways managed under this Act are considered sensitive. The Draft State Planning Policy (DSPP) 2.9 - Planning for Water Draft SPP 2.9 Planning for water policy guides the assessment of development proposals in relation to water resource matters, and the proponent is required to demonstrate that the proposed development can meet the policy objectives. Those of particular relevance to this proposal are: Section 7.2 – Water Quality, requires that proposals: i) minimise export of nutrient and non-nutrient contaminants entering water resources. l) demonstrate that infrastructure and site management practices are in place to manage contaminants, particularly within sensitive water resource areas and public drinking water source areas. Any infrastructure from which runoff might pose a pollution hazard, is to be located within a small, closed catchment, referred to as a controlled drainage area (CDA). Typically, cattle feedlots use a system of sedimentation drains and holding ponds to manage runoff. While these attributes are marked on the site plan, there is insufficient information regarding construction and capacity of the proposed system. Recommendation The proponent is required to provide adequate details of the proposed runoff system infrastructure to allow it to be assessed for adequacy against the Guidelines and Code of Practice. The proponent should address design features such as capacity and velocities, construction details of materials and access, and management details such as monitoring and risk assessment. <u>Stormwater and Wastewater Management</u> The application does not provide adequate details on how stormwater will be managed across the site.	Advice that the proposal has not sufficiently demonstrated compliance with draft SPP 2.9 is noted. The fact that the proposal does not demonstrate that key environmental risks have been considered and addressed is one of the reasons that refusal is recommended. Advice noted. Details of stormwater calculation and management have not been provided to sufficiently demonstrate

		The proponent should manage stormwater in accordance with the Decision process for stormwater management in WA: Draft for consultation and the Stormwater management manual for Western Australia. As a minimum, the proponent should be required to calculate stormwater runoff volumes and provide details of any proposed treatment measures, prior to any approvals. Details of runoff quality and quantity from feedlot areas in intense rain events should be provided and understood in relation to potential impact on native vegetation and water resources. Contaminated and uncontaminated stormwater should be managed separately. Consideration should be given to the potential reuse of uncontaminated stormwater within the proposed operations. Recommendation The proponent to provide calculations for stormwater runoff volumes and provide details of any proposed treatment measures. Identify potential sources of wastewater from feedlot activities and state how these will be managed in accordance with the Code of Practice. Address design requirements for drainage systems as outlined in the Guidelines, with specific attention to siting, construction and capacity. Groundwater Protection A minimum 2 m separation above the maximum seasonal groundwater level is recommended as a buffer to groundwater resources. This is required to reduce the risk of nutrients leaching into groundwater, to ensure a sufficient depth of aerobic soil is maintained, which limits waterlogging and fosters nutrient assimilation via soil filtration and microbial action. While it is noted that the proponent has provided depth to groundwater information, due to the timing of the study, the depths reported are unlikely to reflect the highest groundwater levels in the activity area. The proponent should be required to undertake groundwater investigations to determine the maximum seasonal groundwater level to ensure that they can achieve the required minimum 2m separation. This should be done when groundwater levels peak during September - October. Recommendation The proponent should undertake groundwater investigations to determine the maximum seasonal groundwater level to ensure that they can achieve the required minimum 2m	that wastewater will be appropriately addressed. Advice noted. Feedback from DPIRD and DWER advises that assessment of the water table was undertaken earlier (June) than the expected seasonal peak (September) and additional testing is warranted to determine whether this minimum depth separation will be met. Given the proximity of test pit 4 where groundwater was observed at 1.1m when the tests occurred (before the expected seasonal peak) the expected separation from peak season groundwater levels has not been sufficiently demonstrated.

		separation. This should be done when groundwater levels peak during September - October. A minimum buffer of 2m to highest groundwater level is established. Any areas of the proposed activity that cannot meet the 2m separation to groundwater should be excluded or subject to additional control measures. <u>Native vegetation protection</u> It is acknowledged that the application does not propose to clear remnant native vegetation. It is noted that the proposed feedlot activity footprint is adjacent to a stand of remnant vegetation on its southern boundary, without any obvious buffers. There is also a strip of remnant vegetation located within the northern boundaries of proposed pens 2 and 4. While this strip of vegetation provides buffering and shade options for the feedlot, it should be protected from stock. Management of the site should include measures to monitor for any impacts on remnant vegetation and to mitigate any risks to its integrity. <u>Separation to Waterways</u> The Code of Practice states that *feedlots are sited and designed to prevent or minimise adverse impacts on surface waters external to the feedlot controlled drainage area and external to manure and effluent utilisation areas.* Cattle Feedlots should be located above the 1 in 100-year flood level and should not be located on land subject to seasonal inundation or waterlogging. Adequate separation distance should be maintained between feedlots and waterways. The Shire of Plantagenet's Policy 13.1 Feedlots, requires a separation distance of 50 to 100m from waterways depending on their flow regimes. It is noted that the nearest waterway to the feedlot footprint is Sleeman Creek, approximately 450m from the feedlot boundary. A vegetated buffer currently exists between the proposed feedlot and the extent of Sleeman creek to the properties south. It is noted that the proposal includes the establishment of a vegetated buffer on the western boundary of the feedlot which will assist in the protection of Sleeman Creek to the west. A native vegetated buffer will protect water resources and reduce the risk of contaminant impact on both surface and groundwater. <u>Solid Waste Management</u> Solid waste including manure, carcasses and sedimentation sludge is to be managed in accordance with the Guidelines and Code of Practice.	Advice noted. The proposal does not involve the direct disturbance of existing native vegetation, but the inadequate management of water and effluent may result in the spread of weed seed, disease and contaminants into this area of remnant vegetation as has occurred with the previous unauthorised feedlot operated on this property by the proponent. Advice noted. This aspect of the proposal is considered compliant. Insufficient information has been provided to detail the method of waste collection, volume, cartage requirements, traffic

		It is acknowledged that the proposal is for solid wastes to be stored before being collected and disposed of by an offsite facility. The storage of solid waste should be on a specially designed solid pad located within the CDA. It should be noted that it is Department of Health's preference that waste is appropriately managed and utilised on the site it was generated and not be carted off site. If approval is to be given to dispose of any waste offsite, the proponent should be required to show evidence of a contract with relevant external waste facilities. It is recommended that the proponent consider the re -use of wastewater and solid waste compost to improve pasture productivity on other areas of the property. This waste re-use would be subject to the approval of wastewater treatment and compost facilities and a nutrient irrigation management plan with a site soil evaluation. DWER is able to assist the proponent, should they want to investigate re-use options. <u>Water Supply</u> A feedlot requires a secure water supply and should be able to demonstrate access to and continuity of supply. It is noted that the proposal is to utilise groundwater from an existing bore in the eastern corner of the property to fill a storage dam. The law relating to the rights to surface and ground water is contained within the by the *Rights in Water and Irrigation Act 1914* (RIWI Act) which is administered by DWER. In proclaimed RIWI areas, the taking of groundwater or surface water is subject to licensing. Given that the proposal property is not in a proclaimed surface or groundwater area, taking of water from a bore/soak or surface waters on the property does not require a licence. The proponent should be required to demonstrate that the water quality from the bore is suitable for cattle and that the bore and dam can supply enough water for the feedlot activity. Water requirements should be calculated using the Guideline's ratio of 24 ML per annum per 1000 SCU of feedlot capacity. In this instance, given the capacity of the feedlot is 4000 SCU, the proponent should be required to demonstrate access to approximately 96 ML per year. In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed.	movements and external facility capacity to support this proposal. Advice noted. Water sampling of existing groundwater supply can be required as a condition if the application were to be approved.
2	Department of Primary Industries & Regional Development	The Department of Primary Industries and Regional Development (DPIRD) in principle supports the development of rural industries, however, DPIRD is unable to support this application for a cattle feedlot in its current form, as additional information is required. DPIRD assessed the application and offers the following comments:	Advice noted. DPIRD's position does not support approval of the proposal in its current form.

		• The feedlot does not align with the generic buffer (separation) distances from sensitive receptors as required by the shire. Separation distances should be calculated using the S-factor equation as outlined in the National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition, 2012). • DPIRD recommends a 2m separation to maximum seasonal groundwater level for all waste containment infrastructure (manure and carcass storage areas). The current measurement of depth to groundwater was done in June when the seasonal groundwater level has not reached its maximum level. Depth to groundwater must be verified by measurements done during late August or September. • DPIRD expects that all runoff and leachate from the storage areas and pens are contained within a Controlled Drainage Area (CDA), and that all uncontaminated water is diverted away from the CDA. • The Department of Water and Environmental Regulation (DWER) assesses cattle feedlots based on design capacity rather than actual capacity (unless a planning approval or another instrument limits the operation to a certain capacity). Based on a pen area of 10 ha and maximum stocking density of 25m2 /SCU (standard cattle units), the design capacity of the feedlot is 4000 SCU. This is above the 500 head design capacity of Category 1 and Category 68 of Schedule 1 of the Environmental Protection Regulations 1987 and therefore DWER should be consulted on the need for a works approval. ***DPIRD's Expectations of Performance*** / ***Did the proponent provide evidence demonstrating attainment of this element?*** DPIRD expects that any new cattle feedlot facility in WA should be built in accordance with the specifications of the National Beef Cattle Feedlot Environmental Code of Practice (2nd Edition, 2012) and National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition, 2012). More detailed expectations are below. / The environmental assessment and operations plan has not referenced specifications in accordance with the National Beef Cattle Feedlot Environmental Code of Practice (2nd Edition, 2012) and National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition, 2012). DPIRD recommends a minimum of two metres clearance to groundwater / Information is provided about the distance to groundwater being 2.5 m	Consistent with officer assessment – the proposal does not meet expected buffer distances. Further assessment is required to demonstrated adequate separation from peak ground water levels. Further information is required as to the adequacy of water and effluent capture/ management. Noted – as per DWER advice that the proposal will require licensing as a prescribed premises. Advice that the proposal has not sufficiently demonstrated consistency with relevant industry codes of practice is noted and supports the assessing officer's position to recommend refusal. Compliance with relevant industry codes is an agreed way of demonstrating that the objectives of planning policy are being met. Additional testing is warranted to determine whether this minimum depth

		for all waste containment infrastructure, irrespective of the time of year. If this clearance is not met, additional engineering controls should be in place.	based on buffer distance. However, it is concerning that the groundwater assessment has been undertaken in early winter and may not represent highest groundwater levels.		separation will be met. Given the proximity of test pit 4 where groundwater was observed at 1.1m when the tests occurred (before the expected seasonal peak) the expected separation from peak season groundwater levels has not been sufficiently demonstrated.
		DPIRD expects that manure and carcasses are stored on an impermeable base that is constructed to achieve a permeability of $<1x10^{-9}$m/sec, to protect the surrounding environment.	No information on the permeability of the stockpile area is provided, nor are the designated stockpile areas identified on a map.		Insufficient information has been provided to demonstrate waste management practices, which is one of the most significant environmental risks associated with the proposal.
		The captured runoff/leachate needs to be stored and managed in a way that prevents excess nutrients from entering the surrounding environment. Typically, this involves the construction of holding or evaporation ponds. Ponds need to be appropriately sited, constructed and sized with regards to: • The quantity of leachate/runoff • Rainfall (accommodating a 1 in 20-year ARI for evaporation, or 1 in 10-year ARI for holding ponds) • A safety factor to prevent overtopping during high winds (typically 0.1 - 0.3 m) • Minimum of two metres separation to groundwater from the base of the pond • Constructed to meet a permeability of less than 1 x 10-9 m/sec.	No information on pond sizing and pond lining indicated in the environmental report.		Insufficient information has been provided to demonstrate waste management practices, which is one of the most significant environmental risks associated with the proposal.
		DPIRD expects that contaminated and uncontaminated runoff are kept separate. Contaminated runoff should be fully captured within the CDA, and	The application does not provide evidence that uncontaminated stormwater will be diverted away from the feedlot area. This is particularly concerning given the location is low-		Insufficient information has been provided to demonstrate waste management practices, which is one of the most

		uncontaminated runoff should be prevented from entering the CDA.	lying and ingress of stormwater is probable.		significant environmental risks associated with the proposal.
		Separation distance to sensitive receptors should be calculated using the S-factor equation outlined in the National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition, 2012)	A s-factor calculation has not been provided; accordingly, DPIRD is unable to determine if adequate separation distances to nearby sensitive receptors are in place.		In the absence of detailed technical assessment that demonstrates site and operation specific buffer requirements to sensitive land uses such as residential dwellings, it is appropriate to apply the generic buffer distance requirements of planning and environmental policies.