



Annual Audit Compliance Report Form

Environmental Protection Act 1986, Part V Division 3

Once completed, please submit this form either via email to info@dwer.wa.gov.au, or to the below postal address:

Department of Water and Environmental Regulation
Locked Bag 10
Joondalup DC WA 6919

Section A – Licence details			
Licence number:	L9330/2022/1	Licence file number:	
Licence holder name:	Koojan Downs Pty Ltd		
Trading as:	Koojan Downs Feedlot		
ACN:	628 244 628		
Registered business address:	Level 7, 190 St Georges Terrace PERTH WA 6000		
Reporting period:	01 / 01 / 2024 to 31 / 12 / 2024		

Section B – Statement of compliance with licence conditions
Did you comply with all of your licence conditions during the reporting period? (please tick the appropriate box)
<input checked="" type="checkbox"/> Yes – please complete: <ul style="list-style-type: none">• section C;• section D (if required); and• sign the declaration in Section F.
<input type="checkbox"/> No – please complete: <ul style="list-style-type: none">• section C;• section D (if required);• section E; and• sign the declaration in Section F.

Section C – Statement of actual production	
Provide the actual production quantity for this reporting period. Supporting documentation is to be attached.	
Prescribed premises category	Actual production quantity
Category 1: Cattle feedlot: premises on which the watering and feeding of cattle occurs, being premises – (a) situated less than 100 metres from a watercourse; and (b) on which the number of cattle per hectare exceeds 50.	Average 15,370 animals. Refer to supporting information report.

Section D – Statement of actual Part 2 waste discharge quantity	
Provide the actual Part 2 waste discharge quantity for this reporting period. Supporting documentation is to be attached.	
Prescribed premises category	Actual Part 2 waste discharge quantity
Category 1: Cattle feedlot: premises on which the watering and feeding of cattle occurs, being premises – (a) situated less than 100 metres from a watercourse; and (b) on which the number of cattle per hectare exceeds 50.	Nil

Section E – Details of non-compliance with licence condition			
Please use a separate page for each condition with which the licence holder was non-compliant at a time during the reporting period.			
Condition no:		Date(s) of non-compliance:	
Details of non-compliance:			
What was the actual (or suspected) environmental impact of the non-compliance? NOTE – please attach maps or diagrams to provide insight into the precise location of where the non-compliance took place.			
Cause (or suspected cause) of non-compliance:			
Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:			

Section E – Details of non-compliance with licence condition

Was this non-compliance previously reported to DWER?

Yes, and

Reported to DWER verbally

Date: / /

Reported to DWER in writing

Date: / /

Section F – Declaration

I / We declare that the information in this Annual Audit Compliance Report is true and correct and is not false or misleading in a material particular¹.

I / We consent to the Annual Audit Compliance Report being published on the Department of Water and Environmental Regulation's (DWER) website.



Position:	Business Unit Manager Koojan Downs Feedlot	Position:	
Date:	16/04/2025	Date:	
Seal (if signing under seal):			

¹ It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular.

² AACRs can only be signed by the licence holder or an authorised person with the legal authority to sign on behalf of the licence holder.

Annual Audit Compliance Report Licence – L9330/2022/1 – 2024

Koojan Downs Feeding Facility Operation Phase - Stage 1

**“Koojan Downs”
1096 Boundary Road
YATHROO WA 6507**



**Koojan Downs Pty Ltd
Level 7, 190 St Georges Terrace
PERTH WA 6000**

[April 2025]

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ENGINEERS | ENVIRONMENTAL
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Executive summary

The Harvest Road Group is a vertically integrated agricultural business producing a range of ethically and sustainably produced foods. One of Harvest Road businesses is a vertically integrated gate-to-plate beef supply chain. Currently the beef supply chain includes breeding and fattening properties and a beef processing facility located at Harvey.

Koojan Downs Pty Ltd owns 4 adjoining properties known as Koojan Downs, Avena Vale, Water Hill and Damper Downs totalling some 7,200 ha (17,777 acres) in the Yathroo/Koojan area about 22 km south-west of Moora.

Koojan Downs Pty Ltd proposes to develop a beef cattle feeding facility on Koojan Downs with a capacity of up to 40,000 head to supply quality grain fed cattle to the Group's Harvey Beef Operations. The facility is proposed to be developed in two stages with the first stage having a capacity of 20,000 head. The second stage will provide an additional 20,000 head, bringing the facility to a total of 40,000 head.

Koojan Downs Pty Ltd lodged a works approval application under Part V of the *Environmental Protection Act 1986* (EP Act) on 24 October 2019 to establish a Category 1 and Category 23 prescribed premises comprising a 40,000 head capacity beef cattle feedlot and animal feed manufacturing facility across the Koojan Downs, Avena Vale, and Damper Downs property.

In August 2020, Works Approval W6330/2019/1 was granted by DWER subject to the conditions prescribed in the works approval for construction of a 40,000 head cattle feedlot in two stages and an animal feed manufacturing plant.

Koojan Downs Pty Ltd lodged an application to amend Works Approval W6330/2019/1 on the 29th of April 2021 (RDC Engineers Pty Ltd, 2021).

In October 2021, Amended Works Approval W6330/2019/1 was granted by DWER subject to the conditions prescribed in the amended works approval for construction of a 40,000 head cattle feedlot in two stages and an animal feed manufacturing plant.

The construction of Stage 1 infrastructure of the Koojan Downs Feeding Facility commenced in August 2020. The scope of work comprised controlled drainage area 1 (vegetation clearing, bulk earthworks, geosynthetic clay lining, concrete works (feed bunk, feed bunk aprons, water trough, water trough aprons), fencing, shade infrastructure, drainage works, sedimentation basin and effluent holding pond) and ancillary infrastructure (grain storage and processing facility, automatic weather station). Fiveight delivered the project over a 14 month period, with construction completed in 2021 and the Project in defects liability period until December 2022.

In June 2023, Licence L9330/2022/1 was granted with conditions by DWER for Stage 1 operations of the cattle feedlot with a design capacity of 20,000 head (18,750 SCUs).

The purpose of this report is to provide supporting information for the Annual Audit Compliance Report for Licence L9330/2022/1 for 01/01/2024 to 31/12/24.

1 Introduction

Koojan Downs Pty Ltd lodged a works approval application under Part V of the *Environmental Protection Act 1986* (EP Act) on 24 October 2019 to establish a 40,000 head capacity beef cattle feeding facility on a 3,748 ha aggregation of three adjoining properties known as Koojan Downs, Avena Vale and Damper Downs in the Yathroo/Koojan area 22 km south west of Moora.

The proposed development included the construction of the beef cattle feeding facility in two stages. Stage 1 of the proposed development includes the construction of cattle production pens for 20,000 head capacity along with a solid waste storage and composting area with associated sedimentation basins and effluent holding ponds, grain storage and processing facility. Stage 2 of the proposed development includes the construction of cattle production pens to provide an additional 20,000 head capacity with additional sedimentation basins and effluent holding pond. The proposed development also includes the irrigation of effluent to land and the application of solid waste to land.

A draft works approval and draft decision report (DWER, 2020a) was provided to Koojan Downs Pty Ltd on 9 April 2020 for consideration by Koojan Downs Pty Ltd. The purpose of this report was to provide comments on the draft works approval and draft decision report.

Koojan Downs Pty Ltd responded to the draft works approval and draft decision report on the 22 May 2020 in a report prepared by RDC Engineers (RDC Engineers Pty Ltd, 2020).

After consideration of the response provided by Koojan Downs Pty Ltd on 22 May 2020, DWER granted Works Approval W6330/2019/1 on the 14 August 2020 subject to the conditions prescribed in the works approval for the proposed development.

Koojan Downs Pty Ltd lodged an application to amend Works Approval W6330/2019/1 on the 29th of April 2021 (RDC Engineers Pty Ltd, 2021).

In October 2021, Amended Works Approval W6330/2019/1 was granted by DWER subject to the conditions prescribed in the amended works approval for construction of a 40,000 head cattle feedlot in two stages and an animal feed manufacturing plant.

The construction of Stage 1 infrastructure of the Koojan Downs Feeding Facility commenced in August 2020. The scope of work comprised controlled drainage area 1 (vegetation clearing, bulk earthworks, geosynthetic clay lining, concrete works (feed bunk, feed bunk aprons, water trough, water trough aprons), fencing, shade infrastructure, drainage works, sedimentation basin and effluent holding pond) and ancillary infrastructure (grain storage and processing facility, automatic weather station). Fiveight delivered the project over a 14 month period, with construction completed in 2021 and the Project in defects liability period until December 2022.

The purpose of this report is to provide supporting information for the Annual Audit Compliance Report (AACR) for Licence L9330/2022/1 including the Annual Environmental Report.

2 Compliance Assessment

The following sections outline compliance against each approval condition of Licence L9330/2022/1.

2.1.1 Premises operation

2.1.1.1 Infrastructure and equipment

Condition No	Requirements	Status	Evidence / Comments
1	The licence holder must ensure the site infrastructure listed in Table 1 is maintained in accordance with the corresponding design requirements in that table.	Compliant	Refer to the Table 1.

Table 1: Infrastructure and equipment requirements

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
<i>Stage 1 feedlot infrastructure</i>					
1	Cattle handling facility	(a) Must only be used for processing animals at arrival/dispatch;	"Cattle handling facility"	Compliant	The Cattle handling facility is used for inducting animals when arriving and when being dispatched from the feeding facility.
		(b) Must remain located within the controlled drainage area.		Compliant	The Cattle handling facility is located within the controlled drainage area. Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).
		(c) Floor area must be maintained:		Compliant	Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).
		(i) With a slope of at least 1.5% and cross fall of at least 0.5%;		Compliant	Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).
		(ii) At least 125 mm thick concrete;		Compliant	Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).



Photograph 1 – KDFP – Cattle handling facility

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments	
<i>Stage 1 feedlot infrastructure</i>						
2	Feedlot pens – including cattle alleys and feed delivery roads	(a) Must be maintained as five (5) separate rows, comprising:	“A, B, C, D, & E” and “Feed delivery road”	Compliant	Rows A, B, C, D & E and associated feed delivery roads are maintained as per the original approved plan. For Rows A and B refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a). For Row C refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b). For Rows D and E refer to Environmental Compliance Report 4 - RDC Engineers Pty Ltd (2022b).	
		(i) Row A – 20 full size production pens and 10 half size production pens;			Compliant	Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).
		(ii) Rows B, D & E – each row comprising 24 full size production pens and 2 half size pens;			Compliant	For Row B refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a). For Rows D & E refer to Environmental Compliance Report 4 - RDC Engineers Pty Ltd (2022b).
		(iii) Row C – 22 full size production pens and 2 half size pens (includes 4 hospital pens);			Compliant	For Row C refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b).
		(b) Each full size production pen must be maintained with dimensions not exceeding 53 m x 54.5 m;		Compliant	Each pen has been maintained with its original constructed dimensions. Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a); Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b); and Environmental Compliance Report 4 - RDC Engineers Pty Ltd (2022b).	

		(c) Each half size pen must be maintained with dimensions not exceeding 29 m x 54.5 m;		Compliant	Each pen has been maintained with its original constructed dimensions. Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a); Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b); and Environmental Compliance Report 4 - RDC Engineers Pty Ltd (2022b).
		(d) Pen floors and cattle alleys must be maintained with:		Compliant	Pen floors and cattle alleys are maintained with the downslope of 3% and a dual lining system.
		<ul style="list-style-type: none"> a fall of at least 3% towards the effluent catch drains; 		Compliant	<p>For Rows A and B refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).</p> <p>For Row C refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b).</p> <p>For Rows D and E refer to Environmental Compliance Report 4 - RDC Engineers Pty Ltd (2022b).</p>
		<ul style="list-style-type: none"> a dual lining system 		Compliant	<p>For Rows A and B refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).</p> <p>For Row C refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b).</p> <p>For Rows D and E refer to Environmental Compliance Report 4 - RDC Engineers Pty Ltd (2022b).</p>



Photograph 2 – KDFP – Pen rows and fencing

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
<i>Stage 1 feedlot infrastructure</i>					
3	Effluent catch drains	(a) Cattle handling facility and feedlot rows A – E each must be maintained with an outer effluent catch drain, with minimum dimensions: 3.5 m bed width, 1V:4H batter and 0.5 m depth;	“Cattle hospital facility/ cattle lane/ effluent catch drain”	Compliant	<p>All drains are maintained as per there design geometry.</p> <p>For Rows A and B refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).</p> <p>For Row C refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b).</p> <p>For Rows D and E refer to Environmental Compliance Report 4 - RDC Engineers Pty Ltd (2022b).</p>
		(b) Must be maintained with:			
		(i) a long fall of at least 0.5% and connect to the sedimentation basin;		Compliant	<p>For Rows A and B refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).</p> <p>For Row C refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b).</p> <p>For Rows D and E refer to Environmental Compliance Report 4 - RDC Engineers Pty Ltd (2022b).</p>
		(ii) A dual lining system		Compliant	<p>For Rows A and B refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).</p> <p>For Row C refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b).</p> <p>For Rows D and E refer to Environmental Compliance Report 4 - RDC Engineers Pty Ltd (2022b).</p>



Photograph 3 – KDFE – Production pen effluent catch drains

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
<i>Stage 1 feedlot infrastructure</i>					
4	Controlled Drainage Area 1 (CDA 1)	(a) Must comprise all operational areas relating to the Stage 1 feedlot, including pen areas, hard catchment (feed roads, cattle lanes, effluent catch drains, sedimentation basin 2 & 3, effluent holding pond 1) and soft catchment;	As per design requirements	Compliant	<p>All operational areas relating to Stage 1 including pen areas, hard catchment (feed roads, cattle lanes, effluent catch drains, Sedimentation Basin 2 & 3, Effluent Holding Pond 1) and soft catchment are located within a controlled drainage area as per the original approved plan.</p> <p>For Rows A and B refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).</p> <p>For Row C refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b).</p> <p>For Rows D and E refer to Environmental Compliance Report 4 - RDC Engineers Pty Ltd (2022b).</p>
		(b) Area must be maintained with a slope to facilitate drainage of surface water runoff to effluent holding pond 1;		Compliant	<p>For Rows A and B refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).</p> <p>For Row C refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b).</p> <p>For Rows D and E refer to Environmental Compliance Report 4 - RDC Engineers Pty Ltd (2022b).</p>

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
<i>Stage 1 feedlot infrastructure</i>					
5	Sedimentation basin 2 & 3	(b) Must be maintained immediately downgradient of CDA1, with min. holding capacity of 5,800 m3 and max. operational depth of 1.0 m;	"Sedimentation Basin 2 and 3 (Stage 1)"	Compliant	Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).
		(c) Must be maintained with a slatted concrete weir discharge assembly on the discharge point to effluent holding pond 1;		Compliant	A control outlet weir is maintained on the discharge point. Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).
		(d) Must be maintained with a dual lining system;		Compliant	Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).



Photograph 4 – KDFP – Sedimentation basin 2 & 3 and control outlet weir

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
<i>Stage 1 feedlot infrastructure</i>					
6	Effluent holding pond 1	(a) Must be maintained downgradient of sedimentation basin 2 & 3, with a holding capacity of at least 107,000 kL (once upgraded in accordance with condition 2, and including minimum operational freeboard of 0.9 m);	"Holding Pond 1 (Stage 1)"	Compliant	Effluent Holding Pond 1 has been constructed and is maintained immediately downgradient of Sedimentation Basin 2 & 3 in Controlled Drainage Area 1. Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b). Effluent Holding Pond 1 has a minimum holding capacity of 107,000 kL with a minimum operational freeboard of 0.9 m. Refer to Licence number - L9330/2022/1 Compliance Report 1 - Upgrade works – infrastructure requirements – Effluent Holding Pond 1 - RDC Engineers Pty Ltd (2023).
		(b) Pond floor and walls must be maintained with a dual lining system;		Compliant	Effluent Holding Pond 1 has been constructed with a lining system that complies with the requirements specified in condition 3b. Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b).



Photograph 5 – KDFE – Effluent Holding Pond 1

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
<i>Stage 1 feedlot infrastructure</i>					
7	Manure storage and processing area	(a) Must be maintained with a surface area of at least 30,000 m ² ;	“Solid waste storage and carcass composting area (Stage 1)”	Compliant	The solid waste storage and carcass composting area (Stage 1) is maintained with an area of at least 30,000 m ² . Refer to Environmental Compliance Report 3 - RDC Engineers Pty Ltd (2022a).
		(b) Must be maintained with a dual lining system;		Compliant	The solid waste storage and carcass composting area (Stage 1) has been constructed and is maintained with a dual lining system. Refer to Environmental Compliance Report 3 - RDC Engineers Pty Ltd (2022a).



Photograph 6 – KDFP – Manure storage and processing area

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
<i>Stage 1 feedlot infrastructure</i>					
8	Controlled Drainage Area 2 (CDA 2)	a) Must comprise all operational areas relating to the Stage 1 solid waste storage and composting area;	As per design requirements	Compliant	All operational areas relating to Stage 1 solid waste stockpile and carcass composting area including effluent catch drains, Sedimentation Basin 4, Effluent Holding Pond 2 are located within a controlled drainage area referred to as CDA 2. Refer to Environmental Compliance Report 3 - RDC Engineers Pty Ltd (2022a).
		b) Area must be maintained with diversion drains or banks to ensure manure and compost leachates and contaminated surface water runoff is contained within CDA2;		Compliant	The solid waste storage and carcass composting area has been constructed and is maintained to IFC design. The solid waste stockpile and carcass composting area comprise diversion drains to ensure manure and compost leachates and contaminated surface water runoff is contained within Controlled Drainage Area 2. Refer to Environmental Compliance Report 3 - RDC Engineers Pty Ltd (2022a).
		c) Area must be maintained with a long fall of at least 2.5% to facilitate drainage of surface water runoff to effluent holding pond 2;		Compliant	The solid waste storage and carcass composting area has been constructed and is maintained to IFC design. Refer to Environmental Compliance Report 3 - RDC Engineers Pty Ltd (2022a).

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
<i>Stage 1 feedlot infrastructure</i>					
9	Sedimentation basin 4	a) Must be maintained immediately downgradient of CDA2, with min. holding capacity of 1,000 m3 and max. operational depth of 1.0 m;	"Sedimentation Basin 4 (Stage 1)"	Compliant	Sedimentation Basin 4 has been constructed immediately downgradient of the solid waste storage and carcass compost area in Controlled Drainage Area 2. Refer to Environmental Compliance Report 3 - RDC Engineers Pty Ltd (2022a).
		b) Must be maintained with a slatted concrete weir discharge assembly on the discharge point to effluent holding pond 2;		Compliant	A slatted concrete weir discharge assembly has been constructed and is maintained on the discharge point through the embankment from Sedimentation Basin 4 to Effluent Holding Pond 2. Refer to Environmental Compliance Report 3 - RDC Engineers Pty Ltd (2022a).
		c) Must be maintained with a dual lining system;		Compliant	Sedimentation Basin 4 has been constructed and is maintained with a dual lining system. Refer to Environmental Compliance Report 3 - RDC Engineers Pty Ltd (2022a).



Photograph 7 – KDFP – Sedimentation basin 4 and control out weir

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
<i>Stage 1 feedlot infrastructure</i>					
10	Effluent holding pond 2	a) Must be maintained downgradient of sedimentation basin 4, with a holding capacity of at least 3,000 kL (including minimum operational freeboard of 0.9 m);	"Effluent Holding Pond 2 (Stage 1)"	Compliant	Effluent Holding Pond 2 has been constructed and is maintained immediately downgradient of Sedimentation Basin 4 in Controlled Drainage Area 2. Refer to Environmental Compliance Report 3 - RDC Engineers Pty Ltd (2022a).
		b) Pond floor and walls must be maintained with a dual lining system.		Compliant	Effluent Holding Pond 2 has been constructed and is maintained with a dual lining system. Refer to Environmental Compliance Report 3 - RDC Engineers Pty Ltd (2022a).



Photograph 8 – KDFE – Effluent Holding Pond 2

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
<i>Ancillary infrastructure</i>					
1	Grain storage and processing facility	Must maintain the following:	“Grain Storage and Processing Facility (Stage 1)”		The grain storage and processing facility is maintained with two grain processing mills and storage silos as per design. Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).
		a) 2 x grain processing roller mills, each with capacity of 20 t/hr;		Compliant	Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).
		b) Grain intake rate of 250 t/hr;		Compliant	Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).
		c) 4 x 1,140 tonne grain storage silos.		Compliant	Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).



Photograph 9 – KDFP – Grain storage and processing facility

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
<i>Ancillary infrastructure</i>					
2	Weather station	Must maintain an on-site automatic weather station capable of recording daily rainfall, air temperature, humidity and wind speed, for direct use in estimating evapotranspiration (ET0) at the premises.	Within proximity to effluent holding pond 1	Compliant	<p>An 2m AWS is maintained on-site in close proximity to Effluent Holding Pond 1.</p> <p>Refer to Environmental Compliance Report 1 - RDC Engineers Pty Ltd (2021a).</p> <p>Refer to Environmental Compliance Report 3 - RDC Engineers Pty Ltd (2022a).</p>



Photograph 10 – KDFE – On-site Automatic Weather Station (AWS)

A monthly summary of the weather data collected at the on-site automatic weather station from the 1st of January 2024 to 31st December 2024 is presented in Table 2-1. Electronic records of the AWS data are maintained on-site at the facility. Figure 1 illustrates the rainfall and evaporation pattern for the 12 month period in 2024.

Table 2-1 – KDFE – On-site AWS Summary Data

Month	Temperature			RH			Rainfall mm	Evaporation mm
	Maximum Deg C	Minimum Deg C	Average Deg C	Maximum %	Minimum %	Average %		
Jan-24	42.0	13.7	25.2	95.4	13.0	52.7	0.0	234.4
Feb-24	47.2	13.8	27.8	96.7	6.7	40.1	4.6	221.8
Mar-24	37.0	7.9	23.7	95.2	12.7	53.6	2.2	184.6
Apr-24	36.1	7.9	20.9	93.1	12.2	44.9	4.6	147.6
May-24	29.5	2.8	17.8	94.8	12.5	59.3	53.8	82.7
Jun-24	25.3	0.8	14.0	93.5	28.2	77.9	93.2	44.3
Jul-24	23.9	2.6	12.9	94.0	31.5	76.7	95.6	48.3
Aug-24	25.0	1.4	13.6	90.8	42.2	76.9	83.0	58.2
Sep-24	31.1	2.9	14.6	100.0	-1.0	66.8	19.0	98.6
Oct-24	36.6	3.9	17.5	100.0	-1.0	61.4	22.6	134.9
Nov-24	38.8	5.7	20.2	94.2	-1.0	54.3	3.6	166.9
Dec-24	44.2	9.5	24.4	100.0	-1.0	47.2	0.4	223.8
Total							382.6	1,645.9

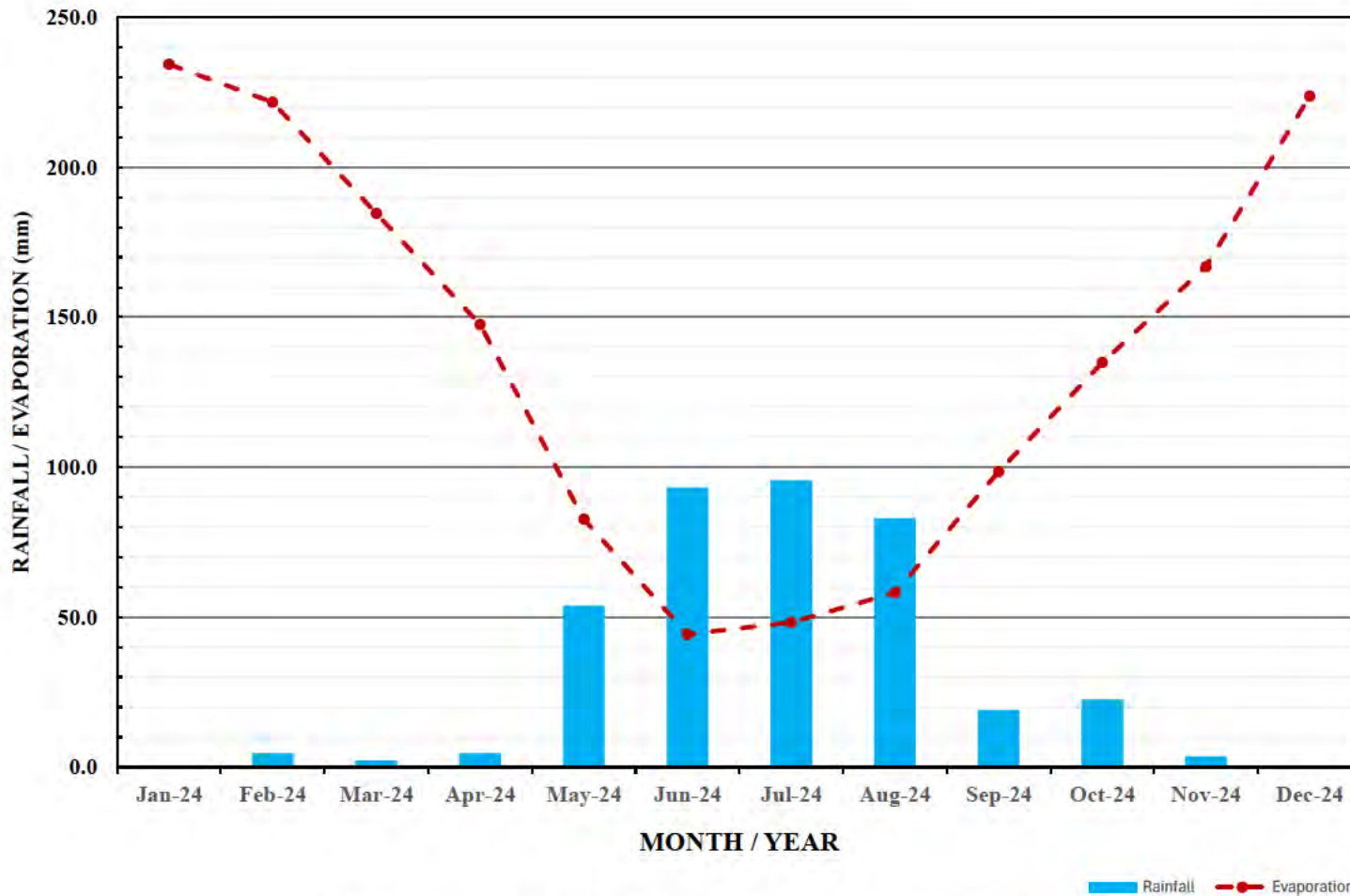


Figure 1 – KDFE – Rainfall and evaporation – 2024

2.1.1.2 Upgrade works – infrastructure

Condition No	Requirements	Status	Evidence / Comments
2	The licence holder must upgrade the infrastructure listed in Table 2 in accordance with the corresponding design and construction requirements as set out in that table.	Compliant	Refer to the Table 2.

Table 2: Upgrade works – infrastructure design and construction requirements

	Infrastructure	Design and construction requirements	Infrastructure location	Status	Evidence / Comments
1	Effluent holding pond 1	(a) Must increase the holding capacity of the pond to at least 107,000 kL (including minimum operational freeboard of 0.9 m);	"Holding Pond 1 (Stage 1)"	Compliant	Refer to Environmental Compliance Report 5 - RDC Engineers Pty Ltd (2023).
		(b) Must ensure the pond wall raise is constructed with a dual liner system, including:		Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for compliance of Effluent Holding Pond 1 in relation to construction of a dual liner system.
		(i) at least 150 mm moisture conditioned and recompacted in-situ subgrade or other suitable fill material, compacted to 98% MDD at $\pm 2\%$ optimum moisture content;		Compliant	Effluent Holding Pond 1 has been constructed with a 150 mm subgrade which has been moisture conditioned and recompacted to 98% MDD $\pm 2\%$ optimum moisture content. Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for compliance of Effluent Holding Pond 1 in relation to construction of the compacted subgrade.
		(ii) a primary lower liner comprising a geosynthetic clay liner with a minimum		Compliant	Effluent Holding Pond 1 has been constructed with a primary lower liner comprising a geosynthetic clay liner with a minimum manufacturer specified

		manufacturer specified MARV of 4,000 g/m ² bentonite at 0% moisture content;			MARV of 4,000 g/m ² bentonite at 0% moisture content. Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for compliance of Effluent Holding Pond 1 in relation to construction of the geosynthetic clay liner.
		(iii) a secondary surcharge layer comprising at least 300 mm of clay or other suitable compactable soil; and		Compliant	Effluent Holding Pond 1 has been constructed with a secondary surcharge layer of at least 300 mm of compacted clay. Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for compliance of Effluent Holding Pond 1 in relation to the construction of a secondary surcharge layer.
		(iv) a capping layer comprising at least 150 mm of compacted gravel material with a minimum CBR wet and dry of 20%”		Compliant	Effluent Holding Pond 1 has been constructed with a 150 mm compacted gravel capping layer with a minimum CBR wet and dry of 20%. Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for compliance of Effluent Holding Pond 1 to the construction of a compacted gravel capping layer.
		(c) Must ensure that permeability and compaction requirements for clay and gravel materials used to comply with clause 1(b) of this table are demonstrated by geotechnical testing conducted by a suitably qualified engineer and in accordance with AS 1289;		Compliant	Geotechnical testing has been undertaken on clay and gravel materials to ensure that permeability and compaction requirements comply with clause 1(b). All testing has been undertaken by a suitably qualified engineer and in accordance with AS 1289. Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for compliance of Effluent Holding Pond 1 clay and gravel materials in accordance with clause 1(b).

		(d) Must conduct quality assurance, including visual inspection and materials testing, for all geosynthetic clay liners in accordance with the requirements specified in Table 3;		Compliant	Quality assurance has been undertaken on the geosynthetic liner materials used in clause 1(b). Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for compliance of Effluent Holding Pond 1 against quality assurance parameters.
		(e) Must ensure all laboratory tests required by clause 1(d) of this table are tested by a laboratory with current NATA accreditation for the parameters being measured;		Compliant	All laboratory tests required by clause 1(d) has been undertaken by a laboratory with current NATA accreditation for the parameters being measured. Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for compliance of Effluent Holding Pond 1 against quality assurance parameters.
		(f) Must prepare a Construction Quality Assurance Validation Report (CQAVR) following installation of the geosynthetic clay liner;		Compliant	A Construction Quality Assurance Validation Report (CQAVR) was prepared and presented to DWER following installation of the geosynthetic clay liner. Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for the Construction Quality Assurance Validation Report (CQAVR) for Effluent Holding Pond 1 geosynthetic clay liner.
		(g) Must ensure the report required by clause 1(f) of this table is written and certified by a qualified professional engineer and includes:		Compliant	The Construction Quality Assurance Validation Report (CQAVR) required by clause 1(f) of this table was written and certified by a qualified professional engineer. Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for the Construction Quality Assurance Validation Report

					(CQAVR) for Effluent Holding Pond 1 geosynthetic clay liner.
		(i) documentation of the quality of the completed works;		Compliant	<p>The Construction Quality Assurance Validation Report (CQAVR) required by clause 1(f) of this table documents the quality of the completed works.</p> <p>Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for the Construction Quality Assurance Validation Report (CQAVR) for Effluent Holding Pond 1 geosynthetic clay liner.</p>
		(ii) demonstration of whether all requirements of the works specifications and QA provisions in Table 3 have been complied with;		Compliant	<p>The Construction Quality Assurance Validation Report (CQAVR) required by clause 1(f) of this table demonstrates that all requirements of the works specifications and QA provisions in Table 3 have been complied with.</p> <p>Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for the Construction Quality Assurance Validation Report (CQAVR) for Effluent Holding Pond 1 geosynthetic clay liner.</p>
		(iii) an assessment of test results against the minimum values specified in Table 3;		Compliant	<p>The Construction Quality Assurance Validation Report (CQAVR) required by clause 1(f) of this table presents an assessment of test results against the minimum values specified in Table 3.</p> <p>Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for the Construction Quality Assurance Validation Report (CQAVR) for Effluent Holding Pond 1 geosynthetic clay liner.</p>

		(iv) certification the installed liner is free of default or defect and is fit-for-purpose; and		Compliant	<p>The Construction Quality Assurance Validation Report (CQAVR) required by clause 1(f) of this table includes certification that the installed liner is free of default or defect and is fit-for-purpose.</p> <p>Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for the Construction Quality Assurance Validation Report (CQAVR) for Effluent Holding Pond 1 geosynthetic clay liner.</p>
		(v) copies of all surveys and drawing of the 'as installed' liner, inspections and materials testing results.		Compliant	<p>The Construction Quality Assurance Validation Report (CQAVR) required by clause 1(f) of this table includes copies of all surveys and drawing of the 'as installed' liner, inspections and materials testing results.</p> <p>Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022b) for the Construction Quality Assurance Validation Report (CQAVR) for Effluent Holding Pond 1 geosynthetic clay liner.</p>

Table 3: Upgrade works – Geosynthetic clay liner QA requirements

Property	Test method	Frequency	Minimum value	Infrastructure location	Status	Evidence / Comments
Swell index	ASTM D5890	As per manufacturer's testing frequency	$\geq 24 \text{ cm}^3/2\text{g}$	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
Fluid loss	ASTM D5981		$\leq 15 \text{ mL}$	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
Montmorillonite content	X-ray diffraction		70%	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
Cation exchange capacity of bentonite	NH ₄ displacement; Methylene blue; Barium saturation		70 – 110 cmol/kg of bulk sample	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
Bentonite mass @ 0% moisture content	ASTM D5993	Every 3,600 g/m ²	$\geq 3,700 \text{ g/m}^2$	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.

Mass per unit area of GCL		Every 3,600 g/m ²	≥ 4,030 g/m ²	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
Thickness	ASTM D5199	Visual inspection onsite for variability	≥ 6 mm	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
Moisture content (MaxARV)	ASTM D5993	MARV using frequency as prescribed in each ASTM standard	≤ 25% at manufacturer	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
Peel strength (min avg.)	ASTM D6496		≥ 360 N/m	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
Tensile strength	ASTM D6768		≥ 7 kN/m	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
CBR strength	AS 3706.4		≥ 1,400 N	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the

						clay liner for Effluent Holding Pond 1.
CBR elongation (MaxARV)	AS 3706.4		≤ 10%	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
Hydraulic conductivity, k	ASTM D5887	As per manufacturer's testing frequency	Index testing ≤ 2.5 x 10 ⁻¹¹ m/s Performance testing ≤ 1 x 10 ⁻⁹ m/s	Holding Pond 1	Compliant	Refer to Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2022a) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.

2.1.1.3 Upgrade works – Compliance reporting

Condition No	Requirements	Status	Evidence / Comments
3	The licence holder must, within 30 days of the completion of infrastructure upgrades specified in condition 2:	Compliant	Refer to Environmental Compliance Report 5 - RDC Engineers Pty Ltd (2023).
	(a) undertake an audit of their compliance with the requirements of condition 2; and	Compliant	Refer to Environmental Compliance Report 5 - RDC Engineers Pty Ltd (2023).
	(b) prepare and submit to the CEO a report on that compliance.	Compliant	Refer to Environmental Compliance Report 5 - RDC Engineers Pty Ltd (2023) and Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Holding Pond 1.

Condition No	Requirements	Status	Evidence / Comments
4	The report required by condition 3, must include as a minimum:		
	(a) certification whether the pond upgrade has been completed in accordance with the relevant requirements specified in condition 2;	Compliant	Refer to Environmental Compliance Report 5 - RDC Engineers Pty Ltd (2023) and Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
	(b) as constructed plans for the upgraded pond specified in condition 2;	Compliant	Refer to Environmental Compliance Report 5 - RDC Engineers Pty Ltd (2023).
	(c) details that demonstrate how the upgraded pond has been designed and constructed to be fit for purpose; and	Compliant	Refer to Environmental Compliance Report 5 - RDC Engineers Pty Ltd (2023) and Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.

	(d) be signed by a person authorised to represent the licence holder and contains the printed name and position of that person.	Compliant	Refer to Environmental Compliance Report 5 - RDC Engineers Pty Ltd (2023) and Environmental Compliance Report 2 - RDC Engineers Pty Ltd (2021b) for the Construction Quality Assurance Validation Report (CQAVR) for the geosynthetic material used as the clay liner for Effluent Holding Pond 1.
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2.1.1.4 Operational requirements

The licence holder must ensure the site infrastructure listed in Table 4 is operated in accordance with the requirements set out in that table.

Condition No	Requirements	Status	Evidence / Comments
53	The licence holder must ensure the site infrastructure listed in Table 4 is operated in accordance with the requirements set out in that table.	Compliant	Refer to Environmental Compliance Report 5 - RDC Engineers Pty Ltd (2023).

Table 4: Infrastructure operational requirements

	Site infrastructure	Operational requirement	Status	Evidence / Comments
1	Stage 1 feedlot pens – Rows A, B, C, D & E	<u>Stocking density</u>		
		(a) Stocking density must not exceed 19.2 m ² /SCU within individual pens;	Compliant	The stocking density does not exceed 19.2 m ² /SCU within individual pens and across the production pen area. Refer to Table 2-3. SCU has been calculated in accordance with the National Beef Cattle Feedlot Environmental Code of Practice 2nd Edition (MLA, 2012)
		<u>Pen cleaning and manure removal</u>		

		(b) Pens must be cleaned to ensure the depth of dry manure on the pen surface and under pen fence lines does not exceed 50 mm;	Compliant	Pens are cleaned to ensure the depth of dry manure on the pen surface and under pen fence lines does not exceed 50 mm. Pens are cleaned on average every 90 days (13 weeks).
		(c) Manure harvested from pen surfaces must be removed directly to the designated manure storage and processing area (CDA2);	Compliant	Manure harvested from pens is removed directly to the designated manure storage and processing area. Refer to Photograph 6.
		(d) Must only use machine control-equipped mobile plant for cleaning pen surfaces;	Compliant	Manure harvested from pens is removed directly to the designated manure storage and processing area. Refer to Photograph 6.
		<u>Pen maintenance</u>		
		(e) Must ensure a minimum 450 mm thick surcharge layer is maintained above the GCL (± 75 mm);	Compliant	Pen maintenance is contracted out to RSA Contractors. RSA Contractors were the Construction Contractors for the facility and have a modern fleet of machines equipped with RTK-GPS machine control. RSA Contractors utilise the constructed design surface as the basis for maintaining minimum 450 mm thick surcharge layer above the GCL.
		(f) Pens must be maintained to ensure there are no depressions, potholes and wet spots in the pen surface;	Compliant	Pen maintenance is contracted out to RSA Contractors. RSA Contractors were the Construction Contractors for the facility and have a modern fleet of machines equipped with RTK-GPS machine control. RSA Contractors utilise the constructed design surface as the basis for ensuring there are no depressions, potholes and wet spots in the pen surface.
		<u>Mortalities</u>		
		(g) All mortalities must be removed from the pens within 24 hours of death;	Compliant	All mortalities are identified by Pen Riders during their daily pen inspection. Mortalities are reported to the Livestock Manager or Feedlot Manager and

				are removed from the pens the same day. Mortalities are taken to the Cattle Handling Yards for autopsy if a cause of death cannot be attributed. Livestock Manager or Feedlot Manager are notified if cattle are required to be euthanised Once euthanised is performed, then carcass is removed removed.
		(h) Following post mortem at the cattle handling yards (if required), mortalities removed from pens must be:		
		(i) taken directly to the designated manure storage and processing area; or	Compliant	Following post mortem, mortalities are taken directly to the designated manure storage and processing area for composting.
		(ii) taken directly off-site for further processing or disposal, to a premises that is lawfully able to accept that kind of waste (such as a licensed rendering facility or composting facility);	Not Relevant^	Mortalities are not taken off-site for further processing or disposal, to a premises that is lawfully able to accept that kind of waste (such as a licensed rendering facility or composting facility).
2	Effluent catch drains (Stage 1)	(a) Must be maintained to ensure all leachate and surface water runoff from the feedlot pens, bunks and cattle alleys can flow freely to the sedimentation basins without scouring;	Compliant	The effluent catch drains are maintained to ensure all leachate and surface water runoff from the feedlot pens, bunks and cattle alleys is able to flow freely to the respective sedimentation basins.
		(b) Must only use machine control-equipped mobile plant for cleaning effluent catch drains	Compliant	Effluent catch drain maintenance is contracted out to RSA Contractors. RSA Contractors were the Construction Contractors for the facility and have a modern fleet of machines equipped with RTK-GPS machine control. RSA Contractors utilise the constructed design surface as the basis for cleaning effluent catch drains.

		(c) Must ensure a minimum 450 mm thick surcharge layer is maintained above the GCL (± 75 mm);	Compliant	Effluent catch drain maintenance is contracted out to RSA Contractors. RSA Contractors were the Construction Contractors for the facility and have a modern fleet of machines equipped with RTK-GPS machine control. RSA Contractors utilise the constructed design surface as the basis for maintaining minimum 450 mm thick surcharge layer above the GCL.
3	CDA 1 & 2 (Stage 1)	(a) Must be maintained to ensure all surface water runoff is able to flow freely to the respective sedimentation basins;	Compliant	The pens and effluent catch drains are maintained to ensure all surface water runoff is able to flow freely to the respective sedimentation basins.
4	Sedimentation basins 2 & 3 and 4 (Stage 1)	(a) Must be maintained such that each basin flows freely after rainfall events;	Compliant	The pens and effluent catch drains are maintained to ensure all surface water runoff is able to flow freely to the respective sedimentation basins.
		(b) An operational freeboard of at least 0.9 m must be maintained at all times;	Compliant	An operational freeboard of at least 0.9 m is maintained at all times due to the height of the control outlet weir structure.
		(c) Must only use machine control-equipped mobile plant for cleaning sedimentation basins	Compliant	Sedimentation basin maintenance is contracted out to RSA Contractors. RSA Contractors were the Construction Contractors for the facility and have a modern fleet of machines equipped with RTK-GPS machine control. RSA Contractors utilise the constructed design surface as the basis for cleaning effluent catch drains.
		(d) Must ensure a minimum 450 mm thick surcharge layer is maintained above the GCL (± 75 mm);	Compliant	Sedimentation basin maintenance is contracted out to RSA Contractors. RSA Contractors were the Construction Contractors for the facility and have a modern fleet of machines equipped with RTK-GPS machine control. RSA Contractors utilise the constructed design surface as the basis for maintaining minimum 450 mm thick surcharge layer above the GCL.

		(e) Basins must be cleaned of sludge before it takes up more than 10% of the design capacity of the basin;	Compliant	The sedimentation basins are cleaned as required to maintain the design capacity of the basin.
		(f) Sludge removed from basins must be taken directly to the manure storage and processing area;	Compliant	Sludge removed from the sedimentation basins is taken directly to the manure storage and processing area for stockpiling with pen manure.
5	Effluent holding ponds 1 & 2 (Stage 1)	An operational freeboard of at least 0.9 m must be maintained at all times;	Compliant	An operational freeboard of at least 0.9 m is maintained at all times due to the height of the bywash structure.
6	Manure storage and processing area (Stage 1)	<u>Management of manure and mortalities</u>		
		(a) Manure storage and/or processing, and composting of mortalities, must only occur on the manure storage and processing area;	Compliant	Manure storage and/or processing, and composting of mortalities, only occurs on the manure storage and processing area within CDA 2.
		(b) Only low risk organic materials may be brought onto the premises for use in the composting process;	Compliant	Only low risk organic materials are brought onto the premises (if required) for use in the composting process. Currently straw is used as the carbon source.
		<u>Management of pond sludge</u>		
		(a) Following pond desludging, the sludge must be:	Not Relevant*	The effluent pond has not been deslugged during the reporting period.
		(b) dried within dedicated bays on the manure storage and processing area; or	Not Relevant*	The effluent pond has not been deslugged during the reporting period.
		(c) applied directly to manure or mortalities windrows;	Not Relevant*	The effluent pond has not been deslugged during the reporting period.

		(d) If sludge is dried in bays, the resulting dried sludge must remain stored on the hardstand area, until being managed in accordance with condition 12;	Not Relevant*	The effluent pond has not been desludged during the reporting period.
		<u>Pad maintenance</u>		
		(a) Must only use machine control-equipped mobile plant for cleaning solid waste stockpile pads;	Compliant	Maintenance of the manure storage and processing area is contracted out to RSA Contractors. RSA Contractors were the Construction Contractors for the facility and have a modern fleet of machines equipped with RTK-GPS machine control. RSA Contractors utilise the constructed design surface as the basis for control.
		(b) Must ensure a minimum 450 mm thick surcharge layer is maintained above the GCL (± 75 mm);	Compliant	Maintenance of the manure storage and processing area is contracted out to RSA Contractors. RSA Contractors were the Construction Contractors for the facility and have a modern fleet of machine equipped with RTK-GPS machine control. RSA Contractors utilise the constructed design surface as the basis for maintaining minimum 450 mm thick surcharge layer above the GCL.
		(c) Must be maintained to ensure all leachate and surface water runoff can flow freely to sedimentation basin 4;	Compliant	Maintenance of the manure storage and processing area is contracted out to RSA Contractors. The pad and effluent drains are maintained to ensure all leachate and surface water runoff can flow freely to sedimentation basin 4.
		(d) Must be operated to prevent ingress of surface water runoff from entering the area.	Compliant	The manure storage and processing area has been constructed and is maintained to prevent ingress of upslope surface water runoff from entering the area. Refer to RDC Engineers Pty Ltd (2022a).

^Not Relevant to reporting period

2.1.2 Backgrounding

Condition No	Design and construction requirements	Status	Evidence / Comments
6	The licence holder must not conduct backgrounding of animals outside of the feedlot complex on the premises, unless it is done:		
	a) outside of designated effluent irrigation and manure utilisation areas; and	Compliant	Backgrounding of animals is undertaken on land that has not had effluent or fresh or unprocessed manure applied.
	b) where the number of cattle per hectare is less than 50.	Compliant	Backgrounding of animals is less than 50 cattle per hectare.

2.1.3 Inspection of infrastructure

Condition No	Requirements	Status	Evidence / Comments
7	The licence holder must undertake inspections of the scope and type and at the corresponding frequency specified in Table 5.	Compliant	Refer to the inspection log provided in Appendix A – Records.

Table 5: Inspection of infrastructure requirements

Scope of inspection	Type of inspection	Frequency of inspection
Sedimentation basins 2 & 3 and 4	Visual integrity (including signs of leakage and deterioration), freeboard capacity	A visual inspection of the sedimentation basins was conducted daily during May to October inclusive, weekly during January to April and November and December with the visual integrity parameters recorded in the Sedimentation Basins Visual Inspection Log. A copy is presented in Appendix A – Records.
Effluent holding ponds 1 & 2	Visual integrity (including signs of leakage and deterioration), freeboard capacity	A visual inspection of the holding ponds was conducted daily during May to October and weekly during January to April and November and December with the visual integrity parameters recorded in the Holding Ponds Visual Inspection Log. A copy is presented in Appendix A – Records.

Condition No	Requirements	Status	Evidence / Comments
8	Where any inspection required by condition 7 identifies an appropriate level of environmental protection is not being maintained, the works approval holder must:		
	(a) take corrective action to mitigate adverse environmental consequences as soon as practicable; and	Not Relevant [^]	Inspections have not identified any issues or corrective actions.
	(b) maintain a written log of all inspections undertaken, with each inspection signed off by the person who conducted the inspection.	Compliant	Refer to the inspection log provided in Appendix A – Records.

[^]Not relevant to reporting period.

2.1.4 Emissions

2.1.4.1 Effluent management

Condition No	Requirements	Status	Evidence / Comments
9	The licence holder may manage effluent from the holding ponds in accordance with the requirements in Table 6.	Compliant	When available and in line with plant requirements, effluent has been applied via centre pivot to the nominated effluent utilisation area.

Table 6: Authorised management of effluent

Reference point	Requirements
“Effluent utilisation area”, as shown in Schedule 1: Waste utilisation map	Irrigation of effluent via centre pivot, in accordance with conditions 10, 11 and 26
Manure storage and processing area (Stage 1)	Application of effluent to manure and/or mortalities windrows to optimise the composting (microbiological breakdown) process

Condition No	Requirements	Status	Evidence / Comments
10	The licence holder must ensure that when irrigating effluent to land in accordance with condition 9:		
	(a) it is only irrigated over the designated (centre pivot) effluent utilisation areas;	Compliant	When available and in line with plant requirements, effluent has been applied via centre pivot to the nominated effluent utilisation area.
	(b) it is only irrigated over areas that are about to be sown with, or are actively growing, crops or pasture;	Compliant	When available and in line with plant requirements, effluent has been applied via centre pivot to the nominated effluent utilisation area.
	(c) it is irrigated with even distribution;	Compliant	When available and in line with plant requirements, effluent has been applied via centre pivot to the nominated effluent utilisation area.
	(d) it is irrigated in a manner that does not produce surface runoff beyond the effluent utilisation areas;	Compliant	When available and in line with plant requirements, effluent has been applied via centre pivot to the nominated effluent utilisation area.
	(e) it is only irrigated under the following conditions:		
	(i) within 28 days of sowing or during periods of active plant growth;	Compliant	When available and in line with plant requirements, effluent has been applied via centre pivot to the nominated effluent utilisation area within 28 days of sowing and during periods of active plant growth.
	(ii) at a rate where the soil water storage capacity is not exceeded;	Compliant	When available and in line with plant requirements, effluent has been applied via centre pivot to the nominated effluent utilisation area within 28 days of sowing and during periods of active plant growth.
	(iii) not beyond 95% of the phosphorus sorption capacity of the soil (to be determined through a phosphorus sustainability calculation at the start of each irrigation season);	Not Compliant	A phosphorus sustainability calculation at the start of each irrigation season has not been undertaken.

	(iv) not when rain or heavy cloud is expected within the following 24 hours; and	Compliant	When available and in line with plant requirements, effluent has been applied via centre pivot to the nominated effluent utilisation area.
	(v) not when an inversion layer is present;	Compliant	When available and in line with plant requirements, effluent has been applied via centre pivot to the nominated effluent utilisation area.
	(f) the effluent utilisation areas are harvested at least once every 12 months.	Not Compliant	The crops grown in the effluent utilisation areas have been grazed by cattle and not are harvested. No backgrounding of cattle is undertaken on the effluent utilisation area.
11	The licence holder must keep accurate records of the date, time, area, and volumes of effluent irrigated in accordance with conditions 9 and 10.	Compliant	When available and in line with plant requirements, effluent has been applied via centre pivot to the nominated effluent utilisation area. The meter on the effluent supply line has been read at the commencement of each effluent irrigation event.

2.1.4.2 Manure and mortalities management

Condition No	Requirements	Status	Evidence / Comments
12	The licence holder must ensure manure, including fresh or unprocessed manure, and wet or dried pond sludge, is:		
	(a) managed as an unprocessed material, by:		
	(i) ageing in windrows for at least 12 months, prior to applying to land in accordance with the requirements of Table 7 (as aged manure); and/or	Not Relevant^	No fresh or unprocessed manure, or wet or dried pond sludge has been applied to land. Manure is currently processed on the manure storage and processing area.
	(ii) taken off-site to a premises that is lawfully able to accept that type of waste, such as a licensed composting facility or solid waste facility; and/or	Not Relevant^	No fresh or unprocessed manure, and wet or dried pond sludge has been taken offsite. Manure is currently stockpiled on the manure storage and processing area undergoing its composting process.
	(b) processed (i.e., pasteurised), to significantly reduce the number of pathogens, by:		
	(i) maintaining the core of the windrow mass at 55°C or higher for 15 consecutive days or longer; and	Compliant	Manure is currently processed by composting on the manure storage.
	(ii) turning the windrow at least 5 times during the 15-day period, with the outer material being effectively turned to the inside of the windrow mass to ensure the whole mass is subjected to the required temperature and process;	Compliant	Manure is currently processed by composting on the manure storage and processing area. The compost is turned at least 5 days during the 15-day period by a Eggersmann A60 windrow turner as shown in Photograph 11.
	to enable the material to be taken off-site for reuse.	Not Relevant^	No fresh or unprocessed manure, and wet or dried pond sludge has been taken offsite. Manure is currently processed by composting on the manure storage as shown in Photograph 11 for use on the prescribed area.

13	The licence holder must ensure mortalities are:		
	(a) composted (i.e., pasteurised), to significantly reduce the number of pathogens, prior to applying to land in accordance with the requirements of Table 7; and/or	Compliant	Mortalities are currently composted on the manure storage and processing area.
	(b) taken off-site to a premises that is lawfully able to accept that type of waste, such as a licensed composting facility or solid waste facility.	Not Relevant [^]	No mortalities have been taken offsite. Mortalities are currently composted on the manure storage and processing area.
14	The licence holder must ensure mortalities composted in accordance with condition 13(a):		
	(a) the core of the mass is maintained at 55°C or higher for at least 3 consecutive days;	Compliant	Mortalities are currently composted on the manure storage and processing area. The temperature of the core of the windrow is continually measured with a temperature probe (Photograph 12) to ensure the temperature reaches 55°C or higher.
	(b) the whole mass is turned at least once 3 months after the last carcasses were added within each bay or windrow; and	Compliant	Mortalities are currently composted on the manure storage and processing area with the composting process ongoing.
	(c) after turning, the mass is allowed to cure for a period of at least 4 months.	Compliant	Mortalities are currently composted on the manure storage and processing area with the composting period ongoing.

[^]Not Relevant to reporting period



Photograph 11 – KDFE – Manure management – Compost tuner



Photograph 12 – KDFP – Monitoring equipment – Manure/Compost Temperature Probe

Table 7: Authorised management of manure and mortalities compost

Condition No	Requirements	Status	Evidence / Comments
15	The licence holder may manage manure processed in accordance with condition 12(b), by:		
	(a) removing from the premises for off-site reuse, subject to the requirements of condition 18; and/or	Not Relevant^	No manure has been removed from the premises. Manure is currently stockpiled on the manure storage and processing area undergoing its composting process.
	(b) directly applying to land in accordance with the requirements of condition 16.	Compliant	Processed manure has been applied to several areas within the nominated waste utilisation area.
16	The licence holder must ensure that when applying manure and mortalities compost to land in accordance with conditions 12(a)(i) and 15(b):	Not Relevant^	No manure or mortalities compost has been applied to land. Manure is currently stockpiled on the manure storage and processing area undergoing its composting process.
	(a) processed manure, aged manure and mortalities compost generated from operations at the premises are the only solid wastes that are spread over the manure utilisation areas;	Compliant	Processed (composted) manure and mortalities compost generated from the operations are the only solid wastes that have been spread within the nominated manure utilisation area. No other solid wastes are spread over the manure utilisation areas
	(b) it is evenly distributed over the manure utilisation areas;	Compliant	Processed (composted) manure has been applied to several areas within the nominated waste utilisation area.
	(c) it is only spread onto areas growing crops or pasture within the manure utilisation areas;	Compliant^	Processed (composted) manure has been applied to several areas within the nominated waste utilisation area growing crops and/or pasture.
	(d) it is not spread within 50 m of any defined watercourse or within 25 m of the premises boundary;	Compliant^	Processed (composted) manure has been applied to several areas within the nominated waste utilisation area and not within 50 m of any defined watercourse or within 25 m of the premises boundary.

	(e) it is not spread under the following conditions: (i) when rain or heavy cloud is expected within the following 24 hours; and (ii) when an inversion layer is present;	Compliant^	Processed (composted) manure has been applied to several areas within the nominated waste utilisation area and not spread when rain or heavy cloud is expected within the following 24 hours and an inversion layer is present.
	(f) the manure utilisation areas are harvested at least once every 12 months.	Compliant^	Processed (composted) manure has been applied to several areas within the nominated waste utilisation area on crops and pasture. However, due to the below average rainfall the crops and pasture have been grazed.
17	The licence holder must keep accurate records of the date, time, area, and volumes of processed manure, aged manure and mortalities compost applied in accordance with conditions 12(a)(i), 13(a), 15(b) and 16.	Compliant^	Processed (composted) manure has been applied to several areas within the nominated waste utilisation area and accurate records of the date, time, area, and volumes of processed manure are being kept.

^Not relevant to reporting period

2.1.4.3 Off-site removal of manure

Condition No	Requirements	Status	Evidence / Comments
18	The licence holder must ensure all manure removed from the premises:		
	(a) has been processed to achieve pasteurisation, in accordance with condition 12(b); and	Not Relevant^	No manure has been removed from the premises. Manure is currently stockpiled on the manure storage and processing area undergoing aerobic composting.
	(b) meets the following testing requirements for indicator pathogens and plant propagules:	Not Relevant^	No manure has been removed from the premises. Manure is currently stockpiled on the manure storage and processing area undergoing aerobic composting.
	(i) Salmonella spp.: absent in 50 g (dry weight equivalent);	Not Relevant^	No manure has been removed from the premises. Manure is currently stockpiled on the manure storage and processing area undergoing aerobic composting.

	(ii) faecal coliforms: <1,000 MPN or CFU/g (dry weight equivalent); and	Not Relevant^	No manure has been removed from the premises. Manure is currently stockpiled on the manure storage and processing area undergoing aerobic composting.
	(iii) nil germination of viable plant propagules after 21 days.	Not Relevant^	No manure has been removed from the premises. Manure is currently stockpiled on the manure storage and processing area undergoing aerobic composting.
19	The licence holder must maintain accurate records to provide evidence of pasteurisation for manure removed from the premises.	Not Relevant^	No manure has been removed from the premises. Manure is currently stockpiled on the manure storage and processing area undergoing aerobic composting.
20	The licence holder must conduct quality sampling and testing for processed manure in accordance with the requirements of Table 8.	Not Relevant^	No manure has been removed from the premises. Manure is currently stockpiled on the manure storage and processing area undergoing aerobic composting.

^Not relevant to reporting period

Table 8: Processed manure monitoring requirements

Parameter	Sampling method	Analytical method	Testing frequency
Faecal coliforms, Salmonella spp.	AS 4454 – Appendix A	AS 4454 – Appendix D	At least one sample per 500 tonnes of processed manure
Viable plant propagules		AS 4454 – Appendix M	

2.1.5 Monitoring

2.1.5.1 General monitoring

Condition No	Requirements	Status	Evidence / Comments
21	The licence holder must ensure that:		
	(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;	Compliant	All water samples are collected and preserved in accordance with AS/NZS 5667.1. Refer to the groundwater monitoring results provided in Appendix B – Groundwater monitoring.
	(b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;	Compliant	Refer to the groundwater monitoring results provided in Appendix B – Groundwater monitoring.
	(c) all groundwater samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured, unless otherwise specified;	Compliant	Refer to the groundwater monitoring results provided in Appendix B – Groundwater monitoring.
	(d) all soil samples are collected in accordance with DPIRD guidelines for soil sampling; and	Compliant	Baseline soil testing was undertaken in mid-February 2024 and were taken by CSBP in accordance with DPIRD guidelines for soil sampling.
	(e) all soil samples are submitted to and tested by a laboratory with current ASPAC certification (or equivalent).	Compliant	Baseline soil testing was undertaken in mid-February 2024 and were taken by CSBP and submitted to and tested by the CSBP Soil and Plant Analysis Laboratory with current ASPAC certification.
22	The licence holder must ensure quarterly monitoring is undertaken at least 45 days apart.	Compliant	All quarterly monitoring is undertaken at least 45 days apart. Refer to Table 2-2 for groundwater monitoring.
23	The licence holder must ensure all monitoring equipment used on the premises to comply with conditions of this licence is calibrated in accordance with the manufacturer’s specifications	Compliant	All monitoring equipment used on the premises to comply with conditions of this licence is calibrated in accordance with the manufacturer’s specifications. Refer to the groundwater monitoring results provided in Appendix B – Groundwater monitoring.

24	The licence holder must, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.	Not Relevant [^]	All monitoring equipment used on the premises can be calibrated in accordance with the manufacturer's specifications.
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[^]Not relevant to reporting period

2.1.5.2 Groundwater monitoring

Condition No	Requirements	Status	Evidence / Comments
25	The licence holder must monitor and record the results of ambient groundwater in accordance with Table 9.	Compliant	Refer to the groundwater monitoring results provided in Appendix B – Groundwater monitoring and Table 2-2, Figure 2 and Figure 3.

Table 9: Monitoring of groundwater requirements

Monitoring location	Requirements	Units	Averaging period	Frequency
KDMB08 – KDMB13; KDMB15- KDMB17	Standing water level ¹	m (AHD) m (BGL)	Spot sample	Quarterly
	pH ¹	-		
	Electrical conductivity ¹	µS/cm		
	Total nitrogen, Ammonia nitrogen	mg/L		
	Total phosphorus			
	Total dissolved solids			
	Biological oxygen demand			
	Na, K, Ca, Mg, Cl, SO ₄ , HCO ₃ and As			

Note 1: In-field, non NATA-accredited sampling permitted.

As outlined in Table 2-2, groundwater monitoring has been undertaken in 9 groundwater monitoring bores on the Koojan Downs Feeding Facility site at least 45 days apart. Samples have been collected and analysed for the parameters outlined in Table 9: Monitoring of groundwater requirements at the ALS laboratory in Perth which holds NATA accreditation for the parameters being analysed. The sample analyses results are presented in Appendix B – Groundwater monitoring.

Table 2-2 – KDFP – Groundwater monitoring

Date	Monitoring location	Days from previous monitoring
29/01/2024	KDMB08 – KDMB13; KDMB15-KDMB17	91
29/04/2024	KDMB08 – KDMB13; KDMB15-KDMB17	91
05/08/2024	KDMB08 – KDMB13; KDMB15-KDMB17	98
28/10/2024	KDMB08 – KDMB13; KDMB15-KDMB17	84

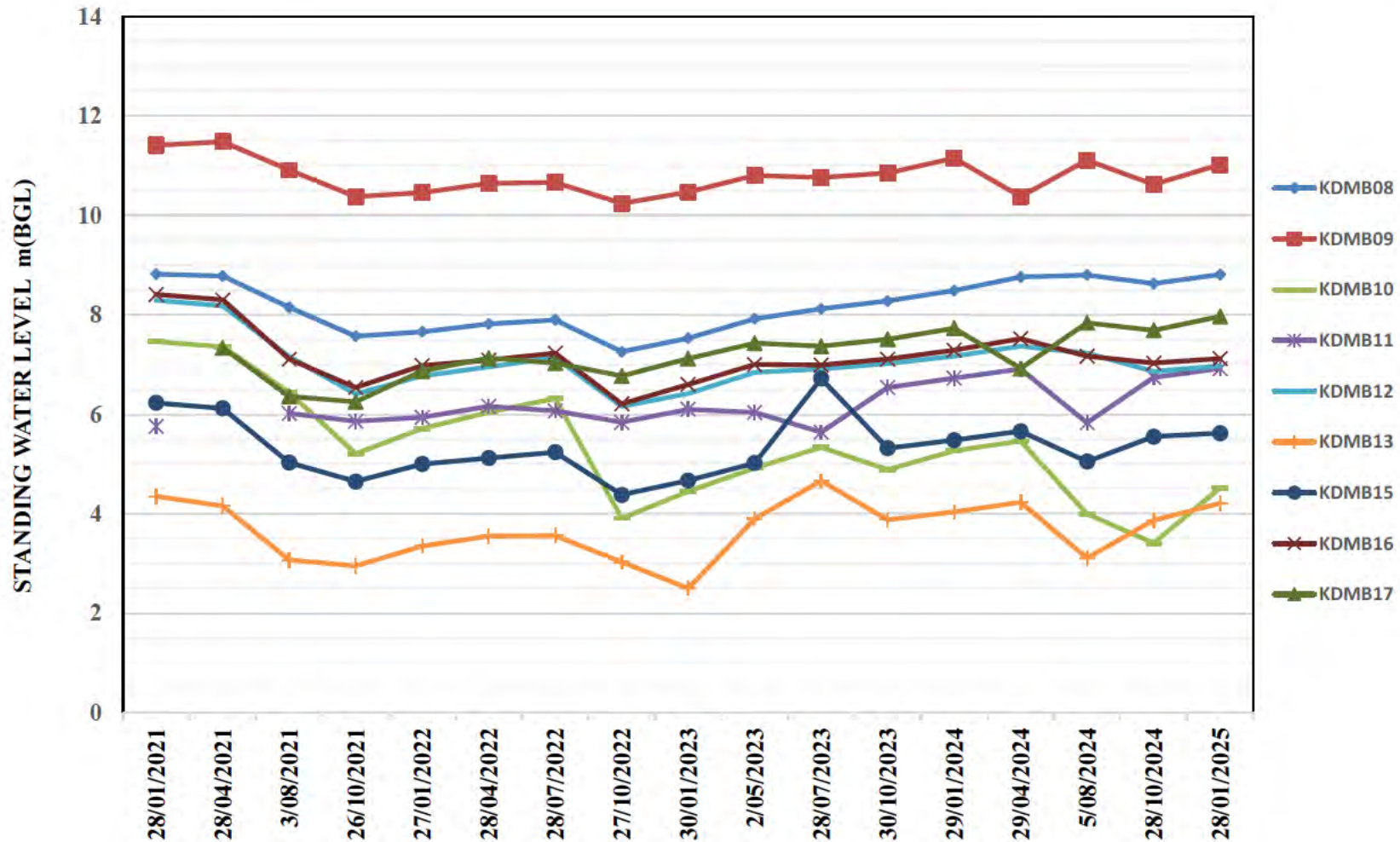


Figure 2 – KDFE – Groundwater monitoring – SWL m (BGL)

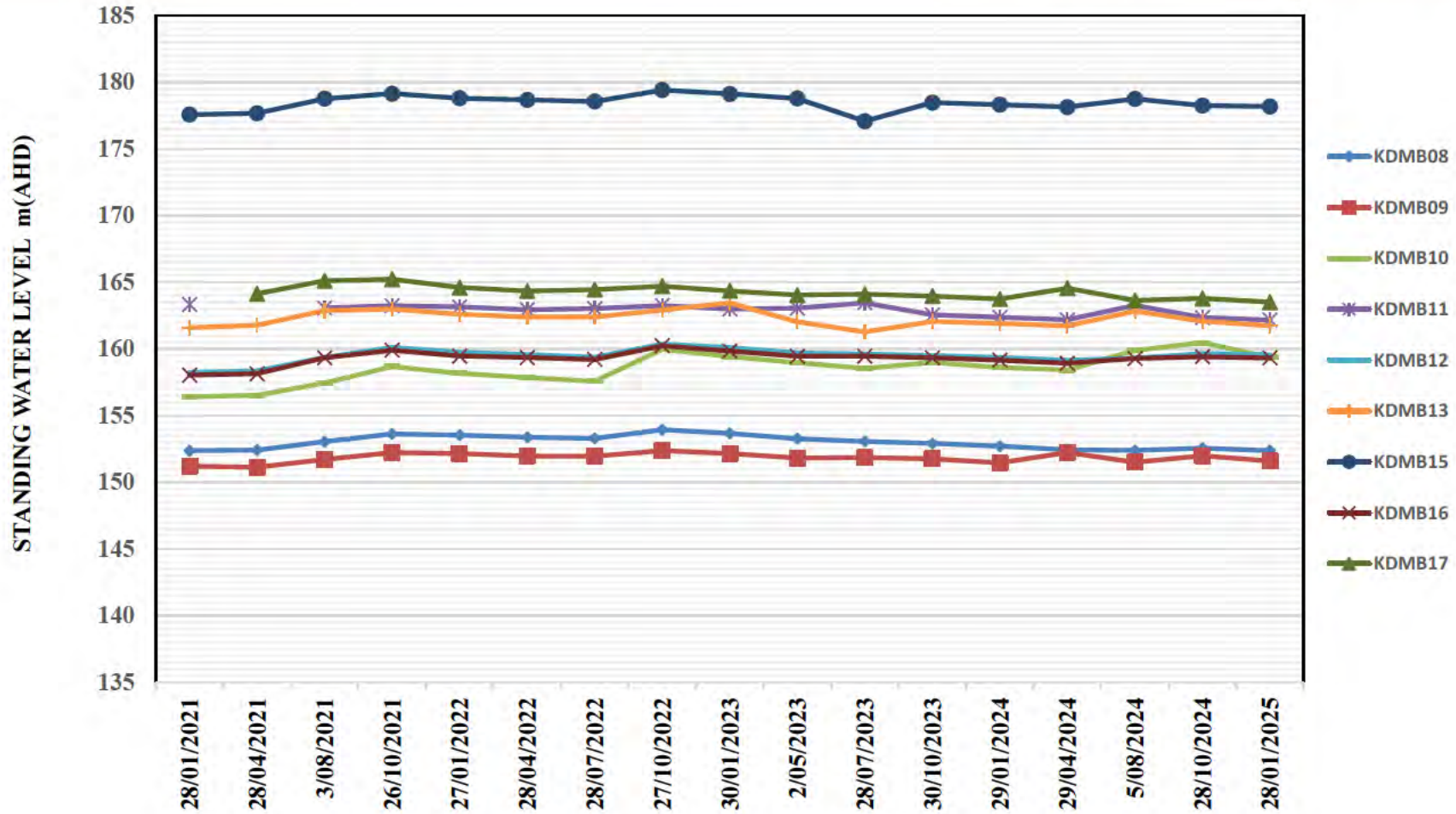


Figure 3 – KDFP – Groundwater monitoring – SWL m (AHD)

2.1.5.3 Soil monitoring

Condition No	Requirements	Status	Evidence / Comments
26	The licence holder must conduct soil testing in accordance with Table 10.	Compliant	Baseline soil testing of the waste utilisation area has been conducted in February 2024 prior to the application of effluent and solid waste. The field identifiers are shown in Figure 4.

Table 10: Soil testing requirements

Soil sampling locations	Soil profile	Parameter	Units	Frequency
At least one sample made up of at least 5 individual cores for each farm paddock across the waste utilisation area ^{1,2}	0 – 10 cm,	pH ¹	CaCl ₂	Annually, prior to application of effluent or manure
	10 – 20 cm,	Electrical conductivity ¹	mS/cm	
	20 – 30 cm	Moisture content	%	
		Total nitrogen, ammonium-nitrogen, nitrate-nitrogen	mg/kg	
		Total phosphorus	mg/kg	
		Phosphorus retention index (PRI)	-	
		Phosphorus buffering index (PBI)	-	
	Aluminium	CaCl ₂ extract		

Note 1: For soil sampling purposes, each farm paddock must represent a maximum area of 50 ha.

Note 2: GPS coordinates must be recorded for each sampling location, to ensure subsequent sampling events are in the same location.



Figure 4 – KDFP – Baseline soil testing locations

2.1.5.4 Monitoring and recording inputs

Condition No	Requirements	Status	Evidence / Comments
27	The licence holder must monitor and record inputs and outputs in accordance with Table 11, where applicable.	Compliant	Refer to Table 2-3, Table 2-4, Table 2-5 and Table 2-6.

Table 11: Monitoring and recording of inputs and outputs

Input / Output	Parameter	Units	Frequency
Animals received and dispatched at the premises	Animals	Number	Aggregated total monthly summary
Mortalities			Monthly
Low risk organic materials brought onto the premises	Organic material type	Tonnes	Each load brought onto the premises, by type
Yield harvested, dry matter yield	Harvested crops or fodder	t/ha	Each crop harvested from the effluent & manure utilisation areas
N & P removal rate		kg/ha	

The data presented in Table 2-3 has been collated from the Facility’s Herd Management Software – Elynx 3000.

Table 2-3 – KDFE – Animals received and dispatched and mortalities

Year	Month	No received	No dispatched	No of mortalities	Incoming Weight kg	Outgoing Weight kg	Animals		No of SCU# Average	Stocking Density** m2/head
							Average Weight kg	No of Head Average		
2024	January	4,184	3,901	25	405.8	608.4	507.1	17,935	15,808	19.0
2024	February	3,892	3,857	29	402.7	594.0	498.4	18,096	15,745	18.8
2024	March	3,367	5,163	12	399.4	581.2	490.3	17,445	14,995	19.5
2024	April	4,059	3,546	19	395.4	594.8	495.1	16,331	14,139	20.9
2024	May	3,527	3,824	29	370.1	604.7	487.4	16,793	14,370	20.3
2024	June	5,106	4,175	33	395.1	584.6	489.8	16,189	13,903	21.1
2024	July	3,274	3,428	35	392.6	572.9	482.7	17,337	14,728	19.7
2024	August	1,589	4,419	63	422.2	549.4	485.8	15,236	13,005	22.4
2024	September	2,081	5,294	27	473.3	507.7	490.5	11,315	9,727	30.1
2024	October	3,236	3,605	20	436.2	517.2	476.7	10,660	8,971	32.0
2024	November	5,574	3,185	10	414.2	507.2	460.7	12,535	10,282	27.2
2024	December	4,241	2,853	22	422.8	517.9	470.3	14,571	12,139	23.4

**Average stocking density across the as-constructed production pen area.

#The SCU calculation was based on animal liveweight and the following formula in accordance with the National Beef Cattle Feedlot Environmental Code of Practice 2nd Edition (2012):

$$\text{SCU scaling factor} = (\text{Animal liveweight}/600)^{0.75}$$

The average incoming weight of animals for the reporting period was 411 kg and the average outgoing weight of animals for the reporting period was 562 kg.

Table 2-4 – KDFE – Composting organic materials

Year	Month	Identifier	Material type**	Quantity
		Load no		T
2024	January	NIL	NIL	NIL
2024	February	NIL	NIL	NIL
2024	March	NIL	NIL	NIL
2024	April	NIL	NIL	NIL
2024	May	NIL	NIL	NIL
2024	June	NIL	NIL	NIL
2024	July	NIL	NIL	NIL
2024	August	NIL	NIL	NIL
2024	September	NIL	NIL	NIL
2024	October	NIL	NIL	NIL
2024	November	NIL	NIL	NIL
2024	December	NIL	NIL	NIL

**Straw that is brought on-site for the feed ration is currently used as the carbon source for composting of carcasses and manure.

Table 2-5 – KDFE – Effluent utilisation area – Crop data

Year	Month	Field Identifier	Crop	Yield	Nutrient removal	
				T DM/ha	Nitrogen kg N/ha	Phosphorus kg N/ha
2024	January	-	NA^	NA^	NA^	NA^
2024	February	-	NA^	NA^	NA^	NA^
2024	March	-	NA^	NA^	NA^	NA^
2024	April	-	NA^	NA^	NA^	NA^
2024	May	-	NA^	NA^	NA^	NA^
2024	June	-	NA^	NA^	NA^	NA^
2024	July	Little Pivot	Oats /Volgar Vetch	NR#	NR#	NR#
2024	August	Little Pivot	Oats /Volgar Vetch	NR#	NR#	NR#
2024	September	-	NA^	NA^	NA^	NA^
2024	October	Big Pivot	Oats /Volgar Vetch	NR#	NR#	NR#
2024	November	Big Pivot	Oats /Volgar Vetch	NR#	NR#	NR#
2024	December	-	NA^	NA^	NA^	NA^

NA^ - Effluent not applied

NR# - Crops grazed

Table 2-6 – KDFE – Manure utilisation area – Crop data

Year	Month	Field Identifier	Area ha	Crop	Yield T DM/ha	Nutrient removal	
						Nitrogen kg N/ha	Phosphorus kg N/ha
2024	January	NA	-	-	-	-	-
2024	February	NA	-	-	-	-	-
2024	March	NA	-	-	-	-	-
2024	April	DD7	25	Tagasaste	NR [#]	NR [#]	NR [#]
2024	May	DD 8	33	Tagasaste	NR [#]	NR [#]	NR [#]
2024	May	DD 9	37	Pasture	NR [#]	NR [#]	NR [#]
2024	May	DD 10	33	Pasture	NR [#]	NR [#]	NR [#]
2024	May	DD 15	26	Tagasaste	NR [#]	NR [#]	NR [#]
2024	May	DD 16	40	Tagasaste	NR [#]	NR [#]	NR [#]
2024	May	DD 19	64	Oats	NR [#]	NR [#]	NR [#]
2024	May	DD 20	36	Pasture	NR [#]	NR [#]	NR [#]
2024	May	DD 21	50	Oats	NR [#]	NR [#]	NR [#]
2024	May	KW9	60	Oats	NR [#]	NR [#]	NR [#]
2024	May	KW10	25	Oats	NR [#]	NR [#]	NR [#]
2024	June	AV 13	19	Oats	NR [#]	NR [#]	NR [#]
2024	June	Couch 7	12	Pasture	NR [#]	NR [#]	NR [#]
2024	June	Couch 8	9	Pasture	NR [#]	NR [#]	NR [#]
2024	June	Couch 9	11	Pasture	NR [#]	NR [#]	NR [#]
2024	June	Couch 10	11	Pasture	NR [#]	NR [#]	NR [#]
2024	June	KE 5	38	Pasture	NR [#]	NR [#]	NR [#]
2024	June	AV 13	11	Oats	NR [#]	NR [#]	NR [#]
2024	July	KE8	74	Pasture	NR [#]	NR [#]	NR [#]
2024	August	Farm Shed Strip	8	Pasture	NR [#]	NR [#]	NR [#]
2024	September	NA	-	-	-	-	-
2024	October	NA	-	-	-	-	-
2024	November	NA	-	-	-	-	-
2024	December	NA	-	-	-	-	-

NA – No compost applied / NR[#] - Crops grazed

2.1.6 Complaints management

Condition No	Requirements	Status	Evidence / Comments
28	The licence holder must investigate any complaints it receives (whether received directly from a complainant or forwarded to them by the department or another party) about any alleged emissions from the premises. Following receipt of a complaint directly from a complainant about any alleged emissions from the premises, the licence holder must:	Compliant	For the reporting period the facility has received no complaints from the Department or another party.
29	(a) respond to the complainant within 72 hours of receipt of the complaint; and	Not Relevant^	No complaints have been received during the reporting period.
	(b) within 10 calendar days of receipt of the complaint, provide a summary of the outcomes of any investigation(s) conducted in response to the complaint, including any corrective and preventative action(s) taken in response to the complaint, unless such communication is not requested by the complainant.	Not Relevant^	No complaints have been received during the reporting period.

^Not Relevant to reporting period

2.1.7 Records and reporting

2.1.7.1 Record-keeping

Condition No	Requirements	Status	Evidence / Comments
30	The licence holder must record the following information in relation to complaints it receives (whether directly from a complainant or forwarded to them by the department or another party) about any alleged emissions from the premises:	Compliant	The facility has a 'Complaints Register' for recording of complaints received. Refer to Appendix A – Records. No complaints have been received during the reporting period.
	(a) the name and contact details of the complainant (if provided);	Compliant	The facility has a 'Complaints Register' for recording of complaints received. Refer to Appendix A – Records. No complaints have been received during the reporting period.
	(b) the time and date of the complaint;	Compliant	The facility has a 'Complaints Register' for recording of complaints received. Refer to Appendix A – Records. No complaints have been received during the reporting period.
	(c) the complete details of the complaint and any other concerns or other issues raised;	Compliant	The facility has a 'Complaints Register' for recording of complaints received. Refer to Appendix A – Records. No complaints have been received during the reporting period.
	(d) the complete details of any activities being undertaken, where, and the weather and wind conditions at the time of the complaint;	Compliant	The facility has a 'Complaints Register' for recording of complaints received. Refer to Appendix A – Records. No complaints have been received during the reporting period.
	(e) the complete details and dates of any investigation(s) conducted in response to the complaint;	Compliant	The facility has a 'Complaints Register' for recording of complaints received. Refer to Appendix A – Records. No complaints have been received during the reporting period.
	(f) a summary of the findings of any investigation(s) conducted in response to the complaint, including details of the person(s) responsible for the investigation(s);	Compliant	The facility has a 'Complaints Register' for recording of complaints received. Refer to Appendix A – Records. No complaints have been received during the reporting period.

	(g) a summary of any corrective and preventative action(s) taken in response to the complaint;	Compliant	The facility has a 'Complaints Register' for recording of complaints received. Refer to Appendix A – Records. No complaints have been received during the reporting period.
	(h) a summary of the time taken to respond to the complaint; and	Compliant	The facility has a 'Complaints Register' for recording of complaints received. Refer to Appendix A – Records. No complaints have been received during the reporting period.
	(i) a summary of all communications with the complainant.	Compliant	The facility has a 'Complaints Register' for recording of complaints received. Refer to Appendix A – Records. No complaints have been received during the reporting period.

Condition No	Requirements	Status	Evidence / Comments
31	The licence holder must maintain accurate and auditable books including the following records, information, reports, and data required by this licence:		
	(a) the calculation of fees payable in respect of this licence;	Compliant	The facility maintains a record of the prescribed fee using the online fee calculator linked below. www.der.wa.gov.au/LicenceFeeCalculator
	(b) any maintenance of infrastructure that is performed in the course of complying with condition 1;	Compliant	The facility maintains a record of maintenance of infrastructure that is performed in the course of complying with condition 1.
	c) records of phosphorus sustainability calculations required by condition 10(e)(iii);	Not Compliant	Records of phosphorus sustainability calculations required by condition 10(e)(iii) have not been prepared.
	(d) records of effluent irrigation required by condition 11;	Compliant	Effluent has been applied to applied to the waste utilisation area under Centre Pivot 1 (Little Pivot).

	(e) records of manure spreading required by condition 17;	Compliant	No fresh or unprocessed manure, and wet or dried pond sludge has been applied to the waste utilisation area. Manure is currently stockpiled on the manure storage and processing area undergoing its composting process.
	(f) records of processed manure taken off site in accordance with condition 18;	Not Relevant^	No processed manure has been taken offsite. Manure is currently stockpiled on the manure storage and processing area undergoing its composting process.
	(g) results of groundwater monitoring required by condition 25;	Compliant	The maintains an e-record of the groundwater monitoring required by condition 25. Refer to Appendix B – Groundwater monitoring.
	(h) results of soil monitoring required by condition 26;	Compliant	Baseline soil test results required by Condition 26 have been undertaken during the reporting period.
	(i) records of inputs and outputs in accordance with condition 27; and	Compliant	The facility maintains an e-record of the herd details required by condition 27. Refer to Appendix C – Herd data.
	(j) records of complaints required by condition 30.	Compliant	The facility maintains a ‘Complaints Register’ for recording of complaints received. Refer to Appendix A – Records.

^Not Relevant to the reporting period

Condition No	Requirements	Status	Evidence / Comments
32	The books specified under condition 31 must:		
	(a) be legible;	Compliant	The facility maintains electronic and paper based records.
	(b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;	Compliant	The facility maintains electronic and paper based records.
	(c) be retained by the licence holder for the duration of the licence; and	Compliant	The facility maintains electronic and paper based records.
	(d) be available to be produced to an inspector or the CEO as required.	Compliant	The facility maintains electronic and paper based records.

2.1.8 Notification requirements

Condition No	Requirements	Status	Evidence / Comments
33	The licence holder must notify the CEO, at least 14 days prior to, the commencement of any pond desludging works at the premises.	Not Relevant^	The holding ponds have not been desludged.
34	The licence holder must notify the CEO, within 7 days after, the completion of any pond desludging works at the premises:	Not Relevant^	The holding ponds have not been desludged.
	(a) the total volume of sludge removed; and	Not Relevant^	The holding ponds have not been desludged.

	(b) on-site management of all sludge removed.	Not Relevant^	The holding ponds have not been desludged.
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^Not Relevant refers to this reporting period

2.1.8.1 Annual reporting requirements

Condition No	Requirements	Status	Evidence / Comments
35	The licence holder must:		
	(a) undertake an audit of their compliance with the conditions of this licence during the preceding annual period; and	Compliant	Refer to this report.
	(b) prepare and submit to the CEO, by no later than 1 March in each year, an Annual Audit Compliance Report in the approved form.	Compliant	Refer to this report.
36	The licence holder must submit to the CEO, by 1 March in each year, an environmental report containing the information listed in Table 12 for the preceding annual period.	Compliant	Refer to this report.

Table 12: Annual environmental report

Condition or table	Parameter
-	Summary of any environmental incidents that have occurred during the annual period and any action taken
Condition 10	Records of phosphorus sustainability calculations
Condition 11	Records to demonstrate compliance with effluent irrigation requirements, including the volumes of effluent irrigated, the location(s) in which the effluent was irrigated, and the total irrigation area
Condition 17	Records to demonstrate compliance with manure spreading rates, including the amount of manure applied, the location(s) in which the manure was applied, and the total application area
Conditions 18, 19 & 20	Records of processed manure taken off-site, including records to demonstrate pasteurisation requirements, and testing requirements, have been met
Table 9	Results of groundwater monitoring
Table 10	Results of soil monitoring
Table 11	Records of inputs and outputs
Condition 30	Complaints summary
Conditions 33 & 34	Summary of notifications
Condition 35	Compliance

3 References

Meat and Livestock Australia, 2012, National Beef Cattle Feedlot Environmental Code of Practice 2nd Edition, Meat & Livestock Australia, North Sydney, NSW.

RDC Engineers Pty Ltd, 2021a, Amended Works Approval - W6630/2019/1 Environmental Compliance Report Construction Phase - Stage 1 Feedlot Infrastructure – Row A & B, Sedimentation Basin 2 & 3 and Feedmill, A8-104-KDFF-ECR1 V1R2 RDC Engineers Pty Ltd, Toowoomba, QLD, 4350

RDC Engineers Pty Ltd, 2021b, Amended Works Approval - W6630/2019/1 Environmental Compliance Report 2 Construction Phase - Stage 1 Feedlot Infrastructure – Row C and Effluent Holding Pond 1, A8-104-KDFF-ECR2 V1R2 RDC Engineers Pty Ltd, Toowoomba, QLD, 4350.

RDC Engineers Pty Ltd, 2022a, Amended Works Approval - W6630/2019/1 Environmental Compliance Report 3 Construction Phase - Stage 1 Feedlot Infrastructure – Rows D and E, the Solid waste storage and carcass composting area, Sedimentation Basin 4 and Effluent Holding Pond 2, A8-104-KDFF-ECR3 V1R2 RDC Engineers Pty Ltd, Toowoomba, QLD, 4350.

RDC Engineers Pty Ltd, 2022b, Amended Works Approval - W6630/2019/1 Environmental Compliance Report 4 Construction Phase - Stage 1 Feedlot Infrastructure – Rows D and E (Fencing), A8-104-KDFF-ECR4 V1R2 RDC Engineers Pty Ltd, Toowoomba, QLD, 4350.

RDC Engineers Pty Ltd, 2023, Licence number – L9330/2022/1 Compliance Report 1 Upgrade works – infrastructure requirements – Effluent Holding Pond 1, A8-104-KDFF-LECR1/V1R2 RDC Engineers Pty Ltd, Toowoomba, QLD, 4350.

Appendix A – Records

Infrastructure Inspection Log

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 2&3 and Holding Pond 1 - Yards

Sedimentation Basin 2&3 and Holding Pond 1 - Yards								
	Main Sediment Basin				Main Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C=Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E=Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L=Leaks	C=Full (Over weir)	C=Full (Top of Weir)		L=Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B / C	C / E / L	A / B / C	Y / N	
1/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
2/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
3/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
4/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
5/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
6/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
7/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
8/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
9/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
10/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
11/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
12/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
13/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
14/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
15/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
16/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
17/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
18/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
19/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
20/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
21/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
22/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
23/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
24/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
25/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
26/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
27/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
28/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
29/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
30/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad								
Manure Sediment Basin					Manure Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C-Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E-Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L-Leaks	C=Full (Over weir)	C=Full (Top of Weir)		L-Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B / C	C / E / L	A / B / C	Y / N	
1/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
2/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
3/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
4/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
5/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
6/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
7/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
8/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
9/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
10/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
11/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
12/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
13/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
14/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
15/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
16/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
17/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
18/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
19/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
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21/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
22/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
23/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
24/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
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28/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
29/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU
30/05/2024	E few small scours	A	A	C	E few small scours	A	N	DU

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 2&3 and Holding Pond 1 - Yards

Sedimentation Basin 2&3 and Holding Pond 1 - Yards								
	Main Sediment Basin				Main Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C=Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E=Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L=Leaks	C=Full (Over weir)	C=Full (Top of Weir)		L=Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B / C	C / E / L	A / B / C	Y / N	
1/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
2/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
3/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
4/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
5/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
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8/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
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14/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
15/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
16/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
17/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
18/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
19/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
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29/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
30/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad								
Manure Sediment Basin					Manure Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C-Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E-Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L-Leaks	C=Full (Over weir)	C=Full (Top of Weir)		L-Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B / C	C / E / L	A / B / C	Y / N	
1/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
2/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
3/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
4/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
5/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
6/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
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9/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
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14/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
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27/06/2024	E few small scours	A	A	C	E few small scours	A	N	DU
28/06/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	DU
29/06/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	DU
30/06/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	DU

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 2&3 and Holding Pond 1 - Yards

Sedimentation Basin 2&3 and Holding Pond 1 - Yards								
	Main Sediment Basin				Main Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C=Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E=Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L=Leaks	C=Full (Over weir)	C=Full (Top of Weir)		L=Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B/C	C / E / L	A / B / C	Y / N	
1/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
2/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
3/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
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5/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
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9/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
10/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
11/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
12/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
13/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
14/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
15/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
16/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
17/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
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24/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
25/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
26/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
27/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
28/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
29/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
30/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad								
	Manure Sediment Basin				Manure Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C=Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E=Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L=Leaks	C=Full (Over weir)	C=Full (Top of Weir)		L=Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B / C	C / E / L	A / B / C	Y / N	
1/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
2/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
3/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
4/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
5/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
6/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
7/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
8/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
9/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
10/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
11/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
12/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
13/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
14/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
15/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
16/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
17/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
18/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
19/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
20/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
21/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
22/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
23/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
24/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
25/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
26/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
27/07/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	PG
28/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
29/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG
30/07/2024	E few small scours	A	A	C	E few small scours	A	N	PG

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 2&3 and Holding Pond 1 - Yards

Sedimentation Basin 2&3 and Holding Pond 1 - Yards								
	Main Sediment Basin				Main Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C-Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E-Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L-Leaks	C=Full (Over weir)	C=Full (Top of Weir)		L-Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B/C	C / E / L	A / B / C	Y / N	
1/08/2024	E few small scours	B	A	C	E few small scours	B=1/2 Full	N	DU
2/08/2024	E few small scours	B	A	C	E few small scours	B=1/2 Full	N	PG
3/08/2024	E few small scours	B	A	C	E few small scours	B=1/2 Full	N	PG
4/08/2024	E few small scours	B	A	C	E few small scours	B=1/2 Full	N	PG
5/08/2024	E few small scours	B	A	C	E few small scours	B=1/2 Full	N	PG
6/08/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	DU
7/08/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	DU
8/08/2024	E few small scours	A	A	C	E few small scours	B=1/2 Full	N	DU
9/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
10/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
11/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
12/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
13/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
14/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
15/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
16/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
17/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
18/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
19/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
20/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
21/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
22/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
23/08/2024	E few small scours	A	B=1/2 Full	C	E few small scours	A	N	PG
24/08/2024	E few small scours	A	B=1/2 Full	C	E few small scours	A	N	PG
25/08/2024	E few small scours	A	B=1/2 Full	C	E few small scours	A	N	PG
26/08/2024	E few small scours	A	B=1/2 Full	C	E few small scours	A	N	DU
27/08/2024	E few small scours	A	B=1/2 Full	C	E few small scours	A	N	DU
28/08/2024	E few small scours	A	B=1/2 Full	C	E few small scours	A	N	DU
29/08/2024	E few small scours	A	B=1/2 Full	C	E few small scours	A	N	DU
30/08/2024	E few small scours	A	B=1/2 Full	C	E few small scours	A	N	PG

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad								
	Manure Sediment Basin				Manure Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C=Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E=Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L=Leaks	C=Full (Over	C=Full (Top of Weir)		L=Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B / C	C / E / L	A / B / C	Y / N	
1/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
2/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
3/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
4/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
5/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
6/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
7/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
8/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
9/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
10/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
11/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
12/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
13/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
14/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
15/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
16/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
17/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
18/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
19/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
20/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
21/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
22/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
23/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
24/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
25/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
26/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
27/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
28/08/2024	E few small scours	A	A	C	E few small scours	A	N	PG
29/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU
30/08/2024	E few small scours	A	A	C	E few small scours	A	N	DU

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 2&3 and Holding Pond 1 - Yards

Sedimentation Basin 2&3 and Holding Pond 1 - Yards								
	Main Sediment Basin				Main Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C=Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E=Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L=Leaks	C=Full (Over weir)	C=Full (Top of Weir)		L=Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B/C	C / E / L	A / B / C	Y / N	
1/09/2024	E few small scours	B	B=1/2 Full	C	E few small scours	A	N	DU
2/09/2024	E few small scours	B	B=1/2 Full	C	E few small scours	A	N	DU
3/09/2024	E few small scours	B	B=1/2 Full	C	E few small scours	A	N	DU
4/09/2024			A	C		A	N	
5/09/2024			A	C		A	N	
6/09/2024			A	C		A	N	
7/09/2024			A	C		A	N	
8/09/2024			A	C		A	N	
9/09/2024			A	C		A	N	
10/09/2024			A	C		A	N	
11/09/2024			A	C		A	N	
12/09/2024			A	C		A	N	
13/09/2024			A	C		B	N	
14/09/2024			A	C		B	N	
15/09/2024			A	C		B	N	
16/09/2024			A	C		B	N	
17/09/2024			A	C		B	N	
18/09/2024			A	C		B	N	
19/09/2024			A	C		B	N	
20/09/2024			A	C		B	N	
21/09/2024			A	C		B	N	
22/09/2024			A	C		B	N	
23/09/2024			A	C		B	N	
24/09/2024			A	C		B	N	
25/09/2024			A	C		B	N	
26/09/2024			A	C		B	N	
27/09/2024			A	C		B	N	
28/09/2024			A	C		B	N	
29/09/2024			A	C		B	N	
30/09/2024			A	C		B	N	

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad								
	Manure Sediment Basin				Manure Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C=Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E=Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L=Leaks	C=Full (Over	C=Full (Top of Weir)		L=Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B / C	C / E / L	A / B / C	Y / N	
1/09/2024	E few small scours	A	A	C	E few small scours	A	N	DU
2/09/2024	E few small scours	A	A	C	E few small scours	A	N	DU
3/09/2024	E few small scours	A	A	C	E few small scours	A	N	DU
4/09/2024		A	A	C		A	N	
5/09/2024		A	A	C		A	N	
6/09/2024		A	A	C		A	N	
7/09/2024		A	A	C		A	N	
8/09/2024		A	A	C		A	N	
9/09/2024		A	A	C		A	N	
10/09/2024		A	A	C		A	N	
11/09/2024		A	A	C		A	N	
12/09/2024		A	A	C		A	N	
13/09/2024		A	A	C		A	N	
14/09/2024		A	A	C		A	N	
15/09/2024		A	A	C		B	N	
16/09/2024		A	A	C		B	N	
17/09/2024		A	A	C		B	N	
18/09/2024		A	A	C		B	N	
19/09/2024		A	A	C		B	N	
20/09/2024		A	A	C		B	N	
21/09/2024		A	A	C		B	N	
22/09/2024		A	A	C		B	N	
23/09/2024		A	A	C		B	N	
24/09/2024		A	A	C		B	N	
25/09/2024		A	A	C		B	N	
26/09/2024		A	A	C		B	N	
27/09/2024		A	A	C		B	N	
28/09/2024		A	A	C		B	N	
29/09/2024		A	A	C		B	N	
30/09/2024		A	A	C		B	N	

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 2&3 and Holding Pond 1 - Yards

	Main Sediment Basin				Main Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C=Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E=Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L=Leaks	C=Full (Over weir)	C=Full (Top of Weir)		L=Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B/C	C / E / L	A / B / C	Y / N	
1/10/2024		A	A	C		A	N	
2/10/2024		A	A	C		A	N	
3/10/2024		A	A	C		A	N	
4/10/2024		A	A	C		A	N	
5/10/2024		A	A	C		A	N	
6/10/2024		A	A	C		A	N	
7/10/2024		A	A	C		A	N	
8/10/2024		A	A	C		A	N	
9/10/2024		A	A	C		A	N	
10/10/2024		A	A	C		A	N	
11/10/2024		A	A	C		A	N	
12/10/2024		A	A	C		A	N	
13/10/2024		A	A	C		A	N	
14/10/2024		A	A	C		A	N	
15/10/2024		A	A	C		A	N	
16/10/2024		A	A	C		A	N	
17/10/2024		A	A	C		A	N	
18/10/2024		A	A	C		A	N	
19/10/2024		A	A	C		A	N	
20/10/2024		A	A	C		A	N	
21/10/2024		A	A	C		A	N	
22/10/2024		A	A	C		A	N	
23/10/2024		A	A	C		A	N	
24/10/2024		A	A	C		A	N	
25/10/2024		A	A	C		A	N	
26/10/2024		A	A	C		A	N	
27/10/2024		A	A	C		A	N	
28/10/2024		A	A	C		A	N	
29/10/2024		A	A	C		A	N	
30/10/2024		A	A	C		A	N	

Koojan Downs Feeding Facility Infrastructure Inspection Log

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad

Sedimentation Basin 4 and Holding Pond 2 - Manure Pad								
	Manure Sediment Basin				Manure Effluent Holding Pond			
Date	Embankment Batters	Effluent Level	Manure Level	Weir Condition	Embankment Batters	Effluent Level	Sludge Level	Initials
	C=Any cracks	A=Empty	A=Clean	B=Blocked	C=Any cracks	A=Empty	N=No Sludge visible	
	E=Any erosion	B=1/2 Full	B=1/2 Full	C=Clean & leaky	E=Any erosion	B=1/2 Full	Y= Sludge visible	
	L=Leaks	C=Full (Over weir)	C=Full (Top of Weir)		L=Leaks	C=Full(Bywashing)		
	C / E / L	A / B / C	A / B / C	B / C	C / E / L	A / B / C	Y / N	
1/10/2024		A	A	C		A	N	
2/10/2024		A	A	C		A	N	
3/10/2024		A	A	C		A	N	
4/10/2024		A	A	C		A	N	
5/10/2024		A	A	C		A	N	
6/10/2024		A	A	C		A	N	
7/10/2024		A	A	C		A	N	
8/10/2024		A	A	C		A	N	
9/10/2024		A	A	C		A	N	
10/10/2024		A	A	C		A	N	
11/10/2024		A	A	C		A	N	
12/10/2024		A	A	C		A	N	
13/10/2024		A	A	C		A	N	
14/10/2024		A	A	C		A	N	
15/10/2024		A	A	C		A	N	
16/10/2024		A	A	C		A	N	
17/10/2024		A	A	C		A	N	
18/10/2024		A	A	C		A	N	
19/10/2024		A	A	C		A	N	
20/10/2024		A	A	C		A	N	
21/10/2024		A	A	C		A	N	
22/10/2024		A	A	C		A	N	
23/10/2024		A	A	C		B	N	
24/10/2024		A	A	C		B	N	
25/10/2024		A	A	C		B	N	
26/10/2024		A	A	C		B	N	
27/10/2024		A	A	C		B	N	
28/10/2024		A	A	C		B	N	
29/10/2024		A	A	C		B	N	
30/10/2024		A	A	C		B	N	
31/10/2024		A	A	C		B	N	

Complaints Register

Appendix B – Groundwater monitoring



CERTIFICATE OF ANALYSIS

Work Order : EP2401125
Client : Ecotec (WA) Pty Ltd
Contact : [REDACTED]
Address : [REDACTED]
Telephone : [REDACTED]
Project : Koojan Downs
Order number : [REDACTED]
C-O-C number : [REDACTED]
Sampler : [REDACTED]
Site : [REDACTED]
Quote number : EP/050/22_V2
No. of samples received : 9
No. of samples analysed : 9

Page : 1 of 6
Laboratory : Environmental Division Perth
Contact : Customer Services EP
Address : 26 Rigali Way Wangara WA Australia 6065
Telephone : [REDACTED]
Date Samples Received : 30-Jan-2024 09:45
Date Analysis Commenced : 30-Jan-2024
Issue Date : 06-Feb-2024 17:29



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	Inorganics Supervisor	Perth Inorganics, Wangara, WA
[REDACTED]	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
[REDACTED]	Lab Technician	Perth Inorganics, Wangara, WA



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB08	KDMB09	KDMB10	KDMB11	KDMB12
Sampling date / time				29-Jan-2024 12:30	29-Jan-2024 12:00	29-Jan-2024 11:00	29-Jan-2024 14:00	29-Jan-2024 10:30	
Compound	CAS Number	LOR	Unit	EP2401125-001	EP2401125-002	EP2401125-003	EP2401125-004	EP2401125-005	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	---	10	mg/L	3870	1890	1580	266	2830	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L	50	<1	51	4	10	
Total Alkalinity as CaCO ₃	---	1	mg/L	50	<1	51	4	10	
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L	226	158	89	80	174	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	1930	987	856	60	1600	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	29	<1	3	<1	9	
Magnesium	7439-95-4	1	mg/L	169	29	51	3	98	
Sodium	7440-23-5	1	mg/L	1080	643	501	84	841	
Potassium	7440-09-7	1	mg/L	16	2	6	1	22	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	4.66	6.06	5.24	6.93	0.75	
EK059G: Nitrite plus Nitrate as N (NO_x) by Discrete Analyser									
Nitrite + Nitrate as N	---	0.01	mg/L	4.66	6.06	5.24	6.93	0.75	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.4	0.8	0.6	0.5	0.2	
EK062G: Total Nitrogen as N (TKN + NO_x) by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB08	KDMB09	KDMB10	KDMB11	KDMB12
Sampling date / time					29-Jan-2024 12:30	29-Jan-2024 12:00	29-Jan-2024 11:00	29-Jan-2024 14:00	29-Jan-2024 10:30
Compound	CAS Number	LOR	Unit		EP2401125-001	EP2401125-002	EP2401125-003	EP2401125-004	EP2401125-005
					Result	Result	Result	Result	Result
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ Total Nitrogen as N	---	0.1	mg/L		5.1	6.9	5.8	7.4	1.0
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	---	0.01	mg/L		<0.01	<0.01	0.03	0.03	0.02
EN055: Ionic Balance									
∅ Total Anions	---	0.01	meq/L		60.1	31.1	27.0	3.44	49.0
∅ Total Cations	---	0.01	meq/L		62.7	30.4	26.3	3.93	45.6
∅ Ionic Balance	---	0.01	%		2.11	1.18	1.36	6.63	3.48
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	---	2	mg/L		<2	<2	<2	<2	<2



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB13	KDMB15	KDMB16	KDMB17	----
Sampling date / time				29-Jan-2024 13:30	29-Jan-2024 08:30	29-Jan-2024 09:30	29-Jan-2024 15:00	----	
Compound	CAS Number	LOR	Unit	EP2401125-006	EP2401125-007	EP2401125-008	EP2401125-009	-----	
				Result	Result	Result	Result	---	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	---	10	mg/L	5850	2210	1500	291	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	7	34	4	8	----	
Total Alkalinity as CaCO3	---	1	mg/L	7	34	4	8	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	215	204	36	127	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	2750	1090	762	31	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	26	4	11	<1	----	
Magnesium	7439-95-4	1	mg/L	285	79	78	<1	----	
Sodium	7440-23-5	1	mg/L	1480	678	340	95	----	
Potassium	7440-09-7	1	mg/L	36	18	7	2	----	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.003	<0.001	<0.001	<0.001	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.03	<0.01	<0.01	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	2.19	6.32	3.98	6.54	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	---	0.01	mg/L	2.19	6.32	3.98	6.54	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.2	0.8	0.5	0.8	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB13	KDMB15	KDMB16	KDMB17	----
				Sampling date / time	29-Jan-2024 13:30	29-Jan-2024 08:30	29-Jan-2024 09:30	29-Jan-2024 15:00	---
Compound	CAS Number	LOR	Unit	EP2401125-006	EP2401125-007	EP2401125-008	EP2401125-009	-----	---
				Result	Result	Result	Result	---	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ Total Nitrogen as N	---	0.1	mg/L	2.4	7.1	4.5	7.3	----	---
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	---	0.01	mg/L	0.02	0.02	<0.01	0.01	----	---
EN055: Ionic Balance									
∅ Total Anions	---	0.01	meq/L	82.2	35.7	22.3	3.68	----	---
∅ Total Cations	---	0.01	meq/L	90.0	36.6	21.9	4.18	----	---
∅ Ionic Balance	---	0.01	%	4.56	1.35	0.88	6.42	----	---
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	---	2	mg/L	<2	<2	<2	<2	----	---



CERTIFICATE OF ANALYSIS

Work Order : **EP2405757**
Client : **Ecotec (WA) Pty Ltd**
Contact : [REDACTED]
Address : [REDACTED]
Telephone : [REDACTED]
Project : **Koojan Downs**
Order number : [REDACTED]
C-O-C number : [REDACTED]
Sampler : [REDACTED]
Site : [REDACTED]
Quote number : **EP/050/22_V2**
No. of samples received : **9**
No. of samples analysed : **9**

Page : 1 of 6
Laboratory : Environmental Division Perth
Contact : Customer Services EP
Address : 26 Rigali Way Wangara WA Australia 6065
Telephone : [REDACTED]
Date Samples Received : 30-Apr-2024 11:00
Date Analysis Commenced : 01-May-2024
Issue Date : 09-May-2024 16:24



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	Inorganics Supervisor	Perth Inorganics, Wangara, WA
[REDACTED]	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
[REDACTED]	Inorganics Analyst	Perth Inorganics, Wangara, WA



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- EA015H (Total Dissolved Solids): Sample #6 and #9 confirmed by re-preparation and re-analysis.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB08	KDMB09	KDMB10	KDMB11	KDMB12
Sampling date / time				29-Apr-2024 13:00	29-Apr-2024 12:00	29-Apr-2024 11:00	29-Apr-2024 14:30	29-Apr-2024 10:00	
Compound	CAS Number	LOR	Unit	EP2405757-001	EP2405757-002	EP2405757-003	EP2405757-004	EP2405757-005	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	---	10	mg/L	3740	1840	2000	254	2710	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	48	<1	51	3	8	
Total Alkalinity as CaCO3	---	1	mg/L	48	<1	51	3	8	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	202	126	96	70	137	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	2020	956	1060	57	1400	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	27	<1	4	<1	9	
Magnesium	7439-95-4	1	mg/L	152	27	67	3	91	
Sodium	7440-23-5	1	mg/L	972	580	567	80	729	
Potassium	7440-09-7	1	mg/L	14	2	6	1	21	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	4.89	6.32	5.80	7.24	0.77	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	---	0.01	mg/L	4.89	6.32	5.80	7.24	0.77	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.6	0.9	1.0	0.9	0.3	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB08	KDMB09	KDMB10	KDMB11	KDMB12
Sampling date / time					29-Apr-2024 13:00	29-Apr-2024 12:00	29-Apr-2024 11:00	29-Apr-2024 14:30	29-Apr-2024 10:00
Compound	CAS Number	LOR	Unit		EP2405757-001	EP2405757-002	EP2405757-003	EP2405757-004	EP2405757-005
					Result	Result	Result	Result	Result
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ Total Nitrogen as N	---	0.1	mg/L		5.5	7.2	6.8	8.1	1.1
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	---	0.01	mg/L		<0.01	0.02	<0.01	0.02	0.01
EN055: Ionic Balance									
∅ Total Anions	---	0.01	meq/L		---	---	---	3.64	---
∅ Total Anions	---	0.01	meq/L		62.1	29.6	32.9	---	42.5
∅ Total Cations	---	0.01	meq/L		56.5	27.5	30.5	3.75	40.2
∅ Ionic Balance	---	0.01	%		---	---	---	1.49	---
∅ Ionic Balance	---	0.01	%		4.76	3.66	3.76	---	2.80
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	---	2	mg/L		<2	<2	<2	<2	<2



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB13	KDMB15	KDMB16	KDMB17	----
Sampling date / time				29-Apr-2024 14:00	29-Apr-2024 07:30	29-Apr-2024 09:30	29-Apr-2024 15:00	----	
Compound	CAS Number	LOR	Unit	EP2405757-006	EP2405757-007	EP2405757-008	EP2405757-009	-----	
				Result	Result	Result	Result	---	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	---	10	mg/L	5590	2010	1400	294	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	6	34	4	7	----	
Total Alkalinity as CaCO3	---	1	mg/L	6	34	4	7	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	194	176	34	110	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	2860	950	784	28	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	26	2	11	<1	----	
Magnesium	7439-95-4	1	mg/L	261	49	73	<1	----	
Sodium	7440-23-5	1	mg/L	1370	568	323	86	----	
Potassium	7440-09-7	1	mg/L	34	14	7	2	----	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.003	<0.001	<0.001	<0.001	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.01	0.01	<0.01	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	2.24	6.96	3.67	6.81	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	---	0.01	mg/L	2.24	6.96	3.67	6.81	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.3	0.8	0.6	0.7	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB13	KDMB15	KDMB16	KDMB17	----
				Sampling date / time	29-Apr-2024 14:00	29-Apr-2024 07:30	29-Apr-2024 09:30	29-Apr-2024 15:00	----
Compound	CAS Number	LOR	Unit	EP2405757-006	EP2405757-007	EP2405757-008	EP2405757-009	-----	---
				Result	Result	Result	Result	---	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ Total Nitrogen as N	---	0.1	mg/L	2.5	7.8	4.3	7.5	----	---
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	---	0.01	mg/L	<0.01	0.04	<0.01	<0.01	----	---
EN055: Ionic Balance									
∅ Total Anions	---	0.01	meq/L	---	---	---	3.71	----	---
∅ Total Anions	---	0.01	meq/L	84.8	31.1	22.9	---	----	---
∅ Total Cations	---	0.01	meq/L	83.2	29.2	20.8	3.79	----	---
∅ Ionic Balance	---	0.01	%	---	---	---	1.14	----	---
∅ Ionic Balance	---	0.01	%	0.95	3.22	4.85	---	----	---
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	---	2	mg/L	<2	<2	<2	<2	----	---



CERTIFICATE OF ANALYSIS

Work Order : EP2411048
Client : Ecotec (WA) Pty Ltd
Contact : [REDACTED]
Address : [REDACTED]
Telephone : [REDACTED]
Project : Koojan Downs
Order number : [REDACTED]
C-O-C number : [REDACTED]
Sampler : [REDACTED]
Site : [REDACTED]
Quote number : EP/050/22_V2
No. of samples received : 9
No. of samples analysed : 9

Page : 1 of 6
Laboratory : Environmental Division Perth
Contact : Customer Services EP
Address : 26 Rigali Way Wangara WA Australia 6065
Telephone : [REDACTED]
Date Samples Received : 06-Aug-2024 10:00
Date Analysis Commenced : 06-Aug-2024
Issue Date : 13-Aug-2024 19:57



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	Inorganics Supervisor	Perth Inorganics, Wangara, WA
[REDACTED]	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
[REDACTED]	Inorganics Analyst	Perth Inorganics, Wangara, WA



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Perth, NATA accreditation no. 825, site no. 15847.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB08	KDMB09	KDMB10	KDMB11	KDMB12
Sampling date / time				05-Aug-2024 14:00	05-Aug-2024 13:00	05-Aug-2024 12:30	05-Aug-2024 14:30	05-Aug-2024 10:45	
Compound	CAS Number	LOR	Unit	EP2411048-001	EP2411048-002	EP2411048-003	EP2411048-004	EP2411048-005	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	---	10	mg/L	3310	1740	1800	326	3440	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	48	<1	55	4	10	
Total Alkalinity as CaCO3	---	1	mg/L	48	<1	55	4	10	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	239	168	116	99	239	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	1800	901	960	96	1910	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	26	<1	3	<1	12	
Magnesium	7439-95-4	1	mg/L	138	25	58	4	123	
Sodium	7440-23-5	1	mg/L	976	588	564	97	1050	
Potassium	7440-09-7	1	mg/L	14	2	6	2	26	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	<0.01	<0.01	<0.01	<0.01	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	4.53	6.20	5.28	6.72	0.74	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	---	0.01	mg/L	4.53	6.20	5.28	6.72	0.74	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.3	0.9	0.6	0.7	0.2	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB08	KDMB09	KDMB10	KDMB11	KDMB12
Sampling date / time				05-Aug-2024 14:00	05-Aug-2024 13:00	05-Aug-2024 12:30	05-Aug-2024 14:30	05-Aug-2024 10:45	
Compound	CAS Number	LOR	Unit	EP2411048-001	EP2411048-002	EP2411048-003	EP2411048-004	EP2411048-005	
				Result	Result	Result	Result	Result	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ Total Nitrogen as N	---	0.1	mg/L	4.8	7.1	5.9	7.4	0.9	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	---	0.01	mg/L	<0.01	<0.01	0.02	0.01	<0.01	
EN055: Ionic Balance									
∅ Total Anions	---	0.01	meq/L	56.7	28.9	30.6	4.85	59.0	
∅ Total Cations	---	0.01	meq/L	55.5	27.7	29.6	4.60	57.0	
∅ Ionic Balance	---	0.01	%	1.11	2.17	1.64	2.64	1.72	
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	---	2	mg/L	2	<2	2	<2	<2	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB13	KDMB15	KDMB16	KDMB17	----
Sampling date / time				05-Aug-2024 15:00	05-Aug-2024 07:30	05-Aug-2024 10:00	05-Aug-2024 15:35	----	
Compound	CAS Number	LOR	Unit	EP2411048-006	EP2411048-007	EP2411048-008	EP2411048-009	-----	
				Result	Result	Result	Result	---	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	---	10	mg/L	5470	1770	1340	328	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	7	34	5	8	----	
Total Alkalinity as CaCO3	---	1	mg/L	7	34	5	8	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	237	234	34	156	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	2910	850	798	42	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	28	2	12	<1	----	
Magnesium	7439-95-4	1	mg/L	280	40	71	<1	----	
Sodium	7440-23-5	1	mg/L	1540	559	361	99	----	
Potassium	7440-09-7	1	mg/L	37	13	7	2	----	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.004	<0.001	<0.001	<0.001	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	2.03	6.36	3.87	6.46	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	---	0.01	mg/L	2.03	6.36	3.87	6.46	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.2	0.6	0.6	0.6	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB13	KDMB15	KDMB16	KDMB17	----	
Sampling date / time				05-Aug-2024 15:00	05-Aug-2024 07:30	05-Aug-2024 10:00	05-Aug-2024 15:35	----		
Compound	CAS Number	LOR	Unit	EP2411048-006	EP2411048-007	EP2411048-008	EP2411048-009	-----		
				Result	Result	Result	Result	---		
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued										
^ Total Nitrogen as N				0.1	mg/L	2.2	7.0	4.5	7.1	----
EK067G: Total Phosphorus as P by Discrete Analyser										
Total Phosphorus as P				0.01	mg/L	<0.01	0.03	<0.01	0.02	----
EN055: Ionic Balance										
∅ Total Anions				0.01	meq/L	87.2	29.5	23.3	4.59	----
∅ Total Cations				0.01	meq/L	92.4	28.0	22.3	4.36	----
∅ Ionic Balance				0.01	%	2.90	2.59	2.18	2.63	----
EP030: Biochemical Oxygen Demand (BOD)										
Biochemical Oxygen Demand				2	mg/L	<2	<2	<2	<2	----



CERTIFICATE OF ANALYSIS

Work Order	: EP2415949	Page	: 1 of 6
Client	: Ecotec (WA) Pty Ltd	Laboratory	: Environmental Division Perth
Contact	: [REDACTED]	Contact	: Customer Services EP
Address	: [REDACTED]	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: [REDACTED]	Telephone	: [REDACTED]
Project	: Koojan Downs	Date Samples Received	: 29-Oct-2024 10:00
Order number	: [REDACTED]	Date Analysis Commenced	: 29-Oct-2024
C-O-C number	: [REDACTED]	Issue Date	: 06-Nov-2024 13:31
Sampler	: [REDACTED]		
Site	: [REDACTED]		
Quote number	: EP/050/22_V3		
No. of samples received	: 9		
No. of samples analysed	: 9		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	Inorganics Supervisor	Perth Inorganics, Wangara, WA
[REDACTED]	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
[REDACTED]	Metals Chemist	Perth Inorganics, Wangara, WA



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- TDS by method EA-015 may bias high for #8 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB08	KDMB09	KDMB10	KDMB11	KDMB12
Sampling date / time				28-Oct-2024 13:45	28-Oct-2024 12:45	28-Oct-2024 11:30	28-Oct-2024 15:20	28-Oct-2024 09:15	
Compound	CAS Number	LOR	Unit	EP2415949-001	EP2415949-002	EP2415949-003	EP2415949-004	EP2415949-005	
				Result	Result	Result	Result	Result	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	---	10	mg/L	3100	1570	2000	280	3800	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	42	<1	52	3	9	
Total Alkalinity as CaCO3	---	1	mg/L	42	<1	52	3	9	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	196	156	110	78	230	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	1620	832	1090	61	2190	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	22	1	4	<1	12	
Magnesium	7439-95-4	1	mg/L	116	23	62	3	126	
Sodium	7440-23-5	1	mg/L	856	515	596	84	1090	
Potassium	7440-09-7	1	mg/L	13	2	6	1	25	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	4.85	6.35	5.61	6.76	0.70	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	---	0.01	mg/L	4.85	6.35	5.61	6.76	0.70	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.4	0.6	0.6	0.8	0.2	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB08	KDMB09	KDMB10	KDMB11	KDMB12
Sampling date / time					28-Oct-2024 13:45	28-Oct-2024 12:45	28-Oct-2024 11:30	28-Oct-2024 15:20	28-Oct-2024 09:15
Compound	CAS Number	LOR	Unit		EP2415949-001	EP2415949-002	EP2415949-003	EP2415949-004	EP2415949-005
					Result	Result	Result	Result	Result
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ Total Nitrogen as N	---	0.1	mg/L		5.2	7.0	6.2	7.6	0.9
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	---	0.01	mg/L		0.02	0.02	0.02	0.02	0.02
EN055: Ionic Balance									
∅ Total Anions	---	0.01	meq/L		---	---	---	3.89	---
∅ Total Anions	---	0.01	meq/L		50.6	26.7	34.1	---	66.7
∅ Total Cations	---	0.01	meq/L		48.2	24.4	31.4	3.93	59.0
∅ Ionic Balance	---	0.01	%		---	---	---	0.50	---
∅ Ionic Balance	---	0.01	%		2.44	4.54	4.12	---	6.14
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	---	2	mg/L		<2	2	<2	<2	<2



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	KDMB13	KDMB15	KDMB16	KDMB17	----
Sampling date / time				28-Oct-2024 14:45	28-Oct-2024 07:30	28-Oct-2024 09:45	28-Oct-2024 16:00	----	
Compound	CAS Number	LOR	Unit	EP2415949-006	EP2415949-007	EP2415949-008	EP2415949-009	-----	
				Result	Result	Result	Result	---	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	---	10	mg/L	5540	1820	1450	276	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	7	36	4	7	----	
Total Alkalinity as CaCO3	---	1	mg/L	7	36	4	7	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	239	196	36	122	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	2780	899	837	24	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	23	3	10	<1	----	
Magnesium	7439-95-4	1	mg/L	233	45	65	<1	----	
Sodium	7440-23-5	1	mg/L	1500	573	367	81	----	
Potassium	7440-09-7	1	mg/L	34	14	7	2	----	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	0.003	<0.001	<0.001	<0.001	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	3.00	6.76	4.11	6.40	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	---	0.01	mg/L	3.00	6.76	4.11	6.40	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.3	0.7	0.5	0.6	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	KDMB13	KDMB15	KDMB16	KDMB17	----
Sampling date / time			28-Oct-2024 14:45	28-Oct-2024 07:30	28-Oct-2024 09:45	28-Oct-2024 16:00	----	----
Compound	CAS Number	LOR	Unit	EP2415949-006	EP2415949-007	EP2415949-008	EP2415949-009	-----
				Result	Result	Result	Result	---
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued								
^ Total Nitrogen as N	---	0.1	mg/L	3.3	7.5	4.6	7.0	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	---	0.01	mg/L	<0.01	0.02	0.01	0.04	----
EN055: Ionic Balance								
∅ Total Anions	---	0.01	meq/L	83.5	30.2	24.4	3.36	----
∅ Total Cations	---	0.01	meq/L	86.4	29.1	22.0	3.57	----
∅ Ionic Balance	---	0.01	%	1.71	1.73	5.27	3.14	----
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	---	2	mg/L	<2	<2	<2	<2	----



Procedure

Koojan Downs Quarterly Water Monitoring

1.0 PURPOSE

This procedure is intended to ensure sampling methods obtain samples representative of actual groundwater composition at the site. If followed correctly it will also ensure that all sampling is consistent, undertaken in a safe manner and that water samples are collected and stored in the correct manner to enable laboratory analysis to be undertaken.

This procedure has been developed in accordance with the requirements of Australian/New Zealand Standard AS/NZS 5667.1:1998. *Water Quality – Sampling – Guidance on the design of sampling Programs, Sampling Techniques and the Preservation and Handling of samples* and 5667.11:1998. *Water Quality – Sampling – Guidance on sampling of groundwaters*.

2.0 SCOPE

This procedure applies to groundwater sampling undertaken by Ecotec (WA) Pty Ltd personnel at the Koojan Downs Feedlot Facility.

The quarterly groundwater quality monitoring is intended to assist in identifying any impacts on groundwater aquifers resulting from the operational area and irrigation fields.

At this stage there are nine bores that are included in the quarterly groundwater monitoring program. Table 2 provides the coordinates and Figure 1 shows the location of the bores.

3.0 RESPONSIBILITIES

Ecotec (WA) Pty Ltd management have a responsibility to ensure that water sampling is undertaken at the required frequency and in a manner that meets the requirements of AS/NZS 5667.1 and AS/NZS 5667.11.

All personnel involved in water sampling at Koojan Downs have a responsibility to follow this procedure and report any incidents or issues that occur during the task. This includes employees of Ecotec and its sub-contractors.

4.0 TIMING

Water sampling is required to be undertaken at quarterly intervals. To maintain consistent timing, the recommended schedule for sample collection is end of January, end of April, end of July and end of October.

Samples must be delivered to the laboratory within 24 hours of collection. Sampling must be undertaken between Monday and Thursday to ensure the laboratory is open to receive samples the following day.

5.0 EQUIPMENT

This procedure makes reference to the Ecotec dual cab Landcruiser and equipment fitted to that vehicle (Photograph 2). If another vehicle is to be used, ensure suitable connections/fittings and alternative equipment is sourced prior to departure.

Equipment required to complete water sampling at Koojan Downs includes:

- 10 x sample bottle sets provided by the laboratory (Photograph 6). Table 1 lists the types and quantities of sample bottles required (this includes a spare set).

- 12V pump and hose (Photograph 4)
- bore dipper (Photograph 1)
- 20 L bucket (Photograph 4)
- Hanna Instruments multimeter (Photograph 7) and calibration fluid
- Toshiba Toughbook tablet and data collection spreadsheet (Photograph 8)
- GPS with bore locations loaded
- Glass beaker
- appropriate PPE – no specific PPE is required for collection of samples however a broad brimmed hat, sunscreen, safety glasses and appropriate footwear is recommended.
- Disposable baler and length of rope (in case pump breaks down).

Table 1: Sample bottles required for the Koojan Downs monitoring.

No.	Label Colour	Container Type (Preservation noted if required)	Test Parameter(s)
10	Green	1 x 500mL Clear Plastic Bottle - Natural	Ca, Mg, Na, K, Cl, SO ₄ , Alkalinity, Total Dissolved Solids - Standard Level, NO ₂ + NO ₃
10	Purple	1 x 60mL Clear Plastic Bottle - Sulfuric Acid	NO ₂ + NO ₃
10	Red/Green	1 x 60mL Clear Plastic Bottle - Unfiltered; Lab-acidified	Total Metals by ICP/MS (including digestion)

6.0 SAFETY AND GENERAL RULES

- Koojan Downs is an approximately 1.5 hour from Perth. Allow sufficient time to drive to and from site to avoid being in the field after dark. Sample collection from the nine bores takes around six hours in total.
- Email the site contact around a week before the planned site visit and confirm that the planned date is suitable.
- Email the laboratory (bottles.perth@alsglobal.com) to order 10 sets of sample bottles from the laboratory at least a week prior to the planned sampling date. Table 1
- Sign in at the administration office on arrival and advise staff. Sign out on completion of sample collection and advise staff that the task has been completed.
- Paddock gates are usually closed at Koojan Downs but in general, gates should be left as they are found (i.e. close the gate if it is closed, leave it open if it was open on arrival). If in doubt contact the gate house for confirmation.
- Some areas are sandy, particularly in summer and it is possible to get bogged. Use 4WD when leaving the main access tracks and ensure a set of "Max Trax" are in/on the vehicle.

7.0 METHOD

7.1 Bore locations

The bores are located across the Koojan Downs property. Prior to departing for water sampling, ensure the points are entered into the GPS. Table 2 lists the bores and their locations. Figure 1 shows the bore locations.

Table 2: Bore locations.

Bore name	Easting	Northing
KDMB08	393464	6587635
KDMB09	392935	6588201
KDMB10	393412	6588933
KDMB11	394925	6588834
KDMB12	393581	6589552
KDMB13	394364	6589033
KDMB15	396566	6590954
KDMB16	393562	6589722
KDMB17	395106	6588697

7.2 Standing water level

Prior to collection of the water sample, the standing water level (SWL) must be recorded using the bore dipper (Photograph 1). Lower the probe slowly until the alarm sounds, indicating contact with water. The measurement is taken from the top of the bore casing.

Record the SWL in the appropriate cell in the spreadsheet for the corresponding bore.



Photograph 1: Bore dipper.



Figure 1: Koojan Downs bore locations.

7.3 Water sampling

1. Position the vehicle so that the drivers' side rear is adjacent to the bore with approximately 2 m of clearance (Photograph 2).



Photograph 2: Position vehicle adjacent to bore.

2. Attach the hose to the pump (Photograph 3) and lower the pump into the bore. The pump should be at least halfway down the water column. The hose is marked at 5 m intervals. The Koojan Downs monitoring bores have all been constructed to a depth of 30 m. Typically the pump at a depth of around 15 m is suitable however 20 m is recommended for bores with a SWL of more than 8 m.



Photograph 3: Attach hose to pump.

3. Once lowered to the appropriate depth, place the discharge hose into the bucket (Photograph 4) and attach the pump electrical plug to the socket in the back of the vehicle (Photograph 5).



Photograph 4: Pump lowered into bore and discharge hose directed to bucket.



Photograph 5: Electrical connection for pump.

The pump draws quite a lot of power so the vehicle should be left running for every second bore hole sampled to ensure the batteries are not flattened.

- Complete label details with a waterproof pen before collecting the sample (Photograph 6).



Photograph 6: Sample bottles labelled.

- Use laboratory supplied sample containers only.
 - Do not reuse or use previously opened bottles.
 - Do not touch or contaminate any part of the bottle that will come into contact with the sample (i.e. inside of lids or mouth of sample bottle).
- Samples are not collected until the standing water column within the bore has been removed and recharged from the surrounding water table. Once the SWL is entered into the spreadsheet a “Minimum purge volume required” will be automatically calculated. This is an approximate value that is used as a guide only (i.e. if the purge volume = 100 litres, fill the 20 litre bucket five times before collecting the sample).

The actual point at which the sample is collected is determined by stabilisation of water quality and temperature. Collect at least 3 x 20 litre buckets consecutively.

NOTE: As the water quality at Koojan Downs is near-fresh it can be disposed directly onto the ground. Tip the water out away from the work area to avoid standing in water and mud.

After the third bucket, collect a sample in a glass beaker (leave pump running into the bucket). Insert the Hanna Instruments multimeter (Photograph 7) probe and record the pH, EC and temperature in the first column of the “Field monitoring” table (Photograph 8).

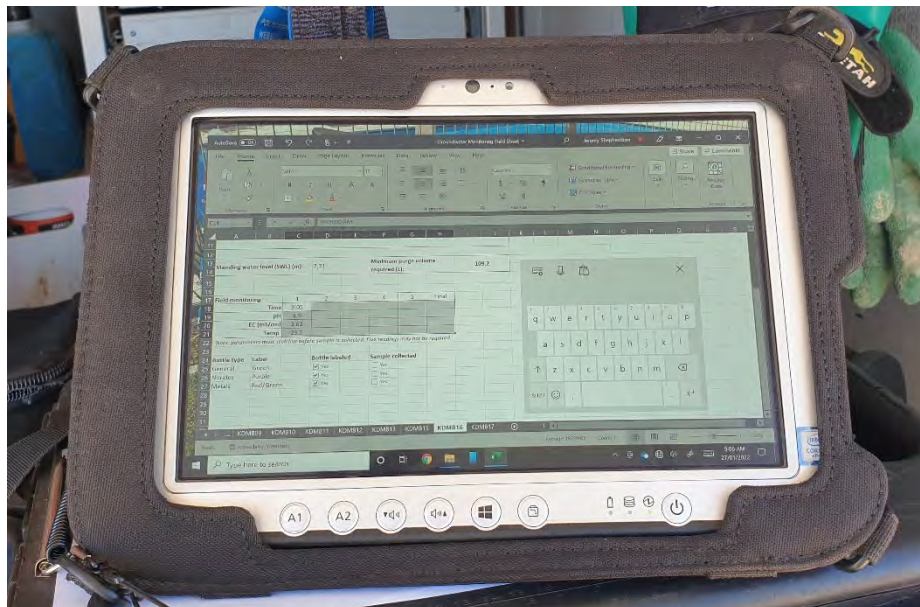
Repeat this step at approximately 10 minute intervals (this varies depending on how quickly the water quality stabilises). Once three consecutive pH and EC readings have been obtained without significant variation ($< \pm 10\%$) and temperature is stable ($\pm 0.2^\circ\text{C}$), the final values are recorded in the spreadsheet and the sample is collected in the previously labelled sample bottles (Photograph 9).

- Collect sample directly into sample container if possible. If not, collect in a sampling beaker (rinse out twice with water to be sampled) and transfer immediately to the sample container.
- If the bottle contains a preservative do not over fill the bottle as preservative may be diluted or lost.

Prior to departing site, check that all bores have been sampled and that there are nine of each type of bottle, correctly labelled and stowed in the fridge.



Photograph 7: Hanna Instruments multimeter.



Photograph 8: Toshiba Toughbook tablet and field monitoring spreadsheet.



Photograph 9: Collecting the water sample.

7.4 Storage and delivery to the laboratory

Seal the sample bottles tightly and place them into the fridge in the rear of the vehicle. The fridge compartment should be set to 4°C.

The bottles are to remain refrigerated until they are ready to be delivered to the laboratory.

Samples must be delivered within 24 hours of being collected to minimise changes in water chemistry.

Ecotec uses Australian Laboratory Services (NATA Certified) for all analysis.

Complete an Australian Chain of Custody (CoC) form ensuring the correct sample numbers (example included as Attachment 1).

Transfer the sample bottles to an esky (supplied by the lab) with one or two frozen ice bricks (also supplied by the lab).

Email the completed CoC form to the lab (samples.perth@alsglobal.com). Also print off a hard copy of the completed CoC and place it in the esky.

Deliver the samples to ALS at 26 Rigali Way, Wangara.

7.5 Record keeping

The lab will return the results in around 7-10 days after delivery.

Results are saved to the Ecotec server in the Koojan Downs Water Monitoring folder in the appropriately dated sub-folder [REDACTED]. The field data sheet will be automatically uploaded when the tablet connects with the Ecotec network.

Field and laboratory results are entered into the Koojan Groundwater Monitoring Combined Results spreadsheet, saved in the same folder. This spreadsheet and the laboratory results are provided to the client when requested.

Attachment 1

Chain of Custody form



CHAIN OF CUSTODY

ALS Laboratory: **please tick** →

ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callemondah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

MUDGEES 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

NEWCASTLE 5 Rose Gum Road Warabrook NSW 2264
Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 02 4423 2063 E: nowra@alsglobal.com

PERTH 26 Rigali Way, Wangara WA 6065
Ph: 08 9406 1301 E: samples.perth@alsglobal.com

SYDNEY 2077-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8555 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: Ecotec (WA) Pty Ltd		TURNAROUND REQUIREMENTS : <input checked="" type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: 6 Cyclamen Court, Wanneroo		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)			
PROJECT: Koojan Downs		ALQS QUOTE NO.: EP/050/22		COC SEQUENCE NUMBER (Circle)	
PURCHASE ORDER NUMBER:		COUNTRY OF ORIGIN: AUSTRALIA		COC: 1 2 3 4 5 6 7	
PROJECT MANAGER: [REDACTED]		CONTACT PH: [REDACTED]		OF: 1 2 3 4 5 6 7	
SAMPLER: [REDACTED]		SAMPLER MOBILE: [REDACTED]		RECEIVED BY:	
COC Emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RELINQUISHED BY:	
Email Reports to [REDACTED]		DATE/TIME:		DATE/TIME:	
Email Invoice to: [REDACTED]		30/01/2024 9am		DATE/TIME:	
				RECEIVED BY:	
				DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Suite 1: Water parameters									Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	KDMB08	29/01/2024 12:30	W		3	X									
	KDMB09	29/01/2024 12:00	W		3	X									
	KDMB10	29/01/2024 11:00	W		3	X									
	KDMB11	29/01/2024 14:00	W		3	X									
	KDMB12	29/01/2024 10:30	W		3	X									
	KDMB13	29/01/2024 13:30	W		3	X									
	KDMB15	29/01/2024 8:30	W		3	X									
	KDMB16	29/01/2024 9:30	W		3	X									
	KDMB17	29/01/2024 15:00	W		3	X									
TOTAL					27										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

Appendix C – Herd data

Date	Ins	Outs	Deads	T'fers In	T'fers Out	Stock on Hand	SCU
Opening Stock						17,842	0
01/01/2024	0	0	1	0	0	17,841	-1
02/01/2024	0	264	1	0	0	17,576	-266
03/01/2024	340	198	1	0	0	17,717	-125
04/01/2024	14	132	0	0	0	17,599	-243
05/01/2024	335	180	1	0	0	17,753	-89
06/01/2024	0	0	0	0	0	17,753	-89
07/01/2024	0	0	1	0	0	17,752	-90
08/01/2024	66	264	0	0	0	17,554	-288
09/01/2024	280	132	0	0	0	17,702	-140
10/01/2024	101	132	1	0	0	17,670	-172
11/01/2024	243	218	0	0	0	17,695	-147
12/01/2024	97	0	2	0	0	17,790	-52
13/01/2024	0	0	1	0	0	17,789	-53
14/01/2024	536	0	2	0	0	18,323	481
15/01/2024	176	350	1	0	0	18,148	306
16/01/2024	89	132	1	0	0	18,104	262
17/01/2024	0	132	0	0	0	17,972	130
18/01/2024	456	222	1	0	0	18,205	363
19/01/2024	0	90	0	0	0	18,115	273
20/01/2024	141	0	0	0	0	18,256	414
21/01/2024	0	0	0	0	0	18,256	414
22/01/2024	547	865	1	0	0	17,937	95
23/01/2024	280	132	0	0	0	18,085	243
24/01/2024	101	131	0	0	0	18,055	213
25/01/2024	0	0	0	0	0	18,055	213
26/01/2024	44	87	1	0	0	18,011	169
27/01/2024	0	0	3	0	0	18,008	166
28/01/2024	0	42	1	0	0	17,965	123
29/01/2024	80	198	1	0	0	17,846	4
30/01/2024	638	198	0	0	0	18,286	444
31/01/2024	0	132	0	0	0	18,154	312
01/02/2024	3	222	1	0	0	17,934	92
02/02/2024	0	144	0	0	0	17,790	-52
03/02/2024	0	0	0	0	0	17,790	-52
04/02/2024	0	0	0	0	0	17,790	-52
05/02/2024	387	264	2	0	0	17,911	69
06/02/2024	514	132	0	0	0	18,293	451
07/02/2024	0	198	0	0	0	18,095	253
08/02/2024	233	222	0	0	0	18,106	264
09/02/2024	0	90	1	0	0	18,015	173
10/02/2024	0	0	4	0	0	18,011	169
11/02/2024	0	0	0	0	0	18,011	169
12/02/2024	55	264	0	0	0	17,802	-40
13/02/2024	483	132	0	0	0	18,153	311
14/02/2024	558	132	2	0	0	18,577	735
15/02/2024	21	377	1	0	0	18,220	378
16/02/2024	100	148	1	0	0	18,171	329

Date	Ins	Outs	Deads	T'fers In	T'fers Out	Stock on Hand	SCU
17/02/2024	0	0	1	0	0	18,170	328
18/02/2024	6	3	2	0	0	18,171	329
19/02/2024	279	264	1	0	0	18,185	343
20/02/2024	317	132	0	0	0	18,370	528
21/02/2024	91	131	5	0	0	18,325	483
22/02/2024	0	378	1	0	0	17,946	104
23/02/2024	127	90	2	0	0	17,981	139
24/02/2024	0	0	0	0	0	17,981	139
25/02/2024	0	0	0	0	0	17,981	139
26/02/2024	343	264	0	0	0	18,060	218
27/02/2024	502	132	0	0	0	18,430	588
28/02/2024	76	132	0	0	0	18,374	532
29/02/2024	0	222	0	0	0	18,152	310
01/03/2024	78	161	1	0	0	18,068	226
02/03/2024	0	0	0	0	0	18,068	226
03/03/2024	0	0	0	0	0	18,068	226
04/03/2024	0	0	1	0	0	18,067	225
05/03/2024	233	264	0	0	0	18,036	194
06/03/2024	91	222	0	0	0	17,905	63
07/03/2024	0	312	0	19	19	17,593	-249
08/03/2024	0	156	2	129	129	17,435	-407
09/03/2024	66	0	0	151	151	17,501	-341
10/03/2024	0	0	0	0	0	17,501	-341
11/03/2024	168	264	1	0	0	17,404	-438
12/03/2024	30	132	0	0	0	17,302	-540
13/03/2024	43	132	0	0	0	17,213	-629
14/03/2024	98	936	1	0	0	16,374	-1,468
15/03/2024	135	90	0	0	0	16,419	-1,423
16/03/2024	0	0	0	0	0	16,419	-1,423
17/03/2024	0	0	0	0	0	16,419	-1,423
18/03/2024	0	264	0	0	0	16,155	-1,687
19/03/2024	269	132	0	0	0	16,292	-1,550
20/03/2024	153	132	0	0	0	16,313	-1,529
21/03/2024	89	249	0	0	0	16,153	-1,689
22/03/2024	140	215	1	0	0	16,077	-1,765
23/03/2024	0	0	0	0	0	16,077	-1,765
24/03/2024	0	0	1	0	0	16,076	-1,766
25/03/2024	411	264	0	0	0	16,223	-1,619
26/03/2024	342	222	0	0	0	16,343	-1,499
27/03/2024	100	202	1	0	0	16,240	-1,602
28/03/2024	0	70	1	0	0	16,169	-1,673
29/03/2024	0	0	2	0	0	16,167	-1,675
30/03/2024	0	0	0	0	0	16,167	-1,675
31/03/2024	0	0	0	0	0	16,167	-1,675
01/04/2024	0	0	0	0	0	16,167	-1,675
02/04/2024	419	264	1	0	0	16,321	-1,521
03/04/2024	336	132	1	0	0	16,524	-1,318
04/04/2024	79	293	0	0	0	16,310	-1,532

Date	Ins	Outs	Deads	T'fers In	T'fers Out	Stock on Hand	SCU
05/04/2024	114	356	0	0	0	16,068	-1,774
06/04/2024	0	90	0	0	0	15,978	-1,864
07/04/2024	0	0	1	0	0	15,977	-1,865
08/04/2024	0	333	0	0	0	15,644	-2,198
09/04/2024	220	202	0	0	0	15,662	-2,180
10/04/2024	319	132	0	0	0	15,849	-1,993
11/04/2024	127	222	0	0	0	15,754	-2,088
12/04/2024	568	180	3	0	0	16,139	-1,703
13/04/2024	0	0	0	0	0	16,139	-1,703
14/04/2024	194	0	2	0	0	16,331	-1,511
15/04/2024	601	354	0	0	0	16,578	-1,264
16/04/2024	8	132	2	0	0	16,452	-1,390
17/04/2024	26	132	1	0	0	16,345	-1,497
18/04/2024	367	222	0	0	0	16,490	-1,352
19/04/2024	194	238	0	0	0	16,446	-1,396
20/04/2024	0	0	1	0	0	16,445	-1,397
21/04/2024	9	0	1	0	0	16,453	-1,389
22/04/2024	120	132	1	0	0	16,440	-1,402
23/04/2024	82	132	0	0	0	16,390	-1,452
24/04/2024	276	0	0	0	0	16,666	-1,176
25/04/2024	0	0	0	0	0	16,666	-1,176
26/04/2024	0	0	0	0	0	16,666	-1,176
27/04/2024	0	0	0	0	0	16,666	-1,176
28/04/2024	0	0	5	0	0	16,661	-1,181
29/04/2024	372	264	0	0	0	16,769	-1,073
30/04/2024	291	132	0	0	0	16,928	-914
01/05/2024	119	132	2	0	0	16,913	-929
02/05/2024	82	222	1	0	0	16,772	-1,070
03/05/2024	296	99	2	0	0	16,967	-875
04/05/2024	0	0	1	128	128	16,966	-876
05/05/2024	0	0	0	0	0	16,966	-876
06/05/2024	48	132	1	0	0	16,881	-961
07/05/2024	463	132	3	0	0	17,209	-633
08/05/2024	218	271	0	0	0	17,156	-686
09/05/2024	0	222	0	0	0	16,934	-908
10/05/2024	112	180	0	0	0	16,866	-976
11/05/2024	0	0	0	0	0	16,866	-976
12/05/2024	0	0	1	0	0	16,865	-977
13/05/2024	18	330	1	0	0	16,552	-1,290
14/05/2024	607	132	0	132	132	17,027	-815
15/05/2024	425	132	0	0	0	17,320	-522
16/05/2024	57	132	0	0	0	17,245	-597
17/05/2024	23	250	4	0	0	17,014	-828
18/05/2024	0	0	0	0	0	17,014	-828
19/05/2024	0	0	0	0	0	17,014	-828
20/05/2024	115	330	2	0	0	16,797	-1,045
21/05/2024	257	132	1	0	0	16,921	-921
22/05/2024	0	202	3	0	0	16,716	-1,126

Date	Ins	Outs	Deads	T'fers In	T'fers Out	Stock on Hand	SCU
23/05/2024	24	220	3	0	0	16,517	-1,325
24/05/2024	0	178	3	0	0	16,336	-1,506
25/05/2024	0	0	1	0	0	16,335	-1,507
26/05/2024	0	0	0	0	0	16,335	-1,507
27/05/2024	169	264	2	0	0	16,238	-1,604
28/05/2024	422	132	2	29	29	16,526	-1,316
29/05/2024	29	132	0	0	0	16,423	-1,419
30/05/2024	288	132	0	0	0	16,579	-1,263
31/05/2024	0	248	5	0	0	16,326	-1,516
01/06/2024	0	0	0	115	115	16,326	-1,516
02/06/2024	0	0	0	0	0	16,326	-1,516
03/06/2024	0	0	0	0	0	16,326	-1,516
04/06/2024	120	264	1	0	0	16,181	-1,661
05/06/2024	65	132	1	0	0	16,113	-1,729
06/06/2024	46	312	0	0	0	15,847	-1,995
07/06/2024	199	89	0	0	0	15,957	-1,885
08/06/2024	0	0	0	0	0	15,957	-1,885
09/06/2024	0	0	0	0	0	15,957	-1,885
10/06/2024	288	264	0	0	0	15,981	-1,861
11/06/2024	30	222	1	0	0	15,788	-2,054
12/06/2024	9	282	2	0	0	15,513	-2,329
13/06/2024	0	298	0	0	0	15,215	-2,627
14/06/2024	434	113	0	0	0	15,536	-2,306
15/06/2024	611	0	3	0	0	16,144	-1,698
16/06/2024	0	0	0	0	0	16,144	-1,698
17/06/2024	0	0	1	0	0	16,143	-1,699
18/06/2024	388	0	0	0	0	16,531	-1,311
19/06/2024	5	132	4	0	0	16,400	-1,442
20/06/2024	263	222	0	0	0	16,441	-1,401
21/06/2024	64	164	4	0	0	16,337	-1,505
22/06/2024	0	0	3	0	0	16,334	-1,508
23/06/2024	0	0	0	0	0	16,334	-1,508
24/06/2024	90	66	2	0	0	16,356	-1,486
25/06/2024	199	132	0	0	0	16,423	-1,419
26/06/2024	0	198	0	0	0	16,225	-1,617
27/06/2024	42	132	0	0	0	16,135	-1,707
28/06/2024	547	245	0	0	0	16,437	-1,405
29/06/2024	356	0	0	0	0	16,793	-1,049
30/06/2024	666	0	0	0	0	17,459	-383
01/07/2024	0	353	0	0	0	17,106	-736
02/07/2024	8	132	0	0	0	16,982	-860
03/07/2024	60	132	2	0	0	16,908	-934
04/07/2024	0	133	1	0	0	16,774	-1,068
05/07/2024	450	0	5	0	0	17,219	-623
06/07/2024	0	0	1	0	0	17,218	-624
07/07/2024	0	0	0	0	0	17,218	-624
08/07/2024	14	156	1	0	0	17,075	-767
09/07/2024	338	221	1	0	0	17,191	-651

Date	Ins	Outs	Deads	T'fers In	T'fers Out	Stock on Hand	SCU
10/07/2024	656	222	1	0	0	17,624	-218
11/07/2024	412	328	0	0	0	17,708	-134
12/07/2024	0	72	1	0	0	17,635	-207
13/07/2024	0	0	1	0	0	17,634	-208
14/07/2024	0	0	0	0	0	17,634	-208
15/07/2024	267	264	0	0	0	17,637	-205
16/07/2024	0	132	1	107	107	17,504	-338
17/07/2024	77	198	3	0	0	17,380	-462
18/07/2024	192	246	1	0	0	17,325	-517
19/07/2024	86	0	3	0	0	17,408	-434
20/07/2024	103	0	0	141	141	17,511	-331
21/07/2024	0	0	0	0	0	17,511	-331
22/07/2024	291	288	3	0	0	17,511	-331
23/07/2024	145	66	0	0	0	17,590	-252
24/07/2024	175	288	2	0	0	17,475	-367
25/07/2024	0	196	4	0	0	17,275	-567
26/07/2024	0	0	0	0	0	17,275	-567
27/07/2024	0	0	3	0	0	17,272	-570
28/07/2024	0	0	1	0	0	17,271	-571
29/07/2024	279	264	0	0	0	17,286	-556
30/07/2024	136	131	4	0	0	17,287	-555
31/07/2024	8	287	3	0	0	17,005	-837
01/08/2024	0	232	3	0	0	16,770	-1,072
02/08/2024	0	0	4	0	0	16,766	-1,076
03/08/2024	0	0	3	111	111	16,763	-1,079
04/08/2024	10	100	2	0	0	16,671	-1,171
05/08/2024	60	132	2	0	0	16,597	-1,245
06/08/2024	46	198	4	0	0	16,441	-1,401
07/08/2024	273	273	0	0	0	16,441	-1,401
08/08/2024	0	296	3	0	0	16,142	-1,700
09/08/2024	0	0	0	0	0	16,142	-1,700
10/08/2024	0	0	4	0	0	16,138	-1,704
11/08/2024	0	0	1	0	0	16,137	-1,705
12/08/2024	103	264	2	0	0	15,974	-1,868
13/08/2024	42	206	3	0	0	15,807	-2,035
14/08/2024	0	271	1	0	0	15,535	-2,307
15/08/2024	33	453	3	0	0	15,112	-2,730
16/08/2024	55	235	2	0	0	14,930	-2,912
17/08/2024	0	0	0	0	0	14,930	-2,912
18/08/2024	0	0	3	0	0	14,927	-2,915
19/08/2024	120	264	4	0	0	14,779	-3,063
20/08/2024	356	132	6	0	0	14,997	-2,845
21/08/2024	26	230	2	0	0	14,791	-3,051
22/08/2024	42	311	2	0	0	14,520	-3,322
23/08/2024	0	140	0	0	0	14,380	-3,462
24/08/2024	0	0	1	0	0	14,379	-3,463
25/08/2024	0	0	1	0	0	14,378	-3,464
26/08/2024	59	198	1	0	0	14,238	-3,604

Date	Ins	Outs	Deads	T'fers In	T'fers Out	Stock on Hand	SCU
27/08/2024	0	207	1	0	0	14,030	-3,812
28/08/2024	72	208	2	0	0	13,892	-3,950
29/08/2024	0	499	0	0	0	13,393	-4,449
30/08/2024	0	240	0	0	0	13,153	-4,689
31/08/2024	0	0	0	0	0	13,153	-4,689
01/09/2024	0	0	1	0	0	13,152	-4,690
02/09/2024	0	264	5	2	2	12,883	-4,959
03/09/2024	18	357	0	0	0	12,544	-5,298
04/09/2024	0	283	1	0	0	12,260	-5,582
05/09/2024	243	398	0	0	0	12,105	-5,737
06/09/2024	19	218	2	0	0	11,904	-5,938
07/09/2024	0	0	1	166	166	11,903	-5,939
08/09/2024	6	6	0	0	0	11,903	-5,939
09/09/2024	0	264	0	4	4	11,639	-6,203
10/09/2024	87	131	0	0	0	11,595	-6,247
11/09/2024	0	132	1	0	0	11,462	-6,380
12/09/2024	56	450	5	0	0	11,063	-6,779
13/09/2024	0	34	0	0	0	11,029	-6,813
14/09/2024	0	0	0	0	0	11,029	-6,813
15/09/2024	0	0	0	0	0	11,029	-6,813
16/09/2024	82	264	0	0	0	10,847	-6,995
17/09/2024	8	132	3	0	0	10,720	-7,122
18/09/2024	161	221	1	0	0	10,659	-7,183
19/09/2024	106	65	0	0	0	10,700	-7,142
20/09/2024	65	56	0	0	0	10,709	-7,133
21/09/2024	0	0	0	0	0	10,709	-7,133
22/09/2024	0	0	1	0	0	10,708	-7,134
23/09/2024	0	0	0	0	0	10,708	-7,134
24/09/2024	109	264	2	0	0	10,551	-7,291
25/09/2024	373	132	0	0	0	10,792	-7,050
26/09/2024	216	181	0	0	0	10,827	-7,015
27/09/2024	86	90	0	0	0	10,823	-7,019
28/09/2024	315	0	0	0	0	11,138	-6,704
29/09/2024	0	0	0	0	0	11,138	-6,704
30/09/2024	32	264	0	0	0	10,906	-6,936
01/10/2024	185	132	0	15	15	10,959	-6,883
02/10/2024	11	132	0	0	0	10,838	-7,004
03/10/2024	241	180	0	0	0	10,899	-6,943
04/10/2024	45	299	0	0	0	10,645	-7,197
05/10/2024	0	0	0	0	0	10,645	-7,197
06/10/2024	0	0	4	0	0	10,641	-7,201
07/10/2024	0	264	1	0	0	10,376	-7,466
08/10/2024	150	132	4	0	0	10,390	-7,452
09/10/2024	161	132	4	0	0	10,415	-7,427
10/10/2024	132	336	0	0	0	10,211	-7,631
11/10/2024	68	0	1	0	0	10,278	-7,564
12/10/2024	0	0	0	0	0	10,278	-7,564
13/10/2024	0	0	0	0	0	10,278	-7,564

Date	Ins	Outs	Deads	T'fers In	T'fers Out	Stock on Hand	SCU
14/10/2024	829	268	0	0	0	10,839	-7,003
15/10/2024	9	197	0	0	0	10,651	-7,191
16/10/2024	83	132	0	0	0	10,602	-7,240
17/10/2024	87	270	0	0	0	10,419	-7,423
18/10/2024	0	12	1	0	0	10,406	-7,436
19/10/2024	0	0	2	0	0	10,404	-7,438
20/10/2024	0	0	0	0	0	10,404	-7,438
21/10/2024	458	264	3	0	0	10,595	-7,247
22/10/2024	107	132	0	0	0	10,570	-7,272
23/10/2024	368	279	0	0	0	10,659	-7,183
24/10/2024	163	0	0	0	0	10,822	-7,020
25/10/2024	107	180	0	0	0	10,749	-7,093
26/10/2024	0	0	0	0	0	10,749	-7,093
27/10/2024	0	0	0	0	0	10,749	-7,093
28/10/2024	643	323	0	0	0	11,069	-6,773
29/10/2024	277	146	0	0	0	11,200	-6,642
30/10/2024	166	132	2	0	0	11,232	-6,610
31/10/2024	269	270	0	0	0	11,231	-6,611
01/11/2024	23	161	1	0	0	11,092	-6,750
02/11/2024	0	0	0	0	0	11,092	-6,750
03/11/2024	0	0	0	0	0	11,092	-6,750
04/11/2024	45	264	0	0	0	10,873	-6,969
05/11/2024	599	132	0	0	0	11,340	-6,502
06/11/2024	107	222	0	0	0	11,225	-6,617
07/11/2024	373	258	0	0	0	11,340	-6,502
08/11/2024	567	70	0	0	0	11,837	-6,005
09/11/2024	0	0	0	0	0	11,837	-6,005
10/11/2024	168	0	0	0	0	12,005	-5,837
11/11/2024	125	264	1	0	0	11,865	-5,977
12/11/2024	474	197	0	0	0	12,142	-5,700
13/11/2024	550	0	2	0	0	12,690	-5,152
14/11/2024	272	90	0	0	0	12,872	-4,970
15/11/2024	12	107	0	0	0	12,777	-5,065
16/11/2024	0	0	0	0	0	12,777	-5,065
17/11/2024	12	22	0	0	0	12,767	-5,075
18/11/2024	219	264	3	0	0	12,719	-5,123
19/11/2024	342	132	0	0	0	12,929	-4,913
20/11/2024	274	0	1	0	0	13,202	-4,640
21/11/2024	0	0	0	0	0	13,202	-4,640
22/11/2024	57	131	0	0	0	13,128	-4,714
23/11/2024	0	0	0	0	0	13,128	-4,714
24/11/2024	0	0	0	0	0	13,128	-4,714
25/11/2024	659	198	1	0	0	13,588	-4,254
26/11/2024	60	132	3	0	0	13,513	-4,329
27/11/2024	331	89	1	0	0	13,754	-4,088
28/11/2024	333	90	1	0	0	13,996	-3,846
29/11/2024	75	0	1	0	0	14,070	-3,772
30/11/2024	0	0	0	0	0	14,070	-3,772

Date	Ins	Outs	Deads	T'fers In	T'fers Out	Stock on Hand	SCU
01/12/2024	0	0	0	0	0	14,070	-3,772
02/12/2024	287	263	1	0	0	14,093	-3,749
03/12/2024	588	424	0	0	0	14,257	-3,585
04/12/2024	40	7	1	0	0	14,289	-3,553
05/12/2024	96	0	0	0	0	14,385	-3,457
06/12/2024	47	8	0	0	0	14,424	-3,418
07/12/2024	0	0	0	0	0	14,424	-3,418
08/12/2024	0	0	0	0	0	14,424	-3,418
09/12/2024	0	262	2	0	0	14,160	-3,682
10/12/2024	592	132	1	0	0	14,619	-3,223
11/12/2024	0	0	2	0	0	14,617	-3,225
12/12/2024	0	120	2	0	0	14,495	-3,347
13/12/2024	153	119	0	0	0	14,529	-3,313
14/12/2024	0	0	0	0	0	14,529	-3,313
15/12/2024	0	0	1	0	0	14,528	-3,314
16/12/2024	280	264	0	0	0	14,544	-3,298
17/12/2024	298	206	0	0	0	14,636	-3,206
18/12/2024	402	0	2	0	0	15,036	-2,806
19/12/2024	0	72	0	0	0	14,964	-2,878
20/12/2024	0	0	1	0	0	14,963	-2,879
21/12/2024	0	0	2	0	0	14,961	-2,881
22/12/2024	0	0	0	0	0	14,961	-2,881
23/12/2024	0	132	0	0	0	14,829	-3,013
24/12/2024	0	0	0	0	0	14,829	-3,013
25/12/2024	0	0	0	0	0	14,829	-3,013
26/12/2024	0	0	0	0	0	14,829	-3,013
27/12/2024	0	335	1	0	0	14,493	-3,349
28/12/2024	0	0	0	0	0	14,493	-3,349
29/12/2024	0	0	0	0	0	14,493	-3,349
30/12/2024	0	0	0	0	0	14,493	-3,349
31/12/2024	0	0	0	0	0	14,493	-3,349

Totals:	44,016	47,051	314	1,249	1,249
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Total Head Days:	5,606,489	
Minimum Stock on Hand:	10,211	-7,631
Average Stock on Hand:	15,318	-2,524
Maximum Stock on Hand:	18,577	735

Appendix D – Meteorology data

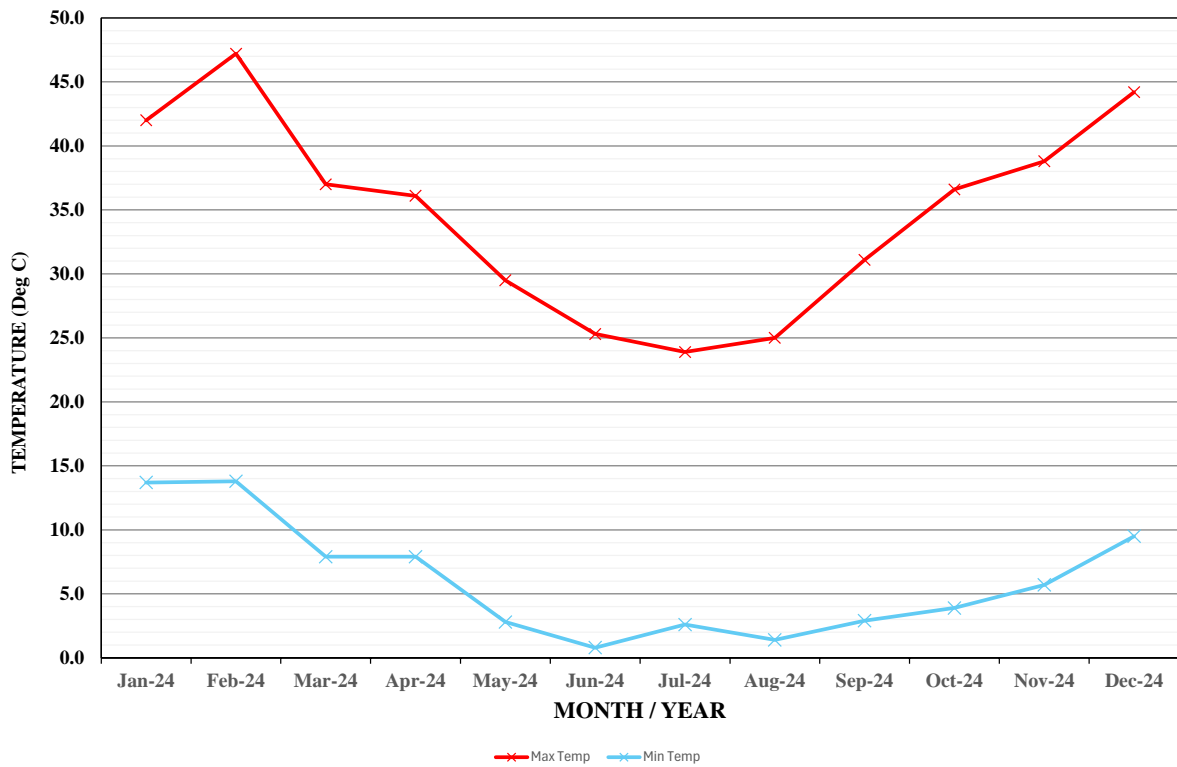


Figure 5 – KDFE – Weather monitoring – On-site AWS Temperature

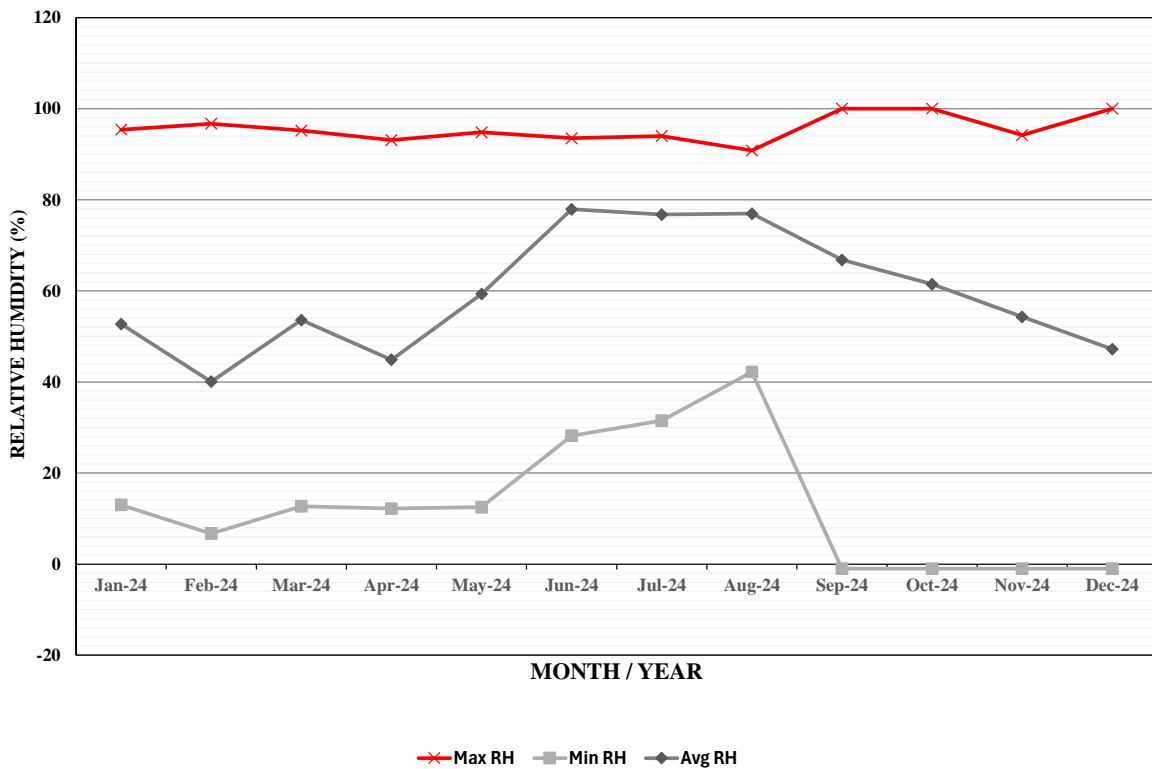


Figure 6 – KDFE – Weather monitoring – On-site AWS Relative Humidity

Appendix E – Soil test results

SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

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Avena Vale

Paddock	AV11 (29)		AV11 (29)			AV6 (55)	AV6 (55)		AV6 (55)			AV6 (55)
Site	101		102			110	111		123			124
Lab No.	1PDS24078	1PDS24075	1PDS24077	1PDS24076	1PDS24079	1PFS24020	1PDS24160	1PDS24161	1PDS24162	1PDS24164	1PDS24166	1PDS24074
Longitude	-30.8128	-30.8128	-30.81859	-30.81859	-30.81859	-30.81214	-30.80577	-30.80577	-30.80552	-30.80552	-30.80552	-30.81293
Latitude	115.91564	115.91564	115.91644	115.91644	115.91644	115.90912	115.9092	115.9092	115.90317	115.90317	115.90317	115.90358
Depth	0 - 10	10 - 20	0 - 10	10 - 20	20 - 30	0 - 10	0 - 10	10 - 20	0 - 10	10 - 20	20 - 30	0 - 10
Texture	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Loamy sand
Colour	Light Grey	Grey White	Light Grey	Grey White	White	Grey	Grey Brown	Grey White	Brown Grey	Yellow Brown	Yellow	Grey
Gravel (%)	0	5	0	0	0	5	0	0	0	0	0	0
NO3 (mg/kg)	2	1	7	5	3	2	< 1	< 1	2	3	1	1
NH4 (mg/kg)	3	< 1	2	< 1	< 1	2	2	< 1	2	< 1	< 1	2
OC (%)	0.57	0.18	0.46	0.21	0.15	0.87	0.72	0.37	0.64	0.20	0.14	0.49
P (mg/kg)	4	3	3	2	2	5	3	2	4	4	6	5
PBI	6.3	4.0	6.6	6.1	< 1.0	4.7	4.6	7.0	7.6	7.2	10.4	5.1
K (mg/kg)	27	< 15	33	23	16	20	25	< 15	24	16	< 15	15
S (mg/kg)	3.3	1.5	3.4	2.0	1.1	4.2	3.4	2.1	4.7	2.2	1.4	3.1
pH	5.5	5.6	5.9	5.8	5.9	5.4	5.3	5.3	5.9	5.8	5.9	5.6
pH H2O	6.3	6.5	6.4	6.4	6.7	6.2	6.1	5.8	6.5	6.3	6.5	6.4
EC (dS/m)	0.048	0.030	0.061	0.044	0.040	0.038	0.053	0.028	0.059	0.040	0.033	0.036

Soil Health: VERY LOW LOW IDEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

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Avena Vale

Paddock	AV6 (55)		AV6 (55)		
Site	124		AV1129-A		
Lab No.	1PDS24071	1PDS24069	1PDS24073	1PDS24072	1PDS24070
Longitude	-30.81293	-30.81293	-30.81723	-30.81723	-30.81723
Latitude	115.90358	115.90358	115.90899	115.90899	115.90899
Depth	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand
Colour	Grey White	Grey White	Grey Brown	Grey White	Grey White
Gravel (%)	0	5	0	0	5
NO3 (mg/kg)	< 1	< 1	2	< 1	< 1
NH4 (mg/kg)	< 1	< 1	3	< 1	< 1
OC (%)	0.21	0.13	0.67	0.20	0.16
P (mg/kg)	< 2	3	5	2	< 2
PBI	5.9	9.1	8.2	6.9	7.9
K (mg/kg)	< 15	< 15	27	< 15	< 15
S (mg/kg)	1.2	1.2	4.1	1.6	1.1
pH	5.7	5.6	6.0	5.8	5.9
pH H2O	6.6	6.4	6.7	6.5	6.6
EC (dS/m)	0.033	0.027	0.053	0.029	0.025

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

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Damper Downs

Paddock	DD01 (34)			DD02 (34)			DD03 (60)			DD03 (60)		
Site	156			155			157			158		
Lab No.	1PDS24142	1PDS24137	1PDS24139	1PDS24147	1PDS24144	1PDS24143	1PDS24025	1PDS24027	1PDS24028	1PDS24026	1PDS24029	1PDS24030
Longitude	-30.78	-30.78	-30.78	-30.78556	-30.78556	-30.78556	-30.78631	-30.78631	-30.78631	-30.79267	-30.79267	-30.79267
Latitude	115.88047	115.88047	115.88047	115.87956	115.87956	115.87956	115.87247	115.87247	115.87247	115.87363	115.87363	115.87363
Depth	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture	Sand	Sand	Sand	Sand	Sand	Sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand
Colour	Grey Brown	Grey White	Light Brown	Grey	Light Grey	White	Grey	Grey White	Grey White	Brown Grey	Brown Yellow	Yellow
Gravel (%)	0	0	0	0	0	0	0	0	0	0	0	0
NO3 (mg/kg)	2	< 1	< 1	1	< 1	< 1	1	< 1	< 1	2	1	< 1
NH4 (mg/kg)	3	< 1	< 1	2	< 1	< 1	2	< 1	< 1	3	2	1
OC (%)	0.45	0.14	0.09	0.73	0.26	0.10	0.44	0.11	0.06	0.89	0.20	0.10
P (mg/kg)	8	6	7	5	< 2	< 2	4	3	3	6	5	6
PBI	8.9	9.1	11.8	5.6	7.7	< 1.0	7.4	9.1	10.2	9.5	9.5	10.5
K (mg/kg)	39	93	46	18	< 15	< 15	< 15	< 15	< 15	26	< 15	< 15
S (mg/kg)	7.9	3.0	2.0	3.7	1.7	1.0	3.2	1.7	1.0	3.3	1.7	1.6
pH	4.9	5.0	4.8	4.8	4.8	5.1	5.1	5.1	5.2	5.1	5.1	4.8
pH H2O	5.8	5.7	5.4	5.6	5.6	5.7	6.0	5.8	6.0	5.9	5.9	5.6
EC (dS/m)	0.054	0.042	0.034	0.046	0.026	0.023	0.035	0.020	0.018	0.046	0.027	0.028

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

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Damper Downs

Paddock	DD04 (43)			DD05 (53)			DD06 (27)			DD07 (19)		
Site	159			120			166			DD07		
Lab No.	1PFS24007	1PDS24180	1PFS24008	1PDS24177	1PDS24178	1PDS24179	1PDS24174	1PDS24175	1PDS24176	1PFS24010	1PFS24009	1PFS24012
Longitude	-30.79907	-30.79907	-30.79907	-30.7986	-30.7986	-30.7986	-30.79901	-30.79901	-30.79901	-30.80363	-30.80363	-30.80363
Latitude	115.87232	115.87232	115.87232	115.86843	115.86843	115.86843	115.86493	115.86493	115.86493	115.86736	115.86736	115.86736
Depth	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
Colour	Light Grey	Grey White	Brown White	Grey	Grey White	Brown White	Grey Brown	Grey White	Grey Yellow	Dark Grey	Light Grey	Brown White
Gravel (%)	0	0	0	0	0	0	0	0	0	0	0	5
NO3 (mg/kg)	2	1	< 1	1	1	< 1	1	< 1	< 1	3	2	1
NH4 (mg/kg)	2	< 1	< 1	1	< 1	< 1	3	< 1	< 1	3	< 1	< 1
OC (%)	0.73	0.14	0.10	0.41	0.13	0.07	0.65	0.20	0.12	0.85	0.23	0.14
P (mg/kg)	4	3	5	4	3	5	6	4	5	4	2	2
PBI	3.7	< 1.0	5.0	6.7	6.5	< 1.0	5.6	5.8	6.9	1.9	4.2	6.7
K (mg/kg)	26	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	55	18	< 15
S (mg/kg)	6.0	3.3	2.0	4.1	2.2	1.4	5.3	2.7	2.3	6.3	2.7	1.5
pH	5.1	5.4	5.4	5.3	5.4	5.3	5.0	5.1	5.2	5.5	5.4	5.5
pH H2O	6.1	5.9	6.7	6.1	6.0	6.0	5.7	5.9	5.7	6.4	6.3	6.4
EC (dS/m)	0.044	1.390	0.017	0.033	0.023	0.019	0.047	0.019	0.022	0.057	0.027	0.025

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

CSBP
NULOGIC



Damper Downs

Paddock	DD08 (27)			DD09 (32)			DD10 (36)			DD11 (26)		
Site	167			153			154			121		
Lab No.	1PFS24014	1PFS24011	1PFS24013	1PDS24159	1PDS24148	1PDS24150	1PDS24031	1PDS24032	1PDS24037	1PDS24152	1PDS24145	1PDS24146
Longitude	-30.80385	-30.80385	-30.80385	-30.80013	-30.80013	-30.80013	-30.79275	-30.79275	-30.79275	-30.79014	-30.79014	-30.79014
Latitude	115.87625	115.87625	115.87625	115.88044	115.88044	115.88044	115.87978	115.87978	115.87978	115.88371	115.88371	115.88371
Depth	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Loamy sand	Loamy sand	Loamy sand	Sand	Sand
Colour	Grey	Grey White	White	Grey Brown	Grey Brown	Light Brown	Dark Grey	Light Grey	Light Grey	Grey	Yellow Grey	Yellow Grey
Gravel (%)	0	0	0	0	0	0	0	0	0	0	0	0
NO3 (mg/kg)	2	2	3	9	5	3	<1	<1	<1	<1	<1	<1
NH4 (mg/kg)	7	1	1	2	<1	<1	2	<1	<1	2	<1	<1
OC (%)	0.78	0.31	0.22	0.64	0.17	0.15	0.67	0.38	0.11	0.65	0.10	0.07
P (mg/kg)	4	<2	2	5	6	9	<2	<2	<2	8	4	4
PBI	<1.0	3.3	6.4	<1.0	13.6	8.6	7.1	9.9	9.1	7.4	8.7	8.6
K (mg/kg)	29	<15	<15	19	<15	<15	<15	<15	<15	15	<15	<15
S (mg/kg)	5.4	2.7	2.2	5.6	2.1	2.1	2.8	1.0	0.9	3.5	2.3	1.4
pH	5.4	5.4	5.3	5.5	5.4	5.4	4.8	4.8	5.2	5.4	5.3	5.3
pH H2O	6.1	6.2	6.1	6.2	6.2	6.2	5.7	5.8	6.1	6.1	6.1	5.9
EC (dS/m)	0.055	0.033	0.034	0.103	0.035	0.026	0.155	0.067	0.034	0.048	0.021	0.031

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

CSBP
NULOGIC



Damper Downs

Paddock	DD12 (35)			DD13 (63)			DD13 (63)			DD14 (51)		
Site	137			139			140			141		
Lab No.	1PDS24033	1PDS24034	1PDS24035	1PDS24141	1PDS24136	1PDS24138	1PDS24140	1PDS24167	1PFS24024	1PDS24153	1PDS24149	1PDS24151
Longitude	-30.7804	-30.7804	-30.7804	-30.78006	-30.78006	-30.78006	-30.78644	-30.78644	-30.78644	-30.79282	-30.79282	-30.79282
Latitude	115.89185	115.89185	115.89185	115.88732	115.88732	115.88732	115.88724	115.88724	115.88724	115.88717	115.88717	115.88717
Depth	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture	Sand	Loamy sand	Loamy sand	Sand	Sand	Sand	Loamy sand	Sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand
Colour	Brown Grey	Brown Yellow	Yellow	Grey Brown	Yellow Brown	Yellow Grey	Brown Grey	Brown Yellow	Yellow	Grey	Grey White	Yellow Grey
Gravel (%)	0	0	0	5	5	5	0	0	0	0	0	0
NO3 (mg/kg)	4	3	1	1	< 1	1	< 1	< 1	< 1	< 1	< 1	< 1
NH4 (mg/kg)	3	< 1	< 1	2	< 1	< 1	2	< 1	< 1	2	< 1	< 1
OC (%)	1.37	0.13	0.15	0.68	0.14	0.08	0.41	0.15	0.17	0.47	0.09	< 0.05
P (mg/kg)	9	6	8	6	6	11	7	9	6	< 2	3	4
PBI	9.1	10.9	14.6	10.7	10.4	10.6	12.8	12.1	11.2	5.9	6.9	9.1
K (mg/kg)	66	30	22	22	97	68	34	< 15	< 15	< 15	< 15	< 15
S (mg/kg)	5.8	2.4	1.7	5.4	2.3	1.8	2.6	2.1	1.5	1.6	1.2	1.0
pH	5.2	5.1	5.1	5.3	5.3	5.3	4.9	4.7	4.6	5.0	5.0	5.0
pH H2O	6.1	6.0	6.0	6.0	5.9	6.0	5.7	5.4	5.5	5.8	5.8	5.7
EC (dS/m)	0.093	0.041	0.030	0.068	0.042	0.039	0.041	0.032	0.014	0.036	0.023	0.015

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

CSBP
NULOGIC



Damper Downs

Paddock	DD15 (35)			DD16 (25)			DD17		DD18 (29)			DD19 (42)
Site	142			135			DD17		DD1-A			160
Lab No.	1PDS24158	1PDS24154	1PDS24155	1PDS24165	1PDS24156	1PDS24157	1PFS24025	1PFS24026	1PFS24015	1PFS24016	1PFS24017	1PDS24021
Longitude	-30.7992	-30.7992	-30.7992	-30.7993	-30.7993	-30.7993	-30.80449	-30.80449	-30.80588	-30.80588	-30.80588	-30.81676
Latitude	115.8871	115.8871	115.8871	115.8904	115.8904	115.8904	115.88974	115.88974	115.87991	115.87991	115.87991	115.87447
Depth	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	0 - 10	10 - 20	20 - 30	0 - 10
Texture	Sand	Sand	Sand	Sand	Sand	Sand	Loamy sand	Loamy sand	Sand	Sand	Sand	Loamy sand
Colour	Grey	Light Grey	Grey White	Grey	Grey White	White	Grey	Light Grey	Grey	Light Grey	Grey Brown	Grey
Gravel (%)	0	0	0	0	0	0	0	5	5	5	15-20	0
NO3 (mg/kg)	1	<1	1	2	1	<1	1	<1	2	1	<1	<1
NH4 (mg/kg)	5	5	3	2	<1	<1	2	<1	2	<1	<1	2
OC (%)	0.71	0.25	0.18	0.58	0.17	0.12	0.74	0.25	0.73	0.31	0.22	0.56
P (mg/kg)	5	5	3	4	3	6	2	<2	2	<2	<2	4
PBI	2.0	5.8	7.5	2.2	8.8	8.9	3.2	<1.0	3.5	5.0	8.9	11.2
K (mg/kg)	26	<15	18	<15	<15	<15	16	<15	49	<15	<15	19
S (mg/kg)	6.6	4.4	3.1	5.4	2.4	2.3	2.6	1.2	4.2	2.0	1.5	4.0
pH	5.4	5.5	5.7	5.7	5.4	5.5	5.3	5.2	4.9	5.0	5.0	5.1
pH H2O	6.1	6.3	6.3	6.4	6.2	6.2	6.2	6.1	5.9	6.1	6.0	6.0
EC (dS/m)	0.050	0.046	0.030	0.055	0.018	<0.010	0.030	0.016	0.050	0.024	0.020	0.039

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

CSBP
NULOGIC



Damper Downs

Paddock	DD19 (42)			DD20 (51)			DD21			DD23		
Site	160			161			DD21			143		
Lab No.	1PDS24023	1PDS24024	1PDS24019	1PDS24020	1PDS24022	1PDS24015	1PDS24017	1PDS24018	1PFS24018	1PFS24019	1PFS24021	
Longitude	-30.81676	-30.81676	-30.8234	-30.8234	-30.8234	-30.82073	-30.82073	-30.82073	-30.80373	-30.80373	-30.80373	
Latitude	115.87447	115.87447	115.87209	115.87209	115.87209	115.87994	115.87994	115.87994	115.88409	115.88409	115.88409	
Depth	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	
Texture	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Sand	Sand	Sand	
Colour	Grey White	White	Grey Brown	Light Brown	Light Brown	Grey	Light Grey	Grey White	Grey	White	Brown White	
Gravel (%)	0	0	0	0	0	5	5	5	5	5	5	
NO3 (mg/kg)	< 1	1	1	2	< 1	1	< 1	< 1	1	< 1	< 1	
NH4 (mg/kg)	< 1	< 1	5	2	2	2	< 1	< 1	2	< 1	< 1	
OC (%)	0.11	0.08	0.71	0.26	0.10	0.73	0.28	0.23	0.59	0.20	0.17	
P (mg/kg)	2	3	10	6	3	6	< 2	3	< 2	< 2	< 2	
PBI	8.4	11.6	18.9	21.2	7.3	5.6	4.8	13.8	2.4	3.8	7.4	
K (mg/kg)	< 15	< 15	58	24	21	24	16	18	< 15	< 15	< 15	
S (mg/kg)	2.0	1.7	5.3	2.8	2.1	5.7	3.1	2.9	2.7	1.4	0.9	
pH	5.2	5.1	4.7	4.6	4.6	5.2	5.2	5.4	5.2	5.7	5.6	
pH H2O	6.0	5.9	5.5	5.4	5.4	6.0	6.1	6.2	6.1	6.4	6.4	
EC (dS/m)	0.025	0.020	0.069	0.034	0.025	0.075	0.036	0.031	0.027	0.013	0.019	

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

CSBP
NULOGIC



Danmoor

Paddock	DM 1			DM 1			DM 1			DM 1		
Site	116			117			118			138		
Lab No.	1PDS24116	1PDS24111	1PDS24112	1PDS24108	1PDS24096	1PDS24104	1PDS24119	1PDS24114	1PDS24115	1PDS24122	1PDS24117	1PDS24118
Longitude	-30.77387	-30.77387	-30.77387	-30.76749	-30.76749	-30.76749	-30.77381	-30.77381	-30.77381	-30.77374	-30.77374	-30.77374
Latitude	115.90956	115.90956	115.90956	115.90963	115.90963	115.90963	115.90217	115.90217	115.90217	115.89478	115.89478	115.89478
Depth	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Sand	Loamy sand	Sand	Sand	Loamy sand	Sand	Loamy sand	Loamy sand
Colour	Grey Brown	Yellow Grey	Yellow	Light Grey	Grey White	Yellow Grey	Grey	Yellow Grey	Yellow Grey	Grey Brown	Yellow Brown	Yellow
Gravel (%)	0	0	0	0	5	5	0	5	5	0	0	0
NO3 (mg/kg)	5	1	1	4	2	1	11	3	1	2	1	< 1
NH4 (mg/kg)	4	< 1	< 1	4	< 1	< 1	4	1	< 1	2	< 1	< 1
OC (%)	0.34	0.12	0.10	0.38	0.07	0.06	0.50	0.18	0.09	0.38	0.07	0.06
P (mg/kg)	7	5	10	13	7	9	11	6	8	8	11	17
PBI	9.9	13.5	14.2	9.5	13.3	10.5	10.9	9.5	12.2	13.2	12.9	16.7
K (mg/kg)	54	21	18	63	30	38	41	16	17	36	27	17
S (mg/kg)	5.4	1.6	1.3	11.0	2.0	1.2	6.1	1.9	1.3	6.0	2.5	2.0
pH	5.6	4.9	4.7	5.9	5.6	5.4	5.9	4.9	4.9	5.6	4.8	4.7
pH H2O	6.4	5.7	5.4	6.5	6.2	6.3	6.4	6.0	5.8	6.4	5.5	5.5
EC (dS/m)	0.073	0.027	0.027	0.079	0.033	0.027	0.099	0.040	0.023	0.058	0.028	0.015

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

CSBP
NULOGIC



Danmoor

Paddock	DM 1			DM 1			DM 1			DM 1		
Site	69			70			71			93		
Lab No.	1PDS24082	1PDS24081	1PDS24080	1PDS24084	1PDS24083	1PDS24085	1PDS24087	1PDS24089	1PDS24086	1PDS24091	1PDS24092	1PDS24088
Longitude	-30.75491	-30.75491	-30.75491	-30.76129	-30.76129	-30.76129	-30.76767	-30.76767	-30.76767	-30.76761	-30.76761	-30.76761
Latitude	115.93193	115.93193	115.93193	115.93186	115.93186	115.93186	115.93179	115.93179	115.93179	115.9244	115.9244	115.9244
Depth	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture	Sand	Loamy sand	Sand	Sand	Sand	Loamy sand	Sand	Sand	Loamy sand	Loamy sand	Sand	Sand
Colour	Grey	Light Brown	Yellow	Grey Brown	Yellow	Yellow	Grey	Grey White	Yellow Grey	Light Grey	Yellow Grey	Yellow Grey
Gravel (%)	0	0	0	0	0	0	0	0	0	0	5	0
NO3 (mg/kg)	3	2	2	4	2	1	2	<1	1	3	2	2
NH4 (mg/kg)	3	<1	<1	3	<1	<1	3	<1	<1	4	1	<1
OC (%)	0.79	0.22	0.08	0.68	0.17	0.09	0.34	0.11	0.07	0.39	0.18	0.11
P (mg/kg)	8	8	15	8	5	7	5	6	10	5	5	11
PBI	6.6	8.4	12.8	8.8	7.2	8.1	8.2	7.5	8.3	9.8	10.3	10.1
K (mg/kg)	43	19	<15	29	<15	<15	<15	<15	<15	34	30	<15
S (mg/kg)	3.7	1.9	1.6	4.0	2.3	1.1	3.7	1.6	1.1	3.5	1.3	1.1
pH	5.5	5.2	5.0	5.8	5.3	5.1	5.6	5.1	5.1	5.8	5.2	4.9
pH H2O	6.2	6.1	5.9	6.4	6.1	5.9	6.2	5.9	5.8	6.4	6.1	5.7
EC (dS/m)	0.063	0.054	0.030	0.065	0.044	0.030	0.044	0.034	0.027	0.067	0.033	0.031

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

CSBP
NULOGIC



Danmoor

Paddock	DM 1			DM 1			DM 1			DM 1			DM13
Site	94			95			96			97			119
Lab No.	1PDS24093	1PDS24090	1PDS24103	1PDS24095	1PDS24094	1PDS24107	1PDS24110	1PDS24109	1PDS24113	1PDS24106	1PDS24105	1PDS24123	
Longitude	-30.76187	-30.76187	-30.76117	-30.76117	-30.76117	-30.76755	-30.76755	-30.76755	-30.77353	-30.77353	-30.77353	-30.78041	
Latitude	115.92456	115.92456	115.91709	115.91709	115.91709	115.91702	115.91702	115.91702	115.91609	115.91609	115.91609	115.90066	
Depth	0 - 10	10 - 20	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	
Texture	Sand	Sand	Loamy sand	Sand	Sand	Loamy sand	Loamy sand	Loamy sand	Sand	Sand	Sand	Loamy sand	
Colour	Dark Grey	Grey Brown	Grey	Grey White	Yellow Grey	Brown Grey	Yellow	Yellow	Grey	Light Grey	White	Brown Grey	
Gravel (%)	5	5-10	0	0	0	0	0	0	5	0	0	5	
NO3 (mg/kg)	5	3	5	2	1	5	1	<1	4	1	<1	<1	
NH4 (mg/kg)	2	1	4	<1	<1	5	<1	<1	3	1	<1	2	
OC (%)	1.13	0.64	0.45	0.14	0.07	0.79	0.17	0.14	0.70	0.18	0.07	0.56	
P (mg/kg)	9	5	10	4	15	13	15	14	8	4	3	8	
PBI	7.7	13.0	11.9	10.1	13.3	13.6	18.7	18.0	8.0	<1.0	6.1	12.2	
K (mg/kg)	62	21	40	20	20	54	31	34	32	42	16	27	
S (mg/kg)	5.4	3.1	6.3	1.6	1.0	6.6	1.9	2.0	6.1	2.3	1.5	3.0	
pH	5.9	5.7	5.8	5.2	5.0	5.4	4.6	4.5	5.7	5.2	5.3	5.2	
pH H2O	6.5	6.3	6.3	6.0	5.9	6.1	5.4	5.3	6.3	6.1	6.0	6.0	
EC (dS/m)	0.078	0.053	0.048	0.035	0.024	0.074	0.040	0.027	0.052	0.028	0.031	0.053	

Soil Health: VERY LOW LOW IDEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

CSBP
NULOGIC



Danmoor

Paddock	DM13		DM13			DM14			DM15		DM16	
Site	119		136			115			98		92	
Lab No.	1PDS24121	1PDS24120	1PDS24128	1PDS24125	1PDS24124	1PDS24038	1PDS24133	1PDS24134	1PDS24042	1PDS24040	1PDS24045	1PDS24046
Longitude	-30.78041	-30.78041	-30.78447	-30.78447	-30.78447	-30.78025	-30.78025	-30.78025	-30.78031	-30.78031	-30.77399	-30.77399
Latitude	115.90066	115.90066	115.89807	115.89807	115.89807	115.90948	115.90948	115.90948	115.91687	115.91687	115.92433	115.92433
Depth	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	0 - 10	10 - 20
Texture	Sand	Loamy sand	Sand	Loamy sand	Loamy sand	Sand	Sand	Sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand
Colour	Yellow	Yellow	Brown Grey	Yellow	Yellow	Yellow Grey	Yellow Grey	Yellow	Grey Brown	Grey Brown	Yellow Brown	Yellow Brown
Gravel (%)	0	0	0	0	0	0	0	0	15-20	45-50	15-20	5-10
NO3 (mg/kg)	<1	<1	1	<1	<1	1	1	<1	<1	<1	1	<1
NH4 (mg/kg)	<1	<1	2	<1	<1	<1	<1	<1	1	<1	<1	1
OC (%)	0.15	0.12	0.62	0.16	0.10	0.32	0.09	0.06	0.45	0.26	0.20	0.15
P (mg/kg)	9	9	10	8	6	4	5	8	4	<2	6	4
PBI	15.6	13.2	10.0	16.4	7.6	7.0	13.4	13.8	<1.0	10.0	7.7	11.9
K (mg/kg)	17	21	34	21	<15	43	107	99	<15	<15	30	28
S (mg/kg)	2.4	2.7	3.4	2.3	2.9	3.0	2.0	1.8	2.0	1.6	2.2	1.4
pH	4.7	4.6	5.4	4.7	4.6	5.7	5.2	5.2	5.3	5.2	5.4	4.7
pH H2O	5.5	5.3	6.1	5.6	5.4	6.5	5.9	6.0	6.1	6.1	6.1	5.7
EC (dS/m)	0.028	0.023	0.072	0.030	0.026	0.067	0.055	0.027	0.047	0.026	0.053	0.023

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

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NULOGIC



Danmoor

Paddock	DM16				DM17				DM19				DM20			
Site	92				72				73				91		114	
Lab No.	1PDS24048	1PDS24044	1PDS24047	1PDS24049	1PDS24052	1PDS24053	1PDS24055	1PDS24043	1PDS24041	1PDS24039	1PDS24129	1PDS24126				
Longitude	-30.77399	-30.77405	-30.77405	-30.77405	-30.7803	-30.7803	-30.7803	-30.78037	-30.78037	-30.78037	-30.78488	-30.78488				
Latitude	115.92433	115.93172	115.93172	115.93172	115.93262	115.93262	115.93262	115.92426	115.92426	115.92426	115.90879	115.90879				
Depth	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20				
Texture	Loamy sand	Loamy sand	Loamy sand	Sand	Sand	Loamy sand	Sand	Loamy sand	Loamy sand	Loamy sand	Sand	Loamy sand				
Colour	Light Brown	Brown Grey	Yellow	Yellow	Brown Grey	Yellow	Yellow	Brown Grey	Yellow Grey	Yellow	Grey	Grey White				
Gravel (%)	5	0	0	0	0	0	0	5	0	0	0	0				
NO3 (mg/kg)	< 1	1	< 1	< 1	2	< 1	1	1	1	< 1	1	< 1				
NH4 (mg/kg)	3	1	< 1	< 1	2	< 1	< 1	2	< 1	< 1	2	< 1				
OC (%)	0.42	0.44	0.11	0.11	0.67	0.14	0.07	0.68	0.15	0.12	0.73	0.15				
P (mg/kg)	8	5	5	5	9	7	7	10	9	12	5	3				
PBI	9.7	8.6	11.0	11.5	11.0	10.3	14.3	11.3	9.8	14.1	9.7	12.2				
K (mg/kg)	15	28	29	17	36	< 15	< 15	36	23	20	22	22				
S (mg/kg)	1.9	4.2	2.2	1.4	3.0	2.5	2.0	2.7	1.3	1.2	3.3	1.5				
pH	4.4	5.7	5.3	5.2	5.3	5.0	5.0	5.6	5.3	5.0	5.7	5.6				
pH H2O	5.3	6.2	6.1	6.0	6.1	5.8	5.6	6.3	6.1	5.8	6.4	6.3				
EC (dS/m)	0.024	0.047	0.043	0.026	0.061	0.043	0.025	0.060	0.046	0.027	0.065	0.059				

Soil Health: VERY LOW LOW IDEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

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Danmoor

Paddock	DM20				DM22			DM22			DM23	
Site	99				100			89			90	
Lab No.	1PDS24127	1PDS24135	1PDS24131	1PDS24130	1PDS24060	1PDS24058	1PDS24056	1PDS24068	1PDS24065	1PDS24063	1PDS24061	1PDS24059
Longitude	-30.78488	-30.78669	-30.78669	-30.78669	-30.79397	-30.79397	-30.79397	-30.79276	-30.79276	-30.79276	-30.78658	-30.78658
Latitude	115.90879	115.91696	115.91696	115.91696	115.91737	115.91737	115.91737	115.92363	115.92363	115.92363	115.9261	115.9261
Depth	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20
Texture	Loamy sand	Sand	Sand	Sand	Loamy sand	Sand	Sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand
Colour	Yellow Grey	Grey	Grey White	Yellow Grey	Grey	Light Grey	White	Light Grey	Grey White	White	Grey	Yellow Grey
Gravel (%)	0	0	0	0	5	0	0	0	0	0	0	0
NO3 (mg/kg)	< 1	< 1	< 1	< 1	3	1	1	1	< 1	< 1	1	< 1
NH4 (mg/kg)	< 1	< 1	< 1	< 1	1	< 1	< 1	1	< 1	< 1	< 1	< 1
OC (%)	0.11	0.45	0.17	0.08	0.64	0.13	< 0.05	0.42	0.12	0.16	0.35	0.11
P (mg/kg)	2	3	3	5	6	< 2	< 2	2	2	7	7	11
PBI	11.5	5.8	10.6	5.3	< 1.0	7.4	7.5	5.6	8.1	9.5	8.6	9.5
K (mg/kg)	< 15	103	112	102	< 15	< 15	< 15	< 15	< 15	< 15	23	< 15
S (mg/kg)	1.2	2.3	0.9	0.6	4.0	2.1	0.8	3.5	2.1	1.4	2.2	1.1
pH	5.6	5.4	5.0	5.1	6.0	5.8	5.8	5.8	5.5	5.4	5.4	5.1
pH H2O	6.5	6.1	5.8	5.8	6.6	6.5	6.4	6.5	6.2	6.1	6.2	5.8
EC (dS/m)	0.048	0.046	0.032	0.020	0.042	0.032	0.026	0.041	0.034	0.027	0.037	0.025

Soil Health: VERY LOW LOW IDEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

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Danmoor

Paddock	DM23	DM25			DM27		
Site	90	74			75		
Lab No.	1PDS24057	1PDS24050	1PDS24051	1PDS24054	1PDS24066	1PDS24064	1PDS24062
Longitude	-30.78658	-30.78681	-30.78681	-30.78681	-30.79319	-30.79319	-30.79319
Latitude	115.9261	115.93158	115.93158	115.93158	115.93151	115.93151	115.93151
Depth	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture	Sand	Sand	Sand	Sand	Sand	Loamy sand	Loamy sand
Colour	Yellow Grey	Grey	Grey White	Light Brown	Dark Grey	Grey White	Grey White
Gravel (%)	0	5	5-10	45-50	0	5	5-10
NO3 (mg/kg)	< 1	2	< 1	< 1	1	< 1	< 1
NH4 (mg/kg)	< 1	2	< 1	< 1	2	< 1	< 1
OC (%)	0.06	0.56	0.11	0.15	0.94	0.16	0.09
P (mg/kg)	10	< 2	2	< 2	10	8	6
PBI	11.9	7.2	10.4	9.3	15.5	11.4	11.7
K (mg/kg)	< 15	31	17	< 15	33	< 15	< 15
S (mg/kg)	0.8	2.8	1.4	1.6	4.1	1.2	0.9
pH	5.0	5.4	5.3	5.3	5.5	5.2	5.3
pH H2O	5.7	6.1	6.1	6.2	6.1	6.1	6.4
EC (dS/m)	0.021	0.061	0.045	0.029	0.062	0.027	0.020

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

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Koojan East

Paddock	KE2 (34)			KE4 (32)		
Site	63			52		
Lab No.	1PDS24173	1PDS24172	1PDS24171	1PDS24170	1PDS24169	1PDS24168
Longitude	-30.83153	-30.83153	-30.83153	-30.83159	-30.83159	-30.83159
Latitude	115.93848	115.93848	115.93848	115.94587	115.94587	115.94587
Depth	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture	Sand	Sand	Sand	Sand	Sand	Sand
Colour	Grey	Light Grey	White	Grey	Grey White	White
Gravel (%)	5	0	0	0	0	0
NO3 (mg/kg)	2	2	1	1	< 1	< 1
NH4 (mg/kg)	1	< 1	< 1	2	< 1	< 1
OC (%)	0.56	0.31	0.13	0.75	0.15	0.08
P (mg/kg)	6	< 2	2	8	4	4
PBI	4.2	< 1.0	7.5	6.7	5.6	6.1
K (mg/kg)	16	< 15	< 15	28	< 15	< 15
S (mg/kg)	4.0	4.7	1.5	4.8	1.7	1.0
pH	5.8	5.8	5.7	5.5	5.5	5.5
pH H2O	6.4	6.4	6.4	6.1	6.2	6.0
EC (dS/m)	0.048	0.038	0.024	0.059	0.025	0.020

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

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Koojan West

Paddock	KW1 (20)			KW11 (54)			KW11 (54)			KW12 (93)		
Site	81			150			151			145		
Lab No.	1PFS24022	1PFS24023	1PFS24029	1PDS24009	1PDS24008	1PDS24007	1PDS24013	1PDS24014	1PDS24016	1PFS24043	1PFS24049	1PFS24053
Longitude	-30.83184	-30.83184	-30.83184	-30.82916	-30.82916	-30.82916	-30.82546	-30.82546	-30.82546	-30.83312	-30.83312	-30.83312
Latitude	115.93197	115.93197	115.93197	115.87667	115.87667	115.87667	115.87898	115.87898	115.87898	115.8854	115.8854	115.8854
Depth	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture		Sand	Loamy sand	Loamy sand	Sand	Sand	Sand	Sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand
Colour	Dark Grey	Grey	Brown White	Grey	Grey White	Grey White	Grey	Grey White	Grey White	Grey	Grey White	White
Gravel (%)	5	5	5-10	0	0	0	0	5	0	0	0	0
NO3 (mg/kg)	7	1	1	2	2	1	2	<1	<1	1	<1	<1
NH4 (mg/kg)	2	<1	<1	2	<1	<1	2	1	<1	2	<1	<1
OC (%)	0.93	0.25	0.16	0.69	0.16	0.09	0.69	0.20	0.18	0.69	0.25	0.14
P (mg/kg)	11	4	4	11	2	2	6	2	<2	6	2	4
PBI	1.3	4.0	5.6	9.5	7.7	<1.0	11.0	8.1	13.0	3.5	3.7	4.9
K (mg/kg)	38	<15	<15	23	<15	<15	23	<15	<15	17	<15	<15
S (mg/kg)	7.9	7.8	3.1	6.4	3.6	1.9	3.4	1.7	1.6	8.2	5.2	1.7
pH	5.9	5.7	5.3	5.7	5.4	5.3	5.4	5.4	5.4	5.5	5.2	5.3
pH H2O	6.5	6.4	6.1	6.4	6.7	6.3	6.1	6.4	6.3	6.3	6.1	6.2
EC (dS/m)	0.073	0.053	0.023	0.055	0.027	0.020	0.047	0.031	0.026	0.055	0.032	0.018

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

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Koojan West

Paddock	KW12 (93)			KW12 (93)			KW9			KW9		
Site	146			KW 3 A			148			149		
Lab No.	1PFS24052	1PFS24048	1PFS24055	1PFS24042	1PFS24040	1PFS24044	1PFS24027	1PFS24037	1PFS24035	1PFS24034	1PFS24032	1PFS24038
Longitude	-30.83747	-30.83747	-30.83747	-30.83506	-30.83506	-30.83506	-30.84379	-30.84379	-30.84379	-30.83741	-30.83741	-30.83741
Latitude	115.88666	115.88666	115.88666	115.89162	115.89162	115.89162	115.87919	115.87919	115.87919	115.87926	115.87926	115.87926
Depth	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand	Sandy loam	Sandy loam	Sandy loam	Sandy loam	Sandy loam
Colour	Light Grey	Grey White	White	Grey	Light Grey	Brown Grey	Brown Grey	Yellow Grey	Orange	Grey	Light Grey	White
Gravel (%)	0	0	0	5	5	25-30	0	0	5	0	0	0
NO3 (mg/kg)	2	1	1	2	1	<1	7	1	1	1	<1	<1
NH4 (mg/kg)	4	<1	<1	3	<1	<1	6	<1	<1	3	<1	<1
OC (%)	1.05	0.28	0.17	0.80	0.22	0.21	0.71	0.23	0.21	0.86	0.26	0.16
P (mg/kg)	11	3	3	5	3	3	13	6	5	8	3	3
PBI	<1.0	3.2	3.3	3.7	2.6	9.9	12.7	15.9	31.7	4.5	4.8	1.7
K (mg/kg)	<15	<15	<15	27	<15	<15	37	21	31	49	28	17
S (mg/kg)	6.0	3.2	1.9	7.4	2.6	2.7	5.2	3.2	4.3	9.6	7.3	4.1
pH	5.5	5.3	5.1	5.6	5.4	5.5	5.4	4.5	4.4	5.5	5.1	5.2
pH H2O	6.4	6.2	6.1	6.4	6.3	6.5	6.2	5.2	5.2	6.3	6.0	6.1
EC (dS/m)	0.042	0.027	0.020	0.060	0.025	0.019	0.082	0.033	0.032	0.084	0.065	0.042

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

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Koojan West

Paddock	KW9			KW9			Pivot 1			Pivot 2		
Site	162			170			Pivot 1 North			Pivot 2 North		
Lab No.	1PFS24031	1PFS24030	1PFS24028	1PFS24033	1PFS24039	1PFS24047	1PFS24041	1PFS24046	1PFS24045	1PFS24051	1PFS24050	1PFS24054
Longitude	-30.84377	-30.84377	-30.84377	-30.83732	-30.83732	-30.83732	-30.83145	-30.83145	-30.83145	-30.82553	-30.82553	-30.82553
Latitude	115.8728	115.8728	115.8728	115.87382	115.87382	115.87382	115.87835	115.87835	115.87835	115.88465	115.88465	115.88465
Depth	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30	0 - 10	10 - 20	20 - 30
Texture	Sandy loam	Loamy sand	Loamy sand	Sandy loam	Loamy sand	Loamy sand	Loamy sand	Sand	Loamy sand	Loamy sand	Loamy sand	Loamy sand
Colour	Grey	Grey White	White	Grey	Grey White	Brown White	Dark Grey	Light Grey	Grey White	Grey Brown	Grey Brown	Light Brown
Gravel (%)	0	0	5	0	0	0	0	0	0	5	5	15-20
NO3 (mg/kg)	3	1	1	2	2	<1	7	1	<1	<1	<1	<1
NH4 (mg/kg)	2	<1	<1	2	<1	<1	3	<1	<1	<1	<1	<1
OC (%)	0.83	0.30	0.21	0.65	0.20	0.15	0.82	0.22	0.13	0.41	0.49	0.27
P (mg/kg)	5	<2	<2	6	4	5	23	4	4	5	2	3
PBI	4.2	3.2	8.1	5.4	5.7	8.3	3.5	5.1	<1.0	7.3	4.1	7.9
K (mg/kg)	25	<15	<15	19	<15	<15	44	21	17	22	17	18
S (mg/kg)	7.3	2.5	1.1	4.5	3.2	1.9	18.7	7.7	5.8	11.4	16.8	14.6
pH	5.8	5.2	5.2	5.6	5.2	5.1	6.1	5.8	5.8	5.4	5.5	5.7
pH H2O	6.5	6.2	6.2	6.4	6.0	5.9	6.7	6.5	6.6	6.3	6.3	6.4
EC (dS/m)	0.069	0.023	0.015	0.056	0.049	0.039	0.320	0.199	0.170	0.232	0.385	0.355

Soil Health: VERY LOW LOW IDEAL HIGH VERY HIGH

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SOIL ANALYTE REPORT

Harvest Road Pastoral -Koojan Downs #94530 | 19/07/2024

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NULOGIC



Koojan West

Paddock	Pivot 2		
Site	Pivot 2 South		
Lab No.	1PDS24010	1PDS24011	1PDS24012
Longitude	-30.82892	-30.82892	-30.82892
Latitude	115.88519	115.88519	115.88519
Depth	0 - 10	10 - 20	20 - 30
Texture	Loamy sand	Loamy sand	Loamy sand
Colour	Dark Grey	Dark Grey	Light Brown
Gravel (%)	45-50	55-60	45-50
NO3 (mg/kg)	< 1	< 1	< 1
NH4 (mg/kg)	< 1	1	< 1
OC (%)	0.71	0.85	0.44
P (mg/kg)	12	14	7
PBI	8.9	10.2	23.2
K (mg/kg)	54	43	41
S (mg/kg)	16.5	18.0	9.4
pH	5.6	6.0	5.7
pH H2O	6.5	6.3	6.6
EC (dS/m)	0.439	0.563	0.262

Soil Health: VERY LOW LOW DEAL HIGH VERY HIGH

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