



ENVIRONMENTAL MONITORING REPORT JBS CAROONA FEEDLOT

Environment Protection Licence Summary

Licence (EPL) Number:	3375
Licensee's Name:	JBS Australia Pty Limited
Premises Address:	Caroona Feedlot 'Weston' Caroona NSW 2343
Reporting Year:	January 2022 – December 2022

EPA Monitoring Requirements – JBS Caroona

Point 1 & 3

Pollutant	Units of Measure	Frequency	Sampling Method
Aggregate Stability	As appropriate	3 Years	Special Method 1
Available Phosphorus	mg/kg	Yearly	Special Method 1
Bulk density	Kg/cubic metre	3 Years	Special Method 1
Cation Exchange Capacity	centimoles of positive charge/Kg of soil	Yearly	Special Method 1
Chloride	mg/kg	Yearly	Special Method 1
Conductivity	microsiemens/cm	Yearly	Special Method 1
Exchangeable Calcium	centimoles of positive charge per Kg of soil	Yearly	Special Method 1
Exchangeable Magnesium	centimoles of positive charge/Kg of soil	Yearly	Special Method 1
Exchangeable potassium	centimoles of positive charge/Kg of soil	Yearly	Special Method 1
Exchangeable sodium	centimoles of positive charge per Kg of soil	Yearly	Special Method 1
Exchangeable sodium percentage	percent	Yearly	Special Method 1
Nitrate	Mg/Kg	Yearly	Special Method 1
Nitrogen (Total)	Mg/Kg	Yearly	Special Method 2

Point 1 & 3			
Organic Carbon	Percent	Yearly	Special Method 2
pH	pH	Yearly	Special Method 1
Phosphorus Sorption Capacity	phosphorus sorption capacity of soil	3 years	Special Method 1
Sodium Adsorption ration	Sodium adsorption ratio	Yearly	Special Method 1

Point 2,8,9,10,11, 12			
Pollutant	Units of Measure	Frequency	Sampling Method
Conductivity	Microsiemens per centimetres	Every 6 months	In situ
Nitrate	Milligrams per litre	Every 6 months	Representative Sample
Nitrogen (ammonia)	Milligrams per litre	Every 6 months	Representative Sample
Nitrogen (total)	Milligrams per litre	Every 6 months	Representative Sample
pH	pH	Every 6 months	Representative Sample
Phosphorus (total)	Milligrams per litre	Every 6 months	Representative Sample
Reactive Phosphorus	Milligrams per litre	Every 6 months	Representative Sample
Standing Water Level	metres	Every 6 months	In situ

Point 3			
Pollutant	Units of Measure	Frequency	Sampling Method
Calcium	Milligrams per litre	Every 6 months	Representative Sample
Chloride	Milligrams per litre	Every 6 months	Representative Sample
Conductivity	Microsiemens per centimetres	Special Frequency 1	In situ
Magnesium	Milligrams per litre	Every 6 months	Representative Sample
Nitrate	Milligrams per litre	Special Frequency 1	Representative Sample
Nitrate	milligrams per litre	Special Frequency 1	Representative sample
Nitrogen (ammonia)	milligrams per litre	Special Frequency 1	Representative sample
Nitrogen (total)	milligrams per litre	Special Frequency 1	Representative sample
pH	pH	Special Frequency 1	Representative sample
Phosphorus (total)	milligrams per litre	Special Frequency 1	Representative sample

Point 3			
Potassium	milligrams per litre	Every 6 months	Representative sample
Reactive Phosphorus	milligrams per litre	Special Frequency 1	Representative sample
Sodium	milligrams per litre	Every 6 months	Representative sample
Sodium Adsorption Ratio	sodium adsorption ratio	Every 6 months	Representative sample
Total Kjeldahl Nitrogen	milligrams per litre	Every 6 months	Representative sample
Total suspended solids	milligrams per litre	Each overflow event	Representative sample

For the purpose of the table(s) above Special Frequency 1 means the collection of samples shall occur: (a) at every overflow event; and (b) every six (6) months

Point 4			
Pollutant	Units of Measure	Frequency	Sampling Method
Calcium	milligrams per kilogram	Special Frequency 2	Representative sample
Chloride	milligrams per kilogram	Special Frequency 2	Representative sample
Conductivity	microsiemens per centimetre	Special Frequency 2	Representative sample
Magnesium	milligrams per kilogram	Special Frequency 2	Representative sample
Moisture content	percent	Special Frequency 2	Representative sample
Nitrate	milligrams per kilogram	Special Frequency 2	Representative sample
Nitrogen (total)	milligrams per kilogram	Special Frequency 2	Representative sample
Organic carbon	percent	Special Frequency 2	Representative sample
pH	pH	Special Frequency 2	Representative sample
Phosphorus (total)	milligrams per kilogram	Special Frequency 2	Representative sample
Potassium	milligrams per kilogram	Special Frequency 2	Representative sample
Sodium	milligrams per kilogram	Special Frequency 2	Representative sample
Sodium Adsorption Ratio	sodium adsorption ratio	Special Frequency 2	Representative sample
Sulfur	milligrams per kilogram	Special Frequency 2	Representative sample

For the purposes of the table(s) above Special Frequency 2 means the collection of samples shall occur prior to the application of solids to the manure utilisation area and upon removal from the premises.

Point 5			
Pollutant	Units of Measure	Frequency	Sampling Method
Aggregate stability	As approp.	Special Frequency 3	Special Method 1
Available phosphorus	milligrams per kilogram	Special Frequency 3	Special Method 1
Bulk density	kilograms per cubic metre	Special Frequency 3	Special Method 1
Cation Exchange Capacity	centimoles of positive charge per kilogram of soil	Special Frequency 3	Special Method 1
Chloride	milligrams per kilogram	Special Frequency 3	Special Method 1
Conductivity	microsiemens per centimetre	Special Frequency 3	Special Method 1
Exchangeable calcium	centimoles of positive charge per kilogram of soil	Special Frequency 3	Special Method 1
Exchangeable magnesium	centimoles of positive charge per kilogram of soil	Special Frequency 3	Special Method 1
Exchangeable potassium	centimoles of positive charge per kilogram of soil	Special Frequency 3	Special Method 1
Exchangeable sodium	centimoles of positive charge per kilogram of soil	Special Frequency 3	Special Method 1
Exchangeable sodium percentage	percent	Special Frequency 3	Special Method 1
Nitrate	milligrams per kilogram	Special Frequency 3	Special Method 1
Nitrogen (total)	milligrams per kilogram	Special Frequency 3	Special Method 2
Organic carbon	percent	Special Frequency 3	Special Method 2
pH	pH	Special Frequency 3	Special Method 1
Phosphorus Sorption Capacity	phosphorus sorption capacity of soil	Special Frequency 3	Special Method 1
Sodium Adsorption Ratio	sodium adsorption ratio	Special Frequency 3	Special Method 1

For the purposes of the table(s) above Special Frequency 3 means the collection of samples shall occur prior to manure application and at least once every three (3) years.

Point 6			
Pollutant	Units of Measure	Frequency	Sampling Method
Conductivity	microsiemens per centimetre	Each overflow event	In situ
Nitrate	milligrams per litre	Each overflow event	Representative sample
Nitrogen (ammonia)	milligrams per litre	Each overflow event	Representative sample
Nitrogen (total)	milligrams per litre	Each overflow event	Representative sample
pH	pH	Each overflow event	In situ
Phosphorus (total)	milligrams per litre	Each overflow event	Representative sample
Reactive Phosphorus	milligrams per litre	Each overflow event	Representative sample
Total suspended solids	milligrams per litre	Each overflow event	Representative sample

Data Gaps During this reporting Period

Licence Location	JBS sampling Location	Frequency	Period data is missing	Reason for missing data
No gaps to report				

JBS Caroona Feedlot – Environmental Monitoring Points



JBS Caroona Feedlot - Monitoring Results

Discharges to Water and Applications to Land

Type: Groundwater Quality Monitoring

Frequency: 6 Monthly

EPA Licence Location	JBS Sampling Location	Date of Sampling	Sampled By	Pollutants							
				Conductivity uS/cm	NO3 Nitrate (mg/l)	Nitrogen ammonia (mg/l)	Total Nitrogen (mg/l)	pH (Lab)	Total Phosphorus (mg/l)	Reactive Phosphorus (mg/l)	Groundwater Level (m)
EPA 2	Piezo 2	24/06/2022	Kim Brett	33,000	2.40	0.100	3.9	7.70	0.51	0.43	0.50
		15/12/2022		27,000	2.40	0.110	3.7	7.70	0.32	0.27	0.60
EPA 8	Piezo 8	24/06/2022	Kim Brett	26,000	1.60	0.064	3.4	7.50	0.20	0.16	0.40
		15/12/2022		24,000	0.59	0.051	2.5	7.40	0.10	0.12	0.06
EPA 9	Piezo 9	24/06/2022	Kim Brett	19,000	7.40	0.330	9.6	7.90	0.80	0.48	0.70
		15/12/2022		420	0.18	1.200	5.0	7.20	2.20	1.60	1.20
EPA 10	Piezo 10	24/06/2022	Kim Brett	7,900	1.10	0.200	2.9	8.00	3.50	3.00	0.70
		15/12/2022		9,200	2.60	0.200	4.3	7.70	3.70	3.20	0.50
EPA 11	Piezo 11	24/06/2022	Kim Brett	630	1.40	0.037	2.4	8.20	1.20	1.10	1.30
		15/12/2022		410	0.41	0.074	1.8	7.70	1.40	1.10	0.80
EPA 12	Piezo 12	24/06/2022	Kim Brett	1,800	35.00	0.026	36.0	8.30	2.30	2.20	1.40
		15/12/2022		680	0.28	1.100	3.2	7.40	1.40	1.00	0.80

Type: Wet Weather Discharge Quality, Effluent Quality, Volume and Discharge to Utilisation Area Monitoring

Frequency: Special Frequency 1 – Overflow Event

EPA Licence Location	JBS Sampling Location	Date of Sampling	Date Results Obtained	Pollutants							
				Conductivity uS/cm	Nitrate (mg/l)	Nitrogen ammonia (mg/l)	Total Nitrogen (mg/l)	pH	Total Phosphorus (mg/l)	Reactive Phosphorus (mg/l)	*Total Suspended Solids (mg/l)
EPA 3	Release Point	16/09/2022	Kim Brett	2,500	0.036	50.0	120	7.5	33	13.0	3,200

*Only each overflow event at EPA 3

Frequency: 6 Monthly & Special Frequency 1

EPA Licence Location	JBS Sampling Location	Date of Sampling	Sampled By	Pollutants														
				Calcium (mg/l)	Chloride (mg/l)	Conductivity (uS/cm)	Magnesium (mg/l)	Nitrate (mg/l)	Nitrogen ammonia (mg/l)	Total Nitrogen (mg/l)	pH	Total Phosphorus (mg/l)	Potassium (mg/l)	Reactive Phosphorus (mg/l)	Sodium (mg/l)	Sodium Adsorption Ratio	Total Kjeldahl Nitrogen (mg/l)	Total Suspended Solids (mg/l)
EPA 3	Holding Pond	24/06/2022	Kim Brett	110	1,100	6,300	200	0.072	26	92	8.2	48	1,100	23.0	330	4.4	92	580
		15/12/2022		110	840	5,400	170	0.020	33	84	8.2	33		9.1	250	3.4	84	480

For the purposes of the table(s) above Special Frequency 1 means the collection of samples shall occur: (a) at every overflow event; and (b) every six (6) months.

Type: Wet Weather Discharge Quality Monitoring

Frequency: Each overflow event

EPA Licence Location	JBS Sampling Location	Date of Sampling	Sampled By	Pollutants							
				Conductivity (uS/cm)	Nitrate (mg/l)	Nitrogen Ammonia (mg/l)	Total Nitrogen (mg/l)	pH	Total Phosphorus (mg/l)	Reactive Phosphorus (mg/l)	Total Suspended Solids (mg/l)
EPA 6	Release Point	-	-	No sampling required, no overflow event during at 6-monthly scheduled monitoring							

Type: Soil Quality, Mass and Discharge to Utilisation Area Monitoring

Frequency: Yearly / 3 Yearly

EPA Licence Location	JBS Sampling Location	Site Description	Date of Sampling	Sampled By	Monitoring Frequency	Pollutant	Units of Measure	Number of samples required	Number of samples collected and analysed	Sample Depth (cm)	N1	N7
EPA 1	N1 & N7	Quarry Paddock and Hockey Irrigation	30/11/2022	Dr. Robert Banks	3 Years	Aggregate Stability	As appropriate	4	-	0-10	3	1
										40-50	1	3
					Yearly	Electrical Conductivity	deciSiemens/m	4	4	0-10	170	170
										40-50	120	450
						Exchangeable Sodium	centimoles of positive charge/kg of soil	4	4	0-10	0.44	0.88
										40-50	1.1	2.9
						Exchangeable Magnesium	centimoles of positive charge/kg of soil	4	4	0-10	5.8	17
										40-50	13	29
						Nitrate	mg/kg	4	4	0-10	18	11
										40-50	0.78	2
						Total Nitrogen	mg/kg	2	2	0-10	2200	1800
						Total Organic Carbon	percent	2	2	0-10	2.4	2.4
						pH	pH	4	4	0-10	6.9	7.4
										40-50	8.3	8.3
						Exchangeable Potassium	centimoles of positive charge/kg of soil	4	4	0-10	5.6	11
										40-50	7.3	8.6
					3 Years	Bulk Density	kg/m3	4	4	15-25	1250	1250
										40-50	1280	1300

					Yearly	Sodium Adsorption Ratio	sodium adsorption ratio	4	4	0-10	0.14	0.227
										40-50	0.311	0.618
						Available Phosphorus	mg/kg	4	4	0-10	780	620
										40-50	93	220
						Cation Exchange Capacity	centimoles of positive charge/kg of soil	4	4	0-10	26	42
										40-50	33	56
					3 Years	Chloride	mg/kg	4	4	0-10	79	29
										40-50	32	390
					Yearly	Phosphorus Sorption Capacity	As appropriate	4	4	0-10	170	260
										40-50	310	460
						Exchangeable Calcium	centimoles of positive charge per Kg of soil	4	4	0-10	14	13
										40-50	12	15
						Exchangeable Sodium Percentage	Percent %	4	4	0-10	1.7	2.1
										40-50	3.2	5.2

EPA Licence Location	JBS Sampling Location	Site Description	Date of Sampling	Sampled By	Monitoring Frequency	Pollutant	Units of Measure	Number of samples required	Number of samples collected and analysed	Sample Depth (cm)	N16	C1
EPA 13	N16 & C1	Hill Paddock and Compound Paddock	30/11/2022	Dr. Robert Banks	3 Years	Aggregate Stability	As appropriate	4	-	0-10	3	3
										40-50	1	1
					Yearly	Electrical Conductivity	deciSiemens/m	4	4	0-10	87	400
										40-50	91	140
						Exchangeable Sodium	centimoles of positive charge per kg of soil	4	4	0-10	0.09	0.32
										40-50	0.23	0.15
						Exchangeable Magnesium	centimoles of positive charge/kg of soil	4	4	0-10	3.8	3.7
										40-50	5.3	3.3
						Nitrate	mg/kg	4	4	0-10	17	120
										40-50	13	22
						Total Nitrogen	mg/kg	2	2	0-10	4000	4700
						Total Organic Carbon	percent	2	2	0-10	3.6	3.8
						pH (Lab)	pH	4	4	0-10	5.5	5.9
										40-50	7.5	7.7
						Exchangeable Potassium	centimoles of positive charge/kg of soil	4	4	0-10	3.6	4.6
										40-50	2	3.7
					3 Years	Bulk Density	kg/m3	4	4	15-25	1430	1450
										40-50	1610	1670
					Yearly	Sodium Adsorption Ratio	Sodium adsorption ratio	4	4	0-10	0.1	0.114
										40-50	0.1	0.1
							mg/kg	4	4	0-10	710	1300

						Available Phosphorus				40-50	170	170
						Cation Exchange Capacity	centimoles of positive charge/kg of soil	4	4	0-10	15	20
										40-50	19	13
						Chloride mg/kg	mg/kg	4	4	0-10	1.8	38
										40-50	3.6	4.8
					3 Years	Phosphorus Sorption Capacity	As appropriate	4	4	0-10	200	4
										40-50	300	270
					Yearly	Exchangeable Calcium	centimoles of positive charge per Kg of soil	4	4	0-10	7.3	12
										40-50	11	6.3
						Exchangeable Sodium Percentage	Percent %	4	4	0-10	0.6	1.6
										40-50	1.2	1.1

Type: Manure Quality & Mass Monitoring

Frequency: Special Frequency 2

EPA Licence Location	JBS Sampling Location	Monitoring Frequency	Date of Sampling	Sampled By	Pollutant	Units of Measure	Number of samples required	Value
EPA 4	Manure Stockpile	Special Frequency 2	30/11/2022	Dr. Robert Banks	Electrical Conductivity	microsiemens/cm	1	2,200
					Sodium	mg/kg	1	490
					Magnesium	mg/kg	1	3,400
					Moisture	%	1	4
					NO3 Nitrate	mg/kg	1	2
					Total Nitrogen	mg/kg	1	10,000
					Total Organic Carbon	percent	1	16
					pH	pH	1	8
					Potassium	mg/kg	1	7,200
					Sodium Adsorption Ratio	Sodium adsorption ratio	1	0.54
					Total Phosphorus	mg/kg	1	4,000
					Chloride	mg/kg	1	2,200
					Calcium	mg/kg	1	13,000

For the purposes of the table(s) above Special Frequency 2 means the collection of samples shall occur prior to the application of solids to the manure utilisation area and upon removal from the premises.

Type: Soil Quality & Mass Monitoring

Frequency: Special Frequency 3

EPA Licence Location	JBS Sampling Location	Site Description	Monitoring Frequency	Date of Sampling	Sampled By	Pollutant	Units of Measure	Number of samples required	Number of samples collected and analysed	Sample Depth (cm)		N19	N6	A4	B6	B8	H2	P1
EPA Point 5	N19, N6, A4, B6, B8, H2 & P1	Hockey North Paddock, Hockey South Paddock, Airstrip, Bakers East Paddock, Bakers West Paddock, Horse Paddock, Plain Paddock	Special Frequency 3	30/11/2022	Dr. Rober Banks	Aggregate Stability	As appropriate	14	-	Topsoil	0-10	3	1	3	3	3	3	3
										Subsoil	40-50	1	3	3	3	1	2	1
						Electrical Conductivity	deciSiemens/m	14	14	Topsoil	0-10	78	180	21	84	36	88	170
										Subsoil	40-50	84	830	100	18	69	44	530
						Exchangeable Sodium	centimoles of positive charge per kg of soil	14	14	Topsoil	0-10	0.12	2	0.03	0.14	0.03	0.02	2.6
										Subsoil	40-50	0.25	5.5	0.02	0.04	0.09	0.18	14
						Exchangeable Magnesium	centimoles of positive charge/kg of soil	14	14	Topsoil	0-10	2	26	0.48	0.9	0.95	3.3	23
										Subsoil	40-50	13	38	1	0.53	2.5	6.6	31
						Nitrate	mg/kg	14	14	Topsoil	0-10	9.9	9.9	3	0.72	5	23	4.4
										Subsoil	40-50	0.45	0.25	0.74	0.025	0.43	2	0.97
						Nitrogen Total	mg/kg	14	14	Topsoil	0-10	1700	1200	1100	830	1700	3800	2100
						Total Organic Carbon	percent	14	14	Topsoil	0-10	2.3	1.4	0.79	1	1.4	3	2.7
						pH	pH	14	14	Topsoil	0-10	6.4	7.9	5	6.2	5.8	6.7	8.7
										Subsoil	40-50	7.3	8.6	8.3	7.1	7.4	7.7	9.5
						Exchangeable Potassium	centimoles of positive charge/kg of soil	14	14	Topsoil	0-10	2.8	4.3	0.8	0.68	1.4	2.3	3.4
										Subsoil	40-50	3.6	1.8	0.49	0.3	2	2.3	1.7
						Bulk Density	kg/m3	14	14	Topsoil	15-25	1590	1430	1720	1820	1820	1470	1430
										Subsoil	40-50	1350	1430	1820	1920	1790	1520	1430
						Sodium Adsorption Ratio	Sodium adsorption ratio	14	14	Topsoil	0-10	0.1	0.389	0.1	0.1	0.1	0.1	0.446
										Subsoil	40-50	0.1	0.917	0.1	0.1	0.1	0.1	0.437
						Available Phosphorus	mg/kg	14	14	Topsoil	0-10	520	320	280	83	400	370	480
										Subsoil	40-50	63	56	56	6	130	23	72
						Cation Exchange Capacity	centimoles of positive charge/kg of soil	14	14	Topsoil	0-10	13	60	2.5	5	6.1	19	75
										Subsoil	40-50	31	79	7.7	2.8	8	17	82
						Chloride	mg/kg	14	14	Topsoil	0-10	16	140	0.87	95	1	2.4	48
										Subsoil	40-50	10	700	0.25	10	0.96	4.3	21
						Phosphorus Sorption Capacity	As appropriate	14	14	Topsoil	0-10	140	470	230	130	110	150	490
										Subsoil	40-50	480	610	160	130	150	470	530
						Exchangeable Calcium	centimoles of positive charge per Kg of soil	14	14	Topsoil	0-10	8	27	1.2	3.3	3.8	13	45
										Subsoil	40-50	14	34	6.2	1.9	3.5	8.1	35
						Exchangeable Sodium Percentage	Percent %	14	14	Topsoil	0-10	0.9	3.4	1.1	2.9	0.5	0.1	3.5
										Subsoil	40-50	0.8	7	0.3	1.6	1.2	1	17.4

For the purposes of the table(s) above Special Frequency 3 means the collection of samples shall occur prior to manure application and at least once every three (3) years.