



## 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 2020 – JANUARY 2021

### 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

<b>Point 3</b>			
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

<b>Point 4</b>			
<b>Pollutant</b>	<b>Units of Measure</b>	<b>Frequency</b>	<b>Sampling Method</b>
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.

<b>Point 5</b>			
<b>Pollutant</b>	<b>Units of Measure</b>	<b>Frequency</b>	<b>Sampling Method</b>
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.

<b>Point 6</b>			
<b>Pollutant</b>	<b>Units of Measure</b>	<b>Frequency</b>	<b>Sampling Method</b>
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

<b>Licence Location</b>	<b>JBS sampling Location</b>	<b>Frequency</b>	<b>Period data is missing</b>	<b>Reason for missing data</b>
No gaps to report				

# JBS Carroona Feedlot – Environmental Monitoring Points



# JBS Caroona Feedlot - Monitoring Results

Type: Groundwater / Discharge Quality Monitoring

Frequency: 6 monthly

EPA Licence Location	JBS Sampling Location	Date of Sampling	Date of Analysis	Date Results Obtained	Pollutants								
					Conductivity (microSiemens /cm)	Nitrate (mg/l)	Nitrogen ammonia (mg/l)	Total Nitrogen (mg/l)	pH	Total Phosphorus (mg/l)	Reactive Phosphorus (mg/l)	Standing Water Level (metres)	Total Suspended Solids (mg/l)
EPA 2	Piezo 2	15/06/2020	17/06/2020	01/07/2020	41	4.7	0.11	9.0	7.7	4.1	0.70	0.80	N/A
		05/12/2020	07/12/2020	17/12/2020	33,000	4.9	0.077	7.2	7.6	1.9	0.52	1.2	N/A
EPA 6	Holding Pond	15/06/2020	17/06/2020	01/07/2020	5,800	0.36	28	65	8.5	28	19	N/A	1,400
		05/12/2020	07/12/2020	17/12/2020	8,000	0.022	8.2	130	8.3	69	28	N/A	1,700
EPA 8	Piezo 8	15/06/2020	17/06/2020	01/07/2020	29	3.2	0.34	8.7	7.8	5.6	0.54	0.80	N/A
		05/12/2020	07/12/2020	17/12/2020	27,000	3.0	0.084	4.5	7.3	0.57	0.27	1.2	N/A
EPA 9	Piezo 9	15/06/2020	17/06/2020	01/07/2020	15,000	5.4	0.22	9.9	7.9	3.2	0.65	0.60	N/A
		05/12/2020	07/12/2020	17/12/2020	17,000	<0.020	2.6	31	7.1	19	1.6	2.2	N/A
EPA 10	Piezo 10	15/06/2020	17/06/2020	01/07/2020	3,800	6.2	0.46	9.6	7.9	3.6	1.8	0.40	N/A
		05/12/2020	07/12/2020	17/12/2020	5,400	4.5	0.20	7.1	7.4	2.9	2.0	1.0	N/A
EPA 11	Piezo 11	15/06/2020	17/06/2020	01/07/2020	920	14	0.034	19	8.1	9.2	1.3	1.9	N/A
		05/12/2020	07/12/2020	17/12/2020	2,200	29	<0.020	32	7.8	4.7	1.2	2.6	N/A
EPA 12	Piezo 12	15/06/2020	17/06/2020	01/07/2020	dry due to weather conditions								
		05/12/2020	07/12/2020	17/12/2020	dry due to weather conditions								

## Type: Effluent Quality & Volume Monitoring

### Frequency: 6 Monthly

					Pollutants						
EPA Licence Location	JBS Sampling Location	Date of Sampling	Date of Analysis	Date Results Obtained	Calcium (mg/l)	Chloride (mg/l)	Magnesium (mg/l)	Potassium (mg/l)	Sodium (mg/l)	Sodium Absorption Ratio	Total Kjeldahl Nitrogen (mg/l)
EPA 3	Effluent Holding Pond	-	-	-	No sampling required, no overflow event						

### Frequency: Special Frequency 1

					Pollutants							
EPA Licence Location	JBS Sampling Location	Date of Sampling	Date of Analysis	Date Results Obtained	Conductivity (microSiemens/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	Effluent Holding Pond	-	-	-	No sampling required, no overflow event							



**Type: Soil Quality Monitoring**

**Frequency: Yearly / 3 Yearly**

EPA Licence Location	JBS Sampling Location	Site Description	Monitoring Frequency	Date of Sampling	Date Results Obtained	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	Yearly / 3 Yearly	15/12/2020	16/03/2021	Aggregate Stability	As appropriate	4	4	0-10	-	-
										40-50	-	-
						Conductivity	deciSiemens/m	4	4	0-10	0.31	0.53
										40-50	0.59	1.43
						Exchangeable Sodium	centimoles of positive charge per kg of soil	4	4	0-10	0.352	0.987
										40-50	0.959	8.05
						Exchangeable Magnesium	centimoles of positive charge/kg of soil	4	4	0-10	7.44	15.3
										40-50	15.3	39.9
						Nitrate	mg/kg	4	4	0-10	40	77
										40-50	38	61
						Nitrogen (total)	percent	2	2	0-10	0.26	0.26
						Organic Carbon	percent	2	2	0-10	2.89	2.45
pH	pH	4	4	0-10	7.2	7.5						
				40-50	8.0	8.6						

**\* 3 Yearly Monitoring – Last undertaken in 2018, due next in 2021**

EPA Licence Location	JBS Sampling Location	Site Description	Monitoring Frequency	Date of Sampling	Date Results Obtained	Pollutant	Units of Measure	Number of samples required	Number of samples collected and analysed	Sample Depth (cm)	N1	N7
						Exchangeable Potassium	centimoles of positive charge/kg of soil	4	4	0-10	8.96	9.05
										40-50	9.59	1.56
						*Bulk Density	kg/m3	4	4	15-25	1.1	1.1
										40-50	1.0	1.8
						Sodium Adsorption Ratio	Sodium adsorption ratio	4	4	0-10	0.5	1.2
										40-50	1.3	7.0
						Available Phosphorus	mg/kg	4	4	0-10	445	305
										40-50	341	53
						Cation Exchange Capacity	centimoles of positive charge/kg of soil	4	4	0-10	26.8	36
										40-50	42.3	67.8
						Chloride	mg/kg	4	4	0-10	128	296
										40-50	293	1700
						*Phosphorus Sorption Capacity	As appropriate	4	4	0-10	106.1	280.6
										40-50	291.2	548.2
						Exchangeable Calcium	centimoles of positive charge per Kg of soil	4	4	0-10	10.1	10.7
										40-50	16.5	18.2
						Exchangeable Sodium Percentage	percent	4	4	0-10	1.3	2.7
										40-50	2.3	11.9

EPA Licence Location	JBS Sampling Location	Site Description	Monitoring Frequency	Date of Sampling	Date Results Obtained	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	Yearly / 3 Yearly	15/12/2020	16/03/2021	Aggregate Stability	As appropriate	4	4	0-10	-	-
										40-50	-	-
						Conductivity	deciSiemens/m	4	4	0-10	0.2	0.25
										40-50	0.23	0.2
						Exchangeable Sodium	centimoles of positive charge per kg of soil	4	4	0-10	0.143	0.114
										40-50	0.483	0.227
						Exchangeable Magnesium	centimoles of positive charge/kg of soil	4	4	0-10	7.44	2.99
										40-50	10.5	3.59
						Nitrate	mg/kg	4	4	0-10	37	58
										40-50	34	41
						Nitrogen (total)	percent	2	2	0-10	0.28	0.21
						Organic Carbon	percent	2	2	0-10	2.73	2.07
						pH	pH	4	4	0-10	6.1	6.2
										40-50	7.3	7.9
Exchangeable Potassium	centimoles of positive charge/kg of soil	4	4	0-10	5.69	3.59						
				40-50	4.95	1.44						

\* 3 Yearly Monitoring – Last undertaken in 2018, due next in 2021

EPA Licence Location	JBS Sampling Location	Site Description	Monitoring Frequency	Date of Sampling	Date Results Obtained	Pollutant	Units of Measure	Number of samples required	Number of samples collected and analysed	Sample Depth (cm)	N16	C1
						*Bulk Density	kg/m3	4	4	15-25	1.3	1.4
										40-50	1.7	1.3
						Sodium Adsorption Ratio	Sodium adsorption ratio	4	4	0-10	0.2	0.3
										40-50	0.5	0.5
						Available Phosphorus	mg/kg	4	4	0-10	492	440
										40-50	171	<3
						Cation Exchange Capacity	centimoles of positive charge/kg of soil	4	4	0-10	24.2	13.1
										40-50	30.5	11.8
						Chloride	mg/kg	4	4	0-10	63.6	87.2
										40-50	64.3	35.7
						*Phosphorus Sorption Capacity	As approp.	4	4	0-10	345	135.1
										40-50	573.7	471.3
						Exchangeable Calcium	centimoles of positive charge per Kg of soil	4	4	0-10	10.9	6.43
										40-50	14.5	6.45
						Exchangeable Sodium Percentage	percent	4	4	0-10	0.6	0.9
										40-50	1.6	2.3

**Type: Manure Quality Monitoring & Mass Monitoring**

**Frequency: Special Frequency 2**

EPA Licence Location	JBS Sampling Location	Monitoring Frequency	Date of Sampling	Date Results Obtained	Pollutant	Units of Measure	Number of samples required	Value
EPA 4	Manure Stockpile	Special Frequency 2	15/12/2020	16/03/2021	Conductivity	microsiemens/cm	1	10.37
					Sodium	mg/kg	1	1930
					Magnesium	mg/kg	1	10100
					Moisture Content	%	1	22.3
					Nitrate	mg/kg	1	900
					Nitrogen (total)	mg/kg	1	20600
					Organic Carbon	percent	1	18.8
					pH	pH	1	7.9
					Potassium	mg/kg	1	27500
					Sodium Adsorption Ratio	Sodium adsorption ratio	1	4.5
					Phosphorus (total)	mg/kg	1	120
					Chloride	mg/kg	1	10200
Calcium	mg/kg	1	33600					

Type: Soil Quality

Frequency: Special Frequency 3

EPA Licence Location	JBS Sampling Location	Site Description	Monitoring Frequency	Date of Sampling	Date Results Obtained	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	15/12/2020	16/03/2021	Aggregate Stability	As appropriate	14	14	0-10	-	-	-	-	-	-	-
										40-50	-	-	-	-	-	-	-
						Conductivity	deciSiemens/m	14	14	0-10	0.38	0.6	0.3	0.17	0.45	0.13	1.7
										40-50	0.37	2.04	0.17	0.07	0.42	0.17	0.18
						Exchangeable Sodium	centimoles of positive charge per kg of soil	14	14	0-10	0.605	4.95	0.406	0.363	1.61	<0.1	0.676
										40-50	2.17	16.7	2.34	0.192	1.22	0.103	0.932
						Exchangeable Magnesium	centimoles of positive charge/kg of soil	14	14	0-10	10.2	33.4	1.09	5.36	4.8	2.49	23.5
										40-50	18.6	38.7	3.58	10	4.85	3.12	21.7
						Nitrate	mg/kg	14	14	0-10	28	1.8	76	13	75	5.7	7
										40-50	22	1.2	37	4.3	61	1.8	1.2
						Nitrogen (total)	percent	14	14	0-10	0.18	0.09	0.08	0.08	0.07	0.24	0.06
						Organic Carbon	percent	14	14	0-10	2.22	-	0.81	0.92	-	-	0.95
						pH	pH	14	14	0-10	6.9	8.0	5.3	7.6	7.2	7.0	8.4
										40-50	8.5	8.8	8.4	7.7	7.7	7.8	8.9
						Exchangeable Potassium	centimoles of positive charge/kg of soil	14	14	0-10	2.84	1.63	0.64	2.09	1.55	2.59	1.91
										40-50	1.89	0.833	0.359	1.14	1.24	2.19	0.528
						*Bulk Density	kg/m3	14	14	15-25	1.2	1.1	1.5	1.3	1.4	1.2	1.1
										40-50	1.7	1.7	1.5	1.9	1.3	1.3	1.0
						Sodium Adsorption Ratio	Sodium adsorption ratio	14	14	0-10	0.8	4.8	0.8	0.6	2.8	0.1	0.6
										40-50	3.3	16	1.7	0.2	2.3	0.2	1
						Available Phosphorus	mg/kg	14	14	0-10	468	182	108	72	103	317	349
										40-50	115	40	<3	<3	<3	55	8.9
						Cation Exchange Capacity	centimoles of positive charge/kg of soil	14	14	0-10	27.8	61	5.1	14.9	16.6	14.9	66.1
										40-50	42.7	74.8	10.9	24.5	14.6	11.1	56
Chloride	mg/kg	14	14	0-10	57.2	549	145	117	226	51.7	20.3						
				40-50	103	2320	202	52.6	218	85.7	20.1						

EPA Licence Location	JBS Sampling Location	Site Description	Monitoring Frequency	Date of Sampling	Date Results Obtained	Pollutant	Units of Measure	Number of samples required	Number of samples collected and analysed	Sample Depth (cm)	N19	N6	A4	B6	B8	H2	P1
						*Phosphorus Sorption Capacity	As appropriate	14	14	0-10	266.9	590.8	207.4	291	474.5	137.2	547.1
						Exchangeable Calcium	centimoles of positive charge per Kg of soil	14	14	0-10	14.2	21	2.97	7.05	8.6	9.79	39.9
						Exchangeable Sodium Percentage	percent	14	14	0-10	2.2	8.1	8	2.4	9.7	0.7	1

\* 3 Yearly Monitoring – Last undertaken in 2018, due next in 2021

