



# Inverell Landfill

<b>Sampling Point: All Monitoring Points</b>						<b>EPL No. 7463</b>			
<b>Licence Period 19 November 2015 to 18 November 2016</b>						<b>Licensee: Inverell Shire Council</b>			
<a href="http://www.environment.nsw.gov.au/prpoeoapp/detail.aspx?instid=7463&amp;id=7463&amp;option=licence&amp;searchrange=licence&amp;range=POEO">http://www.environment.nsw.gov.au/prpoeoapp/detail.aspx?instid=7463&amp;id=7463&amp;option=licence&amp;searchrange=licence&amp;range=POEO</a>						<b>144 Otho Street, Inverell</b>			
<b>licence&amp;prp=no&amp;status=Issued</b>						<b>Monitoring Frequency - Quarterly</b>			
<b>Date Sampled</b>	<b>22-Feb-16</b>								
<b>Date Reported</b>	<b>14-Mar-16</b>								
<b>Sampling Notes:</b>									
The laboratory and field analysis results indicate that landfill leachate does not appear to be impacting groundwater at the monitoring locations. All groundwater monitoring bores were sampled, however the leachate dam was dry this round, so no sample was collected.									
Groundwater from the up gradient monitoring well BH1 exceeded the established threshold levels for nitrate (at 82 mg/L) and the L/N ratio (29.28).									
The continuing elevated nitrate and sulphate levels detected in monitoring well BH1 is not associated with any other landfill leachate indicators. Bores down gradient of the landfill did not have these characteristics. As this monitoring well is situated up gradient of the landfill, the elevated level of nitrate could be representative of an outside regional/local influence such as agriculture.									
<b>Sampling point</b>	<b>BH1</b>	<b>BH2a</b>	<b>BH2b</b>	<b>BH3a</b>	<b>BH3b</b>	<b>BD1</b>	<b>BH4</b>	<b>BH5</b>	<b>LP1</b>
EPA Identification Numbers	6	7	8	9	10	-	11	12	1
pH (field)	6.92	6.76	6.85	6.95	6.88	-	6.77	7.03	8.75
Conductivity	1,380	2,910	3,254	1,874	1,337	-	2,446	370	2106
Standing Water Level	13.55	3.81	4.98	6.6	12.97	-	12.66	6.57	-
pH (lab)	6.9	6.7	6.9	6.8	6.9	6.9	6.8	6.9	7.6
TDS	880	1860	2050	1200	885	875	1520	975	1050
BOD	2	2	2	2	2	3	<2	3	26
TOC	2	8	6	5	10	2	6	5	57
Total Phenols	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	0.04	0.48	0.03	0.16	0.04	0.05	0.28	0.07	1.4
Manganese	0.02	0.26	<0.01	0.08	0.26	0.25	0.42	0.2	1.2
Sodium	40	320	430	135	115	110	110	73	165
Calcium	120	83	55	115	125	110	150	150	27
Potassium	2.5	1.8	2.1	1.7	3.7	3.6	2.2	2.7	20
Magnesium	120	225	250	150	74	74	225	71	125
Ammonia	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.8
Chloride	19	360	385	160	22	22	370	21	320
Fluoride	0.13	0.19	0.16	<0.1	<0.1	<0.1	0.11	<0.1	0.13
Nitrate	91	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	200	<0.1
Sulfate	21	4	3	3	8	8	14	180	7
Bicarbonate	915	1660	1940	1200	1040	1040	1240	535	640
Phosphate	<0.1	0.12	0.15	<0.1	<0.1	<0.1	0.12	<0.1	0.61
Nitrite	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

**Table notes:**

1. All measurements are in mg/L unless stated otherwise;
2. BD1 = blind field duplicate of BH3b;
3. TDS = Total Dissolved Solids; and
4. BOD = Biological Oxygen Demand; and
5. TOC = Total Organic Carbon.
6. Values with < are below the limit of reporting (LOR)



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<b>licence&amp;prp=no&amp;status=Issued</b>						<b>Monitoring Frequency - Quarterly</b>			
<b>Date Sampled</b>	<b>24-May-16</b>								
<b>Date Reported</b>	<b>17-Jun-16</b>								
<b>Sampling Notes:</b>									
The laboratory and field analysis results indicate that landfill leachate does not appear to be impacting groundwater at the monitoring locations. All groundwater monitoring bores were sampled, however the leachate dam was dry this round, so no sample was collected.									
Groundwater from the up gradient monitoring well BH1 exceeded the established threshold levels for nitrate (at 82 mg/L) and the L/N ratio (29.28).									
The continuing elevated nitrate and sulphate levels detected in monitoring well BH1 is not associated with any other landfill leachate indicators. Bores down gradient of the landfill did not have these characteristics. As this monitoring well is situated up gradient of the landfill, the elevated level of nitrate could be representative of an outside regional/local influence such as agriculture.									
<b>Sampling point</b>	<b>BH1</b>	<b>BH2a</b>	<b>BH2b</b>	<b>BH3a</b>	<b>BH3b</b>	<b>BD1</b>	<b>BH4</b>	<b>BH5</b>	<b>LP1</b>
EPA Identification Numbers	6	7	8	9	10	-	11	12	1
pH (field)	6.84	6.82	6.89	6.9	6.98	-	6.89	7.12	-
Conductivity	1,838	3,622	4,265	2,471	1,733	-	3,179	1587	-
Standing Water Level	13.43	5.43	6.98	6.89	12.81	-	13	10.02	-
pH (lab)	6.9	6.8	7	6.9	7	7	7	7.1	-
TDS	1000	1740	2100	1280	845	885	1500	910	-
BOD	<2	<2	<2	<2	<2	<2	<2	<2	-
TOC	1	8	6	3	<1	<1	5	4	-
Total Phenols	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Iron	0.01	0.02	<0.01	<0.01	0.01	0.01	0.02	<0.01	-
Manganese	<0.01	0.26	<0.01	0.2	0.32	0.3	0.48	0.06	-
Sodium	41	315	400	145	120	130	120	84	-
Calcium	160	76	58	105	115	115	145	135	-
Potassium	2.5	1.9	2.4	1.8	4.1	4	2.4	3.2	-
Magnesium	120	235	255	155	80	78	225	64	-
Ammonia	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Chloride	23	310	340	150	20	20	360	18	-
Fluoride	0.11	0.19	0.17	0.1	<0.1	<0.1	0.12	<0.1	-
Nitrate	110	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	180	-
Sulfate	20	5	4	4	9	9	12	170	-
Bicarbonate	1040	1680	2010	1260	1050	1070	1290	560	-
Phosphate	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Nitrite	0.16	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.4	-

**Table notes:**

1. All measurements are in mg/L unless stated otherwise;
2. BD1 = blind field duplicate of BH3b;
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<b>Date Sampled</b>	23-Aug-17								
<b>Date Reported</b>	9-Sep-16								
<b>Date Published</b>									
<b>Sampling Notes:</b>									
<p>The laboratory and field analysis results indicate that landfill leachate does not appear to be impacting groundwater at the monitoring locations. All groundwater monitoring bores were sampled, however the leachate dam was dry this round, so no sample was collected.</p> <p>Groundwater from the up gradient monitoring well BH1 exceeded the established threshold levels for nitrate (at 82 mg/L) and the L/N ratio (29.28).</p> <p>The continuing elevated nitrate and sulphate levels detected in monitoring well BH1 is not associated with any other landfill leachate indicators. Bores down gradient of the landfill did not have these characteristics. As this monitoring well is situated up gradient of the landfill, the elevated level of nitrate could be representative of an outside regional/local influence such as agriculture.</p>									
Sampling point	BH1	BH2a	BH2b	BH3a	BH3b	BD1	BH4	BH5	LP1
EPA Identification Numbers	6	7	8	9	10	-	11	12	1
pH (field)	6.77	6.75	6.87	6.82	6.94	-	6.85	7.35	7.83
Conductivity	1,469	3,071	3,505	2,086	1,449	-	2,858	943	1378
Static Water Level	12.89	4.68	6.01	6.43	12.79	-	12.63	10.84	-
pH (lab)	7	6.8	6.9	6.9	6.9	6.9	6.8	7.1	8
TDS	950	1900	1990	1080	860	880	1550	745	725
BOD	<2	<2	<2	<2	<2	<2	<2	<2	<2
TOC	1	8	6	4	<1	<1	6	3	24
Total Phenols	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	0.19	0.02	0.57	0.8	0.01	<0.01	0.05	0.01	0.02
Manganese	0.01	0.28	<0.01	0.2	0.19	0.19	0.56	0.03	0.06
Sodium	44	320	450	145	120	120	165	84	115
Calcium	120	78	49	105	110	110	165	98	58
Potassium	2.5	1.8	2.5	1.6	4.1	3.9	2.5	2.9	13
Magnesium	120	225	260	160	80	79	215	43	67
Ammonia	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.9
Chloride	23	345	370	160	23	23	435	15	205
Fluoride	0.11	0.19	0.17	<0.1	<0.1	<0.1	0.12	<0.1	0.17
Nitrate	92	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	115	0.35
Sulfate	21	7	4	3	9	9	14	115	120
Bicarbonate	940	1610	1950	1200	1040	1000	1230	470	355
Phosphate	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.1	0.26
Arsenic	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chromium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
Lead	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	0.003	0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.005	<0.001
Mercury	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Alkalinity	770	1320	1600	985	855	820	1010	385	290

Total Phosphorus	<0.1	0.26	0.14	0.7	0.14	0.1	0.14	0.25	0.31
TKN	-	-	-	-	-	-	-	-	2.7

**Table notes:**

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<b>licence&amp;prp=no&amp;status=Issued</b>						<b>Monitoring Frequency - Quarterly</b>			
<b>Date Sampled</b>	<b>8-Nov-16</b>								
<b>Date Reported</b>	<b>28-Nov-16</b>								
<b>Date Published</b>									
<b>Sampling Notes:</b>									
The laboratory and field analysis results indicate that landfill leachate does not appear to be impacting groundwater at the monitoring locations. All groundwater monitoring bores were sampled, however the leachate dam was dry this round, so no sample was collected.									
Groundwater from the up gradient monitoring well BH1 exceeded the established threshold levels for nitrate (at 82 mg/L) and the L/N ratio (29.28).									
The continuing elevated nitrate and sulphate levels detected in monitoring well BH1 is not associated with any other landfill leachate indicators. Bores down gradient of the landfill did not have these characteristics. As this monitoring well is situated up gradient of the landfill, the elevated level of nitrate could be representative of an outside regional/local influence such as agriculture.									
<b>Sampling point</b>	<b>BH1</b>	<b>BH2a</b>	<b>BH2b</b>	<b>BH3a</b>	<b>BH3b</b>	<b>BD1</b>	<b>BH4</b>	<b>BH5</b>	<b>LP1</b>
EPA Identification Numbers	6	7	8	9	10	-	11	12	1
pH (field)	6.71	6.61	6.78	6.74	7.04	-	6.7	6.76	7.84
Conductivity	1,444	2,999	3,380	2,052	1,469	-	1,809	1347	1226
Static Water Level	12.7	2.19	3.7	5.92	12.8	-	11.9	2.74	-
pH (lab)	7.1	7	7.1	7	7.1	7.1	7	7.1	8.2
TDS	860	1640	1930	1120	780	790	1000	830	1120
BOD	<2	<2	<2	<2	2	<2	<2	<2	<2
TOC	2	9	6	5	<1	<1	4	5	35
Total Phenols	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	0.02	0.16	0.01	0.03	0.02	0.01	0.05	<0.01	0.06
Manganese	0.01	0.2	0.02	0.21	0.22	0.23	0.33	<0.01	0.14
Sodium	41	220	420	135	105	110	62	63	170
Calcium	110	135	55	110	105	100	120	115	69
Potassium	1.9	0.5	0.7	0.8	3.2	3	1.3	2.1	20
Magnesium	120	210	230	140	81	80	145	68	125
Ammonia	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6
Chloride	33	335	345	155	26	26	115	22	335
Fluoride	<0.1	0.16	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	0.12
Nitrate	77	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	180	0.13
Sulfate	19	13	6	3	9	9	10	155	51
Bicarbonate	890	1430	1810	1150	935	935	1040	440	665
Phosphate	0.23	0.12	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Alkalinity	730	1170	1480	945	765	765	855	360	545
TKN	-	-	-	-	-	-	-	-	3.3

**Table notes:**

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5. TOC = Total Organic Carbon.
6. Values with < are below the limit of reporting (LOR)