Wyee Roof Tiles

Environmental Monitoring

October 2020

Date Published: Nov 2020

This monitoring report is to satisfy the requirements of Section 66 (6) of the Protection of the Environment and Operations Act 1997, to make available, within 14 days of request, any monitoring data that relates to pollution under an Environment Protection Licence.

The monitoring of pollutants provided in this report is undertaken as per the requirements of Environment Protection Licence 2702 (EPL 2702 – Boral Wyee Roof Tiles).

This report provides environmental monitoring data for Wyee Roof Tiles from the period of November 2014 to October 2020. This report is reviewed monthly during the reporting period and updated if required.

Wyee Roof Tiles Information	
Premise Details	Boral – Wyee Roof Tiles
Address	288 Tooheys Road East, Bushells Road, Wyee NSW, 2259
Licensee	Boral Montoro Pty Ltd
EPL Nº	2702
EPL Location	http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=109773&SYSUID=1&LICID=2702

Monitoring data in this report relates to the monitoring undertaken during the annual reporting period for the following environmental pollutants:

- Water Quality
- Water Volume
- Air Quality

EPL 2702 Monitoring Locations

Air

EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
4	Kiln scrubber stack	Kiln scrubber stack	Entire premises is detailed in "Air Survey Nov 2013" PDF The document is contained in Trim Document DOC16/495332. Discharge Point 4 is described in that document as LP4
6		Drier stacks	Entire premises is detailed in "Air Survey Nov 2013" PDF The document is contained in Trim Document DOC16/495332. Discharge Point 6 is described in that document as LP6

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1		Discharge to land	Triangular bushland area in the north east corner of the premises bounded by the premises boundary to the north and east and by the loop road, title storage area and envirocycle dam to the west and south west
2	Effluent quality monitoring		Envirocycle dam
3	Total volume monitoring		Outlet of envirocycle dam
7	Discharge to waters Discharge quality monitoring	Discharge to waters Discharge quality monitoring	Entire premises is detailed in "Air Survey Nov 2013" PDF The document is contained in Trim Document DOC16/495332. Discharge Point 7 is described in that document as Quarry Release. LP7 in that same document is the old discharge point.

Water Monitoring

1) Water Quality Monitoring is conducted as per condition M2.3 and M2.4 of EPL 2702. The water quality results for the reporting period are tabled below.

POINT 2

Pollutant	Units of measure	Frequency	Sampling Method
BOD	milligrams per litre	Quarterly	Grab sample
pH	pH	Quarterly	Grab sample
Total suspended solids	milligrams per litre	Quarterly	Grab sample

POINT 7

Pollutant	Units of measure	Frequency	Sampling Method
Oil and Grease	milligrams per litre	Special Frequency 1	Grab sample
pH	pH	Special Frequency 1	Grab sample
Total suspended solids	milligrams per litre	Special Frequency 1	Grab sample

Point 2

Location	Sample date	BOD (mg/L	pH	TSS (mg/L)
Envirocycle dam	5/10/2018	41	6.46	202
Envirocycle dam	3/7/2018	<2	7.45	<5
Envirocycle dam	4/4/2018	28	6.90	240
Envirocycle dam	15/1/2018	22	7.33	32
Envirocycle dam	12/10/2017	<2	6.34	6
Envirocycle dam	17/07/2017	2	6.56	<5
Envirocycle dam	18/04/2017	5	6.84	<5
Envirocycle dam	24/01/2017	11	6.93	6
Envirocycle dam	20/10/2016	17	6.77	17
Envirocycle dam	29/07/2016	<2	6	<5

Envirocycle dam	27/04/2016	<2	6.97	<5
Envirocycle dam	2/02/2016	<2	7.35	13
Envirocycle dam	15/10/2015	2	6.89	5
Envirocycle dam	16/07/2015	2	6.98	5
Envirocycle dam	17/04/2015	2	7.39	5
Envirocycle dam	22/01/2015	2	7.36	7

Point 7*

Results					
Location	**Sampling Date**	**Results Received**	**pH (limit 6-8)**	**TSS (mg/L) Limit 50**	**Oil & Grease (mg/L) Limit 5**
Old Quarry Dam (Point 7)	27/10/2020	27/10/2020	6.9	12	<5
Old Quarry Dam (Point 7)	21/10/2020	21/10/2020	7.1	11	<5
Old Quarry Dam (Point 7)	14/10/2020	14/10/2020	6.6	8	<5
Old Quarry Dam (Point 7)	29/9/2020	29/9/2020	6.5	16	<5
Old Quarry Dam (Point 7)	15/9/2020	15/9/2020	6.5	10	<5
Old Quarry Dam (Point 7)	3/9/2020	3/9/2020	6.7	8	<5
Old Quarry Dam (Point 7)	1/9/2020	1/9/2020	6.6	5	<5
Old Quarry Dam (Point 7)	27/8/2020	27/8/2020	6.7	10	<5
Old Quarry Dam (Point 7)	25/8/2020	25/8/2020	6.7	9	<5
Old Quarry Dam (Point 7)	30/7/2020	30/7/2020	6.8	6	<5
Old Quarry Dam (Point 7)	29/7/2020	29/7/2020	6.7	5	<5
Old Quarry Dam (Point 7)	27/7/2020	27/7/2020	6.6	9	<5

Old Quarry Dam (Point 7)	9/6/2020	9/6/2020	7.2	14	<5
Old Quarry Dam (Point 7)	18/1/2020	18/1/2020	6.3	37	<5
Old Quarry Dam (Point 7)	2/10/2019	2/10/2019	6.4	14	<5
Old Quarry Dam (Point 7)	1/10/2019	1/10/2019	6.4	25	<5
Old Quarry Dam (Point 7)	27/9/2019	27/9/2019	6.3	5	<5
Old Quarry Dam (Point 7)	26/9/2019	26/9/2019	6.5	2	<5
Old Quarry Dam (Point 7)	25/9/2019	25/9/2019	6.4	6	<5
Old Quarry Dam (Point 7)	24/9/2019	24/9/2019	6.4	6	<5
Old Quarry Dam (Point 7)	20/9/2019	20/9/2019	6.2	3	<5
Old Quarry Dam (Point 7)	19/9/2019	19/9/2019	6.3	<2	<5
Old Quarry Dam (Point 7)	18/9/2019	18/9/2019	6.4	4	<5
Old Quarry Dam (Point 7)	17/9/2019	17/9/2019	6.4	2	<5
Old Quarry Dam (Point 7)	16/9/2019	16/9/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	15/9/2019	15/9/2019	6.3	2	<5
Old Quarry Dam (Point 7)	14/9/2019	14/9/2019	6.4	2	<5
Old Quarry Dam (Point 7)	13/9/2019	13/9/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	12/9/2019	12/9/2019	6.4	2	<5
Old Quarry Dam (Point 7)	11/9/2019	11/9/2019	6.5	5	<5
Old Quarry Dam (Point 7)	10/9/2019	10/9/2019	6.4	6	<5
Old Quarry Dam (Point 7)	6/9/2019	6/9/2019	6.4	5	<5
Old Quarry Dam (Point 7)	5/9/2019	5/9/2019	6.6	6	<5
Old Quarry Dam (Point 7)	4/9/2019	4/9/2019	6.5	8	<5
Old Quarry Dam (Point 7)	3/9/2019	3/9/2019	6.4	11	<5

Old Quarry Dam (Point 7)	2/9/2019	2/9/2019	6.6	7	<5
Old Quarry Dam (Point 7)	30/8/2019	30/8/2019	6.7	<2	<5
Old Quarry Dam (Point 7)	30/7/2019	30/7/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	26/7/2019	26/7/2019	6.6	3	<5
Old Quarry Dam (Point 7)	25/7/2019	25/7/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	24/7/2019	24/7/2019	6.66	<2	<5
Old Quarry Dam (Point 7)	23/7/2019	23/7/2019	6.6	<2	<5
Old Quarry Dam (Point 7)	21/7/2019	21/7/2019	6.6	<2	<5
Old Quarry Dam (Point 7)	20/7/2019	20/7/2019	6.6	<2	<5
Old Quarry Dam (Point 7)	19/7/2019	19/7/2019	6.7	<2	<5
Old Quarry Dam (Point 7)	17/7/2019	17/7/2019	6.7	<2	<5
Old Quarry Dam (Point 7)	16/7/2019	16/7/2019	6.7	3	<5
Old Quarry Dam (Point 7)	15/7/2019	15/7/2019	6.8	3	<5
Old Quarry Dam (Point 7)	12/7/2019	12/7/2019	6.7	2	<5
Old Quarry Dam (Point 7)	26/6/2019	26/6/2019	6.66	6	<5
Old Quarry Dam (Point 7)	23/5/2019	31/5/2019	6.7	<2	<5
Old Quarry Dam (Point 7)	22/5/2019	31/5/2019	6.7	<2	<5
Old Quarry Dam (Point 7)	21/5/2019	31/5/2019	6.7	<2	<5
Old Quarry Dam (Point 7)	20/5/2019	31/5/2019	6.6	<2	<5
Old Quarry Dam (Point 7)	19/5/2019	31/5/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	18/5/2019	31/5/2019	6.5	3	<5
Old Quarry Dam (Point 7)	17/5/2019	31/5/2019	6.7	<2	<5
Old Quarry Dam (Point 7)	16/5/2019	31/5/2019	6.7	2	<5

Old Quarry Dam (Point 7)	15/5/2019	31/5/2019	6.8	<2	<5
Old Quarry Dam (Point 7)	14/5/2019	31/5/2019	7.1	<2	<5
Old Quarry Dam (Point 7)	10/5/2019	31/5/2019	6.8	<2	<5
Old Quarry Dam (Point 7)	9/5/2019	31/5/2019	6.7	<2	<5
Old Quarry Dam (Point 7)	8/5/2019	31/5/2019	6.6	<2	<5
Old Quarry Dam (Point 7)	7/5/2019	31/5/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	6/5/2019	31/5/2019	6.6	<2	<5
Old Quarry Dam (Point 7)	5/5/2019	31/5/2019	6.6	<2	<5
Old Quarry Dam (Point 7)	4/5/2019	31/5/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	3/5/2019	31/5/2019	6.4	3	<5
Old Quarry Dam (Point 7)	2/5/2019	31/5/2019	6.4	4	<5
Old Quarry Dam (Point 7)	1/5/2019	31/5/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	30/4/2019	31/5/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	23/4/2019	2/5/2019	6.7	4	<5
Old Quarry Dam (Point 7)	22/4/2019	2/5/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	21/4/2019	2/5/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	20/4/2019	2/5/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	19/4/2019	2/5/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	18/4/2019	30/4/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	17/4/2019	30/4/2019	6.3	<2	<5
Old Quarry Dam (Point 7)	16/4/2019	30/4/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	15/4/2019	30/4/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	13/4/2019	30/4/2019	6.4	<2	<5

Old Quarry Dam (Point 7)	12/4/2019	29/4/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	11/4/2019	23/4/2019	6.5	2	<5
Old Quarry Dam (Point 7)	10/4/2019	23/4/2019	6.6	2	<5
Old Quarry Dam (Point 7)	8/4/2019	15/4/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	5/4/2019	15/4/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	4/4/2019	12/4/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	3/4/2019	11/4/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	2/4/2019	11/4/2019	6.4	<2	<5
Old Quarry Dam (Point 7)	1/4/2019	11/4/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	28/3/2019	10/4/2019	6.5	<2	<5
Old Quarry Dam (Point 7)	27/3/2019	10/4/2019	6.6	2	5
Old Quarry Dam (Point 7)	26/3/2019	5/4/2019	6.6	2	<5
Old Quarry Dam (Point 7)	25/3/2019	4/4/2019	6.3	3	<5
Old Quarry Dam (Point 7)	22/3/2019	3/4/2019	6.8	3	<5
Old Quarry Dam (Point 7)	21/3/2019	29/3/2019	6.8	<2	<5
Old Quarry Dam (Point 7)	19/3/2019	28/3/2019	6.7	5	<5
Old Quarry Dam (Point 7)	14/3/2019	28/3/2019	6.5	2	<5
Old Quarry Dam (Point 7)	13/3/2019	19/3/2019	6.8	3	<5
Old Quarry Dam (Point 7)	12/3/2019	19/3/2019	6.9	4	<5
Old Quarry Dam (Point 7)	11/3/2019	19/3/2019	7.0	7	<5
Old Quarry Dam (Point 7)	8/3/2019	20/3/2019	6.8	6	<5
Old Quarry Dam (Point 7)	6/3/2019	8/3/2019	7.0	7	<5
Old Quarry Dam (Point 7)	7/1/2019	7/1/2019	6.8	13	<5

Old Quarry Dam (Point 7)	29/6/2018	29/6/2018	6.7	3	<5
Old Quarry Dam (Point 7)	9/5/2018	9/5/2018	6.6	4	<5
Old Quarry Dam (Point 7)	3/08/2017	10/08/2017	6.6	2	<5
Old Quarry Dam (Point 7)	17/07/2017	24/07/2017	6.7	18	<5
Old Quarry Dam (Point 7)	20/06/2017	22/06/2017	6.9	13	<5
Old Quarry Dam (Point 7)	18/05/2017	30/05/2017	7.1	16	<5

*Point 7 monitoring location was moved to the Old Quarry Dam on 29 March 2017 as part of s. 58 licence variation. Special Frequency 1 means grab sample prior to discharge.

L4 Volume and mass limits

L4.1 For each discharge point or utilisation area specified below (by a point number), the volume/mass of:
a) liquids discharged to water; or;
b) solids or liquids applied to the area;
must not exceed the volume/mass limit specified for that discharge point or area.

Point	Unit of Measure	Volume/Mass Limit
1	litres per day	7500

This point relates to the irrigation (discharge to land) of envirocycle water within the approved area which currently is logged daily. The current capacity of the irrigation pumps cannot exceed the daily volume with the typical maximum when irrigating 4000L per day. Should day by day volumes are require please contact the site directly on (02) 4399 8668.

Air Quality

1) Air Quality Monitoring is conducted as per condition M2.2 of EPL 2702. The air quality results for the reporting period are tabled below.

POINT 4

Pollutant	Units of measure	Frequency	Sampling Method
Fluoride	milligrams per cubic metre	Yearly	TM-9
Nitrogen Oxides	grams per cubic metre	Yearly	TM-11
Sulphur dioxide	milligrams per cubic metre	Yearly	TM-4
Sulphur trioxide	milligrams per cubic metre	Yearly	TM-3
Total Solid Particles	milligrams per cubic metre	Yearly	TM-15

Emission Testing - Kiln Sep 2020 **Boral Montoro**

Table 4.2 shows the volumetric and continuous gaseous parameters measured during testing.

Table 4.2: Results for Kiln Scrubber Stack

Parameter	Unit	Result Run 1	Result Run 2	Result Run 3	Result Run 4
Date	-	22/09/2020	22/09/2020	22/09/2020	13/10/2020
Time	-	10:06-11:06	12:25-13:25	14:00-15:00	10:00-11:00
Temperature	°C	155	154.74	163	137.9
Carbon dioxide	%	0.98	0.98	0.69	0.69
Oxygen	%	19.73	19.73	19.52	19.52
Moisture content	%	0.1	1.8	3.4	0.81
Molecular weight dry	g/g mole	28.95	28.95	28.89	28.89
Velocity at sampling plane	m/s	9.65	9.47	9.5	9.61
Volumetric flow rate (wet, actual)	m^3/min	427	419.69	421	426
Volumetric flow rate (dry, STP)	m^3/min	252	257.8	255	280
Analytes tested	-	F	SO_2	HCL & TPM	SO_3

Table 4.3 shows the isokinetic results of testing.

Table 4.3: Results for Kiln Scrubber Stack

Pollutant	Run	Isokinetic rate (%)	Concentration mg/m^3	Emission rate g/s	Limit	Compliant with Limit
Total particulate matter	3	100.3	5	0.021	50 mg/m^3	✓
Hydrogen Chloride (HCl)			19	0.079	N/A	N/A
Sulphur Dioxide (SO_2)	2	101.7	12.97	0.006	50 mg/m^3	✓
Sulphur Trioxide (SO_3)	4	94.6	2.6	0.011	50 mg/m^3	✓
Total Fluoride (F)	1	104	0.76	0.0034	50 mg/m^3	✓
Nitrogen Oxide (NO_x)			35.4	0.15	500 mg/m^3	✓
Carbon Monoxide (CO)			7.5	0.033	N/A	N/A

Table 4.2 shows the volumetric and continuous gaseous parameters measured during testing.

Table 4.2: Results for Kiln Scrubber Stack

Parameter	Unit	Result Run 1	Result Run 2	Result Run 3	Result Run 4
Date	-	05/11/2019	05/11/2019	06/11/2019	06/11/2019
Time	-	10:06-11:06	11:56-13:12	08:42-09:42	10:53-11:53
Temperature	°C	146	148	146	150
Carbon dioxide	%	0.69	0.69	0.69	0.69
Oxygen	%	19.5	19.5	19.5	19.5
Moisture content	%	1.7	3.6	3.5	3.6
Molecular weight dry	g/g mole	29	29	29	29
Velocity at sampling plane	m/s	9.0	8.9	8.8	11
Volumetric flow rate (wet, actual)	m^3/min	400	390	390	490
Volumetric flow rate (dry, STP)	m^3/min	250	250	250	300
Analytes tested	-	F	PM10	HCL & TPM	SO_2

Table 4.3 shows the isokinetic results of testing.

Table 4.3: Results for Kiln Scrubber Stack

Pollutant	Run	Isokinetic rate (%)	Concentration mg/m^3	Emission rate g/s	Limit	Compliant with Limit
Total particulate matter	1	94	9.1	0.037	50 mg/m^3	✓
Hydrogen Chloride (HCl)			21	0.085	N/A	N/A
PM10	2	106	1.6	0.0065	N/A	N/A
Sulphur Dioxide (SO_2)	3	103	21	0.10	50 mg/m^3	✓
Sulphur Trioxide (SO_3)			8.4	0.042	50 mg/m^3	✓
Total Fluoride (F)	4	107	0.16	0.00065	50 mg/m^3	✓
Nitrogen Oxide (NO_x)			37	0.17	500 mg/m^3	✓
Carbon Monoxide (CO)			18	0.08	N/A	N/A

Assured Monitoring Group (AMG) conducted source emissions monitoring at the Boral Roofing facility located at Wyee, NSW on the 21st & 22nd March 2018.

A summary of results is presented below, for further details please refer to the body of this report. ***No licence limit exceedances were recorded.***

Table 3: Summary of results – Kiln stack (EPA Point 4)

Release Point Parameter	Unit of Measure	Kiln Stack - EPA Point 4	Licence Limit
Date of testing	dd-mm-yy	21/03/2018	-
Average exhaust Velocity	m/sec	15.8	-
Average stack temperature	°C	143	-
Moisture	%	8.53	-
Dry standard stack flow rate	Nm^3/sec	7.12	-
Total solid particulates	mg/Nm^3	3.03	50
emission rate	g/sec	0.021	-
PM_{10}	mg/Nm^3	2.27	-
emission rate	g/sec	0.016	-
Sulphur dioxide	mg/Nm^3	48.6	50
emission rate	g/sec	0.342	-
Sulphur trioxide (as H_2SO_4)	mg/Nm^3	15.2	50
emission rate	g/sec	0.107	-
Carbon monoxide	mg/Nm^3	80.1	-
emission rate	g/sec	0.563	-
Oxides of nitrogen (NO_2)	mg/Nm^3	74.5	500
emission rate	g/sec	0.524	-
Total Fluorides	mg/Nm^3	14.2	50
emission rate	g/sec	0.103	-
Hydrogen Chloride (HCl)	mg/Nm^3	22.3	
HCl emission rate	g/sec	0.156	

Assured Monitoring Group (AMG) conducted source emissions monitoring at the Boral Roofing facility located at Wyee, NSW on the 18th & 19th July 2017.

A summary of results is presented below, for further details please refer to the body of this report. ***No licence limit breaches were recorded.***

Table 3: Summary of results – Kiln stack (EPA Point 4)

Release Point Parameter	Unit of Measure	Kiln Stack - EPA Point 4	Licence Limit
Date of testing	dd-mm-yy	18/07/2017	-
Average exhaust Velocity	m/sec	14.4	-
Average stack temperature	°C	150	-
Moisture	%	5.89	-
Dry standard stack flow rate	Nm^3/sec	6.50	-
Total solid particulates	mg/Nm^3	39.76	50
emission rate	g/sec	0.256	-
PM_{10}	mg/Nm^3	30.6	-
emission rate	g/sec	0.197	-
Sulphur dioxide	mg/Nm^3	8.31	50
emission rate	g/sec	0.0536	-
Sulphur trioxide (as H_2SO_4)	mg/Nm^3	19.34	20
emission rate	g/sec	0.125	-
Carbon monoxide	mg/Nm^3	25.2	-
emission rate	g/sec	0.162	-
Oxides of nitrogen (NO_2)	mg/Nm^3	43.96	500
emission rate	g/sec	0.283	-
Total Fluorides	mg/Nm^3	2.59	50
emission rate	g/sec	0.0170	-

Assured Monitoring Group (AMG) conducted source emissions monitoring at the Boral Roofing facility located at Wyee, NSW on the 19th & 20th July 2016.

A summary of results is presented below, for further details please refer to the body of this report. ***No licence limit breaches were recorded.***

Table 3: Summary of results – Kiln stack (EPA Point 4)

Release Point Parameter	Unit of Measure	Kiln stack - EPA Point 4	Licence Limit
Date of testing	dd-mm-yy	19/07/2016	-
Average exhaust Velocity	m/sec	17	-
Average stack temperature	°C	151	-
Moisture	%	5.2	-
Dry standard stack flow rate	Nm^3/sec	7.8	-
Total solid particulates	mg/Nm^3	24	250
emission rate	g/sec	0.19	-
PM_{10}	mg/Nm^3	6.8	-
emission rate	g/sec	0.053	-
Sulphur dioxide	mg/Nm^3	29	-
emission rate	g/sec	0.23	-
Sulphur trioxide (as H_2SO_4)	mg/Nm^3	6.7	-
emission rate	g/sec	0.053	-
Carbon monoxide	mg/Nm^3	33	-
emission rate	g/sec	0.25	-
Oxides of nitrogen (NO_2)	g/Nm^3	0.055	2.5
emission rate	g/sec	0.43	-
Total Fluorides	mg/Nm^3	10	50
emission rate	g/sec	0.079	-