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EMISSIONS COMPLIANCE REPORT

ORMONDE ORGANICS LTD

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PORTLAW

COUNTY WATERFORD

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Project	Emissions Compliance Report			
Client	Ormonde Organics Ltd.			
Report No	Date	Status	Prepared By	Reviewed By
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1. INTRODUCTION

This attachment summarises the most recent emissions monitoring undertaken at the Ormonde Organics Ltd. facility and discusses the emissions compliance with relevant emissions limit values set out the Licence.

Condition 6.2 and Schedule C of the EPA licence requires the monitoring of the CHP gas engine stacks, the biofilters, surface water, groundwater, dust, noise and air at defined monitoring locations.

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2. STORM WATER MONITORING

2.1 Locations

Stormwater run-off from the building roofs and areas that are not likely to cause contamination combines with the run-off from areas where there is the potential for contamination to occur and discharges to the River Suir via the same discharge point via an oil interceptor and attenuation system. The water from the attenuation system outflows to the River Suir at a regulated rate (10.9 litres/second). The licence specifies emission limit values for the emission and also the monitoring requirements. The monitoring location is shown on Figure 2.1. SW-1 is the discharge point from the installation.

2.2 Methods

The discharge is rainfall dependent and therefore is completed shortly after or during a rainfall event. The monitoring is carried out as necessary by site personnel and OCM staff. The samples are collected in accordance with OCM's sampling protocol. The samples are stored in a cooler box at 9°C prior to dispatch to the laboratory.

2.3 Results

Sampling is carried out quarterly and the samples are analysed for the list of parameters specified in Schedule C.3 of the Licence. There are no emission limit values set in the Licence. The Table includes, for comparative purposes, the environmental quality standards (EQS) for a river water body assigned 'Good Status' in the European Union. Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 (SI 77of 2019).

An EQS is not emission limit value, but is a quality objectives to be achieved in specified water bodies. An exceedance of an EQS in a surface water discharge does not mean that the emission is of environmental significance, as this is determined by the assimilative capacity of the receiving water.

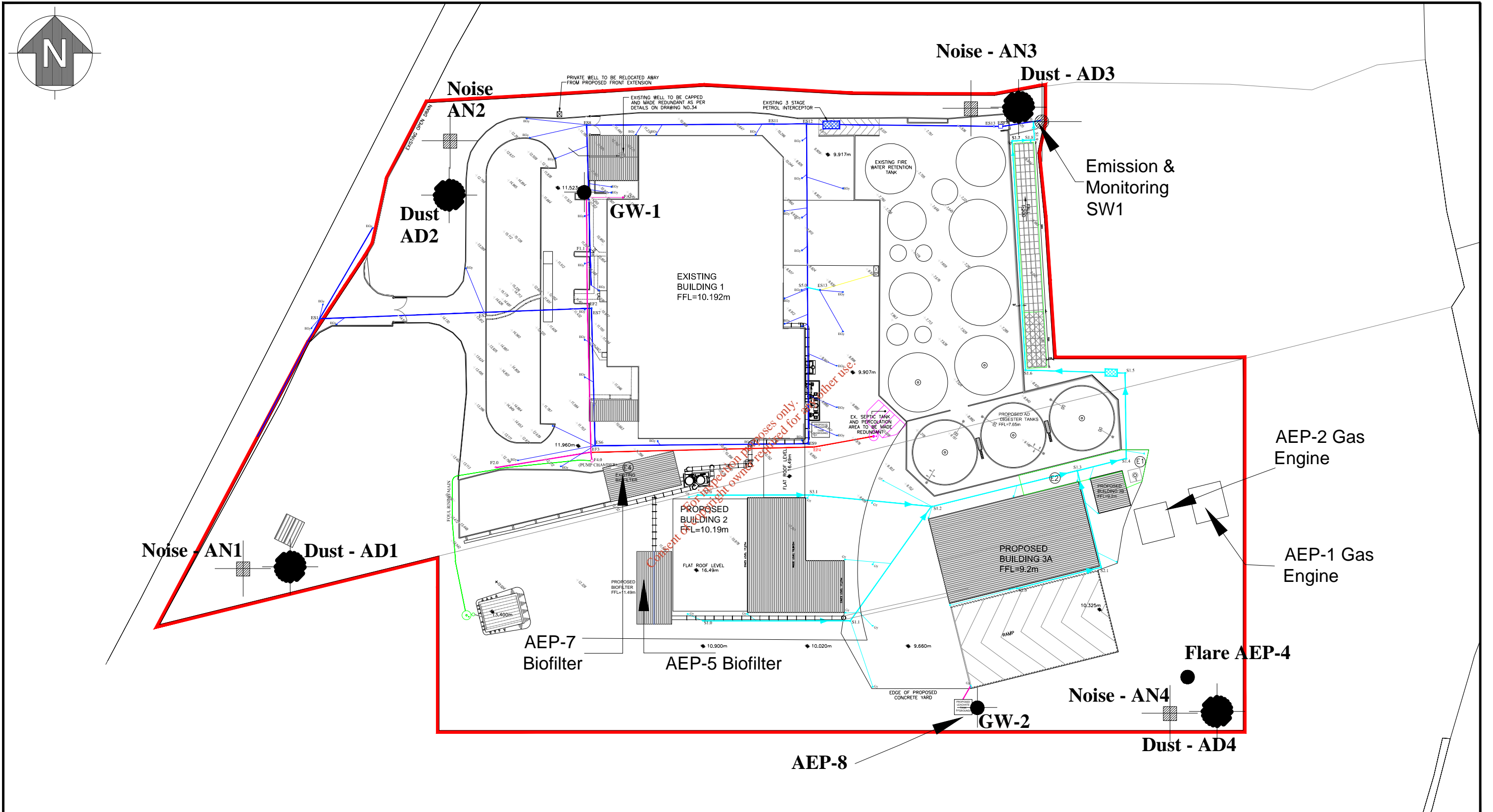
In accordance with Condition 6.15.2 of the Licence trigger levels for the storm water discharge will be set as soon as is practicable. The trigger levels will be calculated following the guidance set out in the Agency's Document 'Guidance for the Setting of Trigger Values for Stormwater Discharges to Off-Site Surface Waters at IPPC and Waste Licensed Facilities' (2012). It is desirable that standard deviation is calculated on at a minimum of 20 data points (preferably a years' worth of weekly samples i.e. +50 data points) to reflect the range of natural variability over most sampling conditions.

The results for the most recent monitoring events from 2020 to Q1 2021 are presented on Table 2.1. There have been no exceedances of the EQS in 2020 and thus far in 2021. COD, BOD, TSS and mineral oils have been below the method detection limit for each of the five monitoring events in 2020 and 2021.

Table 2.1 Storm Water Results (SW-1)

Parameter	Units	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	EQS
pH	pH Units	7.74	6.79	7.91	8	8	6.5- 9.0
COD	mg/l	<7	<7	<7	<7	<7	-
BOD	mg/l	<1	<1	<1	<1	<1	1.5- 2.6
TSS	mg/l	<10	<10	<10	<10	<10	-
Total Ammonia	mg/l	0.05	0.05	<0.03	<0.03	<0.03	0.065- 0.14
Total Nitrogen	mg/l	4.8	3.9	5.1	3.7	3.6	-
Conductivity	mS/cm	0.514	0.111	0.51	0.474	0.462	-
Mineral Oil	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	-
Sulphate	mg/l	28.6	20.6	10.9	11.4	10.9	-

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CLIENT

Ormonde Organics

FIGURE No.

2.1

TITLE

Monitoring Locations and Emission Points

SCALE
SCALE

REV.
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3. NOISE MONITORING

3.1 Locations

Noise monitoring is carried out at the 4 monitoring locations (AN1, AN2, AN3 and AN4) as specified in Schedule B.6 of the Licence. The Licence does not specify the monitoring of noise any off site locations, however, two offsite stations (NSL1 and NSL2) representing the nearest receptors, were added in 2019 at the request of the EPA.

3.2 Methods

Noise monitoring is carried out in accordance with *International Standard ISO 1996-2:2017 Acoustics – Description, measurement and assessment of environmental noise, Part 2: Determination of environmental noise levels* (2017) and EPA document *NG4 Guidance note for noise: Licence applications, surveys and assessments in relation to scheduled activities* (2016). Monitoring is carried out annually by Damian Brosnan Acoustics.

3.3 Results

Monitoring is carried out annually and the most recent noise survey was carried out in November 2020. The results are presented in Tables 3.1 to 3.6.

3.4 Discussion

The noise limits specified in Schedule B4 of the EPA licence (55 dB daytime, 50 dB evening and 45 dB night-time) only apply to the two offsite stations. The specific LAeq T levels at these stations attributable to the site were less than 48 dB during the daytime, and 35 dB or less during the evening and night-time. No tones or impulses were detected at on and off-site offsite locations.

Table 3.1 Noise Monitoring 2020 AN1

Station	AN1	Date	Time	LA _{eqT}	L _{AF10 T}	L _{AF90 T}	Specific L _{Aeq T}
Period	Daytime	17.09.20	1400-1430	57	61	40	<40
			1430-1500	57	52	40	<40
			1500-1530	58	62	41	<40
Facility	Continuous air management emissions audible continuously in background. Sporadic truck movements clearly audible on nearest roadway						
Extraneous	Intermittent R680 traffic dominant and almost continuously audible in distance. Bird song/calls						
Determination	L90 influenced by distant traffic, and thus unrepresentative of site. <L90 (lowest) determination possible only. Truck movements insufficient to influence data.						
Period	Evening	17.09.20	1900-1930	57	52	41	<41
Facility	Continuous air management emissions audible in background.						
Extraneous	Intermittent R680 traffic dominant when present, and audible in distance continuously. Bird song/calls						
Determination	L90 not representative due to distant traffic, <L90 determination possible only						
Period	Night-time	17/18.09.20	2340-2355	47	46	36	36
			2355-0010	45	40	34	34
Facility	Continuous air management emissions audible at low level						
Extraneous	R680 traffic now occasional. Distant traffic across river now audible at low level intermittently						
Determination	L90 representative						

Table 3.2 Noise Monitoring 2020 AN2

Station	AN2	Date	Time	LA _{eqT}	L _{AF10 T}	L _{AF90 T}	Specific L _{Aeq T}
Period	Daytime	17.09.20	1415-1445	57	62	41	<53
			1445-1515	58	62	44	<53
			1515-1545	58	63	48	<53
Facility	Continuous air management emissions audible in background. Sporadic vehicle movements on nearest roadways clearly audible. Loader operating at nearest building clearly audible at intervals						
Extraneous	Intermittent R680 traffic dominant and almost continuously audible in distance. Bird song/calls						
Determination	L90 influenced by distant traffic, and thus unrepresentative of site. L _{eq} dominated by traffic. Onsite traffic contribution to L _{eq} likely to be at least 5 dB lower						
Period	Evening	17.09.20	1930-2000	56	51	42	<42
Facility	Continuous air management emissions audible at low level in background.						
Extraneous	Intermittent R680 traffic dominant and audible on approaches. Bird song/calls						
Determination	L90 not representative due to distant traffic, <L90 determination possible only						
Period	Night-time	17/18.09.20	2345-0000	48	46	37	37
			0000-0015	37	40	35	35
Facility	Continuous air management emissions audible at low level						
Extraneous	R680 traffic now sporadic. Distant traffic across river now audible at low level intermittently						
Determination	L90 representative						

Table 3.3 Noise Monitoring 2020 AN3

Station	AN3	Date	Time	LA _{eqT}	L _{AF10 T}	L _{AF90 T}	Specific L _{Aeq T}
Period	Daytime	17.09.20	1400-1430	47	48	46	47
			1430-1500	46	48	45	46
			1500-1530	46	47	45	46
Facility	Continuous emissions from pumps/motors clearly audible, particularly digester 2 motor						
Extraneous	Loudest R680 traffic passes slightly audible. Bird song/calls						
Determination	L _{eq} reasonably representative						
Period	Evening	17.09.20	2200-2230	47	48	46	47
Facility	Continuous emissions from pumps/motors clearly audible, particularly digester 2 motor						
Extraneous	Loudest R680 traffic passes slightly audible. Distant dog barking						
Determination	L _{eq} representative						
Period	Night-time	17.09.20	2300-2315	48	48	47	48
			2315-2330	47	48	46	47
Facility	Continuous emissions from pumps/motors clearly audible, particularly digester 2 motor						
Extraneous	Loudest R680 traffic passes slightly audible. Distant dog barking						
Determination	L _{eq} representative						

Table 3.4 Noise Monitoring 2020 AN4

Station	AN4	Date	Time	LA _{eqT}	L _{AF10 T}	L _{AF90 T}	Specific L _{Aeq T}
Period	Daytime	17.09.20	1400-1430	59	60	58	59
			1430-1500	60	61	58	60
			1500-1530	60	61	58	60
Facility	Several local plant sources continuously dominant. Sporadic plant/truck movements locally						
Extraneous	None						
Determination	L _{eq} representative						
Period	Evening	17.09.20	2200-2230	62	62	61	62
Facility	Local plant dominant, chiefly gas engines						
Extraneous	None						
Determination	L _{eq} representative						
Period	Night-time	17.09.20	2300-2315	61	62	60	61
			2315-2330	61	62	60	61
Facility	Local plant dominant, chiefly gas engines						
Extraneous	None						
Determination	L _{eq} representative						

Table 3.5 Noise Monitoring 2020 NSL1

Station	NSL1	Date	Time	LA _{eqT}	L _{AF10 T}	L _{AF90 T}	Specific L _{Aeq T}
Period	Daytime	17.09.20	1550-1620	55	59	42	≤43
			1620-1650	56	60	43	≤43
			1650-1720	57	60	43	≤43
Facility	Continuous air management emissions slightly audible. Loader operating at nearest point of site regularly audible at low level, with more clearly audible reversing alarm.						
Extraneous	Intermittent R680 traffic dominant, and almost continuously audible in distance. Bird song/calls.						
Determination	L90 influenced by distant traffic, and thus unrepresentative of site. Estimation: process emissions estimated at 41 dB using L _{AF}] + [loader L _{AF} 42 dB at loudest; L _{eq} likely to be at least 3 dB lower]						
Period	Evening	17.09.20	2030-2100	53	58	39	<39
Facility	Continuous air management emissions audible at low level.						
Extraneous	Sporadic R680 traffic dominant. Traffic across river also intermittently audible. Distant dog barking in several directions.						
Determination	L90 unrepresentative due to traffic in distance. <L90 determination possible only.						
Period	Night-time	18.09.20	0000-0015	41	40	33	33
			0015-0030	46	46	33	33
Facility	Continuous air management emissions audible at low level.						
Extraneous	Sporadic R680 traffic dominant. Traffic across river also intermittently audible. Distant dog barking in several directions.						
Determination	L90 reasonably representative.						

Table 3.6 Noise Monitoring 2020 NSL2

Station	NSL2	Date	Time	LA _{eqT}	L _{AF10 T}	L _{AF90 T}	Specific L _{Aeq T}
Period	Daytime	17.09.20	1645-1715	47	49	41	<38
			1715-1746	45	48	39	<38
			1745-1815	45	48	39	<38
Facility	Inaudible						
Extraneous	Intermittent R680 traffic dominant and almost continuously audible in distance. Bird song/calls. Loader operating at 150 m audible throughout.						
Determination	Inaudible, thus <L95 (lowest value)						
Period	Evening	17.09.20	2115-2148	38	41	32	<31
Facility	Inaudible						
Extraneous	Sporadic R680 traffic clearly audible, with distant traffic also audible. Distant dog barking in several directions. Continuous emissions slightly audible from coolers at adjacent yard.						
Determination	Inaudible, thus <L95						
Period	Night-time	18.09.20	0010-0025	33	36	25	<25
			0025-0040	32	35	26	<25
Facility	Inaudible						
Extraneous	Sporadic R680 traffic clearly audible, with distant traffic also audible. Distant dog barking in several directions. Continuous emissions slightly audible from coolers at adjacent yard.						
Determination	Inaudible, thus <L95						

4. AIR MONITORING

4.1 Locations

Air monitoring includes dust deposition carried out by OCM; odour and bioaerosol monitoring carried out by Odour Monitoring Ireland Ltd (OMI) and stack emission monitoring carried out by Air Scientific Ltd. Dust monitoring is carried out at 4 locations within the site boundary (AD-1, AD-2, AD-3 and AD-4). Stack emission monitoring is carried out on the two CHP gas engine stacks, AEP1 and AEP2. Bioaerosol monitoring is carried out at three on-site locations (Upwind 1, Downwind 2 and Downwind 3). Odour monitoring is carried out on the biofilters. The monitoring locations are shown on Figure 2.1.

4.2 Methods

The dust monitoring is completed using Bergerhoff gauges specified in the German Engineering Institute VDI 2119 document entitled "Measurement of Dustfall Using the Bergerhoff Instrument (Standard Method). Details on the methodologies applied in the odour, bioaerosol and stack emission testing are in the OMI and Air Scientific monitoring reports which are in the EIAR.

4.3 Results

Dust monitoring is carried out quarterly and the results for 2020 and Q1 2021 are presented in Table 4.1. Stack emission monitoring is carried out quarterly and the results for 2020 and Q1 2021 are presented on Tables 4.2 and 4.3. Monitoring of the biofilters is carried out quarterly by OMI and the results are shown on Table 4.4. The results for the bioaerosol monitoring undertaken by OMI is shown on Table 4.5. The tables also include the emission limits set in the Licence.

Table 4.1 Dust Monitoring Results

Sample Location	Units	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Emission Limit
AD-1	(mg/m ² /day)	12	29	59	*	26	350
AD-2	(mg/m ² /day)	54	90	<10	69	16	350
AD-3	(mg/m ² /day)	211	43	<10	80	11	350
AD-4	(mg/m ² /day)	12	38	88	90	263	350

Table 4.2 CHP Stack Emissions AEP1

Stack Monitoring		Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	ELV
Carbon Monoxide	mg/m ³	1189.11	1284.94	1330.74	1335.19	1382.68	1400
Oxides of Nitrogen	mg/m ³	490.85	401.24	478.43	476.86	439.34	500
Total Volatile Organic Compounds	mg/m ³	871.46	926.07	928.17	844.59	895.24	1000
TNMVOC	mg/m ³	<0.47	<0.05	<1.05	<0.44	<0.82	50
Oxygen	% v/v	7.64	7.26	7.60	8.08	7.54	-
Carbon Dioxide	% v/v	10.9	10.75	10.14	9.44	12.18	-
H2O	% v/v	10.4	10.8	10.9	9.1	9.9	-
Sulphur Dioxide	% v/v	13.35	51.61	4.39	29.22	24.58	300
Stack Gas Temp	m/s	458.15	485.15	494.15	488.15	493.15	-
Stack Gas Velocity		20.67	27.56	27.76	27.43	26.03	-
Volumetric Flow Rate	m ³ /h	2424	3056	3001	3050	2851	3000
Volumetric Flow Rate (Ref)	m ³ /h	2028	2634	2511	2475	2403	3000

Table 4.3 CHP Stack Emissions AEP2

Stack Monitoring		Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	ELV
Carbon Monoxide	mg/m ³	783.14	877.55	869.98	944.74	957.15	1400
Oxides of Nitrogen	mg/m ³	487.49	473.5	395.82	480.79	517.46	500
Total Volatile Organic Compounds	mg/m ³	1031.74	1083.75	1516.34	1605.85	1602.3	1000
TNMVOC	mg/m ³	<0.65	<0.07	<1.01	<0.63	<1.07	50
Oxygen	% v/v	7.89	7.61	8.49	8.75	8.2	-
Carbon Dioxide	% v/v	10.9	10.67	9.54	9.32	11.87	-
H2O	% v/v	10.1	10.3	10.4	9.2	10.6	-
Sulphur Dioxide	% v/v	14.48	20.6	5.25	28.41	37.77	300
Stack Gas Temp	m/s	516.15	538.15	543.15	555.15	564.15	-
Stack Gas Velocity		23.93	27.24	27.67	28.3	29.07	-
Volumetric Flow Rate	m ³ /h	2499	2739	2736	2764	2770	3000
Volumetric Flow Rate (Ref)	m ³ /h	2043	2291	2151	1884	1981	3000

Table 4.4 Odour Monitoring Results

	Location	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Limit
Average Odour O _{Ue} /m ³	AEP 5	532	575	456	493	621	1000
	AEP 7	575	621	532	575	532	1000
	AEP 8	621	532	422	532	456	700

Table 4.5 Bacteria Monitoring

Location	Aspergillus Fumigatus (CFUm ³)	Mesophilic Bacteria (CFUm ³)	Aspergillus Fumigatus (CFUm ³)	Mesophilic Bacteria (CFUm ³)
	May 2020	May 2020	Sept 2020	Sept 2020
Upwind 1	<3.5	103	<3.5	187
Downwind 2	<3.5	1066	<3.5	1040
Downwind 3	<3.5	1136	<3.5	1363

4.4 Discussion

The dust deposition results were all below the emission limit set in the Licence. The CHP stack emissions are below the limits set in the licence with the exception of the Total Volatile Organic Compound (TVOC) level at AEP2.

The exceedance of the TVOC ELV in one of the gas engines is due to the methodology specified in the licence to calculate emission limit values. TVOCs are not a priority air pollutant, are not subject to Air Quality Standards Regulations 2011 (S.I. No. 180/2011) and were not included in the list of parameters the Agency requested be assessed by means of air dispersion modelling as part of the original licence application. In this context the exceedance of the TVOC ELV is not of environmental significance.

The licence does not specify emission limits for bio aerosols. *Aspergillus fumigatus* were not detected and the mesophilic bacteria were at the lower end of the range. OMI concluded that the results confirmed there are no significant bioaerosol impacts in the vicinity the facility, as all of ambient air concentrations were within the range of the proposed bioaerosol assessment criterion.

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