Waterford City WWTP (Sludge Treatment)
Springfield House, Gorteens, Co. Kilkenny

Waste Licence Number W0244

ANNUAL ENVIRONMENTAL REPORT FOR 2012

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Waterford City Council

CONTENT

1. Introduction and Background to 2012 AER

1.1 Summary Report on 2012

Name and location of the site

The primary discharge is from a wastewater treatment plant located at Gorteens, Co. Kilkenny approximately 3km east of Waterford City, adjacent to Belview Port.

Description of the plant

The facility is a wastewater treatment plant (WWTP) for Waterford City and its Environs to cater for domestic and industrial wastewater. It is located approximately 3km east of Waterford City in the townland of Gorteens, County Kilkenny. The facility is operated by Celtic Anglian Water on behalf of Anglian Water International , who are contracted by Waterford City Council to operate the plant 24 hours/day and 365 days/year.

The wastewater treatment process consists of inlet screening, grit and grease removal, primary settlement, activated sludge process and final settlement. The facility includes infrastructure for the treatment of excess sludge generated by the wastewater treatment process. The maximum tonnage of sewage sludge to be treated is 95,100 tonnes per annum. No sludges or other wastes are permitted to be imported for treatment.

The sludge arising from wastewater treatment is thickened, pasteurised, treated in one of two anaerobic digesters and dewatered. Biogas from the digestion process is used for the on-site boilers, with any excess gas being flared. The wastewater preliminary treatment works and sludge dewatering works are located indoors, in the inlet works building and sludge building respectively. These areas are operated under negative air pressure with odours extracted to two odour control units for treatment.

The plant was commissioned in July 2010.

2. Monitoring Reports Summary

2.1 Emissions from the facility

2.1.1 Emissions to Air

The monitoring of emissions on the two odour control units was carried out quarterly. Sampling was undertaken for ammonia, amines, hydrogen sulphide and mercaptans. During the monitoring all processes were running normally.

Table 2.1.1: Emissions to Air OCU-1 (Odour Control Unit)

Date	Ammonia	Amines	Hydrogen Sulphide	Mercaptans	Volume Flow
	(ppm)	(ppm)	(ppm)	(ppm)	m^3/hr
Q1 2012	<0.25[1]	<2.0	0.004	<0.5[1]	15,892
Q2 2012	<0.25[1]	<1.08	0	<0.5[1]	14,038
Q3 2012	<0.18	<0.45	0	<0.3	11,888
Q4 2012	<5.0	<0.40	0	<0.1	14,551
ELV	**50**	**5**	**5**	**5**	**15,785**

Table 2.1.2: Emissions to Air OCU-2 (Odour Control Unit)

Date	Ammonia	Amines	Hydrogen Sulphide	Mercaptans	Volume Flow
	(ppm)	(ppm)	(ppm)	(ppm)	Nm^3/hr
Q1 2012	<0.25[1]	<1.1	4.4	2	5,353
Q2 2012	<0.25[1]	<1.43	0.017	1	4,275
Q3 2012	<0.18	<0.41	0	0.26	3,673
Q4 2012	<5.0	<0.40	0	<0.25	4,780
ELV	**50**	**5**	**5**	**5**	**6,833**

Note:

1. Not Detected
2. Results are referenced to standard temperature 273K and pressure 101.325 kPa no correction for oxygen or moisture.
3. Results for amines are referenced to trimethylamine for purposes of conversion from w/v to v/v.

The monitoring of Boiler Emissions was carried out in May 2012. The boilers were running on plant gas, and all processes were running normally during the monitoring period.

Table 2.1.3: Emissions to Air Boiler 1

Time (mins)	NO_x as NO_2	CO	Particulate	Total VOC's as C
	mg/m^3	mg/m^3	mg/m^3	mg/m^3
0-30	82.1	4.1	4.90	0.03
ELV	**100**	**60**	**5**	-

Reference conditions 273K, 101.3 kPa, dry gas @ 3% Oxygen

Table 2.1.4: Emissions to Air Boiler 2

Time (mins)	NO_x as NO_2	CO	Particulate	Total VOC's as C
	mg/m^3	mg/m^3	mg/m^3	mg/m^3
0-30	71.6	14.5	<0.33	0.03
ELV	**100**	**60**	**5**	-

Reference conditions 273K, 101.3 kPa, dry gas @ 3% Oxygen

Noise Emissions

Noise monitoring was undertaken in April 2010, prior to the issue of the taking over certificate. There was one noise complaint in September 2012 as detailed in section 4.1. The issue was resolved.

Storm Water Emissions

A storm water sampling chamber was installed onsite early in 2012 to facilitate sampling of storm water emissions from the site.

2.2 Waste Management Record

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Location of Treatment	Name and Licence/Permit No of Recover/Disposer	Non Haz Waste: Address of Recover/Disposer
Within the Country	19 08 05	No	3558	Wet tonnes of sludges from treatment of urban waste water	R10	Offsite in Ireland	Greenstar,WCP-DC-08-1120-01	David Reck,Courtnacuddy,Clonroche,Co. Wexford,Ireland
Within the Country	19 08 01	No	103	screenings	D5	Offsite in Ireland	Greenstar,W0177-03	Ballynagran, ,Co. Wicklow,.,Ireland
Within the Country	19 08 99	No	9	wastes not otherwise specified	D5	Offsite in Ireland	Greenstar,W0177-03	Ballynagran, ,Co. Wicklow,.,Ireland

2.3 Energy and Water Consumption

The energy supplied to the WWTP is from three sources:

- Electricity (from National Grid)
- Biogas from the Anaerobic Digester
- Diesel Fuel

The records for electricity consumption are contained in Table 2.5. No information was available on biogas production. Diesel usage was minimal

Table 2.3.1: Energy Consumption

Month	Monthly Power Consumption kWh	Average Daily Power Consumption kWh
January	230,051	7,421
February	210,482	7,258
March	225,091	7,261
April	199,170	6,639
May	204,755	6,605
June	195,150	6,505
July	201,531	6,501
August	200,167	6,457
September	200,220	6,674
October	197,377	6,367
November	184,530	6,151
December	163,773	5,283
TOTAL	**2,412,297**	**6,591**

Table 2.3.2: Water Consumption

Month	Potable Water Consumption (m^3)	Average Daily Potable Water Consumption (m^3)
January	136	4.4
February	71	2.45
March	60	1.94
April	599	19.97
May	291	9.39
June	166	5.53
July	156	5.03
August	20	0.65
September	39	1.3
October	112	3.61
November	14	0.47
December	17	0.55
TOTAL	**1,681**	**4.6**

2.4 Environmental Incidents and Complaints

There were no environmental incidents or complaints in 2012.

2.5 Pollutant Release and Transfer Register (PRTR) - report for previous year

The required data was submitted electronically via the EPA website on 25th February 2013 and following a query from the EPA was updated on 10th October 2013.. See data submitted in **Appendix A**.

3. Environmental Management

3.1 Report on Environmental Management Programme (2012)

The environmental monitoring objectives as set out in the AER for 2011 were achieved.

3.2 Schedule of Environmental Objectives and Targets/ Environmental Management Programme Report (2013)

Complete all environmental monitoring required

Task	Details	Due Date	By Whom	Status
1	Conduct monitoring	Dec 2013	WWTP Manager	Ongoing

Energy and resource efficiency

Task	Details	Due Date	By Whom	Status
2	Monitor electricity diesel and biogas usage	Dec 2013	WWTP Manager	Ongoing
3	Efficiency test on boilers	Dec 2013	WWTP Manager	Ongoing
4	Monitor water usage	Dec 2013	WWTP Manager	Ongoing

Waste handling and reduction

Task	Details	Due Date	By Whom	Status
5	Retain records of all waste production and collection onsite	Dec 2013	WWTP Manager	Ongoing
6	Review process to identify waste reductions	Dec 2013	WWTP Manager	Ongoing

The Contractor is currently commissioning biogas flow meters for the Digesters.

The following development/ infrastructural works are also proposed at the facility

- CO monitors and SCADA connection
- Biogas Monitor for Flare Stack

4. Licence Specific Reports

4.1 Noise Management Report Summary

There was one noise complaint in September 2012.

Date & Time	Nature of Complaint	Cause of Complaint	Actions taken to resolve issue	Closed (Y/N)
16/09/12	Persistent squeaking noise coming from plant	Auger in sludge skip was faulty and squeaking	Auger was immediately switched off. Skip was taken off site to be serviced. Grease points were installed and a new bearing was sourced. The skip augers have now been linked to the dewaterer pumps and such noise occurrence should not happen again.	Y

4.2 Odour Management Programme Summary

There were no odour incidents or complaints in 2012.

The odours generated by the sludge treatment works and the inlet works (and primary settlement tanks) are monitored to ensure that the maximum allowable odour emission rates are not exceeded.

There are 2 no. Odour Control Units (OCUs) within the facility, one for the sludge treatment works and one for the inlet works (and primary settlement tanks).

The odour control units are designed to extract odour from the specified areas. The odour extraction from these areas will create a negative pressure in these areas so that no odour can escape. In addition, U-traps are provided on all drain points for the OCUs to further ensure that odours will not escape.

Duty / standby fans will extract air continuously from the following sources:

- Preliminary treatment
- Preliminary treatment building
- Primary settlement tanks
- Picket Fence thickener
- Secondary Sludge thickener
- Sludge dewaterer
- Sludge dewatering building
- Return liquors pumping station
- Sludge holding tanks
- Pasteuriser tanks

In addition the aeration system at the plant is a diffused aeration system which minimises the potential of odour from the activated sludge process.

Operation and Maintenance of OCUs

The odour control units are checked weekly by site personnel and the results are recorded. Any maintenance to the odour control units is recorded and reported in Monthly Status Reports.

If an issue was noted in relation to odour assessment it would be recorded in the site logbook.

4.3 Sludge Register

Sludge Cake Testing (NMP 2012)

Appendix III: Waterford sludge analysis

CAW Waterford sludge analyses summary

Sludge analyses on a dry basis

	P (mg/kg)	N %	DM %	Zinc (mg/kg)	Cadmium (mg/kg)	Nickel (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Chromium (mg/kg)
Mar-12	14080	4.8	19.2	1036	1.3	21.76	177.5	2003	0.05	26.7
Sep-12	18210	5	21.50	8.4	0	0.54	0.3	0	0.01	0.466
Jan-13	14380	4.9	21.00	147.7	0.3	6.88	105.7	7.9	0.01	8.507
Average (kg/t)	15556.67	4.90	20.57	397.37	0.53	9.73	94.50	670.30	0.02	11.89

Sludge analyses on a wet basis

	P (mg/kg)	N %	DM %	Zinc (mg/kg)	Cadmium (mg/kg)	Nickel (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Chromium (mg/kg)
Mar-12	3027.2	10320	25.7	222.74	0.28	4.68	38.16	430.65	0.01	5.74
Sep-12	3915.15	10750	26.7	1.81	0.00	0.12	0.06	0.00	0.00	0.10
Jan-13	3091.7	10535	27.7	31.76	0.06	1.48	22.73	1.70	0.00	1.83
Average (kg/t)	3.34	10.54	0.03	0.09	0.00	0.00	0.02	0.14	0.00	0.00

A summary of sludge disposal records is contained in Appendix B.

4.4 Ambient Monitoring Summary

Clearpower carried out soil sampling for the T&A Byrne Farm in September 2010 as part of the Nutrient Management Plan. Soil analysis for the land plots (field locations and associated soil references included in Table below) was carried out by FBA Laboratories Ltd. of Cappoquin Co. Waterford. Soil samples were tested for phosphorous and potassium nutrient levels, pH, and the seven heavy metals (cadmium, chromium, copper, mercury, nickel, lead and zinc) and taken in accordance to the Teagasc Code of Practice for Soil Sampling.

A summary of the monitoring data is presented in the Table below.

Area	Field ID	Sample	pH	Total P (mg/l)	Total K (mg/l)	Copper (Cu) (mg/kg)	Zinc (Zn) (mg/kg)	Cadmium (Ca) (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Chromium (mg/kg)	Mercury (mg/kg)	Organic Matter %	Clay Content %
Clonroche	Y13003027	SS1	5.3	2.7	157.7	25.22	77.03	0.12	20.75	28.95	37.55	0.04	8.4	82
		SS2	5.2	1.9	129.0	20.65	76.15	0.15	22.29	29.17	42.76	0.05	11.6	14
Ballygalvert	Y12901206	SS3	6.7	4.2	144.3	20.88	75.95	0.16	23.88	24.91	31.25	0.07	8.1	80
	Y12901148	SS4	6.7	3.8	136.9	34.90	142.80	0.30	37.63	39.20	38.89	0.10		
		SS5	6.8	5.3	100.3	19.23	72.84	0.24	24.94	25.59	39.58	0.10	8.5	53
	Y12901182	SS6	6.7	3.9	139.8	19.67	77.50	0.23	27.48	26.60	38.65	0.10	10.4	14
	Y12901113	SS7	6.2	1.9	122.4	24.86	85.58	0.25	36.73	30.16	45.94	0.11	8.5	53
		SS8	5.4	2.1	105.5	27.99	103.20	0.21	30.22	33.32	40.88	0.09		
	Y12901183	SS9	6.6	12.9	143.9	23.74	90.76	0.19	26.29	28.68	43.24	0.07		
		SS10	6.3	15.6	158.2	24.59	93.74	0.21	27.19	30.19	45.01	0.08	8.9	60
		SS11	6.9	13.3	109.9	23.08	91.17	0.21	23.21	29.96	42.53	0.07	9.4	82
Chapel	Y13002052	SS12	6.2	4.8	152.4	21.30	94.59	0.28	27.88	30.28	46.42	0.07	8.9	76
		SS13	6.3	6.8	177.0	22.71	100.20	0.29	26.28	28.49	44.03	0.07	9.4	82
		SS14	6.3	2.2	63.2	20.57	116.50	0.20	23.03	30.83	43.39	0.07		
Tominearly	Y13013086	SS15	5.9	1.8	50.1	18.59	93.50	0.20	27.70	32.83	63.34	0.07	9.0	63
	Y13013087	SS16	6.4	3.3	46.5	23.36	97.74	0.21	27.86	27.20	44.48	0.09	9.0	63
	Y13013098	SS17	5.8	3.5	33.2	17.49	75.66	0.18	22.59	30.90	69.18	0.04		
		SS18	6.0	2.5	98.9	24.04	96.07	0.18	27.93	30.08	53.98	0.07	8.9	76
Growtown Upper	Y15012056	SS19	5.6	2.7	39.1	8.65	35.73	0.10	15.21	12.71	24.30	0.04	8.9	60
	Y15012057	SS20A	6.4	9.1	65.4	9.88	38.85	0.13	16.62	11.85	32.05	0.05	9.4	35
		SS20B	6.4	3.3	42.1	12.16	33.96	0.11	16.58	12.37	30.52	0.04	12.2	44
	Y15012014	SS21	6.0	4.3	79.1	17.11	55.37	0.17	23.11	14.94	34.01	0.06		
	Y15012007	SS22	6.4	2.5	127.8	8.93	35.01	0.15	16.10	8.97	28.64	0.05	6.4	82
	Y15012053	SS23	6.2	5.2	65.1	13.12	58.42	0.15	22.94	12.95	34.25	0.06	8.8	46
	Y15012054	SS24	5.8	3.6	69.6	11.50	47.59	0.15	17.53	11.29	28.37	0.06	10.5	85
Clonroche 2	Y13003106	SS25	6.4	2.2	64.3	22.50	81.88	0.24	26.37	26.87	45.16	0.08		
		SS26	6.6	2.8	97.2	21.92	83.92	0.18	29.82	29.92	54.87	0.10	7.1	78
		SS27	6.6	2.8	69.7	22.22	80.28	0.19	30.84	25.10	46.44	0.08		
		SS28	6.5	3.0	66.2	23.35	78.84	0.22	31.82	24.43	52.55	0.10		

Area	Field ID	Sample	pH	Total P (mg/l)	Total K (mg/l)	Copper (Cu) (mg/kg)	Zinc (Zn) (mg/kg)	Cadmium (Ca) (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Chromium (mg/kg)	Mercury (mg/kg)	Organic Matter %	Clay Content %
Ardenagh Great	Y11601057	SS29	6.8	12.0	139.1	25.11	90.57	0.31	34.46	24.81	52.00	0.08		
	Y11601041	SS30	5.8	11.6	106.1	20.89	77.82	0.28	26.71	21.83	41.89	0.07		
	Y11601026	SS31	6.7	11.6	99.5	25.39	81.84	0.26	34.32	19.22	41.58	0.07		
	Y11601048	SS32	6.8	6.4	105.9	6.72	36.10	0.27	13.38	7.61	12.71	0.06	9.2	72
	Y11601044	SS33	6.9	6.2	106.3	21.62	72.97	0.24	32.90	16.41	34.02	0.06	9.0	72
	Y11601039/ Y11601052	SS34	5.6	10.9	118.9	22.43	100.10	1.95	22.21	48.44	36.29	0.10		
	Y11601052	SS35	7.4	30.0	77.0	26.11	102.90	0.79	33.13	13.47	12.82	0.07		
	Y11601018	SS36	5.4	1.6	78.7	24.91	71.65	0.39	25.95	22.06	31.82	0.06	8.2	60
	Y11614014	SS37	5.9	3.4	246.8	23.66	81.22	0.27	32.36	21.64	44.83	0.07	9.2	63
	Y11601020	SS38	6.5	6.3	117.0	10.10	45.40	0.18	22.90	15.15	42.05	0.03	9.0	71
	Y11601012	SS39	5.7	5.6	191.3	27.79	87.85	0.29	30.31	21.56	50.79	0.06	8.2	71
	Y11601012	SS40	6.5	3.9	105.7	22.35	76.80	0.26	31.66	19.39	49.22	0.06	8.4	79
	Y11601028	SS41	6.3	8.6	113.9	27.39	97.30	0.32	35.95	22.04	51.56	0.07	10.0	66
	n/a	SS42	6.7	10.9	108.1	*	*	*	*	*	*	*		
	Y11601027	SS43	6.8	6.7	97.6	48.52	87.00	0.27	31.92	20.76	48.93	0.07		
	Y11601021	SS44	6.8	4.8	89.6	20.33	76.58	0.32	29.81	17.67	50.20	0.07	9.7	100
	Y11601017	SS45	6.3	8.3	158.4	34.04	99.27	0.32	40.89	22.43	50.29	0.07	10.2	100
	Y11601050	SS46	7.4	30.0	90.4	24.29	140.60	0.51	39.84	17.57	16.57	0.08		

4.5 Tank and Pipeline Testing and Inspection Report

Tank and pipelines were integrity pressure tested during the commissioning of the plant which was completed in 2010. There have been no visible, or, process analysis indications of wastewater leakage from the plant. Mass Balance calculations based on monitoring of the numerous flow meters throughout the site have confirmed the system integrity.

4.6 Energy Efficiency Audit Report Summary

An energy audit was prepared and submitted as part of the 2011 AER. The scope of the audit focussed on the following items:

- Existing energy usage
- Review of Plant Loading versus Electricity Loading
- Identification of energy systems
- Discussion
- Recommendations

7 recommendations were made. An Energy Audit Review Report has been prepared and contains a summary of the actions taken to address recommendations made in the Energy Audit of 2012 as contained in Appendix C

4.7 Report on the Assessment of the efficiency of use of Raw Materials in Processes and the Reduction in Waste Generated

The raw materials used are the fuel for the facility; biogas, electricity and diesel and polyelectrolytes for sludge thickening and dewatering.

The electricity usage for the plant is shown in Table 2.3.1. Total consumption for the year was 2,412,297 Kwh

Biogas generated within the anaerobic digesters is stored and used as required to power the boilers (which provide hot water for the pasteurization process). There is currently no measurement of biogas production onsite.

Diesel fuel is stored on site for the generator and the boilers for situations where there is a shortfall in the primary fuel source, i.e. electricity and biogas. The capacity of boiler fuel tank is 10,000 litres diesel and the generator fuel tank also holds 10,000 litres diesel. Records for diesel usage onsite were not available. Diesel fuel usage during 2012 was minimal.

Polyelectrolytes are used in the thickening and dewatering process of the sewage treatment. These are the only chemicals that are used on site. Two types are used for the WWTP: PLF 1700Q (for sludge thickening) and PLF 2800Q (for sludge dewatering). The polyelectrolyte is in powder form and approximately 2.4 tonnes is to be held on site, i.e. one week supply.

The quantities of raw materials utilised in the process will continue to be monitored to ensure efficiency of use.

4.8 Report on Progress Made and Proposals being developed to minimise water demand and the volume of trade effluent discharges

The water consumption onsite is monitored; the monthly water consumption is shown in Table 2.3.2. The consumption of water onsite will continue to be monitored.

Water Consumption is minimised by the reuse of the treated effluent as a washwater supply for sludge thickening, sludge dewatering and general washdown activities.

4.9 Development/Infrastructural works summary

The following development/ infrastructural works were completed in early 2012

- Storm water sampling chamber

4.10 Decommissioning Management Plan

The Residual Management Plan for the Waterford City WWTP was submitted as part of the 2011 AER.. The estimate of "known" decommissioning costs identified in the Residual Management Plan Report for this site is €335,500.00. The plan remains the same as previous years. See **Appendix D** for a copy of the full plan.

4.11 Environmental Liability and Financial Provisions

4.11.1 Statement of Measures

Waterford City Council is aware of the environmental risks associated with the discharges from the agglomeration to the Lower River Suir Special Area of Conservation (cSAC).

The Waterford City WWTP is operated to the highest standards and all environmental monitoring required under this license is undertaken. Process monitoring is also undertaken and alarm and call-out systems are in place to address any incidents should they arise.

Waterford City Council monitors the operation of the drainage network and addresses any incident which occurs.

4.11.2 Environmental Liabilities Risk Assessment

The detailed ELRA was prepared for the 2011 AER. A total of 19 risks were identified with appropriate measures taken or adopted in relation to the prevention of environmental damage. There have been no additional risks identified. See **Appendix E** for a copy of the full ELRA

Appendix A

PRTR Emissions Data

Environmental Protection Agency

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.15

REFERENCE YEAR	2012

1. FACILITY IDENTIFICATION

Parent Company Name	Waterford City Council
Facility Name	Waterford City Waste Water Treatment Plant
PRTR Identification Number	D0022
Licence Number	D0022-01

Waste or IPPC Classes of Activity

No.	class_name
30.4	General

Address 1	Maritana Gate
Address 2	Canada Street
Address 3	Waterford City
Address 4	Co. Waterford
	Waterford
Country	Ireland
Coordinates of Location	-7.09856 52.2547
River Basin District	IESE
NACE Code	3700
Main Economic Activity	Sewerage
AER Returns Contact Name	Paul Tooher
AER Returns Contact Email Address	ptooher@waterfordcity.ie
AER Returns Contact Position	Senior Executive Engineer
AER Returns Contact Telephone Number	051-849636
AER Returns Contact Mobile Phone Number	
AER Returns Contact Fax Number	
Production Volume	0.0
Production Volume Units	
Number of Installations	0
Number of Operating Hours in Year	0
Number of Employees	5
User Feedback/Comments	
Web Address	

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
5(f)	Urban waste-water treatment plants

4.1 RELEASES TO AIR Link to previous years emissions data

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
01	Methane (CH4)	E	ESTIMATE	EPA LWW TP Tool Version 5.0	0.0	0.0	0.0	0.0
02	Carbon monoxide (CO)	E	ESTIMATE	EPA LWW TP Tool Version 5.0	494.0	505.0	0.0	11.0
03	Carbon dioxide (CO2)	E	ESTIMATE	EPA LWW TP Tool Version 5.0	945530.0	1275483.0	0.0	1129953.0
05	Nitrous oxide (N2O)	E	ESTIMATE	EPA LWW TP Tool Version 5.0	0.0	7.0	0.0	7.0
07	Non methane volatile organic compounds (NMVOC)	E	ESTIMATE	EPA LWW TP Tool Version 5.0	0.0	3.0	0.0	3.0
08	Nitrogen oxides (NOx/NO2)	E	ESTIMATE	EPA LWW TP Tool Version 5.0	1510.0	1543.0	0.0	33.0
11	Sulphur oxides (SOx/SO2)	E	ESTIMATE	EPA LWW TP Tool Version 5.0	0.0	3.0	0.0	3.0

* Select a row by double clicking on the Pollutant Name (Column II) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double clicking on the Pollutant Name (Column II) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (As required in your Licence)

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double clicking on the Pollutant Name (Column II) then click the delete button

Additional Data Requested from Landfill operators

For the purposes of the National Inventory on Greenhouse Gases, landfill operators are requested to provide summary data on landfill gas (Methane) flared or utilised on their facilities to accompany the figures for total methane generated. Operators should only report their Net methane (CH4) emission to the environment under 'T (Total) KG/yr' for Section A: Sector specific PRTR pollutants above. Please complete the table below:

Landfill: Waterford City Waste Water Treatment Plant

Please enter summary data on the quantities of methane flared and/ or utilised	T (Total) kg/Year	M/C/E	Method Used		Facility Total Capacity m3 per hour	
			Method Code	Designation or Description		
Total estimated methane generation (as per site model)	0.0				N/A	
Methane flared	0.0				0.0	(Total Flaring Capacity)
Methane utilised in engines	0.0				0.0	(Total Utilising Capacity)
Net methane emission (as reported in Section A above)	0.0				N/A	

4.2 RELEASES TO WATERS Link to previous years emissions data

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

Data on ambient monitoring of storm/ surface water or groundwater, conducted as part of your licence requirements, should NOT be submitted under AER/ PRTR Reporting as this

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT			Method Used		QUANTITY			
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
34	1,2 dichloroethane (EDC)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
35	Alachlor	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
36	Aldrin	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
61	Anthracene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.034	0.034	0.0	0.0
17	Arsenic and compounds (as As)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	27.028	27.259	0.0	0.231
37	Atrazine	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.127	0.129	0.0	0.002
62	Benzene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.205	0.233	0.0	0.028
81	Benzo(g,h,i)perylene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.024	0.024	0.0	0.0
82	Brominated diphenylethers (PBDE)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
16	Cadmium and compounds (as Cd)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.63	0.677	0.0	0.047
78	Chlordane	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
39	Chlordecone	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
40	Chlorfenvinphos	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
75	Chlorides (as Cl)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	10705720.034	10879443.143	0.0	173723.109
31	Chloro-alkanes, C10-C13	E	ESTIMATE	EPA UWWTP Tool Version 5.0	2.561	2.597	0.0	0.036
80	Chlorpyrifos	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.001	0.001	0.0	0.0
19	Chromium and compounds (as Cr)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	3.76	3.777	0.0	0.017
20	Copper and compounds (as Cu)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	148.962	149.929	0.0	0.967
67	Cyanides (as total CN)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	35.749	36.228	0.0	0.479
30	DDT	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
70	Di-(2-ethyl hexyl) phthalate (DEHP)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	11.185	11.692	0.0	0.507
32	Dichloromethane (DCM)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.554	0.575	0.0	0.021
36	Dieldrin	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
37	Diuron	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.321	0.321	0.0	0.0
38	Endosulphan	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
39	Endrin	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
65	Ethyl benzene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.202	0.222	0.0	0.02

86	Fluoranthene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.029	0.031	0.0	0.002
82	Fluorides (as total F)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	6706.317	6762.817	0.0	56.5
40	Halogenated organic compounds (as AOX)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	29.104	29.513	0.0	0.409
47	Heptachlor	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
90	Hexabromobiphenyl	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
47	Hexachlorobenzene (HCB)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
48	Hexachlorobutadiene (HCBD)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
89	Isodrin	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
87	Isoproturon	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.091	0.094	0.0	0.003
20	Lead and compounds (as Pb)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	37.06	38.909	0.0	1.849
46	Lindane	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.006	0.006	0.0	0.0
21	Mercury and compounds (as Hg)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.017	0.0	0.017
46	Mirex	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
88	Naphthalene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.049	0.074	0.0	0.025
22	Nickel and compounds (as Ni)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	51.914	52.53	0.0	0.616
84	Nonylphenol and Nonylphenol ethoxylates (NP/NPEs)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	1.011	1.197	0.0	0.186
87	Octylphenols and Octylphenol ethoxylates	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
89	Organotin compounds (as total Sn)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
48	Pentachlorobenzene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
49	Pentachlorophenol (PCP)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
71	Phenols (as total C)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	11.093	24.938	0.0	13.845
50	Polychlorinated biphenyls (PCBs)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
79	Polycyclic aromatic hydrocarbons (PAHs)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.151	0.188	0.0	0.037
51	Simazine	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.172	0.174	0.0	0.002
52	Tetrachloroethylene (PER)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.721	0.721	0.0	0.0
53	Tetrachloromethane (TCM)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
73	Toluene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	6.014	8.398	0.0	2.384
12	Total nitrogen	M	OTH	In house methods based on "APHA Standard Methods for Water and Wastewater" 21st edition:2005	154915.915	158935.973	0.0	4020.058
76	Total organic carbon (TOC) (as total C or COD/3)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	112419.482	114662.702	0.0	2243.22

13	Total phosphorus	M	OTH	In house methods based on "APHA Standard Methods for Water and Wastewater" 21st edition:2005	25459.617	26194.973	0.0	735.356
59	Toxaphene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
74	Tributyltin and compounds	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
54	Trichlorobenzenes (TCBs)(all isomers)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
67	Trichloroethylene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
77	Trifluralin	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
75	Triphenyltin and compounds	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
60	Vinyl chloride	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
79	Xylenes	E	ESTIMATE	EPA UWWTP Tool Version 5.0	1.413	1.685	0.0	0.272
24	Zinc and compounds (as Zn)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	601.906	622.777	0.0	20.871

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					QUANTITY			
No. Annex II	Name	M/C/E	Method Used: Method Code	Method Used: Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					QUANTITY			
Pollutant No.	Name	M/C/E	Method Used: Method Code	Method Used: Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
370	Selenium	E	ESTIMATE	EPA UWWTP Tool Version 5.0	57.918	58.032	0.0	0.114
705	Antimony (as Sb)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	1.884	1.966	0.0	0.082
368	Molybdenum	E	ESTIMATE	EPA UWWTP Tool Version 5.0	18.493	18.733	0.0	0.24
358	Tin	E	ESTIMATE	EPA UWWTP Tool Version 5.0	36.885	36.885	0.0	0.0
373	Barium	E	ESTIMATE	EPA UWWTP Tool Version 5.0	280.141	286.242	0.0	6.101
374	Boron	E	ESTIMATE	EPA UWWTP Tool Version 5.0	3578.734	3634.435	0.0	55.701
359	Cobalt	E	ESTIMATE	EPA UWWTP Tool Version 5.0	2.143	2.198	0.0	0.055
366	Vanadium	E	ESTIMATE	EPA UWWTP Tool Version 5.0	33.254	34.144	0.0	0.89
388	Dichlobenil	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.052	0.052	0.0	0.0
383	Linuron	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
385	Mecoprop Total	E	ESTIMATE	EPA UWWTP Tool Version 5.0	1.305	1.325	0.0	0.02
380	2,4 Dichlorophenol (2,4 D)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.622	0.628	0.0	0.006

384	MCPA	E	ESTIMATE	EPA UWWTP Tool Version 5.0	1.081	1.083	0.0	0.002
385	Glyphosate	E	ESTIMATE	EPA UWWTP Tool Version 5.0	18.689	18.756	0.0	0.067
389	Benzo(a)pyrene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.024	0.024	0.0	0.0
390	Benzo(b)fluoranthene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.024	0.024	0.0	0.0
391	Benzo(k)fluoranthene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.024	0.024	0.0	0.0
392	Indeno(1,2,3-cd)pyrene	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.027	0.027	0.0	0.0
393	Carbon tetrachloride	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
394	2,6-Dichlorobenzamide	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.981	0.991	0.0	0.01
395	Dicofol	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
396	Hexabromocyclododecane (HBCD)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
397	PFOS	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.006	0.006	0.0	0.0
236	Ammonia (as N)	M	OTH	In house methods based on "APHA Standard Methods for Waters and Wastewater" 21st edition:2005	30800.283	30800.283	0.0	0.0
303	BOD	M	OTH	In house methods based on "APHA Standard Methods for Waters and Wastewater" 21st edition:2005	79744.202	79744.202	0.0	0.0
306	COD	M	OTH	In house methods based on "APHA Standard Methods for Waters and Wastewater" 21st edition:2005	450457.193	450457.193	0.0	0.0
382	Kjeldahl Nitrogen	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
327	Nitrate (as N)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
372	Nitrite (as N)	E	ESTIMATE	EPA UWWTP Tool Version 5.0	0.0	0.0	0.0	0.0
332	Ortho-phosphate (as PO4)	M	OTH	In house methods based on "APHA Standard Methods for Waters and Wastewater" 21st edition:2005	23411.142	23411.142	0.0	0.0
240	Suspended Solids	M	OTH	In house methods based on "APHA Standard Methods for Waters and Wastewater" 21st edition:2005	103533.336	103533.336	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

4.3 RELEASES TO WASTEWATER OR SEWER

Link to previous years emissions data

[PRTR# : D0002 | Facility Name : Waterford City Waste Water Treatment Plant | Filename : D0002-

SECTION A : PRTR POLLUTANTS

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD			QUANTITY			
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

4.4 RELEASES TO LAND

Link to previous years emissions data

[PRTR# : D0002 | Facility Name : Waterford City Waste Water Treatment Plant | Filename : D0002-01 PRTR 2012.xls | Return Year : 2012]

SECTION A : PRTR POLLUTANTS

RELEASES TO LAND					Please enter all quantities in this section in KGs		
POLLUTANT		METHOD			QUANTITY		
			Method Used				
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
					0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

RELEASES TO LAND					Please enter all quantities in this section in KGs		
POLLUTANT		METHOD			QUANTITY		
			Method Used				
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year
					0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

5. ONSITE TREATMENT & OFFSITE TRANSFERS OF WASTE

PRTRe : Dooza : Facility Name : Waterford City Waste Water Treatment Plant : Filename : Dooza-01 PRTR 2012.xls : Return Year : 2012

26/03/2013 09:36

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Please enter all quantities on this sheet in Tonnes

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Receiver/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Receiver/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						MOTE	Method Used					
Within the Country	19 08 01	No	102.6	screenings	D5	M	Weighed	Offsite in Ireland	Greenstar,W0177-03	Ballynagran,County Wicklow,,,,Ireland		
Within the Country	19 08 05	No	727.2	sludges from treatment of urban waste water - 20.77% TDS	R10	M	Weighed	Offsite in Ireland	Greenstar,WCP-DC-06-1120-01	David Rack,Courtnacuddy,Clonroche,County Wexford,Ireland		
Within the Country	20 03 01	No	9.4	general waste	D5	C	Volume Calculation	Offsite in Ireland	Greenstar,W0177-03	Ballynagran,County Wicklow,,,,Ireland		

* Select a row by double-clicking the Description of Waste then click the delete button

Appendix B

Sludge Transfer and Disposal Details

Appendix B1

Register of Sludge Transfers from Waterford WwTP

Sludge Register

Sludges Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2 **MSR 12-01**

OUTGOING SLUDGE RECORD								
BATCH NO.	**DOCKET NO.**	**DATE**	**DESTINATION OF PRODUCT**	**TYPE OF PRODUCT**	**QUANTITY OF PRODUCT KG**	**CONTACT AT DESTINATION**	**CERTIFICATE OF ORIGIN / DELIVERY**	**RECEIPT RECEIVED AFTER DELIVERY**
1	555	4-Jan	David Reck, Courtnacuddy,	Class A	14,460	Will Phelan	Yes	Yes
2	553	4-Jan	As above	Class A	15,000	Will Phelan	Yes	Yes
3	556	5-Jan	As above	Class A	8,520	Will Phelan	Yes	Yes
4	557	9-Jan	As above	Class A	10,860	Will Phelan	Yes	Yes
4	559	10-Jan	As above	Class A	13,240	Will Phelan	Yes	Yes
4	560	10-Jan	As above	Class A	6,600	Will Phelan	Yes	Yes
5	561	11-Jan	As above	Class A	11,060	Will Phelan	Yes	Yes
6	562	12-Jan	As above	Class A	13,040	Will Phelan	Yes	Yes
6	563	13-Jan	As above	Class A	12,300	Will Phelan	Yes	Yes
7	565	16-Jan	As above	Class A	9,100	Will Phelan	Yes	Yes
8	566	17-Jan	As above	Class A	15,900	Will Phelan	Yes	Yes
9	567	18-Jan	As above	Class A	15,240	Will Phelan	Yes	Yes
10	568	19-Jan	As above	Class A	13,220	Will Phelan	Yes	Yes
11	569	20-Jan	As above	Class A	10,780	Will Phelan	Yes	Yes
12	571	24-Jan	As above	Class A	14,160	Will Phelan	Yes	Yes
13	572	25-Jan	As above	Class A	12,340	Will Phelan	Yes	Yes
14	574	27-Jan	As above	Class A	15,860	Will Phelan	Yes	Yes
15	576	27-Jan	As above	Class A	12,220	Will Phelan	Yes	Yes
16	577	31-Jan	As above	Class A	13,700	Will Phelan	Yes	Yes
17	579	31-Jan	As above	Class A	11,800	Will Phelan	Yes	Yes
Total					249,400			
Daily Ave					8,045			
TDS/day					1.63			

Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2

MSR 12-02

OUTGOING SLUDGE RECORD								
BATCH NO.	DOCKET NO.	DATE	DESTINATION OF PRODUCT	TYPE OF PRODUCT	QUANTITY OF PRODUCT KG	CONTACT AT DESTINATION	CERTIFICATE OF ORIGIN / DELIVERY	RECEIPT RECEIVED AFTER DELIVERY
1	580	2-Feb	David Reck, Courtnacuddy,	Class A	16,000	Will Phelan	Yes	Yes
2	581	3-Feb	As above	Class A	11,720	Will Phelan	Yes	Yes
3	582	3-Feb	As above	Class A	6,360	Will Phelan	Yes	Yes
4	584	6-Feb	As above	Class A	15,660	Will Phelan	Yes	Yes
4	585	6-Feb	As above	Class A	14,880	Will Phelan	Yes	Yes
4	586	7-Feb	As above	Class A	12,680	Will Phelan	Yes	Yes
5	587	8-Feb	As above	Class A	12,860	Will Phelan	Yes	Yes
6	589	9-Feb	As above	Class A	14,720	Will Phelan	Yes	Yes
6	590	10-Feb	As above	Class A	12,520	Will Phelan	Yes	Yes
7	592	13-Feb	As above	Class A	19,360	Will Phelan	Yes	Yes
8	593	14-Feb	As above	Class A	13,120	Will Phelan	Yes	Yes
9	594	15-Feb	As above	Class A	13,460	Will Phelan	Yes	Yes
10	596	16-Feb	As above	Class A	15,180	Will Phelan	Yes	Yes
11	597	17-Feb	As above	Class A	9,180	Will Phelan	Yes	Yes
12	599	20-Feb	As above	Class A	15,580	Will Phelan	Yes	Yes
13	600	21-Feb	As above	Class A	12,920	Will Phelan	Yes	Yes
14	601	22-Feb	As above	Class A	13,100	Will Phelan	Yes	Yes
15	603	23-Feb	As above	Class A	11,180	Will Phelan	Yes	Yes
16	604	24-Feb	As above	Class A	8,780	Will Phelan	Yes	Yes
17	606	27-Feb	As above	Class A	12,060	Will Phelan	Yes	Yes
18	607	28-Feb	As above	Class A	12,740	Will Phelan	Yes	Yes
19	608	29-Feb	As above	Class A	9,280	Will Phelan	Yes	Yes
Total					283,340			
Daily Ave					9,770			
TDS/day					1.98			

Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2

MSR 12-03

OUTGOING SLUDGE RECORD								
BATCH NO.	DOCKET NO	DATE	DESTINATION OF PRODUCT	TYPE OF PRODUCT	QUANTITY OF PRODUCT KG	CONTACT AT DESTINATION	CERTIFICATE OF ORIGIN / DELIVERY	RECEIPT RECEIVED AFTER DELIVERY
1	609	1-Mar	David Reck, Courtnacuddy,	Class A	11,480	Will Phelan	Yes	Yes
2	610	2-Mar	As above	Class A	7,880	Will Phelan	Yes	Yes
3	612	5-Mar	As above	Class A	14,600	Will Phelan	Yes	Yes
4	615	6-Mar	As above	Class A	10,680	Will Phelan	Yes	Yes
5	616	6-Mar	As above	Class A	13,580	Will Phelan	Yes	Yes
6	617	8-Mar	As above	Class A	14,520	Will Phelan	Yes	Yes
7	619	9-Mar	As above	Class A	12,460	Will Phelan	Yes	Yes
8	620	12-Mar	As above	Class A	9,180	Will Phelan	Yes	Yes
9	621	13-Mar	As above	Class A	7,960	Will Phelan	Yes	Yes
10	622	14-Mar	As above	Class A	9,220	Will Phelan	Yes	Yes
11	623	15-Mar	As above	Class A	11,040	Will Phelan	Yes	Yes
12	624	15-Mar	As above	Class A	8,720	Will Phelan	Yes	Yes
13	626	16-Mar	As above	Class A	8,840	Will Phelan	Yes	Yes
14	627	20 Mar	As above	Class A	9,340	Will Phelan	Yes	Yes
14	628	21-Mar	As above	Class A	12,620	Will Phelan	Yes	Yes
15	630	21-Mar	As above	Class A	9,840	Will Phelan	Yes	Yes
16	631	22-Mar	As above	Class A	11,260	Will Phelan	Yes	Yes
17	632	22-Mar	As above	Class A	9,620	Will Phelan	Yes	Yes
18	633	23-Mar	As above	Class A	8,280	Will Phelan	Yes	Yes
19	635	23-Mar	As above	Class A	10,520	Will Phelan	Yes	Yes
20	636	26-Mar	As above	Class A	7,240	Will Phelan	Yes	Yes
21	638	27-Mar	As above	Class A	11,860	Will Phelan	Yes	Yes
22	639	27-Mar	As above	Class A	11,560	Will Phelan	Yes	Yes
23	640	28-Mar	As above	Class A	19,320	Will Phelan	Yes	Yes
24	642	28-Mar	As above	Class A	10,320	Will Phelan	Yes	Yes
25	643	29-Mar	As above	Class A	9,620	Will Phelan	Yes	Yes
26	644	29-Mar	As above	Class A	6,040	Will Phelan	Yes	Yes
27	645	30-Mar	As above	Class A	8,720	Will Phelan	Yes	Yes
28	647	23-Mar	As above	Class A	9,740	Will Phelan	Yes	Yes
Total					306,060			
Daily Ave					9,873			
TDS/day					2.03			

Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2

MSR 12-04

OUTGOING SLUDGE RECORD

BATCH NO.	DOCKET NO.	DATE	DESTINATION OF PRODUCT	TYPE OF PRODUCT	QUANTITY OF PRODUCT KG	CONTACT AT DESTINATION	CERTIFICATE OF ORIGIN / DELIVERY	RECEIPT RECEIVED AFTER DELIVERY
1	646	3-Apr	David Reck, Courtenacuddy,	Class A	12,580	Will Phelan	Yes	Yes
2	650	3-Apr	As above	Class A	11,100	Will Phelan	Yes	Yes
3	649	4-Apr	As above	Class A	6,920	Will Phelan	Yes	Yes
4	652	4-Apr	As above	Class A	10,960	Will Phelan	Yes	Yes
5	653	5-Apr	As above	Class A	9,600	Will Phelan	Yes	Yes
6	654	5 Apr	As above	Class A	12,000	Will Phelan	Yes	Yes
7	655	6-Apr	As above	Class A	11,400	Will Phelan	Yes	Yes
8	656	6-Apr	As above	Class A	11,720	Will Phelan	Yes	Yes
9	657	10-Apr	As above	Class A	14,120	Will Phelan	Yes	Yes
10	658	11-Apr	As above	Class A	11,220	Will Phelan	Yes	Yes
11	659	12-Apr	As above	Class A	13,740	Will Phelan	Yes	Yes
12	661	12 Apr	As above	Class A	9,940	Will Phelan	Yes	Yes
13	664	13-Apr	As above	Class A	9,960	Will Phelan	Yes	Yes
14	663	13-Apr	As above	Class A	10,940	Will Phelan	Yes	Yes
15	666	16-Apr	As above	Class A	7,500	Will Phelan	Yes	Yes
16	667	16-Apr	As above	Class A	7,640	Will Phelan	Yes	Yes
17	668	17-Apr	As above	Class A	7,340	Will Phelan	Yes	Yes
18	669	18-Apr	As above	Class A	10,740	Will Phelan	Yes	Yes
18	672	18-Apr	As above	Class A	15,040	Will Phelan	Yes	Yes
19	671	19-Apr	As above	Class A	10,320	Will Phelan	Yes	Yes
19	673	19-Apr	As above	Class A	8,960	Will Phelan	Yes	Yes
20	675	20-Apr	As above	Class A	12,240	Will Phelan	Yes	Yes
21	674	20-Apr	As above	Class A	9,240	Will Phelan	Yes	Yes
22	676	23-Apr	As above	Class A	9,520	Will Phelan	Yes	Yes
23	677	24-Apr	As above	Class A	11,980	Will Phelan	Yes	Yes
24	679	24-Apr	As above	Class A	11,020	Will Phelan	Yes	Yes
25	680	25-Apr	As above	Class A	12,660	Will Phelan	Yes	Yes
26	681	25-Apr	As above	Class A	11,980	Will Phelan	Yes	Yes
27	683	26-Apr	As above	Class A	10,120	Will Phelan	Yes	Yes
28	685	26-Apr	As above	Class A	11,960	Will Phelan	Yes	Yes
29	687	27-Apr	As above	Class A	14,240	Will Phelan	Yes	Yes
30	688	27-Apr	As above	Class A	11,980	Will Phelan	Yes	Yes
31	689	30-Apr	As above	Class A	13,900	Will Phelan	Yes	Yes
Total					364,580			
Daily Ave					12,153			
TDS/day					2.27			

Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2 **MSR 12-05**

OUTGOING SLUDGE RECORD								
BATCH NO.	DOCKET NO.	DATE	DESTINATION OF PRODUCT	TYPE OF PRODUCT	QUANTITY OF PRODUCT KG	CONTACT AT DESTINATION	CERTIFICATE OF ORIGIN / DELIVERY	RECEIPT RECEIVED AFTER DELIVERY
1	690	1-May	David Rock, Courtnacuddy,	Class A	11,960	Will Phelan	Yes	Yes
2	691	1-May	As above	Class A	13,340	Will Phelan	Yes	Yes
3	694	2-May	As above	Class A	8,680	Will Phelan	Yes	Yes
4	697	3-May	As above	Class A	13,180	Will Phelan	Yes	Yes
5	693	4-May	As above	Class A	11,300	Will Phelan		Yes
6	692	8-May	As above	Class A	12,180	Will Phelan	Yes	Yes
7	699	9-May	As above	Class A	10,360	Will Phelan	Yes	Yes
8	700	10-May	As above	Class A	14,260	Will Phelan	Yes	Yes
9	701	11-May	As above	Class A	10,360	Will Phelan	Yes	Yes
10	702	14-May	As above	Class A	13,900	Will Phelan	Yes	Yes
11	704	15-May	As above	Class A	10,720	Will Phelan	Yes	Yes
12	705	16-May	As above	Class A	11,740	Will Phelan	Yes	Yes
13	707	17-May	As above	Class A	12,700	Will Phelan	Yes	Yes
14	708	18-May	As above	Class A	13,720	Will Phelan	Yes	Yes
15	710	21-May	As above	Class A	14,300	Will Phelan	Yes	Yes
16	711	22-May	As above	Class A	11,460	Will Phelan	Yes	Yes
17	712	23-May	As above	Class A	13,300	Will Phelan	Yes	Yes
18	715	23-May	As above	Class A	11,340	Will Phelan	Yes	Yes
19	716	24-May	As above	Class A	12,280	Will Phelan	Yes	Yes
20	717	25-May	As above	Class A	13,260	Will Phelan	Yes	Yes
21	719	28-May	As above	Class A	15,180	Will Phelan	Yes	Yes
22	713	29-May	As above	Class A	11,840	Will Phelan	Yes	Yes
23	720	29-May	As above	Class A	15,120	Will Phelan	Yes	Yes
24	721	30-May	As above	Class A	11,900	Will Phelan	Yes	Yes
25	724	31-May	As above	Class A	10,520	Will Phelan	Yes	Yes
26	725	31-May	As above	Class A	13,400	Will Phelan	Yes	Yes
Total					321,800			
Daily Ave					10.381			
TDS/day					2.14			

Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2

MSR 12-06

OUTGOING SLUDGE RECORD								
BATCH NO.	DOCKET NO.	DATE	DESTINATION OF PRODUCT	TYPE OF PRODUCT	QUANTITY OF PRODUCT KG	CONTACT AT DESTINATION	CERTIFICATE OF ORIGIN / DELIVERY	RECEIPT RECEIVED AFTER DELIVERY
1	723	1-Jun	David Rock, Courtracuddy.	Class A	12,460	Will Phelan	Yes	Yes
2	727	1-Jun	As above	Class A	11,940	Will Phelan	Yes	Yes
3	728	5-Jun	As above	Class A	10,980	Will Phelan	Yes	Yes
4	729	6-Jun	As above	Class A	8,100	Will Phelan	Yes	Yes
5	730	7-Jun	As above	Class A	13,940	Will Phelan	Yes	Yes
6	732	8-Jun	As above	Class A	9,680	Will Phelan	Yes	Yes
7	734	8-Jun	As above	Class A	11,160	Will Phelan	Yes	Yes
8	735	11-Jun	As above	Class A	10,380	Will Phelan	Yes	Yes
9	737	12-Jun	As above	Class A	11,300	Will Phelan	Yes	Yes
10	740	13-Jun	As above	Class A	13,100	Will Phelan	Yes	Yes
11	741	14-Jun	As above	Class A	12,080	Will Phelan	Yes	Yes
12	741	15-Jun	As above	Class A	11,050	Will Phelan	Yes	Yes
13	744	18-Jun	As above	Class A	16,320	Will Phelan	Yes	Yes
14	745	19-Jun	As above	Class A	7,740	Will Phelan	Yes	Yes
15	745	19-Jun	As above	Class A	12,800	Will Phelan	Yes	Yes
16	747	20-Jun	As above	Class A	9,380	Will Phelan	Yes	Yes
17	748	21-Jun	As above	Class A	8,500	Will Phelan	Yes	Yes
18	749	22-Jun	As above	Class A	10,980	Will Phelan	Yes	Yes
19	752	22-Jun	As above	Class A	7,700	Will Phelan	Yes	Yes
20	754	25-Jun	As above	Class A	8,360	Will Phelan	Yes	Yes
21	753	26-Jun	As above	Class A	13,600	Will Phelan	Yes	Yes
22	756	27-Jun	As above	Class A	9,500	Will Phelan	Yes	Yes
23	755	27-Jun	As above	Class A	6,540	Will Phelan	Yes	Yes
24	759	28-Jun	As above	Class A	7,740	Will Phelan	Yes	Yes
25	758	28-Jun	As above	Class A	13,080	Will Phelan	Yes	Yes
26	760	29-Jun	As above	Class A	10,220	Will Phelan	Yes	Yes
27	761	29-Jun	As above	Class A	11,270	Will Phelan	Yes	Yes
Total					290,160			
Daily Ave					9,672			
TDS/day					2.03			

Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2 **MSR 12-07**

OUTGOING SLUDGE RECORD								
BATCH NO.	DOCKET NO.	DATE	DESTINATION OF PRODUCT	TYPE OF PRODUCT	QUANTITY OF PRODUCT KG	CONTACT AT DESTINATION	CERTIFICATE OF ORIGIN / DELIVERY	RECEIPT RECEIVED AFTER DELIVERY
1	763	2-Jul	David Reck, Courtnacuddy,	Class A	12,620	Will Phelan	Yes	Yes
2	764	3-Jul	As above	Class A	8,000	Will Phelan	Yes	Yes
3	765	3-Jul	As above	Class A	10,940	Will Phelan	Yes	Yes
4	767	4-Jul	As above	Class A	8,300	Will Phelan		Yes
5	766	5-Jul	As above	Class A	15,020	Will Phelan	Yes	Yes
6	769	6-Jul	As above	Class A	8,720	Will Phelan	Yes	Yes
7	770	6-Jul	As above	Class A	10,380	Will Phelan	Yes	Yes
8	774	9-Jul	As above	Class A	13,520	Will Phelan	Yes	Yes
9	775	10-Jul	As above	Class A	12,720	Will Phelan	Yes	Yes
10	776	11-Jul	As above	Class A	9,640	Will Phelan	Yes	Yes
11	771	11-Jul	As above	Class A	6,180	Will Phelan	Yes	Yes
12	777	12-Jul	As above	Class A	8,860	Will Phelan	Yes	Yes
13	779	13-Jul	As above	Class A	8,820	Will Phelan	Yes	Yes
14	780	13-Jul	As above	Class A	12,440	Will Phelan	Yes	Yes
15	782	17-Jul	As above	Class A	12,660	Will Phelan	Yes	Yes
16	783	18-Jul	As above	Class A	9,280	Will Phelan	Yes	Yes
17	784	18-Jul	As above	Class A	8,200	Will Phelan	Yes	Yes
18	786	19-Jul	As above	Class A	13,080	Will Phelan	Yes	Yes
19	787	20-Jul	As above	Class A	13,300	Will Phelan	Yes	Yes
20	788	24-Jul	As above	Class A	14,920	Will Phelan	Yes	Yes
21	789	24-Jul	As above	Class A	13,820	Will Phelan	Yes	Yes
22	790	25-Jul	As above	Class A	11,880	Will Phelan	Yes	Yes
23	792	26-Jul	As above	Class A	14,600	Will Phelan	Yes	Yes
24	793	26-Jul	As above	Class A	13,820	Will Phelan	Yes	Yes
25	796	27-Jul	As above	Class A	13,360	Will Phelan	Yes	Yes
26	797	30-Jul	As above	Class A	14,840	Will Phelan	Yes	Yes
27	798	31-Jul	As above	Class A	16,260	Will Phelan	Yes	Yes
Total					316,180			
Daily Ave					10,199			
TDS/day					2.29			

Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2

MSR 12-08

OUTGOING SLUDGE RECORD								
BATCH NO.	DOCKET NO.	DATE	DESTINATION OF PRODUCT	TYPE OF PRODUCT	QUANTITY OF PRODUCT KG	CONTACT AT DESTINATION	CERTIFICATE OF ORIGIN / DELIVERY	RECEIPT RECEIVED AFTER DELIVERY
1	799	1-Aug	David Reck, Courtnacuddy,	Class A	13,100	Will Phelan	Yes	Yes
2	801	2-Aug	As above	Class A	8,880	Will Phelan	Yes	Yes
3	802	3-Aug	As above	Class A	12,560	Will Phelan	Yes	Yes
4	823	3-Aug	As above	Class A	13,980	Will Phelan		Yes
5	806	5-Aug	As above	Class A	12,460	Will Phelan	Yes	Yes
6	808	8-Aug	As above	Class A	14,960	Will Phelan	Yes	Yes
7	809	9-Aug	As above	Class A	13,380	Will Phelan	Yes	Yes
8	811	10-Aug	As above	Class A	12,180	Will Phelan	Yes	Yes
9	812	13-Aug	As above	Class A	14,060	Will Phelan	Yes	Yes
10	815	14-Aug	As above	Class A	14,520	Will Phelan	Yes	Yes
11	816	15-Aug	As above	Class A	12,480	Will Phelan	Yes	Yes
12	818	15-Aug	As above	Class A	13,500	Will Phelan	Yes	Yes
13	817	16-Aug	As above	Class A	11,300	Will Phelan	Yes	Yes
14	820	17-Aug	As above	Class A	12,800	Will Phelan	Yes	Yes
15	821	20-Aug	As above	Class A	11,300	Will Phelan	Yes	Yes
16	826	21-Aug	As above	Class A	7,920	Will Phelan	Yes	Yes
17	827	22-Aug	As above	Class A	12,080	Will Phelan	Yes	Yes
18	828	23-Aug	As above	Class A	12,580	Will Phelan	Yes	Yes
19	829	24-Aug	As above	Class A	11,840	Will Phelan	Yes	Yes
20	831	27-Aug	As above	Class A	8,220	Will Phelan	Yes	Yes
21	832	29-Aug	As above	Class A	16,060	Will Phelan	Yes	Yes
22	833	30-Aug	As above	Class A	12,680	Will Phelan	Yes	Yes
23	835	30-Aug	As above	Class A	10,320	Will Phelan	Yes	Yes
Total					283,160			
Daily Ave					9,134			
TDS/day					1.98			

Sludge Register

Sludges

Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2

MSR 12-09

OUTGOING SLUDGE RECORD								
BATCH NO.	DOCKET NO.	DATE	DESTINATION OF PRODUCT	TYPE OF PRODUCT	QUANTITY OF PRODUCT KG	CONTACT AT DESTINATION	CERTIFICATE OF ORIGIN / DELIVERY	RECEIPT RECEIVED AFTER DELIVERY
1	838	3-Sep	David Reck, Courtnacuddy,	Class A	12,240	Will Phelan	Yes	Yes
2	834	4-Sep	As above	Class A	13,640	Will Phelan	Yes	Yes
3	839	4-Sep	As above	Class A	8,480	Will Phelan	Yes	Yes
4	840	5-Sep	As above	Class A	9,340	Will Phelan		Yes
5	841	6-Sep	As above	Class A	11,160	Will Phelan	Yes	Yes
6	843	6-Sep	As above	Class A	13,760	Will Phelan	Yes	Yes
7	844	10-Sep	As above	Class A	15,600	Will Phelan	Yes	Yes
8	845	11-Sep	As above	Class A	13,260	Will Phelan	Yes	Yes
9	846	12-Sep	As above	Class A	14,060	Will Phelan	Yes	Yes
10	847	13-Sep	As above	Class A	10,740	Will Phelan	Yes	Yes
11	849	14-Sep	As above	Class A	14,940	Will Phelan	Yes	Yes
12	850	17-Aug	As above	Class A	9,920	Will Phelan	Yes	Yes
13	851	18-Aug	As above	Class A	10,420	Will Phelan	Yes	Yes
14	852	19-Aug	As above	Class A	10,880	Will Phelan	Yes	Yes
15	855	19-Aug	As above	Class A	11,760	Will Phelan	Yes	Yes
16	856	20-Aug	As above	Class A	10,160	Will Phelan	Yes	Yes
17	858	20-Aug	As above	Class A	10,960	Will Phelan	Yes	Yes
18	859	21-Aug	As above	Class A	10,600	Will Phelan	Yes	Yes
19	860	22-Aug	As above	Class A	10,600	Will Phelan	Yes	Yes
20	861	26-Aug	As above	Class A	10,360	Will Phelan	Yes	Yes
21	862	27-Aug	As above	Class A	13,020	Will Phelan	Yes	Yes
22	863	28-Aug	As above	Class A	13,780	Will Phelan	Yes	Yes
23		30-Aug	As above	Class A		Will Phelan	Yes	Yes
Total					259,680			
Daily Ave					8,656			
TDS/day					1.91			

Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2

MSR 12-10

OUTGOING SLUDGE RECORD								
BATCH NO.	DOCKET NO.	DATE	DESTINATION OF PRODUCT	TYPE OF PRODUCT	QUANTITY OF PRODUCT KG	CONTACT AT DESTINATION	CERTIFICATE OF ORIGIN / DELIVERY	RECEIPT RECEIVED AFTER DELIVERY
1	865	1-Oct	David Reck, Courtnacuddy,	Class A	11,800	Will Phelan	Yes	Yes
2	866	2-Oct	As above	Class A	14,300	Will Phelan	Yes	Yes
3	868	3-Oct	As above	Class A	12,080	Will Phelan	Yes	Yes
4	869	4-Oct	As above	Class A	9,200	Will Phelan	Yes	Yes
5	870	5-Oct	As above	Class A	11,580	Will Phelan	Yes	Yes
6	871	6-Oct	As above	Class A	10,760	Will Phelan	Yes	Yes
7	874	8-Oct	As above	Class A	11,820	Will Phelan	Yes	Yes
8	875	9-Oct	As above	Class A	12,880	Will Phelan	Yes	Yes
9	877	10-Oct	As above	Class A	12,500	Will Phelan	Yes	Yes
10	878	11-Oct	As above	Class A	9,960	Will Phelan	Yes	Yes
11	880	12-Oct	As above	Class A	11,380	Will Phelan	Yes	Yes
12	883	13-Oct	As above	Class A	12,340	Will Phelan	Yes	Yes
13	884	15-Oct	As above	Class A	13,460	Will Phelan	Yes	Yes
14	885	16-Oct	As above	Class A	15,200	Will Phelan	Yes	Yes
15	886	17-Oct	As above	Class A	13,300	Will Phelan	Yes	Yes
16	887	19-Oct	As above	Class A	16,180	Will Phelan	Yes	Yes
17	890	22-Oct	As above	Class A	12,260	Will Phelan	Yes	Yes
18	891	23-Oct	As above	Class A	11,100	Will Phelan	Yes	Yes
19	892	24-Oct	As above	Class A	12,060	Will Phelan	Yes	Yes
20	893	25-Oct	As above	Class A	12,160	Will Phelan	Yes	Yes
21	894	26-Oct	As above	Class A	11,480	Will Phelan	Yes	Yes
22	897	27-Oct	As above	Class A	9,960	Will Phelan	Yes	Yes
23	898	30-Oct	As above	Class A	13,140	Will Phelan	Yes	Yes
24	899	31-Oct	As above	Class A	11,240	Will Phelan	Yes	Yes
Total					292,140			
Daily Ave					9,424			
TDS/day					1.80			

Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2

MSR 12-11

OUTGOING SLUDGE RECORD								
BATCH NO.	DOCKET NO.	DATE	DESTINATION OF PRODUCT	TYPE OF PRODUCT	QUANTITY OF PRODUCT KG	CONTACT AT DESTINATION	CERTIFICATE OF ORIGIN / DELIVERY	RECEIPT RECEIVED AFTER DELIVERY
1	900	1-Nov	David Reck, Courtnacuddy,	Class A	10,960	Will Phelan	Yes	Yes
2	902	2-Nov	As above	Class A	10,900	Will Phelan	Yes	Yes
3	903	3-Nov	As above	Class A	7,040	Will Phelan	Yes	Yes
4	904	5-Nov	As above	Class A	11,580	Will Phelan	Yes	Yes
5	905	6-Nov	As above	Class A	9,860	Will Phelan	Yes	Yes
6	906	7-Nov	As above	Class A	11,500	Will Phelan	Yes	Yes
7	907	7-Nov	As above	Class A	12,820	Will Phelan	Yes	Yes
8	909	8-Nov	As above	Class A	11,160	Will Phelan	Yes	Yes
9	911	8-Nov	As above	Class A	16,080	Will Phelan	Yes	Yes
10	912	9-Nov	As above	Class A	12,340	Will Phelan	Yes	Yes
11	913	9-Nov	As above	Class A	9,920	Will Phelan	Yes	Yes
12	914	14-Nov	As above	Class A	16,640	Will Phelan	Yes	Yes
13	917	15-Nov	As above	Class A	19,460	Will Phelan	Yes	Yes
14	918	16-Nov	As above	Class A	15,280	Will Phelan	Yes	Yes
15	921	16-Nov	As above	Class A	13,680	Will Phelan	Yes	Yes
16	919	19-Nov	As above	Class A	9,900	Will Phelan	Yes	Yes
17	922	20-Nov	As above	Class A	13,700	Will Phelan	Yes	Yes
18	923	21-Nov	As above	Class A	13,800	Will Phelan	Yes	Yes
19	924	22-Nov	As above	Class A	12,580	Will Phelan	Yes	Yes
20	925	23-Nov	As above	Class A	11,520	Will Phelan	Yes	Yes
21	927	26-Nov	As above	Class A	12,440	Will Phelan	Yes	Yes
22	928	27-Nov	As above	Class A	7,960	Will Phelan	Yes	Yes
23	929	28-Nov	As above	Class A	12,120	Will Phelan	Yes	Yes
24	930	29-Nov	As above	Class A	12,120	Will Phelan	Yes	Yes
25	931	30-Nov	As above	Class A	13,600	Will Phelan	Yes	Yes
Total					308,960			
Daily Ave					10,299			
TDS/day					2.03			

Transported from WwTP

Waterford Wastewater Treatment Works

ARP19/2

MSR 12-12

OUTGOING SLUDGE RECORD								
BATCH NO.	**DOCKET NO.**	**DATE**	**DESTINATION OF PRODUCT**	**TYPE OF PRODUCT**	**QUANTITY OF PRODUCT KG**	**CONTACT AT DESTINATION**	**CERTIFICATE OF ORIGIN / DELIVERY**	**RECEIPT RECEIVED AFTER DELIVERY**
1	934	3-Dec	David Reck, Courtnacuddy,	Class A	17,680	Will Phelan	Yes	Yes
2	935	4-Dec	As above	Class A	13,880	Will Phelan	Yes	Yes
3	938	5-Dec	As above	Class A	10,580	Will Phelan	Yes	Yes
4	939	6-Dec	As above	Class A	15,840	Will Phelan	Yes	Yes
5	940	7-Dec	As above	Class A	8,480	Will Phelan	Yes	Yes
6	941	10-Dec	As above	Class A	15,540	Will Phelan	Yes	Yes
7	942	11-Dec	As above	Class A	16,580	Will Phelan	Yes	Yes
8	943	12-Dec	As above	Class A	13,840	Will Phelan	Yes	Yes
9	944	13-Dec	As above	Class A	14,600	Will Phelan	Yes	Yes
10	947	13-Dec	As above	Class A	14,340	Will Phelan	Yes	Yes
11	949	14-Dec	As above	Class A	8,440	Will Phelan	Yes	Yes
12	950	17-Dec	As above	Class A	10,680	Will Phelan	Yes	Yes
13	951	18-Dec	As above	Class A	8,080	Will Phelan	Yes	Yes
14	952	19-Dec	As above	Class A	14,660	Will Phelan	Yes	Yes
15	954	20-Dec	As above	Class A	15,220	Will Phelan	Yes	Yes
16	957	21-Dec	As above	Class A	9,420	Will Phelan	Yes	Yes
17	959	22-Dec	As above	Class A	9,920	Will Phelan	Yes	Yes
18	960	23-Dec	As above	Class A	16,360	Will Phelan	Yes	Yes
Total					234,140			
Daily Ave					7,553			
TDS/day					1.73			

Appendix B2

Sludge Disposal Details

Sludge Storage and Deliveries from Nov 2011 – April 2012 (6 month) Period:

Storage Facility	David Reck, Courtnacuddy, Co. Wexford
Tonnes delivered to Storage Facility in Period	1929.4
Tonnes already in storage	100
Tonnes removed	1764.7
Total tonnes in storage at end of Period	264.7

Sludge Storage and Deliveries from May 2012 – End of Dec 2012 Period:

Storage Facility	David Reck, Courtnacuddy, Co. Wexford
Tonnes delivered to Storage Facility in Period	2297.91
Tonnes already in storage	264.7
Tonnes removed	1616.74
Total tonnes in storage at end of Period	681.17

Ted & Aidan Byrne 2012 NMP

Table 1: Summary of sludge delivery and re-use at Ted and Aidan Byrne's (Clonroche, Co. Wexford)

Ted & Aidan Totals: Period: Oct 2011 – Apr 2012	
	Tonnes
Waterford WWTP sludge delivered during period	1364.7
Waterford WWTP sludge recycled during period	1364.7

All of T&A Byrnes capacity was met in 2012 (a total of 2673.87 tonnes were spread)

Ted & Aidan Totals: Period: May 2012 – End Dec 2012	
	Tonnes
Waterford WWTP sludge delivered during period	1312.78
Waterford WWTP sludge recycled during period	1312.78

Table 2: Ted & Aidan Byrne progress against NMP 2012 and application of sludge by field according to the NMP

Field ID	Field ID/ Soil Anlysis Ref	Total Area (ha)	Usable Area (ha)	Crop	P Index	P Max (kg/Ha)	P Restock manure fertiliser (kg/Ha)	P Max - sludge fertiliser (kg/Ha)	P Max (kg)	P Sludge Fertiliser Max (kg)	Sludge fertiliser required in terms of P (t/ha)	N Index	N Max (kg/Ha)	N Restock manure fertiliser (kg/Ha)	N Max - sludge fertiliser (kg/Ha)	N Max (kg)	N Sludge Fertiliser Max (kg)	Sludge fertiliser required in terms of N (t/ha)	Max sludge fertiliser allowed in terms of heavy metal loading (t/ha)	Max sludge fertiliser allowed(t)	Max sludge fertiliser required (t/ha)	Sludge Spread	Capacity Remaining
Ballygalvert (Landbanks 1 & 2)																							
Y12901206	SS3	2.0	1.0	Spring Barley	2	35	1.7	33.3	35.48	33.7	21.3	1	135	4.6	130.4	136.8	132.1	38.3	21.3	21.62	21.35	21.62	0.00
Y12901148	SS4	2.6	2.6	Spring Barley	2	35	1.7	33.3	0.00	87.1	0.0	1	135	4.6	130.4	353.2	341.1	0.0	0.0	0.00	0.00		0.00
	SS5	6.5	5.5	Spring Barley	2	35	1.7	33.3	226.73	215.7	21.3	1	135	4.6	130.4	874.5	844.7	38.3	21.3	138.28	21.35	138.28	0.00
Y12901132	SS6	5.9	5.9	Spring Barley	2	35	1.7	33.3	206.85	196.8	21.3	1	135	4.6	130.4	797.9	770.7	38.3	21.3	126.16	21.35	126.16	0.00
Y12901113	SS7	4.6	4.6	Spring Barley	1	45	1.7	43.3	0.00	199.7	0.0	1	135	4.6	130.4	622.5	601.3	0.0	0.0	0.00	0.00		0.00
	SS8	7.3	7.3	Spring Barley	1	45	1.7	43.3	0.00	316.3	0.0	1	135	4.6	130.4	986.3	952.7	0.0	0.0	0.00	0.00		0.00
Y12901162	SS9	6.4	0.0	Spring Barley	4	0	0	0	0.00	0	0.0	1	135	0	135	0.00	0	0.0	0.0	0.00	0.00		0.00
	SS10	1.0	0.0	Spring Barley	4	0	0	0	0.00	0	0.0	1	135	0	135	0.00	0	0.0	0.0	0.00	0.00		0.00
	SS11	4.2	0.0	Spring Barley	4	0	0	0	0.00	0	0.0	1	135	0	135	0.00	0	0.0	0.0	0.00	0.00		0.00
Tominady (Landbank 3)																							
Y13013066	SS15	3.8	3.8	Winter Wheat	1	45	1.7	43.3	0.00	164.107	0.0	1	210	4.6	205.4	780.00	778.466	60.3	0.0	0.00	0.00		0.00
Y13013067	SS16	4.1	4.1	Winter Wheat	2	35	1.7	33.3	142.80	135.864	21.3	1	210	4.6	205.4	856.80	838.032	60.3	21.3	87.09	21.35	87.09	0.00
Y13013068	SS17	4.0	4.0	Winter Wheat	2	35	1.7	33.3	0.00	166.176	0.0	1	210	4.6	205.4	676.80	667.164	60.3	0.0	0.00	0.00		0.00
	SS18	4.0	4.0	Winter Wheat	1	45	1.7	43.3	0.00	200.912	0.0	1	210	4.6	205.4	974.40	961.064	60.3	0.0	0.00	0.00		0.00
Clonroche 2 (Landbank 4)																							
Y13003106	SS35	3.7	3.7	Spring Barley	1	45	0	45	173.27	173.27	0.0	1	135	0	135	519.82	519.8178	0.0	0.0	0.00	0.00		0.00
	SS36	5.7	3.9	Spring Barley	1	45	1.7	43.3	173.27	166.7267	27.8	1	135	4.6	130.4	519.82	502.1052	38.3	25.9	99.34	25.80	99.34	0.00
	SS37	3.2	3.2	Spring Barley	1	45	0	45	144.00	144	0.0	1	135	0	135	432.00	432	0.0	0.0	0.00	0.00		0.00
	SS38	3.7	3.7	Spring Barley	1	45	0	45	166.50	166.5	0.0	1	135	0	135	499.50	499.5	0.0	0.0	0.00	0.00		0.00
Clonroche (Landbank 5)																							
Y13003027	SS1	4.4	4.4	Winter Wheat	1	45	1.7	43.3	197.91	190.4334	27.8	1	210	4.6	205.4	902.56	903.5403	60.3	25.9	113.47	25.80	113.47	0.00
	SS2	4.4	4.4	Winter Wheat	1	45	1.7	43.3	198.00	190.52	27.8	1	210	4.6	205.4	924.00	903.76	60.3	25.9	113.52	25.80	113.52	0.00
Growtown Upper (Landbank 7)																							
Y15012056	SS19	4.2	4.2	Spring Barley	1	45	1.7	43.3	188.51	181.3837	27.8	1	135	4.6	130.4	565.52	545.2456	38.3	25.9	108.08	25.80	108.09	0.00
Y15012057	SS20A	3.5	3.5	Spring Barley	3	35	1.7	33.3	87.55	81.55	14.9	1	135	4.6	130.4	473.50	455.4	38.3	14.9	52.28	14.94	52.28	0.00
	SS20B	3.5	3.5	Spring Barley	2	35	1.7	33.3	122.50	116.55	21.3	1	135	4.6	130.4	473.50	455.4	38.3	21.3	74.71	21.35	74.71	0.00
Y15012014	SS21	6.7	6.7	Spring Barley	2	35	0	35	234.50	231	0.0	1	135	0	135	904.50	904.5	0.0	0.0	0.00	0.00		0.00
Y15012007	SS22	3.3	3.3	Spring Barley	1	45	1.7	43.3	149.54	143.8859	27.8	1	135	4.6	130.4	446.61	433.3192	38.3	25.8	85.73	25.80	85.73	0.00
Y15012053	SS23	3.7	3.7	Spring Barley	2	35	1.7	33.3	130.13	123.8094	21.3	1	135	4.6	130.4	501.90	484.8272	38.3	21.3	79.37	21.35	79.37	-0.01
Y15012054	SS24	4.9	2.5	Spring Barley	2	35	1.7	33.3	101.55	96.57	21.3	1	135	4.6	130.4	391.50	378.15	38.3	21.3	61.90	21.35	61.9	0.00
Ardnagh Great (Landbank 6)																							
Y11601057	SS29	3.9	0.0	Spring Barley	4	0	0	0	0.00	0	0.0	1	135	0	135	0.00	0	0.0	0.0	0.00	0.00		0.00
Y11601047	SS30	1.7	0.0	Spring Barley	4	0	0	0	0.00	0	0.0	1	135	0	135	0.00	0	0.0	0.0	0.00	0.00		0.00
Y11601026	SS31	4.0	0.0	Winter Wheat	4	0	0	0	0.00	0	0.0	1	210	0	210	0.00	0	0.0	0.0	0.00	0.00		0.00
Y11601040	SS32	5.2	5.2	Winter Wheat	3	25	1.7	23.3	130.50	121.626	14.9	1	210	4.6	205.4	1066.80	1073.198	60.3	14.9	77.97	14.94	77.97	0.00
Y11601044	SS33	2.7	2.7	Spring Barley	3	25	1.7	23.3	68.28	63.6323	14.9	1	135	4.6	130.4	368.69	356.1224	38.3	14.9	40.79	14.94	40.79	0.00
Y11601039	SS34	4.1	0.0	Spring Barley	4	0	0	0	0.00	0	0.0	1	135	0	135	0.00	0	0.0	0.0	0.00	0.00		0.00
Y11601052	SS34	1.0	0.0	Spring Barley	4	0	0	0	0.00	0	0.0	1	135	0	135	0.00	0	0.0	0.0	0.00	0.00		0.00
Y11601018	SS36	2.5	0.0	Spring Barley	4	0	0	0	0.00	0	0.0	1	135	0	135	0.00	0	0.0	0.0	0.00	0.00		0.00

Y11514014	SS36	5.1	5.1	Spring Barley	1	45	1.7	43.3	227.84	219.2279	27.8	1	135	4.6	130.4	683.51	660.2152	38.3	25.8	130.63	25.80	130.63	0.00
Y11601020	SS37	2.7	2.3	Spring Barley	2	35	1.7	33.3	80.15	76.257	21.3	1	135	4.6	130.4	309.12	298.516	38.3	21.3	48.88	21.35	48.88	0.00
Y11601038	SS38	3.0	3.0	Spring Barley	3	25	1.7	23.3	75.45	70.3194	14.9	1	135	4.6	130.4	407.43	393.5472	38.3	14.9	45.08	14.94	45.08	0.00
Y11601012	SS39	3.5	3.5	Spring Barley	2	35	1.7	33.3	121.80	115.884	21.3	1	135	4.6	130.4	469.80	453.792	38.3	21.3	74.28	21.35	74.28	0.00
Y11601030	SS40	5.4	5.4	Winter Wheat	2	35	1.7	33.3	188.30	179.154	21.3	1	210	4.6	205.4	1129.80	1105.052	60.3	21.3	114.84	21.35	114.84	0.00
Y11601028	SS41	4.2	4.2	Winter Wheat	3	25	1.7	23.3	103.75	96.695	14.9	1	210	4.6	205.4	871.30	852.41	60.3	14.9	61.98	14.94	61.98	0.00
Y11601027	SS43	4.0	3.0	Winter Wheat	3	25	1.7	23.3	75.00	69.9	14.9	1	210	4.6	205.4	630.00	616.2	60.3	14.9	44.81	14.94	44.81	0.00
Y11601021	SS44	3.5	3.5	Winter Wheat	2	35	1.7	33.3	120.75	114.885	21.3	1	210	4.5	205.4	724.50	706.63	60.3	21.3	73.64	21.35	73.64	0.00
Y11601017	SS45	2.5	1.9	Winter Wheat	3	25	1.7	23.3	47.00	43.804	14.9	1	210	4.5	205.4	394.80	386.152	60.3	14.9	28.08	14.94	28.08	0.00
Y11601050	SS46	3.0	0.0	Winter Wheat	4	0	0	0	0.00	0	0.0	1	210	0	210	0.00	0	0.0	0.0	0.00	0.00		0.00
[redacted] sland Fields: [redacted] y and Chapel (Landbank [redacted]																							
Y13002118	SS1	3.10	0.00	Grassland	4	0	0	0.0	0.0	0.0	0.0	1	226	0	0.00	0.0	0.0	0.0	0.0	0.00	0.00		0.00
Y13002092	SS2	5.32	5.00	Grassland	2	25	1.7	23.3	132.9	116.5	14.9	1	226	4.6	221.40	1130.0	1107.0	65.0	14.9	74.68	14.94	74.68	0.00
Y13002092	SS3	5.32	5.32	Grassland	1	35	1.7	33.3	186.0	177.2	21.3	1	226	4.6	221.40	1202.3	1177.8	65.0	21.3	113.56	21.35	113.56	0.00
Y13002126	SS4	2.50	0.00	Grassland	4	0	0	0.0	0.0	0.0	0.0	1	226	0	0.00	0.0	0.0	0.0	0.0	0.00	0.00		0.00
Y13002109	SS5	4.86	0.00	Grassland	4	0	0	0.0	0.0	0.0	0.0	1	226	0	0.00	0.0	0.0	0.0	0.0	0.00	0.00		0.00
Y13002053	SS6	4.74	4.74	Grassland	2	25	1.70	23.3	118.5	110.4	14.9	1	226	4.60	221.40	1071.2	1049.4	65.0	14.9	70.80	14.94	70.8	0.00
Y13002053	SS7	4.74	4.25	Grassland	2	25	1.70	23.3	118.5	99.0	14.9	1	226	4.60	221.40	960.5	941.0	65.0	14.9	63.48	14.94	63.48	0.00
Y15406073	SS8	6.60	6.45	Grassland	3	25	1.70	23.3	170.6	150.2	0.0	1	226	4.60	221.40	1457.7	1426.0	0.0	0.0	0.00	0.00		0.00
Y15406034	SS9	2.84	2.40	Grassland	1	35	0	35.0	99.4	84.0	0.0	1	226	0	226.00	542.4	542.4	0.0	0.0	0.00	0.00		0.00
Y15406094	SS10	4.57	4.57	Grassland	1	35	0	35.0	160.0	160.0	0.0	1	226	0	226.00	1032.8	1032.8	0.0	0.0	0.00	0.00		0.00
Y13007146	SS11	4.14	3.80	Grassland	2	25	1.70	23.3	103.4	88.5	14.9	1	226	4.60	221.40	858.8	841.3	65.0	14.9	56.76	14.94	56.76	0.00
Y13007146	SS12	4.14	4.14	Grassland	2	25	1.7	23.3	103.4	96.5	7.5	1	226	4.6	221.40	935.6	916.8	32.5	7.5	31.05	7.50	31-Jan	0.00
Y13007146	SS13	4.14	4.14	Grassland	1	35	0	35.0	144.9	144.9	0.0	1	226	0	226.00	935.6	935.6	0.0	0.0	0.00	0.00		0.00
Y13007008	SS14	1.32	0.00	Grassland	4	0	0	0.0	0.0	0.0	0.0	1	226	0	0.00	0.0	0.0	0.0	0.0	0.00	0.00		0.00
Y13097039	SS15	4.89	4.02	Grassland	2	25	1.70	23.3	122.3	93.7	14.9	1	226	4.60	221.40	908.5	890.0	65.0	14.9	60.04	14.94	60.04	0.00
Y13007014	SS16	1.94	1.94	Grassland	2	35	0	35.0	67.9	67.9	0.0	1	226	0	226.00	438.4	438.4	0.0	0.0	0.00	0.00		0.00
Y13007030	SS17	3.52	3.52	Grassland	2	35	0	35.0	123.2	123.2	0.0	1	226	0	226.00	795.5	795.5	0.0	0.0	0.00	0.00		0.00
Y13007018	SS18	2.16	1.86	Grassland	1	35	1.70	33.3	75.6	61.9	21.3	1	226	4.60	221.40	430.4	411.8	65.0	21.3	39.70	21.35	39.7	0.00
[redacted] y (Landbank 12) [redacted]																							
Y13013203	SS6	5.8	1.5	Winter Oats	2	35	1.7	33.3	52.2	49.6	21.3	1	145	4.6	145	216.1	216.1	42.6	21.3	31.74	21.30	31.74	0.00
Y13013203	SS7	5.8	5.8	Winter Oats	3	25	0	0	145.0	0.0	0.0	1	140	0	0	841.0	0.0	0.0	0.0	0.00	0.00		0.00
Y13007165	SS8	4.1	0.0	Winter Oats	4	0	0	0	0.0	0.0	0.0	1	145	0	0	0.0	0.0	0.0	0.0	0.00	0.00		0.00
Y13007168	SS9	5.0	5.0	Winter Oats	3	25	0	0	125.0	0.0	0.0	1	145	0	0	725.0	0.0	0.0	0.0	0.00	0.00		0.00
Y13007161	SS10	5.6	1.2	Winter Oats	1	45	1.7	43.3	54.0	52.0	27.8	1	145	4.6	144	174.0	172.8	42.3	25.8	30.96	25.80	30.96	0.00
Y13007167	SS11	8.3	4.3	Winter Oats	2	35	1.7	33.3	150.5	149.2	21.3	1	145	4.6	144	633.5	619.2	42.3	21.3	91.59	21.30	91.59	0.00
Y13013168	SS12	3.6	0.6	Winter Oats	3	25	1.7	23.3	15.0	14.0	14.9	1	145	4.6	144	87.0	86.4	42.3	14.9	8.94	14.90	8.94	0.00
[redacted] k 13) [redacted]																							
	SS1	1.6	0.7	Spring Barley	1	45	1.7	43.3	31.5	30.3	27.8	1	135	4.6	134	94.5	93.8	39.4	25.8	18.06	25.80	18.06	0.00
	SS2	3.7	2.1	Spring Barley	1	45	1.7	43.3	94.5	90.9	27.8	1	135	4.6	134	283.5	281.4	39.4	25.8	54.18	25.80	54.18	0.00
	SS3	2.1	2.1	Spring Barley	2	35	0	0	73.5	0.0	0.0	1	135	0	0	283.5	0.0	0.0	0.0	0.00	0.00		0.00
	SS4	3.7	1.0	Spring Barley	1	45	1.7	43.3	45.0	43.3	27.8	1	135	4.6	134	135.0	134.0	39.4	25.8	25.80	25.80	25.8	0.00
	SS5	1.8	1.8	Spring Barley	1	45	0	0	81.0	0.0	0.0	1	135	0	0	243.0	0.0	0.0	0.0	0.00	0.00		0.00
	Total	301.61	218.14							6880.3	798.4						35590.6	2894.1		2673.87		2673.87	0.00

N in WWTP sludge	8.51	kg/t
40% N availability (as per SI 610 of 2010 Note: 15(4))	3.40	kg/t
P in WWTP sludge	3.12	kg/t
50% available	1.56	kg/t

Table 6: Summary of sludge delivery and re-use at David Reck's (Courtnacuddy, Enniscorthy, Co. Wexford)

David Reck Totals: Period: Nov 2011 – Apr 2012	
	Tonnes
Sligo sludge delivered to field during period	400
Sligo sludge recycled during period	400

Table 3: Summary of sludge delivery and re-use at David Reck's (Courtnacuddy, Enniscorthy, Co. Wexford)

David Reck Totals: Period: May 2012 – End Dec 2012	
	Tonnes
Waterford WWTP sludge delivered during period	303.96
Waterford WWTP sludge recycled during period	303.96

All of D Recks capacity was met in 2012 (a total of 704 tonnes spread)

Nutrient Management Plan 2012

Field ID	Soil analysis and Field Parcel number	Total Area (ha)	Usable Area (ha)	Crop	P Index	P Max (kg/Ha)	P livestock manure fertiliser (kg/Ha)	P Max - sludge fertiliser (kg/ha)	P Max (kg)	P Sludge Fertiliser Max (kg)	Sludge fertiliser required in terms of P (t)	N Index	N Max (kg/Ha)	N livestock manure fertiliser (kg/Ha)	N Max - sludge fertiliser (kg/ha)	N Max (kg)	N Sludge Fertiliser Max (kg)	Sludge fertiliser required in terms of N (t)	Max sludge fertiliser allowed in terms of heavy metal loading (t/ha)	Max sludge fertiliser allowed in terms of heavy metal loading (t)	Max sludge fertiliser required (t/ha)	Sludge Spread	Remaining Capacity
1	Y16612025	5.07	4.12	Spring Barley	4	0	0.00	0.0	0.0	0.0	0.0	1	135	0.00	0.00	684.5	0.0	0.0	0.00	0.0	0.00		0.00
2	Y16607200	3.72	2.70	Spring Barley	3	25	1.40	23.6	93.0	63.7	40.8	1	135	4.09	130.91	502.2	353.5	103.8	15.13	40.8	15.13	40.69	0.00
3	Y16607070	1.67	0.54	Spring Barley	3	25	1.40	23.6	41.8	8.0	0.0	1	135	4.09	0.00	225.3	0.0	0.0	0.00	0.0	0.00		0.00
4	Y16607138	3.77	1.68	Spring Barley	2	35	1.40	33.6	132.0	56.4	36.2	1	135	4.09	130.91	509.0	219.9	64.6	21.54	36.2	21.54	36.19	0.00
5	Y16607185	4.28	4.28	Spring Barley	4	0	0.00	0.0	0.0	0.0	0.0	1	135	0.00	0.00	577.8	0.0	0.0	0.00	0.0	0.00		0.00
6	Y16607178	5.1	5.10	Spring Barley	4	0	0.00	0.0	0.0	0.0	0.0	1	135	0.00	0.00	688.5	0.0	0.0	0.00	0.0	0.00		0.00
7	Y16607100	5.36	5.36	Spring Barley	2	35	1.40	0.0	134.0	0.0	0.0	1	135	4.09	0.00	724.0	0.0	0.0	0.00	0.0	0.00		0.00
8	Y16605034 A	4.1	3.50	Spring Barley	1	45	1.40	43.6	184.5	132.6	97.8	1	135	4.09	130.91	553.5	458.2	134.6	26.00	91.0	26.00	91	0.00
9	Y16605035	1.45	1.45	Spring Barley	3	25	1.40	0.0	50.8	0.0	0.0	1	135	4.09	0.00	195.8	0.0	0.0	0.00	0.0	0.00		0.00
10	Y16605034 B	2.1	2.10	Spring Barley	3	25	1.40	23.6	52.5	49.6	31.8	1	135	4.09	130.91	283.5	274.9	80.8	15.13	31.8	15.13	31.77	0.00
11	Y16605021	1.96	1.96	Spring Barley	4	0	0.00	0.0	0.0	0.0	0.0	1	135	0.00	0.00	264.6	0.0	0.0	0.00	0.0	0.00		0.00
12	Y16605022	3.21	2.58	Spring Barley	3	25	1.40	0.0	80.2	0.0	0.0	1	135	4.09	0.00	433.4	0.0	0.0	0.00	0.0	0.00		0.00
14	Y16605008	2.34	2.34	Spring Barley	2	35	1.40	33.6	81.9	78.6	50.4	1	135	4.09	130.91	315.9	306.3	90.0	21.54	50.4	21.54	50.4	0.00
15	Y16605030	6.16	6.16	Spring Barley	2	35	1.40	33.6	215.6	207.0	132.7	1	135	4.09	130.91	831.6	806.4	238.9	21.54	132.7	21.54	132.68	0.00
16	Y16605004	3.47	3.47	Spring Barley	3	25	1.40	23.6	86.8	81.9	52.5	1	135	4.09	130.91	468.5	454.3	133.4	15.13	52.5	15.13	52.5	-0.01
17	Y16605009	2.99	2.99	Spring Barley	2	35	1.40	33.6	104.7	100.5	64.4	1	135	4.09	130.91	403.7	391.4	115.0	21.54	64.4	21.54	64.4	0.00
18	Y17403035	2.39	2.39	Spring Barley	2	35	1.40	33.6	83.7	80.3	51.5	1	135	4.09	130.91	322.7	312.9	91.9	21.54	51.5	21.54	51.48	0.00
19	Y17403088	2.29	2.29	Spring Barley	2	35	1.40	33.6	80.2	76.9	49.3	1	135	4.09	130.91	309.2	299.8	88.1	21.54	49.3	21.54	49.32	0.00
20	Y17403087	5.19	4.80	Spring Barley	2	35	1.40	33.6	181.7	161.3	103.4	1	135	4.09	130.91	700.7	628.4	184.6	21.54	103.4	21.54	103.38	0.00
	Total	66.62	60.61						1603.1	1109.8	710.8					8993.7	4505.9	1323.7		704.0		703.98	0.00

N in WWTP sludge	8.51	kg/t
40% N availability (as per SI 101, 2009 Note: 15(4))	3.40	kg/t
P in WWTP sludge	3.12	kg/t
50% availability (as per guidelines from DoEHLG 2008))	1.56	kg/t

Details of Spreading

No spreading took place during the non-spreading period (Oct 15th – Jan 12th)

T&A Byrne NMP
A total of 1364.7 tonnes were spread in the November 2011 to April 2012 period to the T&A Byrne landbank as follows:

- 8th and 9th of March – 300 tonnes
- 04th 05th and 6th of April – 964.7 tonnes
- 15th of April – 100 tonnes

David Reck NMP
A total of 400 tonnes were spread in the November 2011 to April 2012 period to the T&A Byrne landbank as follows:

- 7th of April – 400 tonnes

No spreading took place during the non-spreading period (Oct 15th – Jan 12th)

T&A Byrne NMP
A total of 1616.74 tonnes were spread in the May 2012 to end of December 2012 period to the T&A Byrne landbank as follows:

- 9th June – 300 tonnes
- 04th 05th and 6th of September – 850 tonnes
- 14th of October – 466.74 tonnes

David Reck NMP
A total of 303.76 tonnes were spread in the May 2012 to end of December 2012 period to the T&A Byrne landbank as follows:

- 13th of October – 303.76 tonnes

Appendix C

Energy Audit Review

Energy Audit Review

Anglian Water International Ltd

Waterford Wastewater Treatment Plant

W0244-01

11th February 2013

Introduction

This document intends to provide a summary of the actions taken to address recommendations made in the Energy Audit of 2012. The recommendations are reproduced below in italics and a brief description of the actions taken follows.

Recommendations

Recommendation 1
(Monitoring & Measuring)

Monitoring, measurement and analysis is key to understanding whether energy reduction projects have been successful. For this reason, it is recommended that the Licensee investigates implementing a monitoring, measurement and analysis programme in addition to the monitoring currently being undertaken that:

- *Monitors the energy usage of the significant energy users*
  - The major users were identified as the Aeration blowers and the Final Effluent (FE) wash water pumps as per Appendix 1 of the Energy Audit.
  - 1 no. Sub-meter was installed on the FE washwater pumps measuring kWh usage and sending a reading back to SCADA
  - 1 no. Sub-meter installed on each of 3 no. individual aeration blowers measuring kWh usage and sending a reading back to SCADA
- *Identifies the variables affecting the users*
  - Aeration blower usage is affected by organic load and hydraulic load primarily. Ammonia loading, conductivity and temperature also have an impact. These key variables are monitored and recorded by the Operations team on a daily basis.
  - FE washwater pumps are affected by the bar pressure setpoints on dewatering equipment and GBTs. All other users including OCU's and screenings compactors work on an continual basis.
- *Monitors actual energy usage against expected consumption*
  - Ongoing. Energy usage is monitored and recorded in the MSR along with plant loading which allows for consumption to be measured using Energy Performance Indicators (EnPIs).
- *Identifies key Energy Performance Indicators (EnPIs)*
  - The primary KPI used is kWh per m^3 of effluent treated.
  - For aeration blower consumption it is kWh per m^3 of effluent treated.
  - For final effluent pumps it is kWh per tonne of dry solids (TDS) produced.
- *Identifies energy improvement action plans*
  - Energy improvement plans are derived from the Objectives and Targets included in Appendix 2.
- *Monitors any deviations and investigates their causes*
  - This is part of the daily responsibilities of the Operations team and recorded in the Daily Operations Log. This review process has been improved following installation of sub-meting as outlined above.
- *Evaluates the success or not of an energy reduction project*
  - Summary details of energy improvement plans are detailed in the Energy Projects Register (Appendix 1).

Recommendation 2
(Energy Reduction)

Additional investigative work is required on the operation of the blowers at the aeration basin. This equipment accounts for 43% of the site's load. There is a need to understand the variables of this system and how they interact with the energy usage (i.e. blower usage). AWI

should continue discussions with leading suppliers of WWTP equipment to identify options to reduce blower usage while maintaining licence conditions.

Operations staff have a clear understanding of the variables affecting energy consumption in the aeration system. Extensive daily analysis of the process is carried out with data analysed and recorded by Operations staff. With the sub-metering of the individual blowers daily analysis of energy consumption is carried out by Operations staff.

Alternative control systems have been examined by AWI Ltd in consultation with industry experts which could improve the efficiency off the aeration process with respect to nutrient treatment. This is being kept under consideration given the significant financial investment required to implement.

Recommendation 3
(Monitoring & Measuring)

Install a biogas flow meter following its investigation for the most suitable location for the meter. This will help identify the quantity of biogas available for alternative uses.

Proposals have been received from the Contractor and this work is due to be completed in the first half of 2013.

Recommendation 4
(Cost Reduction)

Identify operations that could be completed between the hours of 11pm and 8am in order to utilise the lower night time electricity costs.

The Appendix 1 to the Energy Audit specifies the operating regime of each piece of equipment allowing for identification of those items which are required to run during peak hours.

From this a Lean/Six Sigma project focused on equipment associated with sludge dewatering identified an idealised operating schedule which minimises the amount of time dewatering belts and all associated equipment such as liquor return pumps and FE washwater pumps run during daytime electricity time bands.

Further measures to address day time power usage will be considered on completion of this project.

Recommendation 5
(Cost Reduction)

Consider reducing the MIC capacity for the site from 1,000 kVA down to 700 kVA. This would yield savings of approximately €5k per annum.

This recommendation is has been implemented.

Recommendation 6
(Energy Reduction)

Throughout the plant a number of operating controls are set by operators through their experience of operating the plant. It is recommended that the Licensee review the operating controls for significant energy users to determine whether they can be altered in order to reduce the energy requirement.

As previously mentioned the three significant energy systems are:

- *Aeration system (43.1%)*
- *Primary settlement / stormwater holding (13.9%)*
- *Inlet works (13.6%)*

In these areas identify the set parameters controlling each system. Where a set parameter has an influence on energy usage then it is important to question its set points and whether these can be changed to improve energy efficiency while maintaining licence compliance and treatment plant efficiencies.

Aeration blowers are controlled on setpoints. These setpoints are adjusted to improve efficiency of operation without impacting on the characteristics of the treatment process. This is an ongoing operation which is looked at by Operations staff on a daily basis based on laboratory testing, review of SCADA trends and Operator know-how.

SCADA allows daily energy consumption figures to be analysed in a quick and operator-friendly fashion. This process has been improved through sub-metering of aeration blowers as outlined above.

On-going monitoring of aeration basin MLSS, SVI and sludge microscopy several times per week allows the operator consistently adjust aeration blower setpoints to maximise efficiency and maintain a healthy process.

Recommendation 7
(Energy Reduction)

As the plant is not operating to its full design capacity and is unlikely to do so in the short to medium term, consideration should be given to purchasing smaller motors, where possible, when replacements are being purchased. This may not apply in all areas but where it is possible an energy cost benefit analysis should be completed between the replacement with an existing motor and a smaller motor. The analysis should include costs and a payback period.

Obviously, any changes to motor sizes should bear in mind the proposed plant loading over the expected lifetime of any new motor and to ensure that it could cope with any unexpected increase in loading.

Finally, it is recommended that the Licensee maintains a register of energy saving projects that identifies the project and the energy savings made.

The treatment plant has been designed to a very good energy standard with the generation and use of biogas on-site and the reuse of treated effluent for some water applications. The next step for the Licensee is to identify an appropriate monitoring programme for the site, taking into account the recommendations above, and understand the variables that affect the significant energy users.

A Register of Energy Saving Projects is included in Appendix 1.

Appendix C1 Register of Energy Saving Projects

Year	Name of Project	Project Summary	Responsibility	Status	Energy Source Type (electric, gas, oil, water)	Fuel Units (kWh, Therms, kW, m3)	Before: Fuel Consumption	After: Fuel Consumption	1st Year Fuel savings (kWh, Therms, kW, m3)	Annual CO_2 kGs saved (561g CO2/kWh)	Unit Cost of fuel	Cost Saving
2011	Site Lighting	All site lights operate on a photocell control only. Every 12 hours of lighting uses 41kwh. By switching lights off from 6pm to 7:30am approx 3,000 hours of lighting is saved annually while the site is unattended.	L. Harrison	Complete	Electricity	kWh	41kWh/day	33kWh/day	10250 kWh	5,750	10c/kWh	€ 1,025
2012/2013	Lean/Six Sigma: FE Pumps	Previously the FE pumps maintained a set pressure on a continuous basis. Following analysis we identified that depending on the no. of dewatering belts running, FE pressure setpoints could be reduced. The FE pumps are on a VSD so the pump power consumption decreases as pressure setpoints decrease. Also, running DWBs together optimises FE pump efficiency while still maintaining sludge cake dry solids	T. Hayes	Ongoing	Electricity	kWh	316kWh/TDS	253kWh/TDS	45070 kWh	25,284	10c/kWh	€ 4,507

Appendix C2- Energy Improvement Action Plan

Objective	Target	Plan	Responsibility	Timescale
1.1	Include potable water and FE water usage in energy management programmes	As with energy usage, include water usage as part of the daily operations reviews. FE water and energy usage is included in a Lean/Six-Sigma Project carried out by T. Hayes	Plant Manager	Dec-14
1.2	Develop and further optimise the energy management function on SCADA	All key energy data feeds into the SCADA. The plan is to develop and optimise the system so that it is utilised to its full potential. Modifications were made in 2012 and this project will remain on-going for 2013.	Plant Manager	Dec-14
1.3	Energy Awareness Campaign	The site intends to conduct and energy awareness campaign during 2013. Campaign during 2012 this consisted of a poster campaign and presentation of the Lean/Six Sigma project findings have greatly heightened awareness.	Plant Manager & T Hayes	Dec-13
1.4	Review energy reduction in another CAW facility	Review energy reduction techniques in another CAW facility and implement such techniques in Waterford City WwTW where technically and economically feasible	Plant Manager	Dec-13
1.5	Assess the potential for re-use of excess bio-gas	Install bio-gas analysers at the digester and flare stack. Collect data and examine the potential for re-use of the excess bio-gas	Plant Manager	Dec-13
1.6	Move 10% of daytime energy consumption into night-time to lower energy costs	All operations have to identified in terms of the time of day they need to operate in Appendix 1 of the Energy Audit. Closely examine Aeration Blower control	Plant Manager	Dec-13

Appendix D

Residuals Management Plan

Waterford City WWTP (Sludge Treatment)
Springfield House, Gorteens, Co. Kilkenny
W0244-01

Residuals Management Plan

2012

Waterford City Council

Mott MacDonald

Waterford City WWTP (Sludge Treatment)
Springfield House, Gorteens, Co. Kilkenny
W0244-01

Residuals Management Plan

2012

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Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
A	Feb. 2011	A. Lambe	FMcG	FMcG	Draft Report
B	May 2011	A. Lambe	FMcG	FMcG	Issue following incorporation of WCC comments

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Content

1. Introduction

Condition 10 (Decommissioning and Residuals) of the Waste Licence states that:

Condition 10 Decommissioning & Residuals Management

10.1 Following termination, or planned cessation for a period greater than six months, of use or involvement of all or part of the site in the licensed activity, the licensee shall, to the satisfaction of the Agency, decommission, render safe or remove for disposal/recovery any soil, subsoil, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution.

10.2 Decommissioning Management Plan (DMP)

10.2.1 The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for the decommissioning or closure of the site or part thereof. This plan shall be submitted to the Agency for agreement within six months of the date of grant of the licence.

10.2.2 The plan shall be reviewed annually and proposed amendments thereto notified to the Agency for agreement as part of the AER. No amendments may be implemented without the agreement of the Agency.

10.2.3 The licensee shall have regard to the Environmental Protection Agency Guidance on Environmental Liability Risk Assessment, Decommissioning Management Plans and Financial Provision when implementing Condition 10.2.1 above.

10.3 The Decommissioning Management Plan shall include, as a minimum, the following:

(i) a scope statement for the plan;

(ii) the criteria that define the successful decommissioning of the activity or part thereof, which ensures minimum impact on the environment;

(iii) a programme to achieve the stated criteria;

(iv) where relevant, a test programme to demonstrate the successful implementation of the decommissioning plan; and

(v) details of the costings for the plan and the financial provisions to underwrite those costs.

10.4 A final validation report to include a certificate of completion for the Decommissioning Management Plan, for all or part of the site as necessary, shall be submitted to the Agency within three months of execution of the plan. The licensee shall carry out such tests, investigations or submit certification, as requested by the Agency, to confirm that there is no continuing risk to the environment.

This report is prepared in accordance with the EPA's Guidance on Environmental Liability Risk Assessment, Residuals Management Plans and Financial Provision.

2. Site Evaluation

2.1 Description of Site

The facility is a wastewater treatment plant for Waterford City and its Environs to cater for domestic and industrial wastewater. It is located approximately 3km east of Waterford City in the townland of Gorteens, County Kilkenny. The facility is operated by Celtic Anglian Water on behalf of Waterford City Council and operates 24 hours/day and 365 days/year.

The wastewater treatment process consists of inlet screening, grit and grease removal, primary settlement, activated sludge process and final settlement. The facility includes infrastructure for the treatment of excess sludge generated by the wastewater treatment process. The maximum tonnage of sewage sludge to be treated is 95,100 tonnes per annum. No sludges or other wastes are permitted to be imported for treatment.

The sludge arising from wastewater treatment is thickened, pasteurised, treated in two anaerobic digesters and dewatered. Biogas from the digestion process is used for the on-site boilers, with any excess gas being flared. The wastewater preliminary treatment works and sludge dewatering works are located indoors, in the inlet works building and sludge building respectively. These areas are to be operated under negative air pressure with odours extracted to two odour control units for treatment.

2.2 Inventory of Site Plant and Raw Materials

The key infrastructural and process plant are as follows:

- Works Inlet Building
- Inlet Screens (Duty/Duty/Standby) and associated valves, isolation penstocks, and associated controls.
- Aerated grit channel and blowers and associated valves and control, surface scrapers, penstock Grit classifier and associated valves
- Grit screening washer and compactor, washwater sump and submersible pump, associated valves and control
- Odour Control System (OCU1)
  Biofilter, carbon filter, centrifugal fan, ducting exhaust stack, water supply
- Storm Tanks, submersible pumps and associated valves and control, jet mixer
- Flow measurement, flow splitter chamber
- Primary Settlement Tanks covered and clarifier scrapers, scum sump and submersible pump, sludge progressive cavity pumps and associated controls
- Selector Tank
- Inclined Bubble Aeration (IBA) Tanks, mixers, air blowers and associated valves and control equipment
- Final Settlement Tanks, scrapers, valves and associated control equipment
  RAS centrifugal pumps, valves, flow meter and associated controls (each tank has dedicated pump plus two common standby pumps)
  SAS centrifugal pumps, valves and associated controls
- Final Effluent Sampling and Washwater Pumping Station
- Sludge Building
- Sludge Thickening Belt Presses, Sludge Dewatering Belt Presses, Boilers, Generator, MCC, Electrical Switchgear
  OCU2- Biofilter, carbon filter, centrifugal fan, ducting exhaust stack, water supply

- Picket Fence Thickener, valves and associated controls
  Progressive cavity pumps (periodically waste sludge to sludge blending tank)
- Primary and Secondary Sludge Storage Tanks
- Thickened Sludge Blending Tank, mixer, valves and associated controls
- Pasteurisation System
  Pasteurisation Tanks, Progressive Cavity pumps, Macerator, valves, associated control, flow meters, heat exchangers
  Pasteurised Sludge Pumps
- Anaerobic Digestion
  Digester vessel, digester instruments, pressure / vacuum relief valves, digester mixer, sludge offtake
- Digested Sludge Tank, sludge dewater feed pumps, valves and associated controls
- Biogas holder (flexible membrane), condensate trap/chamber, pressure relief valves
- Flare Stack, control Valves and Burner
- Sludge Waste Storage Containers
- Liquor Sump, sludge liquors return pumps, valves and associated controls
- Liquid polymer bulk storage,
  polymer preparation plant and dosing plant
- diesel storage
- Administration Building

Biogas

Biogas produced onsite is stored in flexible membrane holder.

Diesel

Fuel, which is diesel, is stored on site for the generator and the boilers. The fuel storage tanks are located beside the Sludge Thickening, Dewatering and Digestion Control Building. The tanks are double skinned, which provide a second layer of protection.

Chemicals

Approximately 2.4 tonnes/week of polyelectrolytes are used in sludge thickening and dewatering. These are the only chemicals in the process.

Administration Building

The building contains standard office equipment.

2.3 Details of Site Wastes and Decontamination Requirements

The wastes generated are sludge bio-cake (41.1 t/day), screenings, grit, grease, mixed municipal waste, paper/card and plastic. No hazardous waste is generated.

2.4 Initial Screening and Operational Risk Assessment

2.4.1 Environmental Sensitivity

2.4.1.1 Human Occupation

There are residential areas to the west, northwest and northeast of the site. Residential areas are within 200 to 750m from the site boundary.

2.4.1.2 Groundwater Protection

The underlying geology of the site is comprised of shales and siltstones, which can be highly weathered in the upper layers and quite weak. The depth to bedrock ranges significantly in the area, ranging from 3.8 m BGL (Below Ground Level) to 16.6 m BGL in the vicinity of the site. Direction of groundwater flow appears to be from north to south, i.e. towards the River Suir.

The bedrock aquifer has been given a Groundwater Protection Zone classification by the GSI (as part of the Groundwater Protection Scheme for Co. Kilkenny) of Rf/M – Regionally Important of Moderate Vulnerability.

Well card data from the GSI Well Card Database (a record of wells drilled in Ireland) shows a number of wells within a 3 km radius of the WWTP site. From these records, the underlying bedrock in the area has been shown to be capable of yields ranging from moderate (40 – 100 m3/day) to excellent (>400 m3/day).

The IDA Park, located directly to north of the site, contains a borehole within the IDA Park for the purposes of water supply for the area until a public water supply is put in place by the Local Authority. It is understood that the IDA has permission to abstract approximately 10,100 gallons per hour. A public water supply has been constructed to the entrance to the IDA Park.

There are no direct emissions to groundwater. The only emissions to ground waters will be from the surface water runoff from the roads. Swales along the northern access road through the site, will allow some percolation into the ground. The balance of the road runoff is drained via a stormwater drainage system, discharging to a stream at the south east corner of the site. The swales are a SUDS (Sustainable Urban Drainage Systems) component and are grassed depressions for surface water drainage. The underlying soil is sandy clay with sandy gravelly clay in places. The underlying geology of the site is comprised of shales and siltstones.

2.4.1.3 Sensitivity of the Receiving Waters

The site is bounded by the Lower Suir Estuary to the south, and a small unnamed stream to the east. The Lower Suir Estuary was designated as Good Status (SERBD Transitional and Coastal Waters Action Programme 2009-2015). There is no information on the unnamed stream which runs alongside the site.

The Lower Suir Estuary is not designated as sensitive under the Urban Waste Water Treatment Regulations, 2001 (S.I. No. 254 of 2001) and subsequent amendments. The Middle Suir Estuary located upstream of the site is designated as sensitive under the Urban Waste Water Treatment Regulations, 2001 (S.I. No. 254 of 2001) and subsequent amendments. The Middle Suir Estuary was designated as Moderate Status (SERBD Transitional and Coastal Waters Action Programme 2009-2015).

Waterford Harbour is a designated shellfish water (2008) located >1km downstream of site.

Duncannon Beach is a designated bathing waters situated >5km downstream of the site. In 2009, the bathing waters were compliant with EU Mandatory Values.

2.4.1.4 Protected Ecological Sites and Species

The WWTP site overlaps with the Lower River Suir SAC boundary as the boundary of the SAC extends into the salt marsh and runs parallel to the shoreline. The infrastructure does not impinge on the designated site and there will be no impact during operation of the facility.

The Lower River Suir SAC (Site Code 002137) extends from freshwater stretches of the River Suir immediately south of Thurles, to the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford. The site is a SAC selected for the presence of the priority habitats on Annex I of the E.U. Habitats Directive - alluvial wet woodlands and Yew Wood. The site is also selected as a SAC for floating river vegetation, Atlantic salt meadows, Mediterranean salt meadows, old oak woodlands and eutrophic tall herbs, all habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive - Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Crayfish, Twaite Shad, Atlantic Salmon and Otter.

Other sites designated under the Habitats and Birds Directives within 5km of the site include the River Barrow and Nore SAC (Site Code 002162) that joins the Suir less than 5km downstream.

2.4.1.5 Air Quality and Topography

The site is situated on the banks of the River Suir at an elevation of approximately 10m OD. Sensitive receptors are located at elevations greater than 20m OD. Therefore the terrain is classified as intermediate terrain, i.e. where the elevations lie between the stack tip elevation and the plume rise elevation.

An assessment of the baseline air quality in the region of the facility was carried out by reference to suitable EPA long-term monitoring data (Updated EIS, April 2008). Air quality monitoring programs have been undertaken in recent years by the EPA and Local Authorities. The most recent annual report on air quality entitled "Air Quality Monitoring Annual Report 2006" (EPA, 2007), details the range and scope of monitoring undertaken throughout Ireland. The EIS (2008) for the facility concluded that existing baseline levels of NO2, SO2, CO, benzene, PM10 and PM2.5 were below ambient air quality limit values in the vicinity of the site.

The predominant wind direction is south-westerly with an average wind speed of approximately 4-6 m/s.

2.4.1.6 Sensitive Agricultural Receptors

The agricultural land surrounding the site is identified as pasture by the EPA Corine landcover dataset. There were no fruit, vegetable or dairy farming identified within 150m of the site.

2.4.2 Compliance Record

The Waterford City WWTP is a newly licensed facility and has been operating since July 2010. Therefore the facility is classified as Compliant/New Facility with a score of 1.

2.4.3 Operation Risk Assessment

Table 2.5.1 Operation Risk Assessment

Complexity	Complexity Band	Score	
Activity Class:			
Class 6 - Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in this Schedule	G3	-	
Schedule 4 No. 2 "Recycling or reclamation of organic substances which are not used as solvents (including compositing and other biological processes)."	G4	4	Where more than one scheduled activity is located at a facility, then the highest Complexity Band is applied.
Environmental Sensitivity	**Sub Matrix Score**	**Score**	
Human Occupation - Located 50-250m from Site	3		
Groundwater Protection - Regionally Important Aquifer - Moderate Vulnerability	2 1		
Sensitivity of Receiving Waters - Good Status Waters	2		
Protected Ecological Sites and Species - Lower River Suir SAC overlaps site boundary	2		
Air Quality and Topography - Intermediate terrain	1		
Sensitive Agricultural Receptors - Fruit, vegetable or dairy farming >150m from activity footprint	0		
Total Environmental Sensitivity	11	2	
Compliance Record		**Score**	
Compliance/New Facility		1	
OVERALL RISK SCORE / RISK CATEGORY			
OVERALL RISK SCORE Complexity x Environmental Sensitivity x Compliance Record	4x2x1 =	8	
RISK CATEGORY		Category 2	

3. Residual Management Plan Scope and Criteria

3.1 Introduction and Scope of Plan

"10.1 Following termination, or planned cessation for a period greater than six months, of use or involvement of all or part of the site in the licensed activity, the licensee shall, to the satisfaction of the Agency, decommission, render safe or remove for disposal/recovery, any soil, subsoils, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution."

The scope of this plan addresses the key issues, which would occur in an orderly shutdown of the activity or part thereof over the closure period of 4 months (for a full closure). Refer to Table 3.1.1 for closure programme. The closure programme details the cessation of activities and makes an allowance for the shutting downing of processing activities and for the removal of the sludges/ wastewater from site. This time period may be reduced depending on production.

The scope of the plan includes the following major activities:

- Setting up a management structure to oversee the Residuals Management Plan.
- Cessation of all treatment activities
- Removal of all remaining raw materials and final products from the site
- Cleaning and decontamination of all equipment and buildings
- Demolition of Buildings
- Groundwater monitoring.

A residual includes any potentially contaminating material and includes chemicals, wastes, buildings and equipment. In general, specialist equipment will be sold or distributed to other plants in the event of a shut down.

It is envisaged that suitably qualified employees at Waterford City Council will manage and oversee the Residuals Management Plan. Outside contractors required for demolition, cleaning, recycling activities or waste disposal would be licensed and approved.

This section details the plant, buildings, equipment and other materials, which require consideration as part of the closure process. The closure is detailed with regard to the closure of process areas/ activities, with further details regarding the overall residuals present onsite. Details of residuals which require decontamination and the proposed method of decontamination are provided.

It is expected that clean closure will be achieved; a benchmark set of criteria for clean closure for Waterford City WWTP is set out in Section 3.2.

Process Equipment

Upon implementation of the Residuals Management Plan, the transfer of wastewater to the site will cease. Once the final wastewater has been processed, and sludge removed from the site, decommissioning of the process equipment commence.

The processing plant will be isolated from the power source. The plant will then be drained of any oils/chemicals and taken offsite for reuse or sale. If this is not viable, the plant will be dismantled and sold as scrap metal.

The process tanks will be decontaminated and the washings will be tankered from site for treatment. Once the process tanks have been cleaned, the reinforced concrete tanks will be demolished and disposed of by a suitable contractor. The storage tanks onsite will be decommissioned and removed from the site. Reuse of the storage tanks should be considered where appropriate. Any process tanks not suitable for reuse will be dismantled and sold as scrap metals or sent for recycling.

Buildings and Infrastructure

The decommissioning of activities in the respective buildings (Inlet Works Building, Sludge Building, and Administration Building) is discussed above. Once the plant, chemicals, process residuals are removed and the buildings are washed, a final walkthrough inspection of the buildings will be undertaken.

The buildings will be demolished by an approved contractor followed by appropriate disposal.

Ancillary Services

Ancillary services areas such as the Administration Building will be decommissioned in a timely manner.

Office equipment will be isolated from electricity supply. Suitable office equipment will be redistributed to another site, sold for reuse or recycled as scrap materials and disposed of by a licensed contractor.

Canteen equipment and furniture will be sold for reuse or recycled as scrap materials and disposed of by a licensed contractor as appropriate.

Chemicals and Fuel

The quantities of bulk chemicals onsite will be monitored in accordance with the scheduled shut down of the site. Bulk chemicals will be returned to the vendor. Any raw materials which cannot be returned to the supplier whether due to minimal volume constraints or failure to find a suitable user for the material will be treated as a waste product and treated accordingly as outlined in the section of this plan detailing waste handling and disposal.

The bulk chemical storage tanks will be decommissioned and will either be distributed to another site or sold as scrap metal, once they have been decontaminated.

The ordering and supply of diesel to the site will be inline with the planned cessation of activities onsite. Diesel residuals remaining onsite in the bunded storage area will be returned to the vendor or reused in other sites. The bunded diesel storage area will be jetted and cleaned by a specialist contract. The washings will be removed from site and treated by a licensed contractor.

Waste

Existing environmental policies regarding recycling and waste disposal will continue to apply during plant decommissioning. Existing Environmental practises regarding the disposal of waste will be implemented during plant shutdown.

Any plant which cannot be redistributed to another plant or sold for reuse or sold as scrap metals (or materials) will be treated as waste. A contingency is allowed in the costing of the plan to allow for this occurrence where reuse or recycling is not appropriate.

Any chemicals or fuels which cannot be returned to the supplier whether due to minimal volume constraints or failure to find a suitable user will be treated as a waste product and treated accordingly. These chemicals will be disposed of utilising a hazardous waste contractor.

Chemical and fuel wastes outlined above include:

- Polyelectrolyte
- Diesel
- Biogas (it is envisaged that the biogas will be utilised completely, or flared in the process prior to plant shutdown)

Groundwater Monitoring

Groundwater monitoring, will be undertaken in accordance with the licence requirements at the onset of the plant shut down, and again at the completion of the plant shutdown. No further monitoring is anticipated, unless requested by EPA.

Table 3.1.1 Programme

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16
Cessation of receipt of wastewater	x															
Cessation of wastewater/sludge processing	x	x														
Removal of Sludge		x	x													
Process tanks cleaning			x													
Chemicals and fuel removal				x												
Plant inventory					x											
Plant decontamination, decommissioning and removal						x	x	x	x							
Removal of Tanks										x	x	x				
Removal of General Wastes													x			
Building decontamination, inspection													x			
Demolition and Removal Building materials														x	x	
Groundwater Monitoring	x															x

3.2 Criteria for successful decommissioning

Clean Closure is envisaged for this site and the criteria for successful decommissioning are as follows:

1. All plant and buildings safely decontaminated using standard procedures and authorised contractors.

2. All Wastes handled, packaged, temporarily stored and disposed or recovered in a manner which complies the regulatory requirements:

    a. All hazardous materials should be classified in accordance with European Communities (Classification, Packaging, Labelling and Notification of Dangerous Substances) Regulations, 1994.

    b. Handling and transport of waste should be undertaken in accordance with the Waste Management Act 1996.

3. All relevant records relating to waste and materials movement and transfer or disposal were managed and retained throughout the closure process.

4. Remove all potential sources of effluent generation from the site and minimise water use and release quantities during decommissioning

5. There was no soil or groundwater contamination at the site. This was verified using monitoring data and a soil/groundwater assessment at the time of closure.

4. Residual Management Plan Costs

The Residual Management Plan Costs are set out in Table 4.1.1., expenditure includes man-hours, transport costs, disposal costs, specialist contractors and groundwater testing.

Table 4.1.1 Cost of Plan

Residual	Action/Disposal	Costs incurred	Cost
			Total
-	Management of RMP	man-hours	30,000
Waste	Implement existing operational practice. Reuse or recycle where possible. Utilise best practice and comply with regulatory requirements.	man-hours disposal costs	5,000
Chemicals and Fuel	Return to vendor where possible. Dispose of remainder as waste, utilising best practice and complying with Regulatory Requirements.	man-hours disposal costs	3,000
	Decontaminate bunds by specialist contractor. Dispose and treat washings at a licensed facility.	specialist contractor disposal costs	10,000
Process Plant and Equipment	Follow decommissioning programme as set out in Section 3. Decontaminate tanks, demolish tanks, disposal of waste by a licensed contractor Remove pipes and disposal by licensed contractor Utilise specialist contractors for removal of gas/chemicals. Decontaminate plant and sell to another site or sell remainder as scrap.	man-hours specialist contractor disposal costs	206,000
	Office Equipment	man-hours disposal costs	2,000
Buildings and Infrastructure	Follow decommissioning programme as set out in Section 3. Decontaminate buildings. Demolish Buildings.	man-hours disposal costs	27,000
Groundwater	groundwater monitoring and groundwater report	At start of closure period and following completion of RMP	12,000
Environmental Reports			10,000
Contingency			30500
TOTAL			335,500

Appendix E

Environmental Liabilities Risk Assessment

Table 1 Environmental Sensitivity Assessment

Environmental Attribute	Attribute Score	Designated Score	Comment
Sensitivity of Receiving Water			
Class A (Q5, Q4-5, Q4)	3		
Class B (Q3-Q4)	2		
Class C (Q3, Q2-3)	1		
Class D (Q2, Q1-2, Q1)	0		
Designated Costal & Estuarine Waters	2		
Potentially Eutrophic Coastal & Estuarine	1	2	
Groundwater Protection			
Regionally Important Aquifer	2		
Locally Important Aquifer	1		
Poor Aquifer	0	2	
Vulnerability Rating - Extreme	3		
Vulnerability Rating - High	2		
Vulnerability Rating - Moderate	1		
Vulnerability Rating - Low	0	1	
Protected Ecological Sites and Species (Shortest distance from any discharge)			
Discharge within or directly bordering a designated site	2		
<1km	1		
>1km	0	2	
Human Health			
Discharge within or directly bordering a designated shellfish area			
0 - 5 km	1		
>5 km	0	1	
Designated Bathing Water			
WITHIN 0-5 km	1		
>5 km	0	0	
Drinking Water Source			
Within 0-10 km	1		
>10km	0	1	
Environmental Sensitivity Score		1	

Table 2 Risk Assessment Form

Risk ID	Process*	Potential Hazards	Environmental effect	Severity Rating	Basis of Severity	Occurrence Rating	Basis of Occurrence	Risk Score
1	Inlet works	Blockage	Untreated wastewater discharge to groundwater/ surface water	2	Duration would be short, blockage would be noticed. Bypass screens in place.	3	2 automatic screens and bypass screen. Screens are regularly inspected. Pumped flow to inlet.	**6**
2	Operation of plant under storm events	Storm water (continuous pumping of wastewater to plant) resulting in washout of bacteria.	Untreated dilute wastewater discharge to surface water	2	Wastewater feed to plant by a combination of gravity and pumped mains, storm water tanks.	2	No reports of storm events causing problems at site.	**4**
3	Biological Tank	Failure of aeration/ insufficient aeration capacity to treat incoming load	Receiving waters - Depletion of D.O., nutrient enrichment.	3	Remediation of river, and protected habitats.	4	Plant designed for carbonaceous oxidation, aeration system does not have capacity to achieve nitrogen limits set under licence for design load, D.O. monitors, monitoring of D.O. Standby blowers. Trained operatives onsite, monitoring of process.	**12**
4	Biological Tank	Washout of MLSS, failure/ insufficient biological treatment, discharge of untreated/ partially treated wastewater	Receiving waters - Depletion of D.O., nutrient enrichment, potential fish kill	3	Remediation of river, and protected habitats.	4	Plant designed for carbonaceous oxidation, plant does not have capacity to achieve nitrogen limits set under licence for design load, MLSS monitors, monitoring of D.O. Trained operatives onsite, monitoring of process.	**12**
5	Clarifier	Failure of critical equipment leading to solids carryover in effluent	Suspended solids concentration in the receiving water	3	Impact on receiving waters would be short	2	MLSS monitoring and monitoring of process, failure would be noticed.	**6**

Table 2 Risk Assessment Form

Risk ID	Process*	Potential Hazards	Environmental effect	Severity Rating	Basis of Severity	Occurrence Rating	Basis of Occurrence	Risk Score
6	Sludge Exports	Spill onsite	Groundwater pollution - subsequent impact on watercourses	2	High volumes of sludge for transport offsite	3	High volume of sludge for transport on/off site. Experienced site personnel.	**6**
7	Sludge Treatment	Spill onsite	Groundwater pollution - subsequent impact on watercourses	4	High volumes of sludge onsite,	3	Constructed and last integrity tested in 2009/10. Regular inspection and maintenance. Experienced site personnel. Sludge Treatment area to be bunded with drainage directed to the return liquors system.	**12**
8	Biogas Production	Escape of biogas due to malfunction of flare or gas control system	Release of biogas to atmosphere,	4	release of biogas to atmosphere	3	SCADA control system, failure would be noticed. Experienced operatives onsite.	**12**
9	Biogas Production - Gas Holder	Explosion/ fire	Potential release of explosive gas, fire and firewater.	4	Fire at WWTP and potential release of firewater	3	Biogas produced onsite	**12**
10	Supernatant return	Failure of pumps	Groundwater pollution - subsequent impact on watercourses	3	Moderate quantities of high strength wastewater.	2	Pumps linked to plant SCADA, failure would be noticed.	**6**
11	General - chemical spill	Spill onsite	Groundwater pollution - subsequent impact on watercourses	2	2.4 tonnes powdered polyelectrolyte stored onsite (one weeks supply) for sludge thickening and dewatering.	3	Bunded polymer dosing area. Polymer stored with Sludge Building and any spillages will be washed and drained to the Liquors return pumping station.	**6**

Table 2 Risk Assessment Form

Risk ID	Process*	Potential Hazards	Environmental effect	Severity Rating	Basis of Severity	Occurrence Rating	Basis of Occurrence	Risk Score
12	General - diesel spill	Spill onsite	Groundwater pollution - subsequent impact on watercourses	3	The capacity of boiler fuel tank is 10,000 litres diesel and the generator fuel tank also holds 10,000 litres diesel.	2	Double skin tanks, high level alarm experienced personnel onsite.	**6**
13	General - power failure	Power Failure - Washout of MLSS, failure of biological treatment, discharge of untreated wastewater	Receiving waters - Depletion of D.O., nutrient enrichment, potential fish kill	3	Backup generator onsite, no history of power failure onsite. Duration would be short.	1	No reported problem with ESB supply. Backup generator onsite.	**3**
14	General - tank failure	Tank failure	Groundwater pollution - subsequent impact on watercourses	4	Contamination could be ongoing for a long period of time if leak not detected. Possible need to pump and treat groundwater and soil.	2	Constructed and last integrity tested in 2006. Regular inspection and maintenance. Sludge Farm area is bunded.	**8**
15	General - pipe failure	Pipe Failure	Groundwater pollution - subsequent impact on watercourses	3	Contamination could be ongoing for a long period of time if leak not detected. Possible need to pump and treat groundwater and soil.	2	Constructed and last integrity tested in 2009/10. Regular inspection and maintenance.	**6**
16	WWTP operation	Fire at WWTP (firewater)	Groundwater pollution - subsequent impact on watercourses	4	Possible need to pump and treat groundwater.	3	Moderate quantities of hydrocarbons stored onsite.	**12**
17	WWTP site	Flooding	Receiving waters - Depletion of D.O., nutrient enrichment, potential fish kill. Risk to Groundwater	4	Remediation of soil, groundwater and estuarine habitats.	1	No history of flooding onsite.	**4**

Table 2 Risk Assessment Form

Risk ID	Process*	Potential Hazards	Environmental effect	Severity Rating	Basis of Severity	Occurrence Rating	Basis of Occurrence	Risk Score
18	WWTP Influent	Variations in influent, which may impact on process performance e.g. increased salinity in the influent during high tide conditions	Failure of process, resulting in non-compliant discharges. Receiving waters - Depletion of D.O., nutrient enrichment.	3	Remediation of river, and protected habitats.	4	conditions have resulted in non-compliant discharges and mitigation measures are been taken.	**12**
19	WWTP Influent	Underloading of plant, or variations in influent temperature resulting in the growth of filamentous bacteria	Failure of process, resulting in non-compliant discharges. Receiving waters - Depletion of D.O., nutrient enrichment.	3	Remediation of river, and protected habitats.	4	conditions have resulted in non-compliant discharges and mitigation measures are been taken.	**12**

Table 3 Risk Matrix

Occurrence						
V. High	5					
High	4			3,4,18,19		
Medium	3		1,6,11		7,8,9,16	
Low	2		2	5,10,12,15	14	
V. Low	1			13	17	
		Trivial	Minor	Moderate	Major	Massive
		1	2	3	4	5
				Severity		

	These are considered to be high-level risks requiring priority attention. These risks have the potential to be catastrophic and as such should be addressed quickly.
	These are medium-level risks requiring action, but are not as critical as a red coded risk.
	Green (light and dark green) – These are lowest-level risks and indicate a need for continuing awareness and monitoring on a regular basis. Whilst they are currently low or minor risks, some have the potential to increase to medium or even high-level risks and must therefore be regularly monitored and if cost effective mitigation can be carried out to reduce the risk even further this should be pursued.

Table 4 Statement of Measures

Risk I.D.	Risk Score	Mitigation measure to be taken	Outcome	Action	Date for completion	Owner/ Contact Person
1	6	Continue regular maintenance and inspection.	Reduced risk of blockage and over spill.	Continue regular maintenance and inspection.	ongoing	Waterford City Council
2	4	Continue regular maintenance and inspection.	Reduced risk from storm events.	Continue regular maintenance and inspection.	ongoing	Waterford City Council
3	12	Continue regular maintenance and inspection, access aeration plant capacity to achieve nitrogen limits.	Reduced risk of aeration failure.	Continue regular maintenance and inspection. Access aeration system capacity to achieve nitrogen limits and improve infrastructure if required.	ongoing	Waterford City Council
4	12	Continue regular maintenance and inspection, access plant capacity to achieve nitrogen limits.	Reduced risk of failure of biological treatment.	Continue regular maintenance and inspection. Access plant capacity to achieve nitrogen limits and improve infrastructure if required.	ongoing	Waterford City Council
5	6	Continue regular maintenance and inspection.	Reduced risk of failure of clarifier.	Continue regular maintenance and inspection.	ongoing	Waterford City Council
6	6	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed.	Reduced risk of sludge spill onsite	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed.	ongoing	Waterford City Council
7	12	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed.	Reduced risk of sludge spill onsite	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed.	ongoing	Waterford City Council
8	12	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed.	Reduced risk of emission of biogas.	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed.	ongoing	Waterford City Council
9	12	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed.	Reduced risk of fire/ explosion due to storage of biogas onsite.	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed.	ongoing	Waterford City Council
10	6	Continue regular maintenance and inspection.	Reduced risk of failure of clarifier.	Continue regular maintenance and inspection.	ongoing	Waterford City Council

Table 4 Statement of Measures

Risk I.D.	Risk Score	Mitigation measure to be taken	Outcome	Action	Date for completion	Owner/ Contact Person
11	6	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed.	Reduced risk of spill/leak onsite	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed.	ongoing	Waterford City Council
12	6	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed.	Reduced risk of spill/leak onsite	Continue regular maintenance and inspection. Ensure staff training is up to date and SOPs are followed. Ferric chloride bunding to be provided.	ongoing	Waterford City Council
13	3	Put in place emergency procedures for prolonged power outage. Ensure staff training is up to date.	Reduced risk from power outage onsite.	Put in place emergency procedures for prolonged power outage. Ensure staff training is up to date.	ongoing	Waterford City Council
14	8	Continue regular maintenance and inspection.	Reduced risk from tank failure.	Continue regular maintenance and inspection.	ongoing	Waterford City Council
15	6	Continue regular maintenance and inspection.	Reduced risk from pipe failure.	Continue regular maintenance and inspection.	ongoing	Waterford City Council
16	12	Put in place emergency procedures for dealing with fire/firewater. Ensure staff training is up to date.	Reduced risk firewater.	Put in place emergency procedures for dealing with fire/firewater. Ensure staff training is up to date.	ongoing	Waterford City Council
17	4	None required	n/a	None required	n/a	n/a
18	12	Continue regular maintenance and inspection. Investigate source of saline infiltration, survey of sewers to identify sewers requiring rehabilitation.	Reduced risk of failure of biological treatment.	Survey of sewers for saline infiltration complete, report submitted to DEHLG for funding of proposed rehabilitation works to sewers.	ongoing	Waterford City Council
19	12	Continue regular maintenance and inspection, monitor loading to plant and biomass growth.	Reduced risk of failure of biological treatment.	To date the rate of return activated sludge draw-off from the Final Settlement Tanks has been adjusted and floating booms on the Aeration Tanks have been installed to control filamentous growth during underloading.	ongoing	Waterford City Council

Table 5 Risk Classification Table – Severity

Rating	Severity		
	Category	Description	Cost of Remediation €
1	Trivial	No damage or negligible change to the environment.	< 1,000
2	Minor	Minor impact/localised or nuisance	1,000 - 20,000
3	Moderate	Moderate damage to environment	20,000 -75,000
4	Major	Severe damage to local environment	100,000 - 175,000
5	Massive	Massive damage to a large area, irreversible in medium term	175,000 - 1,000,000

Table 6 Risk Classification Table – Occurrence

Rating	Occurrence		
	Category	Description	Likelihood of Occurrence (%)
1	Very Low	Very low chance (0-5%) of hazard occurring in 30 yr period *	0 – 5
2	Low	Low chance (5-10%) of hazard occurring in 30 yr period	5 - 10
3	Medium	Medium chance (10-20%) of hazard occurring in 30 yr period	10 - 20
4	High	High chance (20-50%) of hazard occurring in 30 yr period	20 - 50
5	Very High	Greater than 50% chance of hazard occurring in 30 yr period	>50

STATEMENT
Environmental Liability Risk Assessment (ELRA) for The Annual Environmental Report (AER) for Waste Licence W0244

I confirm the above are the measures which will be taken by the Local Authority in 2013

Signed: _____ Date 12/11/13

Name Richie Walsh, A/Director of Services

The appropriate Officer should sign the Programme of Measures