

### Derrinnumera Landfill Site Management Structure

EMS 006 REV 4			
Title	Name	Responsibilities/Duties	Qualifications/Experience
Director of Services	Peter Hynes	Directoral responsibilities for the operation of the landfill	
Senior Engineer	Stephen Verity	Overall responsibility for all aspects of development and management of the landfill.	B.E., C.Eng., M.I.E.I.
Senior Engineer	Michael Mongan	Overall responsibility for all capital works at the landfill.	B.E., C.Eng., F.I.E.I.
Site Manager	Frank Walsh	Overall responsibility for the for the operation and the management of the landfill and ensuring compliance with the licence.	B.Eng., C.Eng., M.I.E.I.
Deputy Site Manager	Killian Farrell	Carrying out environmental monitoring at Derrinnumera Landfill as specified under Schedule E of the waste licence. Deputising for Site Manager.	B.Sc., M.Sc. Certificate in Waste Management
Administrative Officer Grade 4	Charles Mulchrone	Operation of the office system including weighbridge accounts, payments, invoicing, wages, subsistence, information management, public relations.	Suitable Office Experience
Clerical Officer	Mary Molloy	Operation of the office system including phones, faxes and typing. Deputising for Administrative Officer.	16 years clerical experience
Landfill Supervisor	Pat Reilly	Supervision of works and filling operations at the landfill.	18 years landfill experience
Foreman	Gerry Moran	Supervision of works and filling operations at the landfill. Deputising for Landfill supervisor	8 years landfill experience
General Operative 1	Sean Barrett	General Maintenance as directed	Suitably Qualified
General Operative 2	Vincent Mc Nulty	General Maintenance as directed	Suitably Qualified
General Operative 3	Michael Kelly	General Maintenance as directed	Suitably Qualified
General Operative 4	Seamus Cleary	General Maintenance as directed	Suitably Qualified
General Operative 5	Hugh Syron	General Maintenance as directed	Suitably Qualified

## APPENDIX B

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**Appendix B1****Parameters Analysed for Surface Water Quality**

<b>Parameters</b>	<b>Units</b>
<b>Weekly</b>	
Visual Inspection/Odour	
<b>Monthly</b>	
Ammoniacal Nitrogen	mg/l as N
Biological Oxygen Demand	mg/l as O <sub>2</sub>
Electrical Conductivity	µS/cm @ 20°C
PH	pH units
Suspended Solids	
Temperature	°C
Total Phosphorous/Ortho-phosphate	mg/l as P
<b>Quarterly</b>	
Chloride	mg/l as Cl
Chemical Oxygen Demand	mg/l as O <sub>2</sub>
Dissolved Oxygen	mg/l as O <sub>2</sub>
Potassium	mg/l as K
Sodium	mg/l as Na
<b>Annual</b>	
Cadmium	mg/l as Cd
Calcium	mg/l as Ca
Chromium (Total)	mg/l as Cr
Copper	mg/l as Cu
Iron	mg/l as Fe
Lead	mg/l as Pb
List/II	
Magnesium	mg/l as Mg
Manganese	mg/l as Mn
Mercury	mg/l as Hg
Nickel	mg/l as Ni
Sulphate	mg/l as SO <sub>4</sub>
Total Alkalinity	mg/l as CaCO <sub>3</sub>
Total Oxidised Nitrogen	mg/l as N
Zinc	mg/l as Zn

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**Appendix B2****Parameters Analysed for Groundwater Quality**

<b>Parameters</b>	<b>Units</b>
<b>Monthly</b>	
Groundwater Level	metres
Ammoniacal Nitrogen	mg/l as N
Electrical Conductivity	$\mu\text{S/cm @ } 20^\circ\text{C}$
PH	pH units
Temperature	$^\circ\text{C}$
Total Phosphorous	mg/l as P
<b>Quarterly</b>	
Visual Inspection/Odour	
Chloride	mg/l as Cl
Dissolved Oxygen	mg/l as $\text{O}_2$
Potassium	mg/l as K
Sodium	mg/l as Na
Total Oxidised Nitrogen	mg/l as N
Total Organic Carbon	mg/l as C
<b>Annual</b>	
Boron	mg/l as B
Cadmium	mg/l as Cd
Calcium	mg/l as Ca
Chromium (Total)	mg/l as Cr
Copper	mg/l as Cu
Cyanide	mg/l as Cn
Fluoride	mg/l as F
Iron	mg/l as Fe
Lead	mg/l as Pb
Magnesium	mg/l as Mg
Manganese	mg/l as Mn
List I/II	
Mercury	mg/l as Hg
Nickel	mg/l as Ni
Sulphate	mg/l as $\text{SO}_4$
Total Alkalinity	mg/l as $\text{CaCO}_3$
Residue on Evaporation	( $180^\circ\text{C}$ )
Zinc	mg/l as Zn
Faecal Coliform	CFU/100ml
Total Coliform	CFU/100ml



**Appendix B3****Parameters for Leachate Analysis**

<b>Parameters</b>	<b>Units</b>
<b>Weekly</b>	
Leachate Level	metres
<b>Monthly</b>	
Ammoniacal Nitrogen	mg/l as N
Biological Oxygen Demand	mg/l as O <sub>2</sub>
Electrical Conductivity	µS/cm @ 20°C
PH	pH units
Suspended Solids	
Temperature	°C
Total Phosphorous	mg/l as P
<b>Quarterly</b>	
Visual Inspection/Odour	
Chloride	mg/l as Cl
Chemical Oxygen Demand	mg/l as O <sub>2</sub>
Dissolved Oxygen	mg/l as O <sub>2</sub>
Potassium	mg/l as K
Sodium	mg/l as Na
<b>Annual</b>	
Boron	mg/l as B
Cadmium	mg/l as Cd
Calcium	mg/l as Ca
Chromium (Total)	mg/l as Cr
Copper	mg/l as Cu
Cyanide	mg/l as Cn
Fluoride	mg/l as F
Lead	mg/l as Pb
List I/II	
Magnesium	mg/l as Mg
Manganese	mg/l as Mn
Mercury	mg/l as Hg
Nickel	mg/l as Ni
Sulphate	mg/l as SO <sub>4</sub>
Total Alkalinity	mg/l as CaCO <sub>3</sub>
Zinc	mg/l as Zn
Faecal Coliform	CFU/100ml
Total Coliform	CFU/100ml

**CORRESPONDENCE RELATING  
TO MINOR LICENCE AMENDMENTS**

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Ms Maria Holmes,  
Design Engineer,  
Market Sq.,  
Castlebar,  
Co Mayo

Environmental Protection Agency  
Regional Inspectorate, John Moore Road  
Castlebar, County Mayo, Ireland

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21/09/07

Our Ref: W0021-01/ap02dd

Dear Ms Holmes

The Agency agrees to your proposal, dated 17/09/07 and received by the Agency on 19/09/07 to implement a leachate recirculation unit at Lined Cell 1 subject to the following:

- The proposed works are carried out in compliance with the Conditions of your waste licence.
- The operation of the leachate recirculation system shall not cause odour nuisance or interfere with the collection and abstraction of landfill gas from the waste body. In addition, you should ensure that the system is appropriately sealed to minimise the escape of landfill gas.
- A high level alarm shall be fitted to the leachate header tank and procedures are put in place to prevent the overfilling of this tank.
- Landfill gas shall be prevented from venting to atmosphere via the leachate header tank, or from building up within the header tank. A suitable landfill gas monitoring port shall be fitted to the leachate header tank to allow for the monitoring of landfill gas within the tank.
- Written leachate re-circulation procedures are developed and implemented to ensure that the activity is carried out in compliance with the licence and does not cause nuisance etc.
- The re-circulation of leachate should not commence at the facility without the prior agreement of the Agency following the completion of the above works.

Please quote the above reference in future correspondence in relation to this matter.

Yours sincerely



Office of Environmental Enforcement

Cc: Mr Frank Walsk, Mayo Co Co.

Mr Killian Farrell, A/landfill Manager, Derrinnumera Landfill, Derrinnumera, Newport, Co Mayo

Mr Michael Mongan, Ssenior Engineer, Mayo Co Co.

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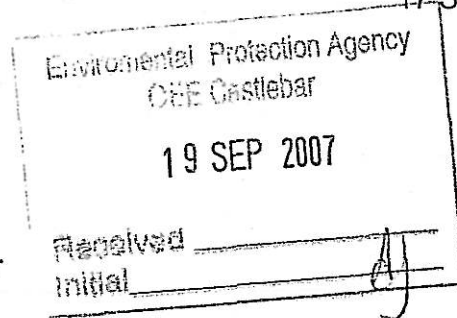
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**Our Ref:** MH/MMcD 1718/1a

17-September, 2007

Environmental Protection Agency  
Regional Inspectorate  
John Moore Road  
CASTLEBAR  
County Mayo

**Attn of:** Ms. Derval Devaney, Inspector



**Re:** Remedial Works at Derrinumera Landfill Site – Permanent Capping of Lined Cell  
No. 1 at Derrinumera Landfill – Waste Licence W0021-01

Dear Ms Devaney,

We are acting on behalf of our client Mayo County Council. In relation to the provision of leachate recirculation and having regard to the above project, please refer to Condition 4.23.6 of the current waste licence for the facility (W0021-01), which states:

*'Unless otherwise agreed by the Agency, the licensee shall not recirculate leachate over or into the waste body.'*

Reference should also be made to the circular letter to all landfills, issued by the Agency on June 20<sup>th</sup> 2007, which states:

***'Leachate Recirculation***

1. *Provision shall be made for the commencement of leachate recirculation in lined cells but only when the final capping has been completed in each cell.'*

Mayo County Council now wish to implement leachate recirculation at Lined Cell No. 1 and require your permission to do so. In the event that approval will be granted for leachate recirculation, enabling works (i.e. provision of distribution pipework underneath the capping geomembrane) will be put in place shortly in advance of above-ground elements necessary for

Directors: D.A. Downes (Chairman) L.E. Waldron (Managing Director) M.F. Garrick R.F. Tobin  
J. Colleran B.J. Downes S. Finlay P.J. Fogarty D. Grehan J.P. Kelly B.M. Mulligan  
B. Murray C. O'Keeffe F. Renkema E.J. Harrigan (Company Secretary)

Associates: T. Cannon P. Cloonan T. Curran O. Downes B. Gaffney B. Gallagher B. Heaney  
B. Hutchinson D. Kennedy J. McCreagh C. McGovern E. McPartlin



the completion of the leachate recirculation infrastructure. A typical detail has been appended to this correspondence to provide a brief outline of the works proposed.

On a different note please find attached data sheets, which have been submitted by the Contractor for materials proposed for use in the completion of permanent capping of cell 1. Having initially examined these data sheets, we feel that these materials would comply with our requirements, however the LLDPE liner will be subject to conformance testing in an independent laboratory to determine its compliance with the specifications. Samples of the liner will be taken following delivery to site and results will be submitted to the Agency along with the completed CQA report for the works. It is proposed that Geomembrane Testing Services Ltd. (Mr. Frank Lennon) will undertake periodic site visits and construction quality assurance for the lining works.

We await your approval with regard to leachate recirculation prior to commencing with same. If you have any outstanding queries on the above, please do not hesitate to contact the undersigned.

Yours sincerely,



Maria Holmes  
Design Engineer

cc. **Mr Killian Farrell, Deputy Landfill Manager, Derrinnumera Landfill**  
**Mr Michael Mongan, Senior Engineer, Mayo County Council**

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DCO 0062

Effective Date: 05/06/07



# TOBIN

Patrick J. Tobin & Co. Ltd

JOB NO:	1718
SHEET:	1.1

**DRAWING REGISTER & RECORD OF DRAWINGS ISSUED**

PROJECT	DATE OF ISSUE			
	Day	Month	Year	Issued by
	17	09	07	MH
	Current Revision			
	A			
Permanent Capping of Lined Cell No. 1 Derrinumera Landfill, Newport, Co. Mayo	A4	1000	A	A
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STATUS: D=DRAFT, P=PLANNING, T=TENDER, C=CONSTRUCTION

DISTRIBUTION				
CATEGORY	ORGANISATION	CONTACT NAME	GI	NUMBER OF HARD COPIES
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Construction	Mayo County Council	Mr. Killian Farrell		1
Construction	Mayo County Council	Mr. Michael Mongan		1
OFFICE COPY				1

**ABBREVIATIONS:**

E = E-Mail Copy  
 CD = Issued on CD

**NOTES:**

SIGNED: *P.J. Tobin*

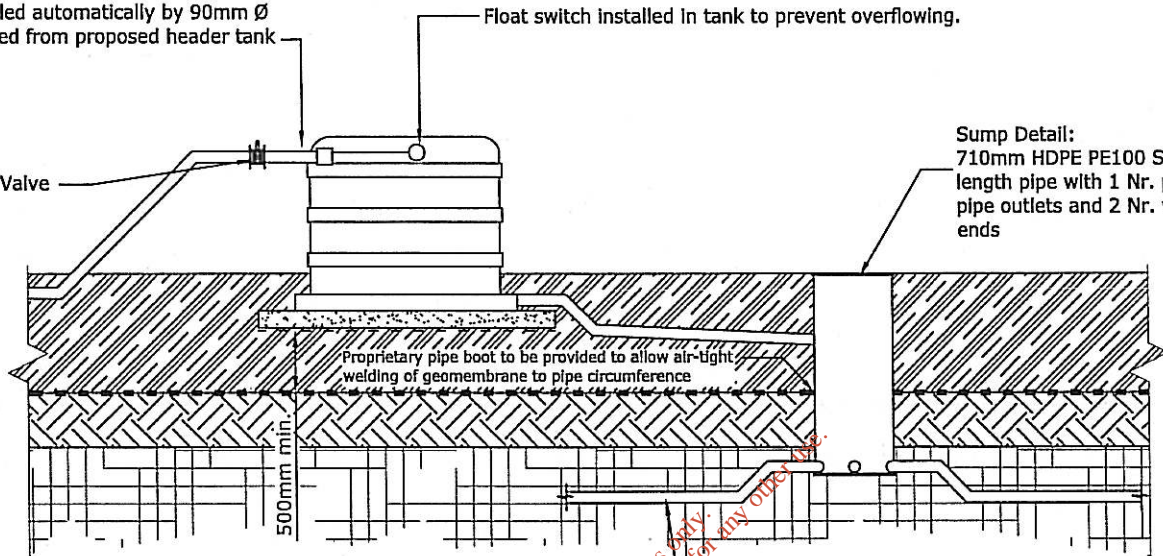
DATE: 17/09/2007

Tank is filled automatically by 90mm Ø gravity feed from proposed header tank

Float switch installed in tank to prevent overflowing.

Isolating Valve

Sump Detail:  
710mm HDPE PE100 SDR17, 1.5m length pipe with 1 Nr. pipe Inlet, 6 Nr. pipe outlets and 2 Nr. welded blank ends



**LEACHATE RECIRCULATION TANK**


Proprietary 2600 litre vertical M.D.P.E tank or approved equal on 200mm lightly-compacted Clause 804 blinding on Geogrid type Tensar SS40 or similar approved on Terram 900 or approved equal.

Capping Construction:  
1000mm topsoil/subsoil capping layer on geo-textile filter/drainage membrane on 1.0mm LLDPE impermeable layer on geo-composite gas venting layer on reprofiled temporary capping layer on waste body

6 NR. 110mm Ø HDPE PE100 SDR 17 leachate re-circulation perforated pipes in star formation from sump to waste to be laid in trench.

**LEACHATE RECIRCULATION DETAIL**  
(Not to scale)

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Client Mayo County Council	Prepared by: M.H.	 <b>TOBIN</b> Patrick J. Tobin & Co. Ltd.	TOBIN Consulting Engineers, Market Square, Castlebar, Co. Mayo, Ireland. tel: +353-(0)94-9021401 fax: +353-(0)94-9021534 e-mail: castlebar@tobin.ie www.tobin.ie
Project Permanent capping of Lined Cell No. 1 at Derrinumera Landfill	Checked: C.M.G. Date: SEPT. '07		TOBIN Consulting Engineers will not be liable for any use of this document for any purpose other than that for which it was originally prepared and provided. Except where specifically and explicitly agreed in writing by TOBIN Consulting Engineers, as copyright holder, no part of this document may be reproduced or transmitted in any form and this document shall not be relied upon by any third party for any purpose.
Title Leachate Recirculation Detail	Project Director: M.F. GARRICK Scale @ A4: NTS	Drawing No. <b>1718-1000</b>	



**Mr. Frank Walsh**  
Landfill Manager  
Mayo County Council  
Aras an Chontae  
Castlebar  
County Mayo

20<sup>th</sup> June 2007

***Ref. - Circular letter to all Landfills***

Dear Mr. Walsh,

I refer to your Waste Licence Reg. No. W0021-01, Derrinumera Landfill Facility.

In 1997 and 2000, the Agency published a number of guideline manuals specifically to assist different parties in the operation (Landfill Operational Practices) and design (Landfill Site Design) of landfills in Ireland. Through its role as an enforcement body for all landfills licensed by the Agency, the Office of Environmental Enforcement (OEE) has undertaken a review of the various practices taking place at such facilities. The OEE is of the opinion that some of the strategies outlined in the above named manuals should be revised and/or updated to take into account the changing situations at landfills across the country.

In particular, you will be aware that odours from landfills continue to be the single biggest problem encountered by the OEE at licensed landfills. To date in 2007, the OEE has received over 500 complaints from members of the public in relation to odours from landfills. Many of the odour issues at landfills occur because of poor planning in relation to phasing of cells, inadequate waste deposition methods employed, lack of landfill gas management infrastructure, poor maintenance of gas infrastructure or failing to put in place measures to minimise odours/gas emissions arising from deposited waste (e.g. delays in final capping). With this in mind, the OEE draws your attention to the following key issues and requests that you revise your plans/procedures to take account of them.

***Cell Design/Capping***

1. Cell sizes should be designed to accept no more than one years waste intake for disposal as specified by the waste licence. In the case where the actual rate of waste acceptance decreases or is less than the licensed annual tonnage the cells should not be operated for a period greater than 15 months from the date of commencement of filling. Existing cells which have already been





constructed and are larger than this requirement should be subdivided to reflect it.

2. The slopes of cells and deposited waste should be engineered in order to provide safe access for maintenance machinery and staff and to provide for the proper application and maintenance of daily/intermediate cover and capping layers (including those in the working face).
3. Cell design should be such so as to allow for progressive final capping of each cell/sub cell.
4. Cells or sub-cells should be final capped within 3 months of the cessation of waste disposal in that cell/sub cell i.e. all barrier layer capping works completed. The application of subsoil and top soil restoration layers of the final capping can follow afterwards provided the barrier layer is adequately protected in the interim.
5. A gas barrier membrane should be incorporated into the barrier layer of the final capping specification and should also be laid on the interphases between filled cells and future cells. The application of the sub-soil/top soil layers to such interphases is not considered necessary by the Agency.
6. Agreement will not be given for waste disposal in future cells unless the Agency is satisfied that that previous cells will be finally capped within 3 months.

#### ***Landfill Gas Management***

1. A landfill gas management plan should be submitted in conjunction with the phasing/filling plan for each cell/subcell.
2. As a minimum, the Agency considers that active gas management infrastructure should be provided prior to the commencement of waste disposal and should also be provided to match the phased filling of each cell. This infrastructure shall consist of horizontal and/or vertical gas collection and shall be placed at intervals to allow adequate gas collection in each cell. Gas flares and interconnecting pipework should also be operational prior to the commencement of waste disposal.
3. The Agency also considers it necessary that a horizontal gas collection system is provided at the top of side slopes to minimise gas emanating from the leachate collection layer. In this regard, for future cells (or cells under construction) the leachate collection layer on the side slopes shall not exceed 2m from the base of each cell (i.e top of artificial liner)
4. All gas collected should be flared in an enclosed gas flare and/or engine. The use of open flares is only acceptable as an interim measure on a temporary basis and must be agreed with the Agency.
5. The landfill gas flaring/utilisation plant should be designed, managed and operated to ensure the optimum management of gas irrespective of the quality of the gas. The Agency considers that at least one on-site representative for the licensee should have adequate knowledge and training on the operation of the landfill gas management system and balancing of the gas field to maximise landfill gas control. Regular assessment of the operation of the gas management system (e.g. field balancing and control of condensate) should be carried out and records maintained of this. In addition, the Agency considers that an independent assessment of the on-site gas management system should be carried out on an annual basis. This should be reported to the Agency on completion.

6. Consideration should be given to the provision of active landfill gas collection from other potential migration pathways such as leachate collection side slope risers.

#### ***Leachate Recirculation***

1. Provision shall be made for the commencement of leachate recirculation in lined cells but only when the final capping has been completed in each cell

#### ***General***

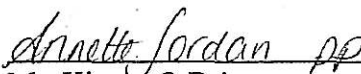
The Agency now requests that, henceforth, the following information should be submitted and agreed with the Agency as part of future submissions related to the construction of any lined cells:

- o Specified Engineering Works proposal for construction of the cell basal liner and leachate collection system;
- o Phasing/Filling Plan for waste emplacement within the cell;
- o Specified Engineering Works proposal for Final Capping of the cell; and,
- o Specified Engineering Works proposal for the collection and flaring or utilisation of landfill gas arising from within the cell.

**The Agency will require that these items are agreed and established prior to providing permission for the deposition of waste into new cells.**

If you require any further clarification in relation to the issues raised in this letter, please contact the local OEE Regional Team Leader.

Yours sincerely,

  
Mr. Kieran O'Brien  
Programme Manager  
Office of Environmental Enforcement

Cc: Mr. Killian Farrell, Deputy Landfill Manager, Derrinnumera Landfill, Derrinnumera, Newport, Co. Mayo



Mr Killian Farrell,  
Landfill Manager,  
Mayo County Council,  
Courthouse,  
Castlebar,  
Co. Mayo,

W0021-01

18<sup>th</sup> January 2007

Dear Mr Farrell,

South/South West Region  
Environmental Protection Agency  
Regional Inspectorate, Inniscarra  
County Cork, Ireland

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The Agency wishes to inform you of forthcoming changes in the reporting structure, scope and mechanism for submitting your annual emissions in your AER. This is to take account of the requirements of the E-PRTR Regulation (EC) No 166/2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC, which came into force on the 24th February 2006.

It is intended to replace for the 2007 reporting year, the spreadsheet AER emissions reporting system with a web-based system to allow licensees to report emissions and waste transfers offsite more easily and in a readily available format. The Agency will collate AER information and will extract those emissions and waste transfer records exceeding the European reporting thresholds for onwards reporting to the European Commission.

**Please note that this does not change in any way your reporting requirements for the calendar year 2006, which are due to be reported to the Agency in March 2007.**

The PRTR is a European pollutant emission reporting system, which aims to enhance the availability of information to the general public on the sources and amounts of emissions to air, water and land from European industry. This is the successor to the EPER (European Pollutant and Emission Register) reporting mechanism which licensees will have been familiar with.

The European PRTR Guidance Document for the implementation of the European PRTR was issued on the 31<sup>st</sup> May 2006. This document is available at [www.eper.ec.europa.eu](http://www.eper.ec.europa.eu). This document provides a copy of the E-PRTR Regulation and detailed guidance on what is required from individual facilities, member states and the EU Commission under the Regulation.

In order to implement the new PRTR Regulations the Agency is required to report to the EU emissions from a range of activities, which are grouped in 9 activity sectors:

1. Energy;
2. Production and processing of metals;
3. Mineral industry;
4. Chemical industry;
5. Waste and wastewater management;
6. Paper and wood production and processing;
7. Intensive livestock production and aquaculture;



8. Animal and vegetable products from the food and beverage sector; and
9. Other activities.

The scope of the PRTR Regulation includes a number of activity sectors which were not required to report under EPER, for example aquaculture; shipbuilding and maintenance; quarrying and underground mining; opencast mining; and urban waste water treatment plants.

Reporting under PRTR will be an annual process: the first report from facility operators is required to be made by 31 March 2008 and will cover the calendar year 2007. Reports for subsequent years will be required on 31 March of the following year.

The main features of the PRTR are as follows:

- 91 specified pollutants are required to be reported upon if they are released to air, water or land, either as permitted emissions or as accidental releases, or transferred to off-site Waste Water Treatment Plants (WWTPs).
- Types of emissions to be reported include deliberate, accidental, routine and non-routine releases.
- The transfer of hazardous and non-hazardous wastes must also be reported under the new Regulation.
- PRTR returns must be made to the EU on an annual basis.
- Facilities are required to ensure an appropriate quality of the data they report to their Competent Authority.
  - The data they provide must be complete, consistent and credible;
  - This requires that they use, to the extent possible, internationally approved data recording and collection methodologies, or other methods shown to be equivalent.

### **Requirements for Individual Licensees**

Therefore, the Agency requires that you undertake the following actions from the beginning of 2007 to prepare for the implementation of the PRTR Regulation:

- 1 Carry out a review of the PRTR list of 91 specified pollutants as laid out in Annex II of the Regulation and identify those which are used or are present on your facility (see attachment);
- 2 Make arrangements to quantify all deliberate, accidental, routine and non-routine releases to air, water or land, irrespective of PRTR thresholds. Quantification can be through measurement, calculation or estimation (Section 1.1.11 of the Guidance Document);
- 3 Make arrangements to quantify all transfers of hazardous or non-hazardous wastes (Section 1.1.10 of the Guidance Document);
- 4 Review the methods of measurement used on your facility to ensure compliance with Appendix 3 of the EU Guidance Document "List of internationally approved measuring methods for air and water pollutants";
- 5 Ensure that robust quality assurance procedures are employed for all data collection (Section 1.1.12 of the Guidance Document).

Any additional substances, not in the PRTR list of 91 specified pollutants, which currently require reporting under your licence or under existing agreements with the Agency shall continue to be reported.



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### Web Based Reporting System

The Agency is developing a web-based data reporting system to provide facilities with a standardised reporting mechanism designed to provide a simple means for facilities to report for PRTR, AER and other related reporting requirements for which the Agency is the Competent Authority. It is hoped that this will minimise the reporting burden on facility operators to the greatest extent possible, given the diverse range of requirements in force. The Agency also intends to revise its AER Guidance.

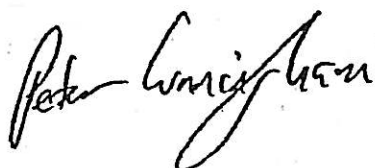
### Communication and Training

In order to assist facilities in fulfilling their obligations, industry-wide or sectoral training in the requirements and specifications of the PRTR will also be developed. The assistance and participation of industry and sectoral representative bodies will be sought in order to ensure the best service to facility operators. Developments in this regard will be communicated in due course.

The EPA will also publish regular updates on progress with the implementation of the PRTR on its website.

You are therefore asked to confirm licensed emissions that will be reported under this new web based system, and to state which substances listed under Annex II of the PRTR Regulation (see attachment) apply to your facility, by the 8<sup>th</sup> February 2007.

Yours sincerely



---

Peter Cunningham  
Senior Inspector  
Office of Environmental Enforcement

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## ATTACHMENT

## Pollutants (\*)

No	CAS number	Pollutant (*)	Threshold for releases (column 1)		
			to air (column 1a) kg/year	to water (column 1b) kg/year	to land (column 1c) kg/year
1	74-82-8	Methane (CH <sub>4</sub> )	100 000	— (2)	—
2	630-08-0	Carbon monoxide (CO)	500 000	—	—
3	124-38-9	Carbon dioxide (CO <sub>2</sub> )	100 million	—	—
4		Hydro-fluorocarbons (HFCs) (2)	100	—	—
5	10024-97-2	Nitrous oxide (N <sub>2</sub> O)	10 000	—	—
6	7664-41-7	Ammonia (NH <sub>3</sub> )	10 000	—	—
7		Non-methane volatile organic compounds (NMVOC)	100 000	—	—
8		Nitrogen oxides (NO <sub>x</sub> /NO <sub>2</sub> )	100 000	—	—
9		Perfluorocarbons (PFCs) (2)	100	—	—
10	2551-62-4	Sulphur hexafluoride (SF <sub>6</sub> )	50	—	—
11		Sulphur oxides (SO <sub>x</sub> /SO <sub>2</sub> )	150 000	—	—
12		Total nitrogen	—	50 000	50 000
13		Total phosphorus	—	5 000	5 000
14		Hydrochlorofluorocarbons (HCFCs) (2)	1	—	—
15		Chlorofluorocarbons (CFCs) (2)	1	—	—
16		Halons (2)	1	—	—
17		Arsenic and compounds (as As) (2)	20	5	5
18		Cadmium and compounds (as Cd) (2)	10	5	5
19		Chromium and compounds (as Cr) (2)	100	50	50
20		Copper and compounds (as Cu) (2)	100	50	50
21		Mercury and compounds (as Hg) (2)	10	1	1
22		Nickel and compounds (as Ni) (2)	50	20	20
23		Lead and compounds (as Pb) (2)	200	20	20
24		Zinc and compounds (as Zn) (2)	200	100	100
25	15972-60-8	Alachlor	—	1	1
26	309-00-2	Aldrin	1	1	1
27	1912-24-9	Atrazine	—	1	1
28	57-74-9	Chlordane	1	1	1

(\*) Releases of pollutants falling into several categories of pollutants shall be reported for each of these categories.



No	CAS number	Pollutant (*)	Threshold for releases (column 1)		
			to air (column 1a) kg/year	to water (column 1b) kg/year	to land (column 1c) kg/year
29	143-50-0	Chlordecone	1	1	1
30	470-90-6	Chlorfenvinphos	—	1	1
31	85535-84-8	Chloro-alkanes, C <sub>10</sub> -C <sub>13</sub>	—	1	1
32	2921-88-2	Chlorpyrifos	—	1	1
33	50-29-3	DDT	1	1	1
34	107-06-2	1,2-dichloroethane (EDC)	1 000	10	10
35	75-09-2	Dichloromethane (DCM)	1 000	10	10
36	60-57-1	Dieldrin	1	1	1
37	330-54-1	Diuron	—	1	1
38	115-29-7	Endosulphan	—	1	1
39	72-20-8	Endrin	1	1	1
40		Halogenated organic compounds (as AOX) (°)	—	1 000	1 000
41	76-44-8	Heptachlor	1	1	1
42	118-74-1	Hexachlorobenzene (HCB)	10	1	1
43	87-68-3	Hexachlorobutadiene (HCBd)	—	1	1
44	608-73-1	1,2,3,4,5,6-hexachlorocyclohexane (HCH)	10	1	1
45	58-89-9	Lindane	1	1	1
46	2385-85-5	Mirex	1	1	1
47		PCDD + PCDF (dioxins + furans) (as Teq) (°)	0,0001	0,0001	0,0001
48	608-93-5	Pentachlorobenzene	1	1	1
49	87-86-5	Pentachlorophenol (PCP)	10	1	1
50	1336-36-3	Polychlorinated biphenyls (PCBs)	0,1	0,1	0,1
51	122-34-9	Simazine	—	1	1
52	127-18-4	Tetrachloroethylene (PER)	2 000	10	—
53	56-23-5	Tetrachloromethane (TCM)	100	1	—
54	12002-48-1	Trichlorobenzenes (TCBs) (all isomers)	10	1	—
55	71-55-6	1,1,1-trichloroethane	100	—	—
56	79-34-5	1,1,2,2-tetrachloroethane	50	—	—
57	79-01-6	Trichloroethylene	2 000	10	—
58	67-66-3	Trichloromethane	500	10	—
59	8001-35-2	Toxaphene	1	1	1
60	75-01-4	Vinyl chloride	1 000	10	10
61	120-12-7	Anthracene	50	1	1