



Annual Environmental Report IPC LICENCE 501
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March 2005

Contents

1.0 Introduction

- 1.1 IPC Licence Register No
- 1.2 Name & Location of Site
- 1.3 Brief Description of Activities
- 1.4 Environmental Management of the Company
- 1.5 Environmental Policy Statement

2.0 Summary Information

- 2.1 Emissions to Water Summary
 - 2.1.1 Silt Pond Emissions
 - 2.1.2 Yard Discharges
 - 2.1.3 Composite Sampler Report
 - 2.1.4 Non-compliance's

2.2 Emissions to Air Summary

- 2.2.1 Dust Monitoring
- 2.2.2 Non-compliance's

2.3 Waste Arisings

- 2.3.1 Non-Hazardous Waste
- 2.3.2 Hazardous Waste

2.4 Energy and Water Consumption

- 2.4.1 Energy Consumption

2.5 Environmental Incidents and Complaints

- 2.5.1 Incidents
- 2.5.2 Complaints

3.0 Management of the Activity

- 3.1 Environmental Management Programme Report
- 3.2 Environmental Management Programme Proposal
- 3.3 Environmental Expenditure

4.0 Licence Specific Reports

- 4.1 Surface Water Discharge Monitoring Location Programme Review
- 4.2 Bunding Programme
- 4.3 Boiler Combustion Efficiency
- 4.4 Resource Consumption Summary
- 4.5 Report on de-silting Programme
- 4.6 Bog Development and Operational Programme
- 4.7 Bog Rehabilitation Report

5.0 Summary

Appendix 1: Composite Sampler Results

1.0 Introduction

1.1 IPC Licence Register No **501**

1.2 Name & Location of Site

Name: Bord na Mona Energy Limited.

Address: Derrygreenagh Group
Derrygreenagh Works
Rochfortbridge
Mullingar
Co Westmeath.

Telephone No: 044 / 22181 Fax No: 044 / 22344

Contact Name: Paul Riordan

Position: Regional Manager.

National Grid Reference: E249450 N238140

1.3 Description of Activities

The Derrygreenagh Group consists of the Derrygreenagh and Ballivor Groups and Rossan Bog.

The Derrygreenagh group of bogs is located in North Offaly and Southeast Westmeath. The Derrygreenagh group comprises of 3664 acquired hectares, of which there was 644.83 nett hectares in production in the 2004 season. The main catchment of these areas is the River Boyne.

The Ballivor group is made up of the bogs in the Ballivor, Carranstown, Bracklin and Lisclogher areas. There is a total of 274.33 hectares in production and each of these areas are linked by peatland railway to the Bord na Mona horticultural factory, situated between Ballivor and Raharney villages. Drainage from these bogs is to the Deel and Stonyford rivers, tributaries of the Boyne.

Rossan bog is situated one mile from Kinnegad village. There are currently 141 hectares in milled moss production. This bog drains to the Kinnegad River, a tributary of the River Boyne.

The Derrygreenagh Group currently employs 48 permanent and 5 seasonal workers. The Ballivor bogs employing 11 permanent and 3 seasonals, with 3 permanent and 3 seasonals employed in Rossan. Giving a total of 62 permanent and 11 seasonal employees across the licence area.

Transport operations are carried out on a seven day cycle throughout the year. Production operations are typically carried out over a seven day week (weather permitting) for 12 to 15 hours per day.

Peat Milling Operations.

For milled peat production the bog is laid out in a series of rectangular fields of varying length and 15m wide with drains located between. There are essentially four operations involved in milled peat production:

- Milling.
- Harrowing.
- Ridging.
- Harvesting.

Milling.

Special milling machines work their way along the fields, milling approximately 15mm of peat of the top of the bog in a pass.

Harrowing

In the course of drying, the milled peat is turned a number of times to avail of the drying conditions. This is achieved with a machine called a harrow. The milled peat is harrowed until its moisture content is down to approximately 40-50%, which can take up to two to three days, weather depending.

Ridging

The dry peat is then scraped into long ridges running down the centre of each field. This is done with a ridger, a machine consisting of a series of blades in the shape of a v that opens the full width of the field.

Harvesting

During harvesting every eleventh field is used to stockpile the peat, with this field receiving the milled peat from the five fields either side.

The milled peat is then transported via the existing network of peatland railways to one of the following locations.

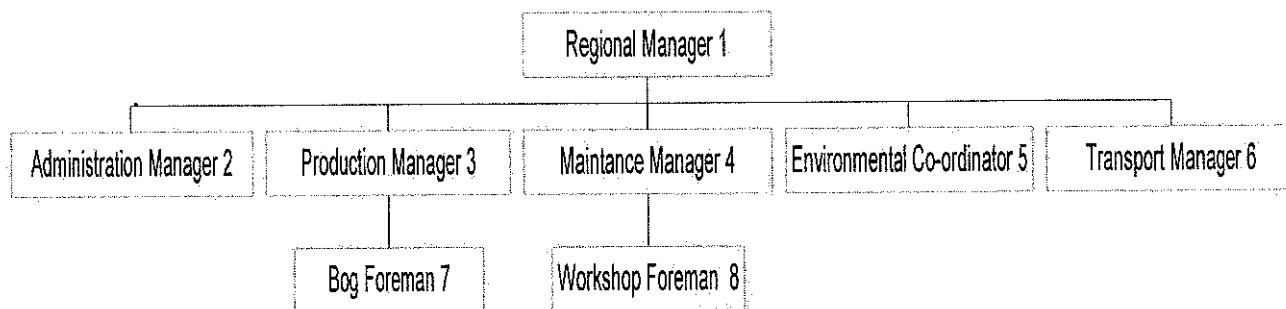
- Power station (EPL)
- Horticultural Factory.
- Briquette Factory.

1.4 Environmental Management of the Company

The organisational structure within the Derrygreenagh Group is presented in the flow chart below.

Derrygreenagh Group

Environmental Responsibilities



- (1) Overall environmental responsibilities
- (2) Records of complaints and registers
- (3) All production related issues
- (4) Machine maintenance
- (5) Co-ordinating environmental affairs
- (6) All peat transportation matters
- (7) Silt pond maintenance, tea centres, codes of practice
- (8) Fuel loading, oil traps, weekly workshop inspections.

1.5 Environmental Policy



Bord na Mona Energy Limited is a commercial semi-state body with responsibility to develop Ireland's peat resources in the national interest.

Bord na Mona Energy Limited is committed to gather and make available information on all aspects of its environmental impact and to help improve understanding among the public generally of its role and the importance of Irish peatlands.

Bord na Mona Energy Limited recognises the importance of peatland conservation.

Bord na Mona Energy Limited will leave behind all areas it owns as either an economically or socially integrated resource of a high environmental value.

Bord na Mona Energy Limited seeks to conduct all aspects of its business in an environmentally sensitive value.

Bord na Mona Energy Limited will establish an environmental management system specifically addressing the following impacts.

- Discharges to water.
- Emissions to atmosphere.
- Waste disposal.
- Use of natural resources.
- Noise, vibration, odour, dust and visual effects.
- Natural environment and eco-system.

The environmental management system will be monitored, maintained and continually improved.

A system of regular environmental audits will be put in place.

Bord na Mona Energy Limited will continue research and development into all aspects of its environmental impact.

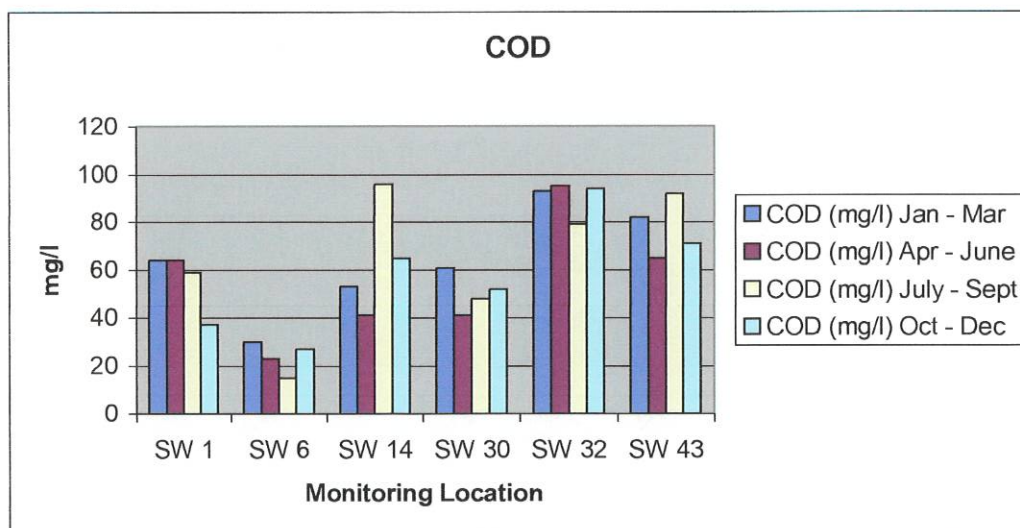
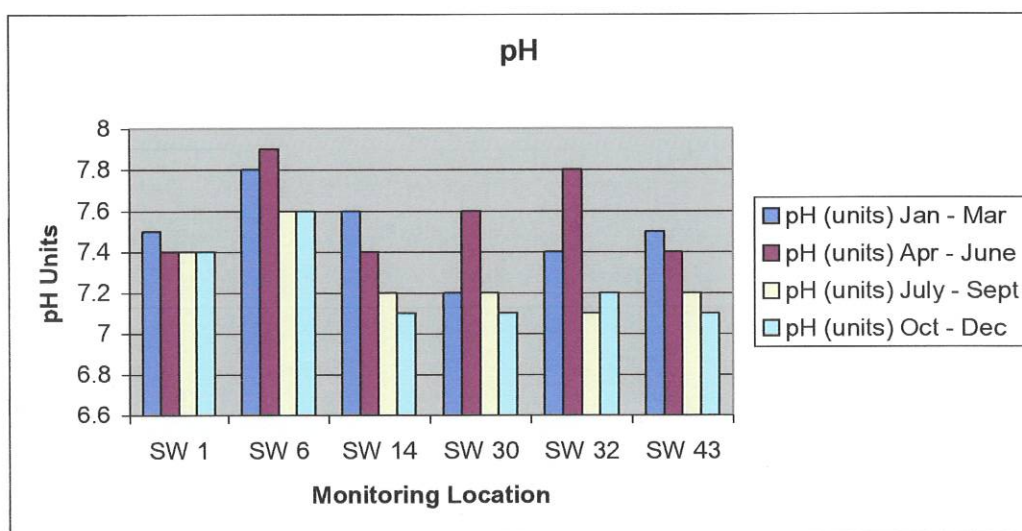
This statement is published and is available at all locations within the division and its contents are brought to the attention of all employees.

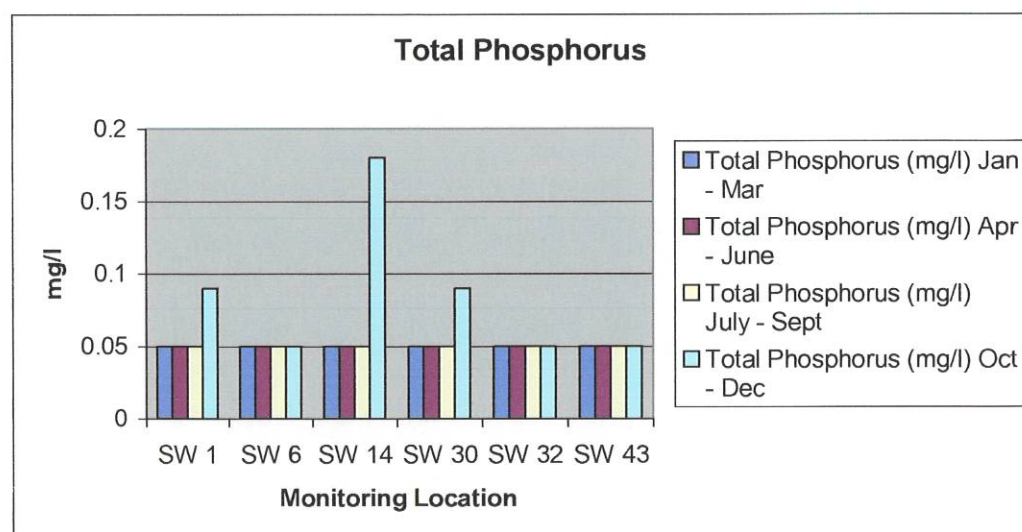
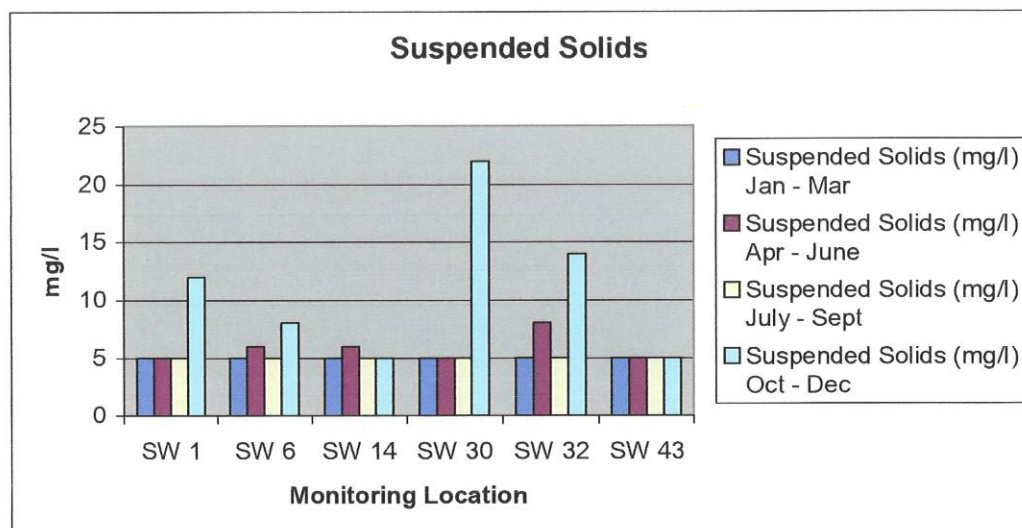
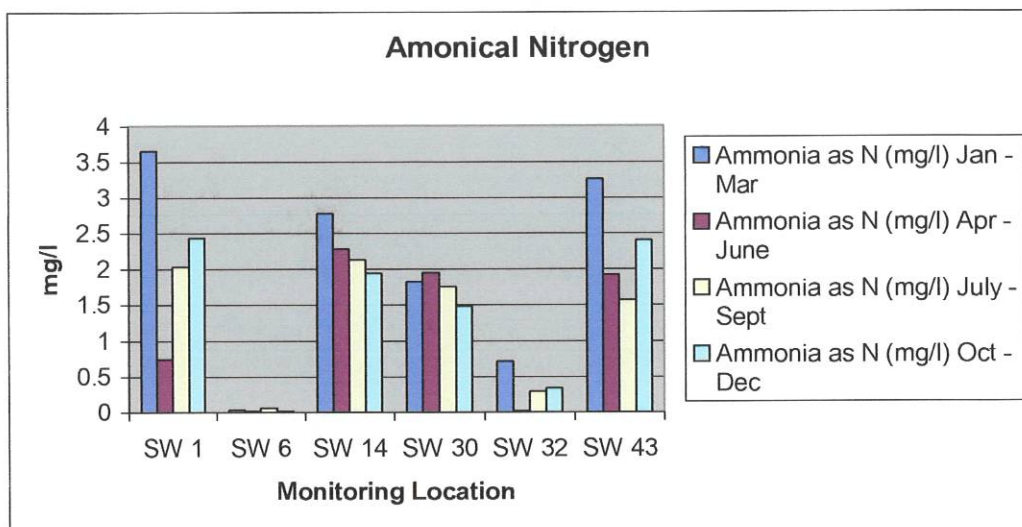
2.0 Summary Information

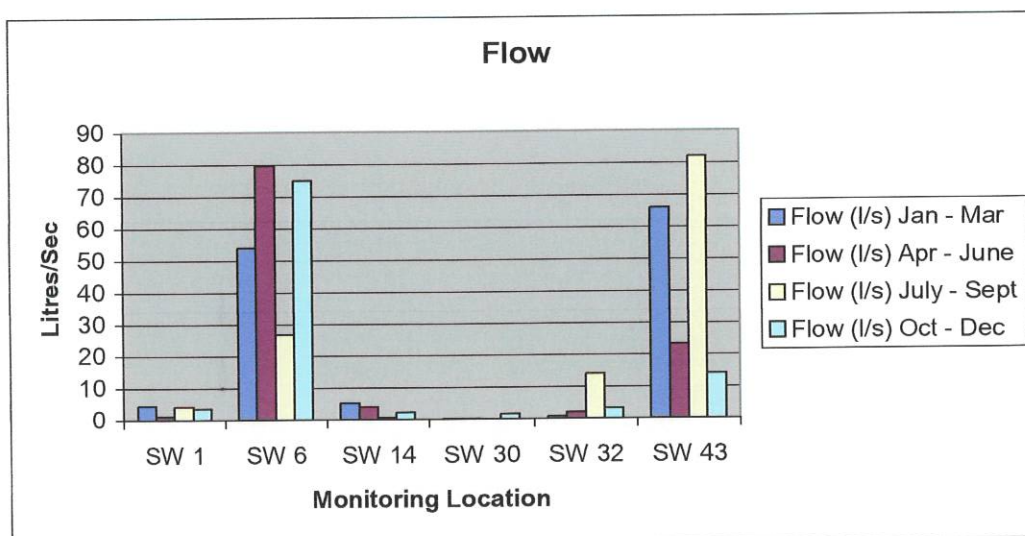
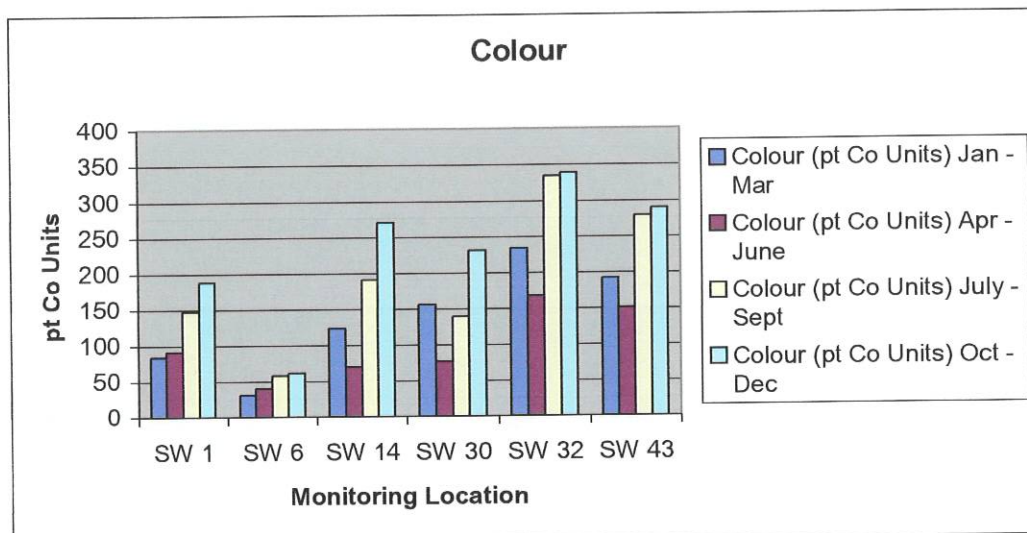
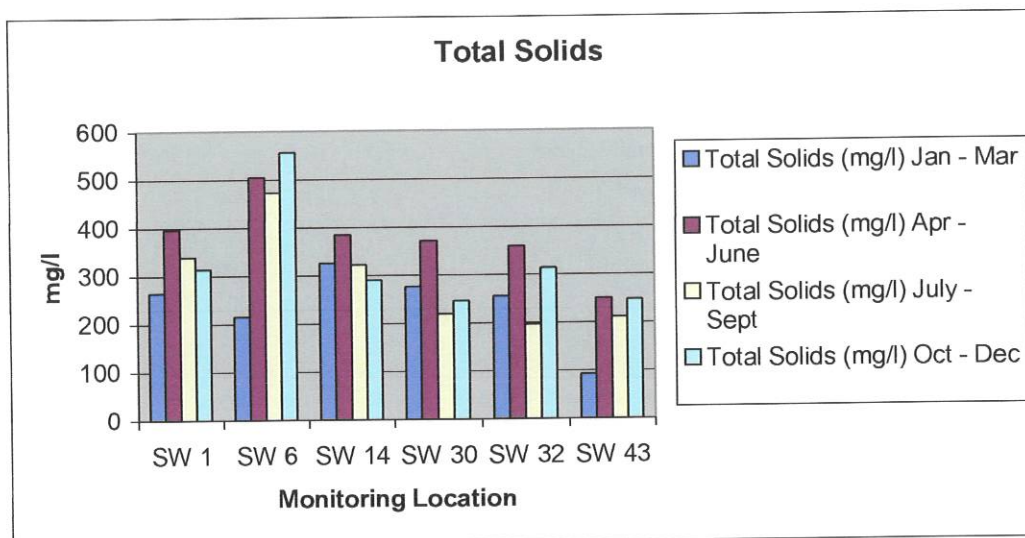
2.1 Emissions to Water Summary

2.1.1 Silt Pond Emissions

The following graphs compare results obtained during the reporting period at all surface water monitoring points.







2.1.2 Yard Discharge

The tables below are a summary of the emissions to surface waters from the yard and workshop at the Derrygreenagh Works.

Derrygreenagh SWE-2

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
COD mg/l			56		38	34	30	23	34	14		52

Note: No samples were available on the day of sampling in the months January, February, April & November.

2.1.3 Composite Sampler Report

The composite sampler remains at the same location as last year. In general it is working well and gathers a full contingent of samples every week. Servicing and calibration of the sampler was carried out in April 2004 during which time grab samples were taken every week that the sampler was away. Attached in Appendix 1 are the results of the monitoring carried out using the composite sampler. There was one non-compliance recorded by the sampler during the reporting period.

2.1.4 Non-compliance's

There were no non-compliance's, in relation to silt pond sampling during the reporting period. The composite sampler had one non - compliance. Suspended solids of 91mg/litre were recorded during February this was after a period of heavy rainfall (50mm).

2.2 Emissions to Air

2.2.1 Dust Monitoring

The tables below contain the dust emissions for each dust monitoring location within the Derrygreenagh Group. Monitoring took place on three separate occasions during the period, June and August 2004.

June - July

Emission Point	Parameter	Emission (mg/m ² /day)	Emission Limit Value	Compliant
DM 01	Dust	18	(350mg/m ² /Day)	YES
DM 02	Dust	258	(350mg/m ² /Day)	YES
DM 03	Dust	3319	(350mg/m ² /Day)	NO

July - July

Emission Point	Parameter	Emission (mg/m ² /day)	Emission Limit Value	Compliant
DM 01	Dust	18	(350mg/m ² /Day)	YES
DM 02	Dust	111	(350mg/m ² /Day)	YES
DM 03	Dust	123	(350mg/m ² /Day)	YES

July - Aug

Emission Point	Parameter	Emission (mg/m ² /day)	Emission Limit Value	Compliant
DM 01	Dust	18	(350mg/m ² /Day)	YES
DM 02	Dust	43	(350mg/m ² /Day)	YES
DM 03	Dust	31	(350mg/m ² /Day)	YES

Note: DM 01= Toar Bog. DM 02 = Derryhinch Bog. DM 03 = Ballivor Bog.

2.2.2 Non-compliance's

There was one non-compliance, in relation to air in the reporting period.

This occurred during the June – July monitoring period. On investigation it transpired that the dust gauge in question was located too close to production activities, where dust generation is both unavoidable and a nuisance to nobody. It was agreed to relocate the gauge closer to the adjacent dust sensitive area in order to give a clearer representation of any dust that may be creating a nuisance. Monitoring will continue at the same locations during production 2005.

2.3 Waste Arisings

2.3.1 Non-Hazardous Waste

The following table lists the quantities of the wastes generated from January-December 2004 from all of the Derrygreenagh Group.

Waste Type	Quantity (Tonnes)
Silt Pond Waste	464.640
Scrap Metal	71.880
Polyethylene	10.130
Mixed Municipal Waste	12.860
Total	559.51

2.3.2 Hazardous Waste

The following table is a record of all the hazardous wastes handled by the Derrygreenagh Group from January - December 2004.

WASTE DESCRIPTION	EWG CODE	TONNES	NAME OF CONTRACTOR	DESTINATION	DATE	REJECTED CONSIGNMENTS
Waste Oil	130202	4100L	Atlas Waste Oil	Portlaoise	13/02/04	NA
Nickel Cadmium Batteries	160602	1.395	Returnbatt LTD	Kildare Town	11/03/04	NA
Oil Filters	160107	660L	Atlas Waste Oil	Portlaoise	20/04/04	NA
Oily rags	150201	240L	Atlas Waste Oil	Portlaoise	20/04/04	NA
Oily rags	150201	240L	Atlas Waste Oil	Portlaoise	20/04/04	NA
Waste Oil	130202	3000L	Atlas Waste Oil	Portlaoise	26/04/04	NA
Waste Oil	130202	1000L	Atlas Waste Oil	Portlaoise	06/05/04	NA
Fluorescent Tube	200121	0.026	Irish Lamp Recycling	Athy Co Kildare	11/05/04	NA
Waste Oil	130202	3000L	Atlas Waste Oil	Portlaoise	17/06/04	NA
Waste Oil	130202	1200L	Atlas Waste Oil	Portlaoise	09/07/04	NA
Lead Acid Batteries	160601	1.00	Returnbatt LTD	Kildare Town	16/07/04	NA
Oil Filters	160107	660L	Atlas Waste Oil	Portlaoise	12/08/04	NA
Fire Extinguishers		0.048	Apex Fire	Harrolds X Dublin	29/09/04	NA
Waste Oil	130202	5200L	Atlas Waste Oil	Portlaoise	15/10/04	NA
Oily rags	150201	240L	Atlas Waste Oil	Portlaoise	26/11/04	NA

Note: * Approximate weight.

2.4 Energy and Water Consumption

2.4.1 Energy Consumption

The table below is a summary of the energy consumption for the Derrygreenagh Group, from the dates January – December 2004.

Water is not included, as it is not used as part of the production process. It is only used in offices, canteens and workshops on a domestic scale.

Fuel	Volume M ³	Tonnes	MW/Hours
Jan - Dec 2004			
Diesel	335.8	278.714	3288.82
Electricity	NA	NA	33.30
Peat Briquettes	NA	343.30	1716.5
Total	335.8	622.014	5038.62

2.5 Environmental Incidents & Complaints

2.5.1 Incidents

There were no incidents within the Derrygreenagh Group during the reporting period.

Environmental Incidents	Number of Incidents
Incidents	0
Incidents requiring corrective action	0
Categories of Incident	
Odour	
Noise	
Water	
Air	
Procedural	
Miscellaneous	

2.5.2 Complaints

There was one complaint within the Derrygreenagh Group, in the period January - December 2004. It was received from the local authority and was in relation to stockpile covering polyethylene which was being stored for subsequent bailing.

Environmental Complaints	Number of complaints
Complaints received	1
Complaints requiring corrective action	1
Categories of complaint	
Odour	
Noise	
Water	
Air	
Procedural	
Miscellaneous	✓

3.0 Management of the Activity

3.1 Environmental Management Programme Report 2004

Environmental Management Report for 2004

Project	
Project 1. Reduction of fugitive dust emissions.	Training The Cleaner Production Video was completed in May 2004. The video covers all aspects of the IPC Licence, and in particular, cleaner production methods, good & bad practice, pollution prevention and codes of practice. A quiz on the contents of the video and items relating to the target audience, accompanies the 1 hour training session. During 2004, training with the video occurred at 4 of the IPC licensed sites and targeted management and production personnel. An internal audit of all IPC licensed sites also occurred during May and June of 2004. This included an assessment of the dust prevention measures in-place or planned during 2004. A copy of the audit findings is on file at each works. Based on these audits, various projects were put in-place regarding training for personnel at these dust sensitive locations and new machines for targeting dust problems from headland peat. Project works for 2004 includes: Hydraulic Harrows As was proposed for 2004, 8 newly fabricated hydraulic harrows were purchased and distributed to Dust Sensitive Locations within the 9 IPC licensed sites. These have proved successful in reducing dust generation at DSL sites. Headland Peat Collection BNM recently took delivery of 4 new mechanical bin harvesters. These were manufactured in Finland, and are currently being modified in Ireland. These types of harvesters are specifically for use in lifting dry peat from headlands at DSL's and will be engaged alone in tackling dust sensitive areas in each licence, for the 2005 production season. In addition two Headland Harvester units will be in operation. These units operated in Boora and Mountdillon in 2004, and will continue to operate in these areas. In total, these 6 units will operate specifically at DSL' in Peco bogs, and will be assessed during the 2005 season, as to their effectiveness at reducing headland peat and reducing incidents of dust generation. The total expenditure on the additional bin harvesters, hydraulic harrows, and the polyrollers (project 5) for the 2004 season is €670,600, which is €400,000 above what was budgeted.

Project 2. Minimisation of Suspended Solids	This project is on-going and is primarily one of training for all production personnel, and is covered in the Cleaner Production Video, as in Project 1 (Training).
Project 3. Effective spill/leak management of mobile fuelling tanks	All of BNM's production bogs now have locations highlighted as being suitable for re-fuelling on the bog, and this is being brought to the attention of all personnel. These locations have been chosen having due regard to location of watercourses and drains.
Project 4. Re-use of silt pond waste	There are over 850 silt ponds in operation in the 9 IPC Licensed BNM bogs. These are located in low areas on the bog perimeters, due to drainage requirements. All of these ponds are excavated into the mineral layer, and as a result of this, all silt removed from the ponds have high levels of grit, stones etc. All of these make the peat unsuitable for combustion purposes. In addition, over 95% of the silt excavated is water, which would require it to be spread out on the bog to be allowed to dry to the required moisture content. Given the small volumes of silt excavated, it is therefore not feasible to reuse this silt pond waste.
Project 5. Collection, storage and re-use of polythene.	Polythene collection is ongoing in BNM, and volumes collected and recycled are recorded in the Non-hazardous Waste records in the AER. The 25 new polystrippers proposed in last years EMP, were delivered in 04' and are currently being used to strip polythene from stockpiles. This new system now produces a roll of polythene which is cleaner, easier to handle, and consequently more attractive for recycling. All bogs now have a hard standing area, where the rolls of polythene are stored for collection and subsequent recycling. In addition to this, procedures have been put in-place, and are highlighted during training, about best practice for stripping, collection and storage. There are currently three potential contractors that could take the waste polythene for recycling. All involve shredding, washing and either baling or pelletising the polythene and BNM are currently assessing each contractor to assess their suitability, environmental compliance etc. Once the back-log has been recycled, and BNM have all of the strippers in place, the day to day recycling of the polythene removed each year will be more efficient.
Project 6. Condition 2.2.2 (v) <i>Provision of measures to protect dust sensitive areas.</i>	All DSL's have been identified within BNM group. Existing shelter belts were maintained were required during the reporting period.

3.2 Environmental Management Programme Proposal for 2005

Environmental Management Programme Proposal for 2005	
Project	
Project 1. Reduction of fugitive dust emissions.	Training Continue with the training programme for 2005. 15 Training sessions have already taken place at 6 of the IPC Licensed works, since January 05. This has targeted management and production personnel (teamleaders) and will be extended to include all seasonal staff to be engaged this year. It is targeted to have all production personnel trained by the commencement of production for 2005. Headland Peat The 6 new headland peat harvester units will be deployed for the 2005 production season. These units are a mixture of the bin harvester system (4 units) and the same field harvester (2 units), and will be operated in dust sensitive locations. The bin harvester units, while having been experimented with previously in BNM, are a relatively new technology in BNM's modern day operations, and so will be monitored closely over the coming season to assess their performance. All trials, observations and tests will be monitored and recorded by the EMP system as to their effectiveness and suitability. Hydraulic harrows 14 new hydraulic harrows have been made over 04/05 and will be in operation between now and the end of 2005. In line with BNM's policy to fabricate 40 hydraulic harrows over 5 years, this current no. brings the total to-date to 22 in operation by the end of 05. This is well ahead of what was planned in the 2004 EMP proposal. In addition, 3 new units are budgeted for fabrication by the end of 05. When completed, all DSL's will be equipped with a hydraulic harrow.
Project 2. Minimisation of Suspended Solids	This project is on-going and is primarily one of training for all production personnel, and is covered in the Cleaner Production Video, as in Project 1 (Training). It will also include inspections at a number of production units during the 05 production season, to assess compliance with the good practice and codes of practice developed by BNM and communicated through the training programmes and the video.

Project 3. Effective spill/leak management of mobile fuelling tanks	As reported in the 2004 EMP report, all areas have designated areas for re-fuelling. This project is therefore completed. Compliance with the original requirements of this project will however be checked through the inspections as highlighted in project 2 above. Specific training has also been provided for oil spill management and clean-up, as part of the management of oil spill kits and procedures etc. and will continue to be facilitated during 2005.
Project 4. Re-use of silt pond waste	This project is also not feasible, as highlighted in the 2004 report, but will be reviewed where necessary, if a use (other than fuel use) emerges.
Project 5. Collection, storage and re-use of polythene.	Banner recycling are currently taking BNM's rolled and loose polythene, for recycling to their permitted yards in Co.Clare. Two additional interested parties are also being investigated, one locally in Co Kildare and a potential recycler in Belgium who may be in a position to reuse the polythene to process pellets to be used in the manufacture of new polythene to be used by BNM. An additional order for 22 polyrollers have been placed, to be delivered by the end of March, so that all bog units will have a roller for stripping piles. This will put an end to loose polythene gathering around the bog.
Project 6. Condition 2.2.2 (v) <i>Provision of measures to protect dust sensitive areas.</i>	This project is on-going. All dust sensitive locations will have bergerhoff dust gauges installed for the 2005 season. Further shelter belts may be planted where no complaints were received but may in time become dust sensitive.

3.3 Environmental Expenditure

The table below lists the environmental costs incurred by the Derrygreenagh Group between January – December 2004.

In calculating the environmental costs 70% of the total costs were attributed to Licence 503 and 30% to Licence 501. The Ballivor Group costs were then added to the Derrygreenagh totals.

Expenditure Related to the Operation of the Derrygreenagh IPC Licence During the Period January – December 2004			
Description	Ballivor Cost	D/Green Cost	Total Cost (€)
Plant @ €40/hour	27,200	210,360	237,560
Labour	10,000	78,519	88,519
Materials	NA	28,686	28,686
Overheads (ESB, Phones, Consumables)	2,000	6,000	8,000
Laboratory Analysis	NA	18,960	18,960
EPA Fees	NA	9,873	9,873
Total	39,200	352,398	391,598

4.0 Licence Specific Reports

4.1 Surface Water Discharge Monitoring Location Programme Review

The surface water discharge monitoring location programme remains the same as was submitted and accepted by the Agency in June 2000.

Pipes have been fitted at each location in order to accommodate flow metering and the provision of safe access is also ongoing.

Emission point signs have been designed and are in place.

Additional work has also been carried out at these locations as part of the ongoing silt pond upgrade programme.

It is proposed to relocate some of the monitoring locations in 2005. A proposal will be forwarded to the agency outlining the reasons for relocation.

4.2 Bunding Programme

The bunding programme for large scale oil storage facilities is complete and the works certified.

4.3 Boiler Combustion Efficiency

Boiler Details

Twin Danstoker solid fuel units each rated at 725KW, fuelled by loose briquettes.

Operating from Oct-Mar approximately at Derrygreenagh Works.

A boiler efficiency test was carried out on the 05/01/05. The results of this test showed the boiler to be operating at an efficiency level of 87.2 %.

A full breakdown of the test is retained on file at the Derrygreenagh office.

4.4 Resource consumption Summary

There was a total of 120,617 tonnes of milled peat produced across the licence area in the production season 2004.

There was also a total of 117,738 tonnes of stock peat sold during the reporting period. Of this total 31,752 tonnes were sold to Edenderry Power Limited, 13,967 tonnes to Derrinlough Briquette Factory, 53,447 tonnes to Ballivor Moss Factory, 40 tonnes to Kilberry Moss Factory, 745 tonnes to Lough Ree Power Station and 17,787 tonnes direct to Dublin Port for export.

4.5 De-silting programme report

Summary Data Table of Ponds De-Silted From Jan-December 2004

Bog	No Silt Ponds	Cleaned Once	Cleaned Twice	Cleaned Three Times	Notes
Ballivor	10	6			
Carranstown	5	3	1		
Bracklin West	6	6	6	2	
Lisclogher	7	0			*
Kinnegad	6	6	6	6	
D/Hinch	4	4	4	4	
Drumman	6	6	6	6	
Ballybeg	6	6	3		**
Toar	6	6			**

*: Bog still under development, no production.

**: No production at this Bog in 2004.

Note: Any pond which was not cleaned at least twice, as required by the licence, is due to the fact that inspections showed those ponds not requiring a second cleaning.

4.6 Bog Development and Operational Programme

The bogs in the Derrygreenagh Group are well into their productive lives, therefore there will be no development in the year 2005.

However in the Ballivor Group, Carranstown and Lisclogher West bogs are currently under development, the works involve production field preparation and drainage works such as piping and also some silt control works.

There will be 630.32 nett hectares in production in the 2005 season, yeilding 125,592 tonnes @ 55% moisture content.

Derrygreenagh will account for 47,514 tonnes and 239.44 hectares.

Ballivor will account for 51,480 tonnes and 252.71 hectares and Rossan will account for 26,598 tonnes and 138.17 hectares.

4.7 Bog Rehabilitation Report

There was no bog rehabilitation carried out within the Derrygreenagh group during the reporting period.

Management guidelines for the planning and implementation of cutaway bog rehabilitation have been adopted and the document is currently available for inspection on file at the Derrygreenagh office.

5.0 Summary

With regard to environmental compliance at the Derrygreenagh Group of Bogs, there were no exceedences in the quarterly grab sampling.

There was one non-compliance in relation to the Composite Sampler during the period January to December 2004. Dust monitoring results at the dust sensitive locations were in general good although as stated in the body of this report there was one exceedence. There was one complaint of an environmental nature received during the reporting period.

The staff awareness through training and involvement in the operation of the licence has also improved immensely. A full programme of training and awareness has been conducted at the works and has targeted all personnel ie. Office, Workshop, Transport and Production.

Bord na Mona are project partners of the South Eastern River Basin District Management, as set up under the Water Framework Directive.

Bord na Mona are also involved in catchment management on the River Barrow.

Bord na Mona Energy Ltd would like to take this opportunity to advise the Environmental Protection Agency of its continued commitment to improving its environmental performance by adopting cleaner production methods and improving its environmental protection measures.

APPENDIX 1

Composite Sampler Results

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochfordsbridge, Co Westmeath
Composite Sampler Results Licence 501

Composite Sampler Results													Licence 501		
Month	pH	COD mg/l	Ammonia as N mg/l	Parameters		Total Solids		Colour Pt Co units	Flow Daily Total (litres)	COD Kg/Day	Ammonia as Kg/Day	Daily Totals			
				Phosphorus mg/l	Total mg/l	Suspended Solids mg/l	Total Solids mg/l					Phosphorus Kg/Day	Total Solids Kg/Day		
January 2004															
1						IS	IS		0						
2						5	166		2072959			10.36	344.11		
3						5	146		0			0.00	0.00		
4						5	196		2616565			13.08	512.85		
5	7.9	37	1.26	0.05		5	232	150	2382647	88.16	3.00	0.12	552.77		
6						5	228		2697902			13.49	615.12		
7						5	214		1069013			5.35	228.77		
8						5	214		489768			2.45	104.81		
9						IS	IS		1405856						
10						IS	IS		863380						
11						IS	IS		1505780						
12						IS	IS		1654729						
13	7.2	11	1	0.05		6	224	137	1605066	17.66	1.61	0.08	359.53		
14						21	190		2644145			55.53	502.39		
15						31	178		4599495			142.58	818.71		
16						36	226		6467866			232.84	1461.74		
17						IS	IS		3243822						
18						IS	IS		1973462						
19						IS	IS		1973462						
20	IS	IS	IS	IS		IS	IS	IS	1973462						
21						IS	IS		1973462						
22						6	326		1972690			11.84	643.10		
23						26	274		1961433			51.00	537.43		
24						7	252		1949851			13.65	491.36		
25						5	306		1981142			9.91	606.23		
26						IS	IS		1972015						
27						IS	IS		1976582						
28	7.4	36	2.14	0.05		5	210	62	2033386	73.20	4.35	0.10	427.01		
29						IS	IS		1935014						
30						IS	IS		2018958						
31						IS	IS		3809406						

IS: Insufficient amount of sample due to low flow or sampler malfunction.

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochforbsbridge, Co Westmeath
Composite Sampler Results Licence 501

Composite Sample Results														Lab No. 501			
Month	pH	COD mg/l	Ammonia as N mg/l	Parameters		Total Solids mg/l	Suspended Solids mg/l	Total Solids mg/l	Colour Pt Co	Flow Daily Total (litres)	COD Kg/Day	Ammonia as Kg/Day	Daily Totals		Suspended Solids Kg/Day	Total Solids Kg/Day	
				Phosphorus mg/l	Phosphorus Kg/Day								Total Phosphorus Kg/Day	Total Solids Kg/Day			
February 2004																	
1						IS	IS	IS		1908948							
2						IS	IS	IS		3806364							
3						IS	IS	IS		5240995							
4						IS	IS	IS		4305142							
5						5	5	174		1996517					9.98	347.39	
6						5	5	204		677601					3.39	138.23	
7						5	5	186		677601					3.39	126.03	
8						13	13	202		677601					8.81	136.88	
9						5	5	314		677601					3.39	212.77	
10						IS	IS	IS		677601							
11	7.7	40	1.66	0.05		5	5	292	102	677601	27.10	1.12	0.03		3.39	197.86	
12						5	5	250		677601					3.39	169.40	
13						5	5	266		677601					3.39	180.24	
14						5	5	298		677601					3.39	201.93	
15						5	5	198		677601					3.39	134.16	
16						5	5	280		677601					3.39	189.73	
17						5	5	198		677601					3.39	134.16	
18	7.5	52	2.29	0.05		5	5	266	66	677601	35.24	1.55	0.03		3.39	180.24	
19						5	5	198		677601					3.39	134.16	
20						5	5	276		677601					3.39	187.02	
21						5	5	250		677601					3.39	169.40	
22						5	5	276		677601					3.39	187.02	
23						5	5	182		677601					3.39	123.32	
24						5	5	326		677601					3.39	220.90	
25	7.6	57	3.28	0.22		31	31	258	32	677601	38.62	2.22	0.15		61.66	174.82	
26						IS	IS	IS		677601							
27						IS	IS	IS		677601							
28						IS	IS	IS		677601							
29						IS	IS	IS		677601							
30																	
31																	

IS: Insufficient amount of sample due to low flow or sampler malfunction.

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochfordsbridge, Co Westmeath

Composite Sample Results													
Month		Parameters			Parameters			Parameters			Daily Totals		
March	pH	COD mg/l	Ammonia as N mg/l	Total Phosphorus mg/l	Suspended Solids mg/l	Total Solids mg/l	Colour Pt Co units	Flow Daily Total (litres)	COD Kg/Day	Ammonia as Kg/Day	Total Phosphorus Kg/Day	Suspended Solids Kg/Day	Total Solids Kg/Day
2004													
1					IS	IS		677601					
2					IS	IS		677601					
3	7.5	10	3.18	0.05	5	352	67	677601	6.78	2.15	0.03	3.39	238.52
4					5	308		677601				3.39	208.70
5					5	272		677601				3.39	184.31
6					5	290		677601				3.39	196.50
7					5	312		677601				3.39	211.41
8					5	310		677601				3.39	210.06
9					5	304		677601				3.39	205.99
10	7.8	40	3.6	0.05	5	334	47	677601	27.10	2.44	0.03	3.39	226.32
11					IS	IS		677601					
12					IS	IS		677601					
13					IS	IS		677601					
14					IS	IS		677601					
15					IS	IS		677601					
16					IS	IS		677601					
17	8.1	35	2.86	0.05	5	266	42	677601	23.72	1.94	0.03	3.39	180.24
18					CAL	CAL		677601					
19					CAL	CAL		677601					
20					CAL	CAL		677601					
21					CAL	CAL		677601					
22					CAL	CAL		677601					
23					CAL	CAL		677601					
24					CAL	CAL		677601					
25					CAL	CAL		677601					
26					CAL	CAL		677601					
27					CAL	CAL		677601					
28					CAL	CAL		677601					
29					CAL	CAL		677601					
30					CAL	CAL		677601					
31	8	43	0.08	0.05	14	324	63	677601	29.14	0.05	0.03	9.49	219.54

IS: Insufficient amount of sample due to low flow or sampler malfunction.

CAL: Sampler away for calibration and service

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochfordsbridge, Co Westmeath
Composite Sampler Results Licence 501

Month	pH	COD		Ammonia as N	Parameters		Total Solids	Suspended Solids	Colour Pt/Co units	Flow Daily	COD		Ammonia as		Daily Totals		Total Solids
		mg/l	mg/l	mg/l	Phosphorus mg/l	mg/l	mg/l	mg/l		Total (litres)	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Phosphorus Kg/Day	Kg/Day	
April 2004																	
1							IS	IS		677601							
2							IS	IS		677601							
3							IS	IS		677601							
4							IS	IS		677601							
5							IS	IS		677601							
6							IS	IS		677601							
7	7.8	31		2.47	0.05		288	5	63	677601	21.01		1.67		0.03	3.39	195.15
8							IS	IS		987925							
9							IS	IS		1484179							
10							IS	IS		1484179							
11							IS	IS		1484179							
12							IS	IS		1484179							
13							IS	IS		1484179							
14	7.5	17		2.62	0.05		254	10	79	1484179	25.23		3.89		0.07	14.84	376.98
15							170	12		1810574						21.73	307.80
16							124	5		1563587						7.82	193.88
17							178	5		1608461						8.04	286.31
18							168	5		2059953						10.30	346.07
19							178	5		1768699						8.84	314.83
20							127	5		1537834						7.69	195.30
21	7.8	48		2.69	0.06		130	5	81	1537834	73.82		4.14		0.09	7.69	199.92
22							IS	IS		1537834							
23							389	5		1537834						7.69	598.22
24							280	5		1537834						7.69	430.59
25							IS	IS		1537834							
26							IS	IS		1537834							
27							IS	IS		1537834							
28							IS	IS		1537834							
29	8	46		3.11	0.05		178	22	48	1537834	70.74		4.78		0.08	33.83	273.73
30							290	5		1537834						7.69	445.97
31							IS	IS									

IS: Insufficient amount of sample due to low flow or sampler malfunction.

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochforbsbridge, Co Westmeath
Composite Sampler Results Licence 501

Month	pH	COD mg/l	Ammonia as N mg/l	Parameters		Total Solids mg/l	Colour Pt Co units	Flow Daily Total (litres)	COD Kg/Day	Ammonia as Kg/Day	Daily Totals		Total Solids Kg/Day	Total Solids Kg/Day
				Phosphorus mg/l	Suspended Solids mg/l						Phosphorus Kg/Day	Suspended Solids Kg/Day		
May 2004														
1					8	138		1537834					12.30	212.22
2					IS	IS		1537834						
3					IS	IS		1537834						
4					6	258		1537834				9.23		396.76
5	8.3	58	2.44	0.05	8	220	79	1537834	89.19	3.75	0.08	12.30		338.32
6					5	238		1537834				7.69		366.00
7					5	227		1537834				7.69		349.09
8					5	256		1355073				6.78		346.90
9					5	278		1155921				5.78		321.35
10					5	288		1354425				6.77		390.07
11					5	274		1364165				6.82		373.78
12	8.7	28	3.1	0.05	5	290	80	1469167	41.14	4.55	0.07	7.35		426.06
13					5	328		1470513				7.35		482.33
14					5	256		1061983				5.31		271.87
15					5	324		871663				4.36		282.42
16					5	314		797508				3.99		250.42
17					5	218		602471				3.01		131.34
18					5	314		1089928				5.45		342.24
19					5	296	67	554189				2.77		164.04
20					IS	IS		880809						
21					IS	IS		18210						
22					IS	IS		43032						
23					IS	IS		67819						
24					IS	IS		82546						
25					IS	IS		66129						
26	7.9	57	2.91	0.05	10	310	56	56819	3.24	0.17	0.00	0.57		17.61
27					IS	IS		533203						
28					IS	IS		517638						
29					IS	IS		322333						
30					IS	IS		324398						
31					IS	IS		501537						

IS: Insufficient amount of sample due to low flow or sampler malfunction.

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochfordsbridge, Co Westmeath
Composite Sampler Results Licence 501

Month	pH	COD mg/l	Ammonia as N mg/l	Parameters		Colour Pt Co units	Flow Daily Total (litres)	COD Kg/Day	Ammonia as Kg/Day	Daily Totals		Total Solids Kg/Day	Total Solids Kg/Day
				Total Phosphorus mg/l	Suspended Solids mg/l	Total Solids mg/l				Total Phosphorus Kg/Day	Suspended Solids Kg/Day		
June 2004													
1					IS	IS	208355						
2	7.5	56	3.68	0.07	14	270	586223	32.83	2.16	0.04	8.21	158.28	
3					IS	IS	323607						
4					IS	IS	313327						
5					IS	IS	231814						
6					IS	IS	192747						
7					IS	IS	279855						
8					IS	IS	45440						
9	7.9	48	2.9	0.12	6	220	157681	7.57	0.46	0.02	0.95	34.69	
10					IS	IS	525410						
11					IS	IS	289846						
12					IS	IS	258180						
13					IS	IS	226278						
14					IS	IS	142002						
15					IS	IS	44842						
16	7.9	33	3.54	0.05	5	228	90198	2.98	0.32	0.00	0.45	20.57	
17					15	282	80597				1.21	22.73	
18					5	260							
19					5	314							
20					8	288							
21					5	228							
22					13	50							
23	7.6	65	3.21	0.05	9	144							
24					IS	IS							
25					IS	IS							
26					IS	IS							
27					IS	IS							
28					IS	IS							
29					IS	IS							
30	7.8	50	3.15	0.05	5	220							
31						126							

IS: Insufficient amount of sample due to low flow or sampler malfunction.

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochforbsbridge, Co Westmeath
Composite Sampler Results Licence 501

Month	pH	COD mg/l	Ammonia as N mg/l	Parameters		Total Solids mg/l	Suspended Solids mg/l	Total Solids mg/l	Colour Pt Co units	Flow Daily Total (litres)	COD Kg/Day	Ammonia as Kg/Day	Daily Totals		Suspended Solids Kg/Day	Total Solids Kg/Day
July 2004				Phosphorus mg/l									Phosphorus Kg/Day	Total		
1						IS	IS	IS		206366						
2						IS	IS	IS		206366						
3						IS	IS	IS		228433						
4						IS	IS	IS		572698						
5						IS	IS	IS		252052						
6						IS	IS	IS		532518						
7	7.9	66	2.73	0.05		5	5	248	440	1195200	78.88	3.26	0.06	5.98	296.41	
8						5	5	256		837507				4.19	214.40	
9						5	5	254		467389				2.34	118.72	
10						5	5	214		389699				1.95	83.40	
11						5	5	262		630242				3.15	165.12	
12						5	5	252		502180				2.51	126.55	
13						5	5	273		448695				2.24	122.49	
14	8	37	1.8	0.05		5	5	268	99	388667	14.38	0.70	0.02	1.94	104.16	
15						9	9	428		542392				4.88	232.14	
16						8	8	236		408974				3.27	96.52	
17						IS	IS	IS		295874						
18						IS	IS	IS		247217						
19						5	5	260		339398				1.70	88.24	
20						5	5	250		455546				2.28	113.89	
21	7.8	4	2.89	0.06		5	5	242	90	207319	0.83	0.60	0.01	1.04	50.17	
22						IS	IS	IS		137186						
23						IS	IS	IS		162969						
24						IS	IS	IS		111579						
25						IS	IS	IS		93919						
26						IS	IS	IS		137430						
27						IS	IS	IS		363003						
28	7.8	26	2.51	0.05		5	5	348	82	172918	4.50	0.43	0.01	0.86	60.18	
29						5	5	236		219447				1.10	51.79	
30						5	5	158		42792				0.21	6.76	
31						13	13	166		24082				0.31	4.00	

IS: Insufficient amount of sample due to low flow or sampler malfunction.

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochfordsbridge, Co Westmeath
Composite Sampler Results Licence 501

Composite Sample Results				Parameters				Daily Totals					
Month	pH	COD mg/l	Ammonia as N mg/l	Total Phosphorus mg/l	Suspended Solids mg/l	Total Solids mg/l	Colour Pt Co units	Flow Daily Total (litres)	COD Kg/Day	Ammonia as Kg/Day	Phosphorus Kg/Day	Suspended Solids Kg/Day	Total Solids Kg/Day
August 2004													
1					7	206		41908				0.29	8.63
2					5	182		36422				0.18	6.63
3					28	248		835137				23.38	207.11
4					18	166		4545526				81.82	754.56
5	7.6	74	1.95	0.05	5	178	174	1459370	107.99	2.85	0.07	7.30	259.77
6					5	210		1010377				5.05	212.18
7					5	IS		105109				0.53	
8					5	IS		194018				0.97	
9					5	200		904361				4.52	180.87
10					8	160		1242595				9.94	198.82
11					5	210		1743890				8.72	366.22
12	7.6	74	1.6	0.05	5	198	202	4431888	327.96	7.09	0.22	22.16	877.51
13					5	198		2824370				14.12	559.23
14					5	222		1582249				7.91	351.26
15					5	270		779618				3.90	210.50
16					5	208		1893017				9.47	393.75
17					5	216		3258885				16.29	703.92
18	7.6	63	0.8	0.08	5	206	215	2093679	131.90	1.67	0.17	10.47	431.30
19					5	146		2531998				12.66	369.67
20					5	150		3086644				15.43	463.00
21					5	214		1760329				8.80	376.71
22					5	204		1794887				8.97	366.16
23					5	154		2730032				13.65	420.42
24					5	174		1787972				8.94	311.11
25	7.5	38	1.12	0.05	19	164	266	3153584	119.84	3.53	0.16	59.92	517.19
26					5	28		2021028				10.11	56.59
27					5	122		3393889				16.97	414.05
28					5	170		1951918				9.76	331.83
29					5	168		1298651				6.49	218.17
30					5	248		962922				4.81	238.80
31					5	168		757465				3.79	127.25

IS: Insufficient amount of sample due to low flow or sampler malfunction.

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochforbsbridge, Co Westmeath
Composite Sampler Results Licence 501

Composite Sample Results															
Month	Parameters			Parameters			Parameters			Parameters			Parameters		
September 2004	pH	COD	Ammonia as N	Total Phosphorus	Suspended Solids	Total Solids	Colour	Flow	COD	Ammonia as	Total Phosphorus	Suspended Solids	Total Solids		
		mg/l	N mg/l	mg/l	mg/l	mg/l	Pt Co units	Daily Total (litres)	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day		
1	7.6	37	1.91	0.05	5	152	151	805364	29.80	1.54	0.04	4.03	122.42		
2					5	40		861198				4.31	34.45		
3					14	278		783969				10.98	217.94		
4					5	304		782813				3.91	237.98		
5					10	320		855143				8.55	273.65		
6					5	330		823143				4.12	271.64		
7					5	338		718035				3.59	242.70		
8	8.4	47	1.63	0.05	5	334	131	897970	42.20	1.46	0.04	4.49	299.92		
9					5	214		960342				4.80	205.51		
10					5	278		1065753				5.33	296.28		
11					5	254		1183867				5.92	300.70		
12					21	272		1201738				25.24	326.87		
13					5	214		1575411				7.88	337.14		
14					5	184		971455				4.86	178.75		
15	7.7	53	2.74	0.05	5	220	158	0							
16					5	174		987103				4.94	171.76		
17					8	198		1608630				12.87	318.51		
18					6	190		1567921				9.41	297.90		
19					10	102		1413734				14.14	144.20		
20					5	158		1756166				8.78	277.47		
21					5	212		1524471				7.62	323.19		
22	8	54	1.25	0.05	12	212	126	1549778	83.69	1.94	0.08	18.60	328.55		
23					5	232		1689527				8.45	391.97		
24					10	226		1349982				13.50	305.10		
25					6	230		1129743				6.78	259.84		
26					5	14		1239783				6.20	17.36		
27					6	168		1297166				7.78	217.92		
28					5	172		1113327				5.57	191.49		
29	7.8	53	2.23	0.05	9	200	143	1232045	65.30	2.75	0.06	11.09	246.41		
30					10	178		2041551				20.42	363.40		

IS: Insufficient amount of sample due to low flow or sampler malfunction.

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochfordsbridge, Co Westmeath
Composite Sampler Results Licence 501

Month	Parameters				Colour Pt Co	Flow		COD Kg/Day	Ammonia as		Daily Totals	
	pH	COD mg/l	Ammonia as N mg/l	Total Phosphorus mg/l		Total Solids mg/l	Suspended Solids mg/l		Phosphorus mg/l	Total Solids mg/l	Phosphorus Kg/Day	Total Solids Kg/Day
October 2004												
1						154	30					60.57
2						200	8					15.80
3						174	12					23.95
4						104	12					52.12
5						126	13					35.48
6	7.7	57	1.42	0.05	177	166	6	103.16	2.57	0.09	10.86	300.43
7						178	5					9.57
8						174	6					10.11
9						184	10					16.30
10						244	8					13.04
11						236	5					8.15
12						244	5					8.15
13	8	32	1.4	0.08	114	244	5	49.33	2.16	0.12	7.71	376.11
14						278	5					6.66
15						298	6					8.75
16						310	11					19.01
17						286	14					24.00
18						237	15					25.26
19						232	42					80.21
20	8	71	2.73	0.08	101	182	26	134.27	5.16	0.15	49.17	344.20
21						146	24					100.46
22						196	14					34.62
23						118	24					120.50
24						106	9					44.36
25						142	29					62.82
26						192	5					13.06
27	7.9	36	1.48	0.05	141	196	5	90.57	3.72	0.13	12.58	493.08
28						196	5					18.33
29						146	16					89.39
30						116	16					71.78
31						216	21					53.20

IS: Insufficient amount of sample due to low flow or sampler malfunction.

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochfordsbridge, Co Westmeath
Composite Sampler Results Licence 501

Month	pH	COD mg/l	Ammonia as N mg/l	Parameters Total Phosphorus mg/l	Suspended Solids mg/l	Total Solids mg/l	Colour Pt Co units	Flow Daily Total (litres)	COD Kg/Day	Ammonia as Kg/Day	Daily Totals Total Phosphorus Kg/Day	Suspended Solids Kg/Day	Total Solids Kg/Day
November 2004													
1					7	214		2466950				17.27	527.93
2					7	232		2413859				16.90	560.02
3	8	83	0.94	0.05	10	238	125	2274971	188.82	2.14	0.11	22.75	541.44
4					16	112		2213892				35.42	247.96
5					10	282		2067631				20.68	583.07
6					6	280		2003990				12.02	561.12
7					6	308		1912667				11.48	589.10
8					12	300		1717857				20.61	515.36
9					5	321		1619880				8.10	519.98
10	7.7	46	2.42	0.05	5	334	106	1649742	75.89	3.99	0.08	8.25	551.01
11					20	280		1719563				34.39	481.48
12					13	274		1610898				20.94	441.39
13					14	224		1400378				19.61	313.68
14					8	230		1438358				11.51	330.82
15					7	74		1486272				10.40	109.98
16					14	282		1473055				20.62	415.40
17	7.9	33	2.27	0.07	8	288	93	1582074	52.21	3.59	0.11	12.66	455.64
18					5	114		2669851				13.35	304.36
19					5	127		2858001				14.29	362.97
20					5	138		4378594				21.89	604.25
21					5	116		5289471				26.45	613.58
22					5	56		3384812				16.92	189.55
23					5	68		2188858				10.94	148.84
24	7.7	28	0.94	0.05	5	26	122	2160200	60.49	2.03	0.11	10.80	56.17
25					30	198		2184395				65.53	432.51
26					6	146		3227900				19.37	471.27
27					6	242		2229344				13.38	539.50
28					5	232		2184575				10.92	506.82
29					8	274		2201157				17.61	603.12
30					5	256		2073302				10.37	530.77

IS: Insufficient amount of sample due to low flow or sampler malfunction.

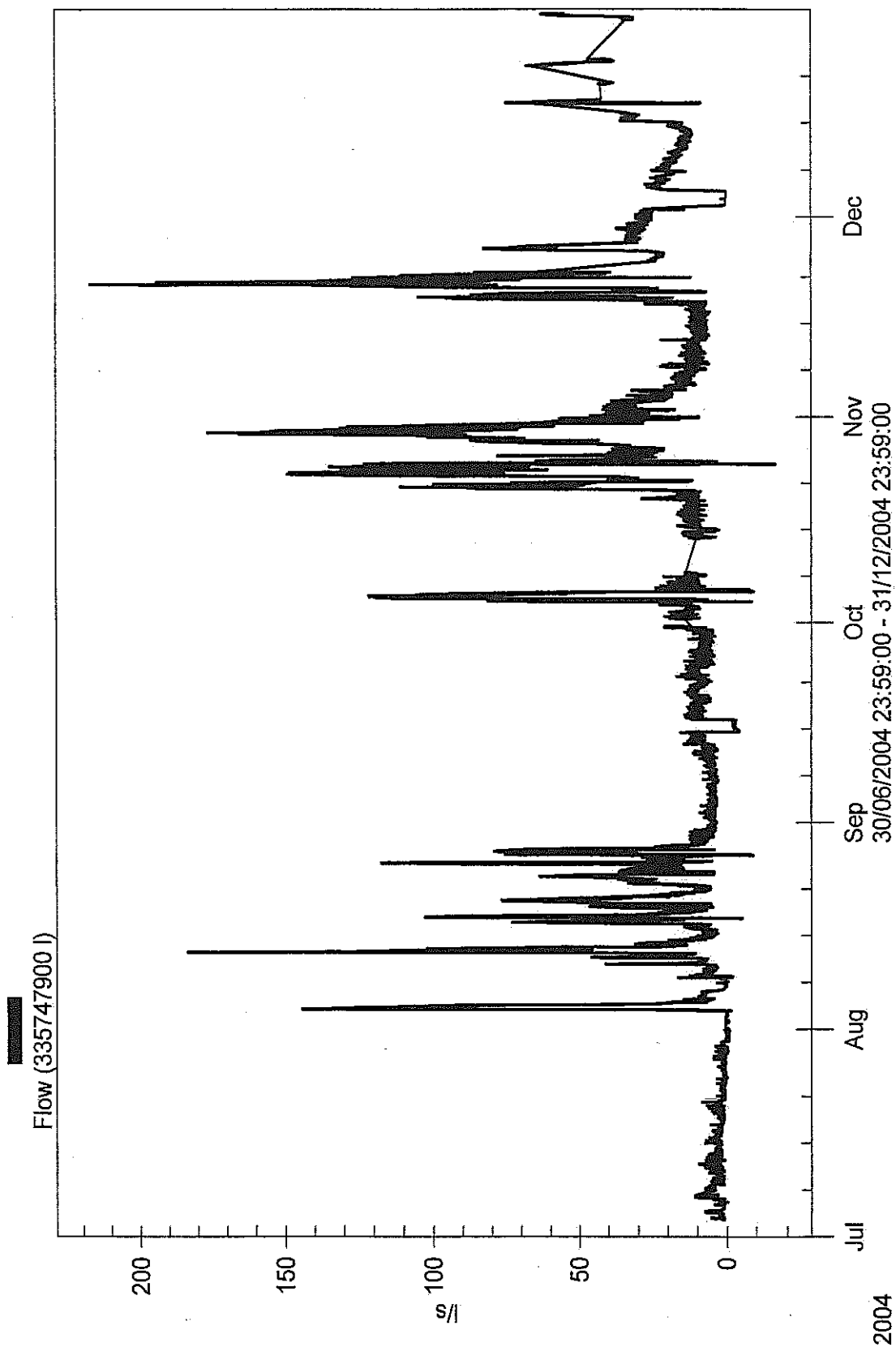
Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochfordsbridge, Co Westmeath
Composite Sampler Results Licence 501

Month	pH	COD mg/l	Ammonia as N mg/l	Parameters		Colour Pt Co	Flow		COD Kg/Day	Ammonia as Kg/Day	Daily Totals		Suspended Solids	Total
Dec 2004				Total Phosphorus mg/l	Suspended Solids mg/l	Total Solids mg/l	Daily Total (litres)				Phosphorus Kg/Day		Kg/Day	Kg/Day
1	8	28	1.44	0.09	5	266	1988299	99	55.67	2.86	0.18		9.94	528.89
2					14	182	717305						10.04	130.55
3					IS	IS	47370							
4					5	198	249618						1.25	49.42
5					5	120	2088162						10.44	250.58
6					10	250	2104617						21.05	526.15
7					5	278	1971759						9.86	548.15
8	8	31	1.24	0.05	6	247	1957443	107	60.68	2.43	0.10		11.74	483.49
9					5	170	1882776						9.41	320.07
10					5	178	1861585						9.31	331.36
11					5	66	1819179						9.10	120.07
12					5	78	1792956						8.96	139.85
13					5	140	1795857						8.98	251.42
14					5	114	1874202						9.37	213.66
15	8	10	0.05	0.05	5	116	2201859	143	22.02	0.11	0.11		11.01	255.42
16					8	58	2916326						23.33	169.15
17					5	50	3143279						15.72	157.16
18					16	130	2609111						41.75	339.18
19					IS	IS	2350080							
20					17	128	2347246							
21					IS	IS	3389994						39.90	300.45
22	7.7	62	1.39	0.05	12	120	3390768	169	210.23	4.71	0.17		40.69	406.89
23					6	117	3255124						19.53	380.85
24					10	138	1266199						12.66	174.74
25					20	202								
26					5	149								
27					5	166								
28					5	174								
29	7.9	10	1.74	0.05	5	144		150						
30														
31														

IS: Insufficient amount of sample due to low flow or sampler malfunction.

Derrygreenagh Composite Sampler

July to Dec



Derrygreenagh Composite Sampler

Jan to June

