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BORD NA MÓNABORD NA MÓNA ENERGY LIMITED
Derrygreenagh, Rochfortbridge, Mullingar, Co-Westmeath.Environmental Protection Agency
Office of Environmental Enforcement
Received 01 APR 2005
Initials

Annual Environmental Report IPC LICENCE 501

March 2005

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:

0444 / 22181 Fax No: 0444 / 22344

Contact Name:

Paul Riordan

Position:

Regional Manager.

National Grid Reference:

E249450 N238140

3.0 Management of the Activity

3.1 Environmental Management Programme Report

3.2 Environmental Management Programme Proposal

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5.0 Summary

Appendix 1: Composite Sampler Results

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 Kinnefad village. There are currently 141 hectares in milled moss production. This bog drains to the Kinnefad 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 there 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.

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Bord na Mona Energy Limited is a commercial semi-state body with responsibility to develop Irelands 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.

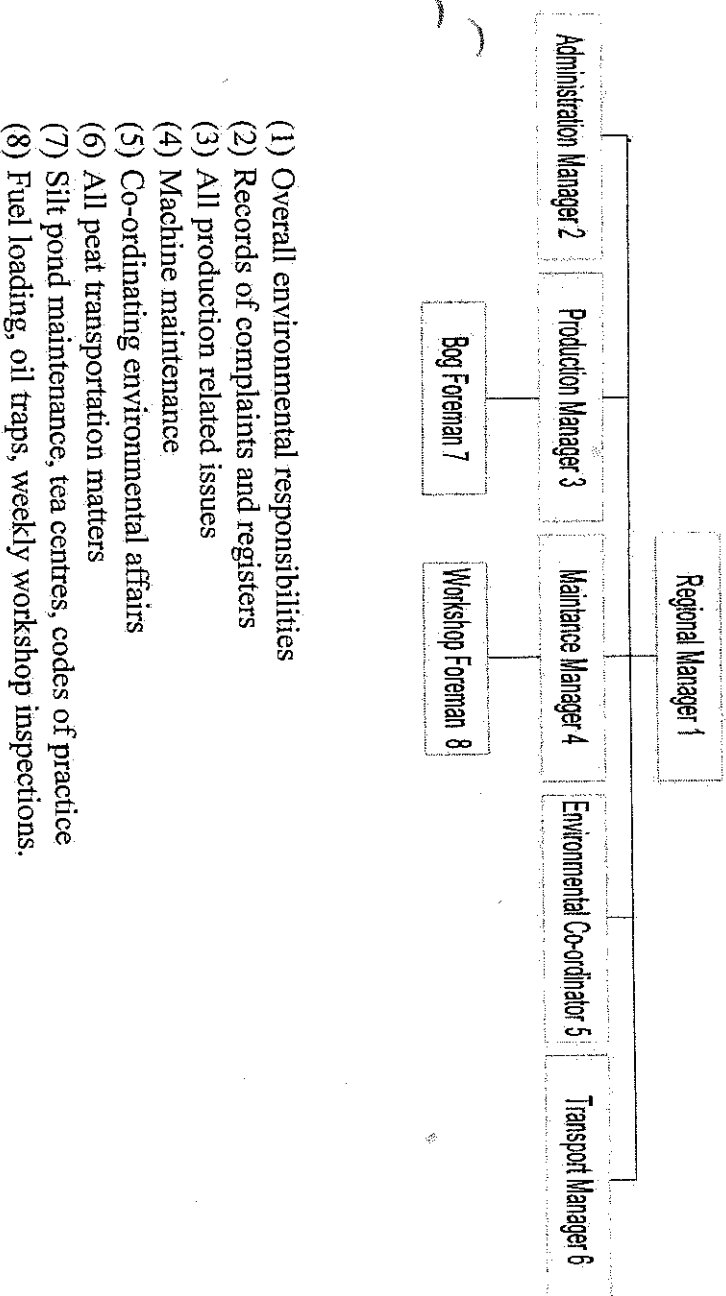
A system of regular environmental audits will be put in place.

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.

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

Derrygreenagh Group Environmental Responsibilities

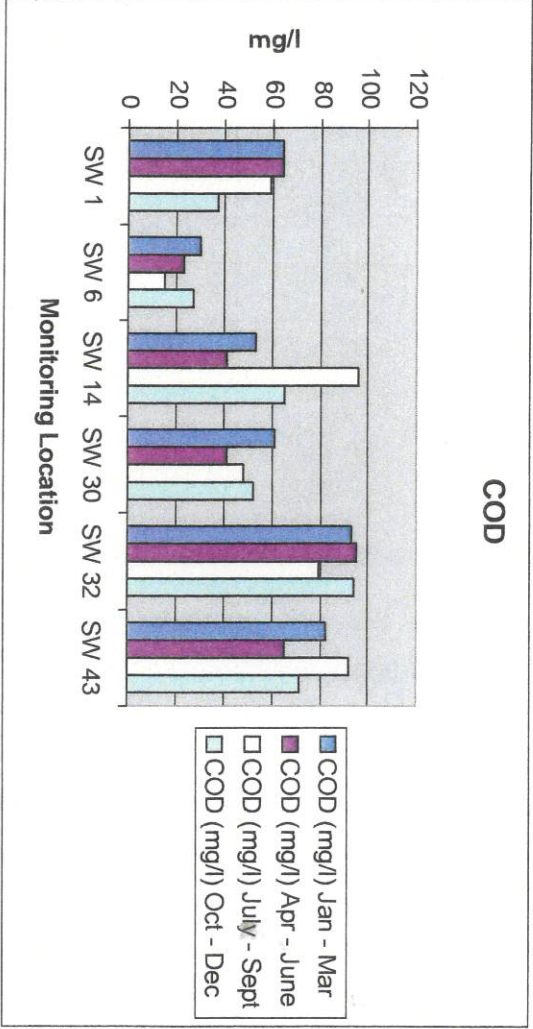
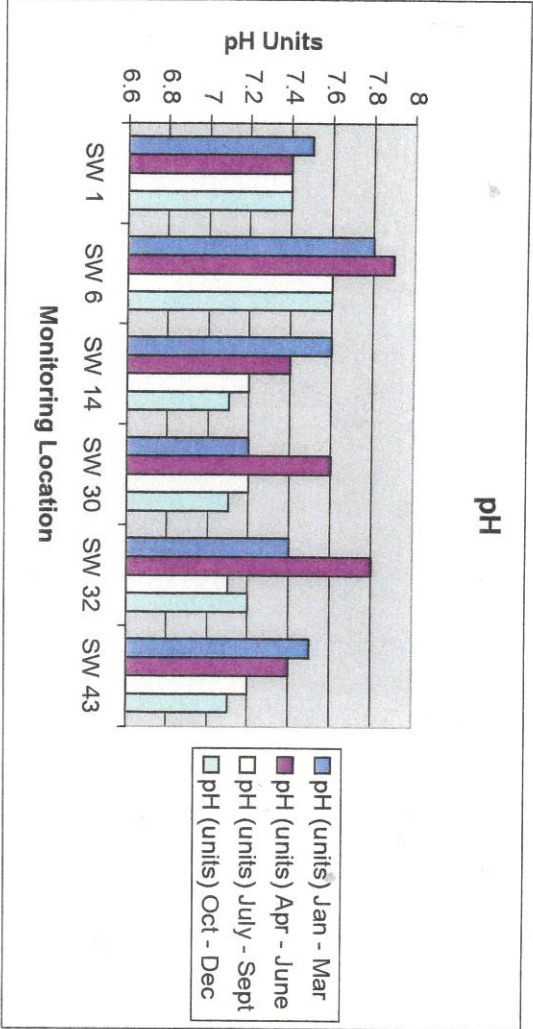


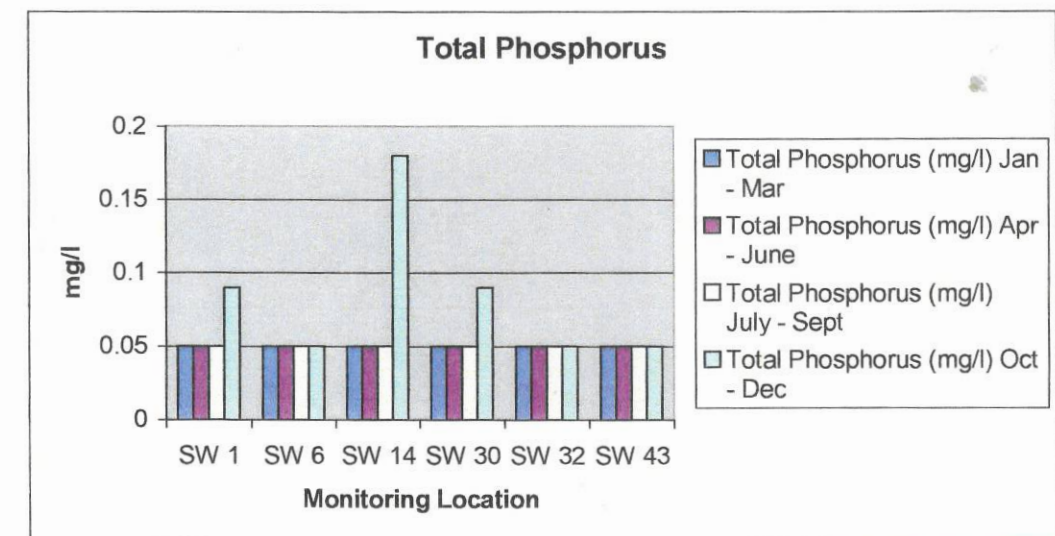
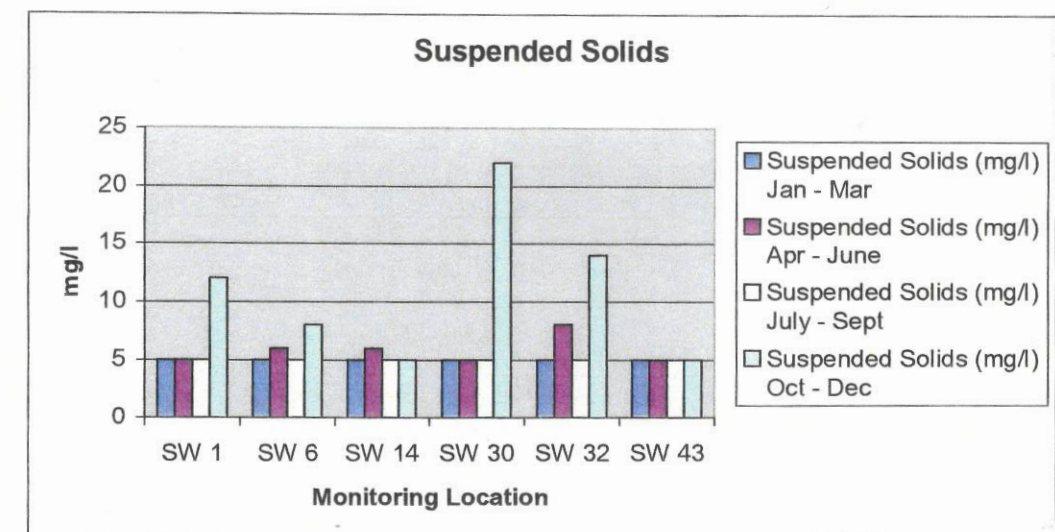
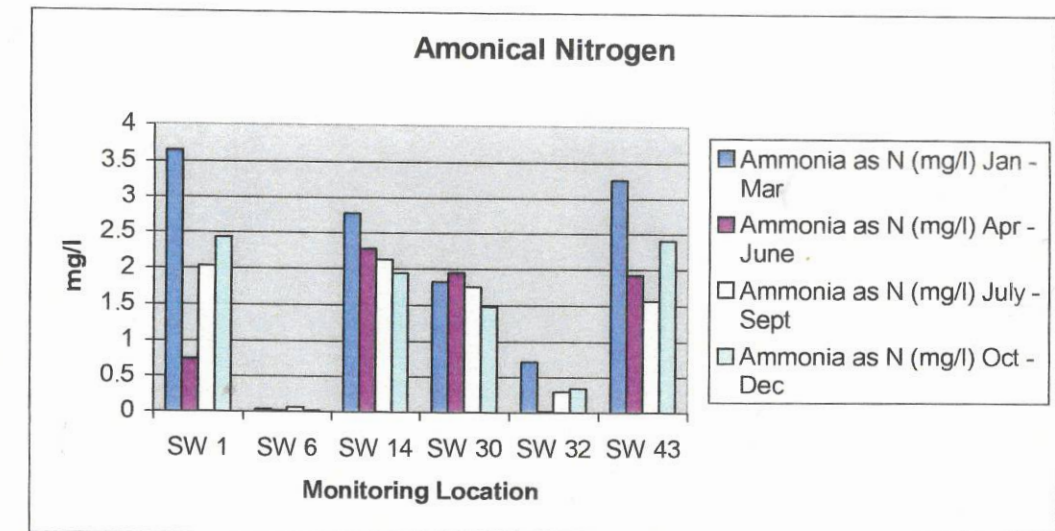
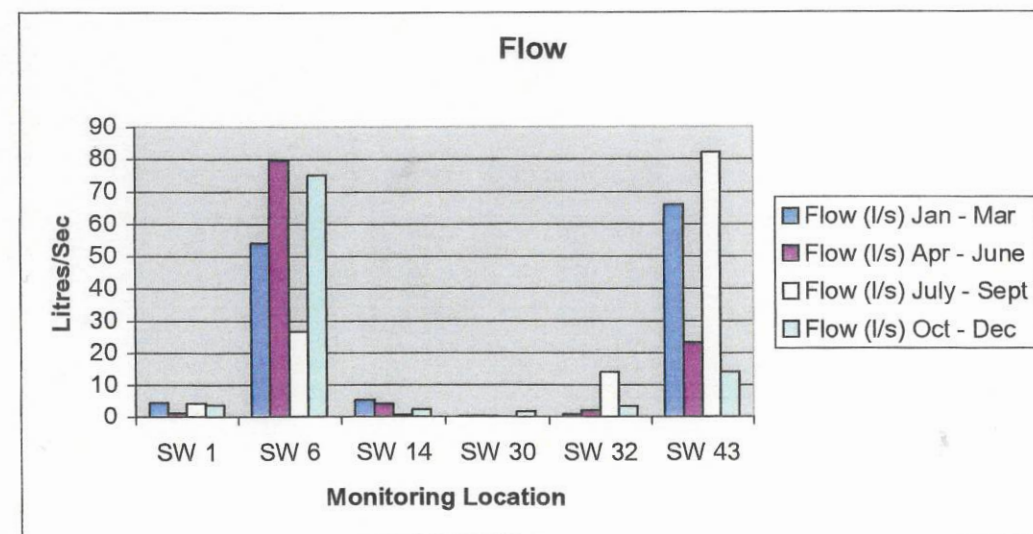
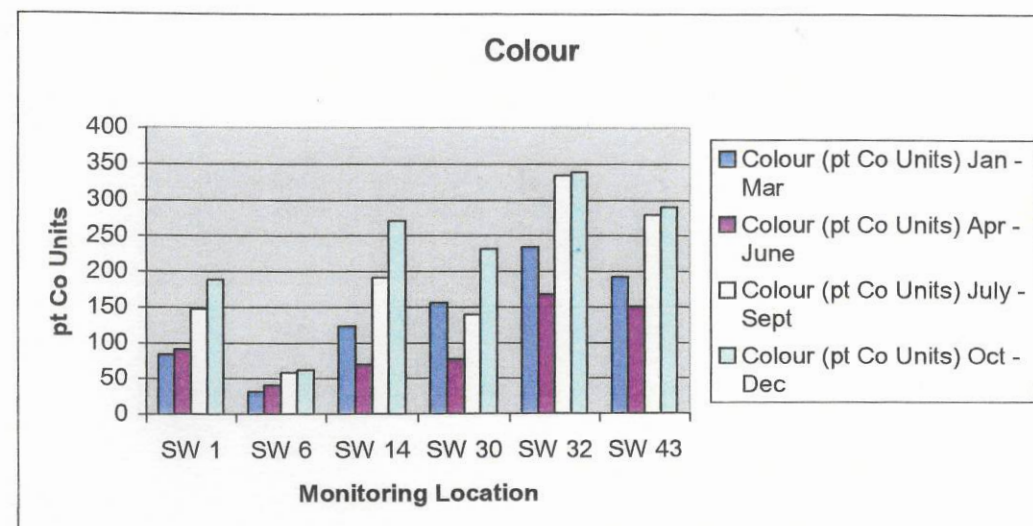
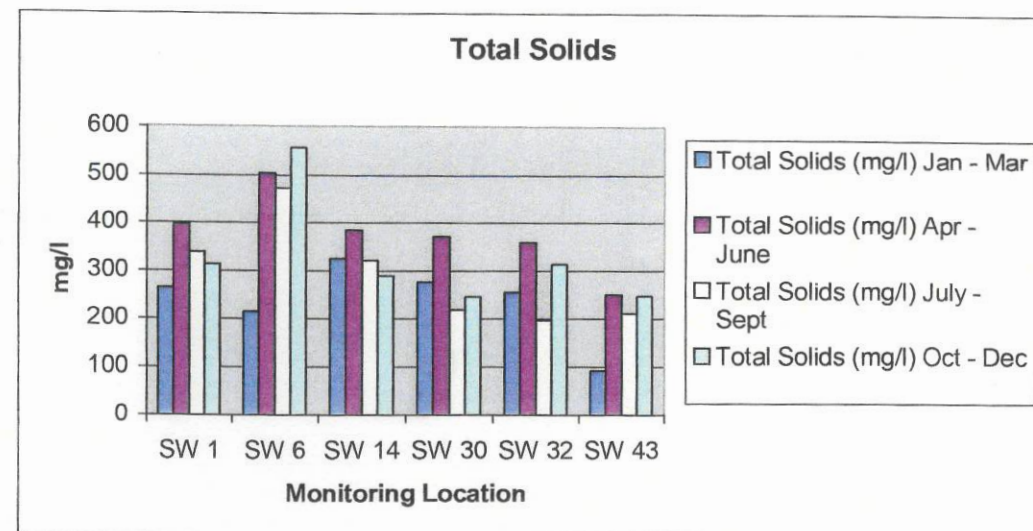
2.0 Summary Information

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 there's 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).

2.2Emissions 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 ³ /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 ³ /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 ³ /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.

2.3.2 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.

Derrygreenagh Group, Annual Environmental Report 2004

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

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.

Derrygreenagh Group, Annual Environmental Report 04

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. I 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	

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 polystripers 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.

Derrygreenagh Group, Annual Environmental Report 2004

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IPC Licence Reg No. 501

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 performance. All trials, observations and tests will be monitored closely over the coming season to assess 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 harrow. 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.

Derrygreenagh Group, Annual Environmental Report 2004

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.

4.7 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.

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		
Blacklin 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.

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

Month	pH	COD	Ammonia as	Parameters										
January				Total	Suspended	Total	Colour	Flow	COD	Ammonia as	Daily Totals			
2004		mg/l	N mg/l	Phosphorus	Solids	Solids	Pt.Co	Daily	Kg/Day	Kg/Day	Total	Suspended	Total	
				mg/l	mg/l	mg/l	units	Total (litres)			Phosphorus	Solids	Solids	
											Kg/Day	Kg/Day	Kg/Day	
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	11.91	552.77	
6					5	228		2697902				13.49	615.12	
7					5	214		1069013				5.35	228.77	
8					IS	IS		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	9.63	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		1973462						
23					26	274		1972690						
24					7	252		1961433				11.84	643.10	
25					5	306		1949851				51.00	537.43	
26					IS	IS		1981142				13.65	491.36	
27					IS	IS		1972015				9.91	606.23	
28	7.4	36	2.14	0.05	5	210	62	1976582						
29					IS	IS		2033386	73.20	4.35	0.10	10.17	427.01	
30					IS	IS		1935014						
31					IS	IS		2018958						
								3809406						

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

APPENDIX 1
Composite Sampler
Results

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Group, Rochfordsbridge, Co Westn.

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Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochforbdsbridge, Co Westm.)
Composite Sampler Results Licence 501

Month	Parameters							Daily Totals					
April 2004	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
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	5	288	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	10	254	79	1484179	25.23	3.89	0.07	14.84	376.98
15					12	170		1810574				21.73	307.80
16					5	124		1563587				7.82	193.88
17					5	178		1608461				8.04	286.31
18					5	168		2059953				10.30	346.07
19					5	178		1768699				8.84	314.83
20					5	127		1537834				7.69	195.30
21	7.8	48	2.69	0.06	5	130	81	1537834	73.82	4.14	0.09	7.69	199.92
22					IS	IS		1537834					
23					5	389		1537834				7.69	598.22
24					5	280		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	22	178	48	1537834	70.74	4.78	0.08	33.83	273.73
30					5	290		1537834				7.69	445.97
31					IS	IS		1537834					

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

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

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
May 2004													
1					8	138		1537834					
2					IS	IS		1537834					
3					IS	IS		1537834					
4					6	258		1537834					
5	8.3	58	2.44	0.05	8	220	79	1537834					
6					5	238		1537834					
7					5	227		1537834			0.08		
8					5	256		1537834					
9					5	278		1355073					
10					5	288		1155921					
11					5	274		1354425					
12	8.7	28	3.1	0.05	5	290	80	1364165					
13					5	328		1469167	41.14	4.55	0.07		
14					5	256		1470513					
15					5	324		1061983					
16					5	314		871663					
17					5	218		797508					
18					5	314		602471					
19					5	296		1089928					
20					IS	IS	67	554189					
21					IS	IS		880809					
22					IS	IS		18210					
23					IS	IS		43032					
24					IS	IS		67819					
25					IS	IS		82546					
26	7.9	57	2.91	0.05	10	310	56	66129					
27					IS	IS		56819	3.24	0.17	0.00		
28					IS	IS		533203					
29					IS	IS		517638				0.57	17.61
30					IS	IS		322333					
31					IS	IS		324398					
					IS	IS		501537					

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

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochforbsbridge, Co Westm.
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
June 2004													
1					IS	IS		208355					
2	7.5	56	3.68	0.07	14	270	119	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	85	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	94	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	203						
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	126						
31													

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

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

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

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

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

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

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

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

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

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochfordbridge, 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				36.42	247.96
5					10	282		2067631				20.68	583.07
6					6	280		1912667				12.02	561.12
7					6	308		1717857				20.61	515.36
8					12	321		1619880				8.10	519.98
9					5	334	106	1649742	75.89	3.99	0.08	8.25	551.01
10	7.7	46	2.42	0.05	20	280		1719563				34.39	481.48
11					13	274		1610898				20.94	441.39
12					14	224		1400378				19.61	313.68
13					8	230		1438358				11.51	330.82
14					7	74		1486272				10.40	109.98
15					14	282		1473055				20.62	415.40
16	7.9	33	2.27	0.07	8	288	93	1582074	52.21	3.59	0.11	12.66	455.64
17					5	114		2669851				13.35	304.36
18					5	127		2858001				14.29	362.97
19					5	138		4378594				21.89	604.25
20					5	116		5289471				26.45	613.58
21					5	56		3384812				16.92	189.55
22					5	68		2188858				10.94	148.84
23					5	26	122	2160200	60.49	2.03	0.11	10.80	56.17
24	7.7	28	0.94	0.05	30	198		2184395				65.53	432.51
25					6	146		3227900				19.37	471.27
26					6	242		2229344				13.38	539.50
27					5	232		2184575				10.92	506.82
28					8	274		2201157				17.61	603.12
29					5	256		2073302				10.37	530.77
30													
31													

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

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochfordbridge, Co Westm
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
October 2004													
1					30	154		2018918				60.57	310.91
2					8	200		1974717				15.80	394.94
3					12	174		1996246				23.95	347.35
4					12	104		4343268				52.12	451.70
5					13	126		2729526				35.48	343.92
6	7.7	57	1.42	0.05	6	166	177	1809816	103.16	2.57	0.09	10.86	300.43
7					5	178		1914141				9.57	340.72
8					6	174		1685272				10.11	293.24
9					10	184		1629763				16.30	299.88
10					8	244		1629763				13.04	397.66
11					5	236		1629763				8.15	384.62
12					5	244		1629763				8.15	397.66
13	8	32	1.4	0.08	5	244	114	1541432	49.33	2.16	0.12	7.71	376.11
14					5	278		1331589				6.66	370.18
15					6	298		1458497				8.75	434.63
16					11	310		1728634				19.01	535.88
17					14	286		1714579				24.00	490.37
18					15	237		1683925				25.26	399.09
19					42	232		1909713				80.21	443.05
20	8	71	2.73	0.08	26	182	101	1891196	134.27	5.16	0.15	49.17	344.20
21					24	146		4186651				100.46	611.11
22					14	196		2473003				34.62	484.71
23					24	118		5020948				120.50	592.47
24					9	106		4929333				44.36	522.51
25					29	142		2166198				62.82	307.60
26					5	192		2611376				13.06	501.38
27	7.9	36	1.48	0.05	5	196	141	2515715	90.57	3.72	0.13	12.58	493.08
28					5	196		3666103				18.33	718.56
29					16	146		5586871				89.39	815.68
30					16	116		4485992				71.78	520.38
31					21	216		2533307				53.20	547.19

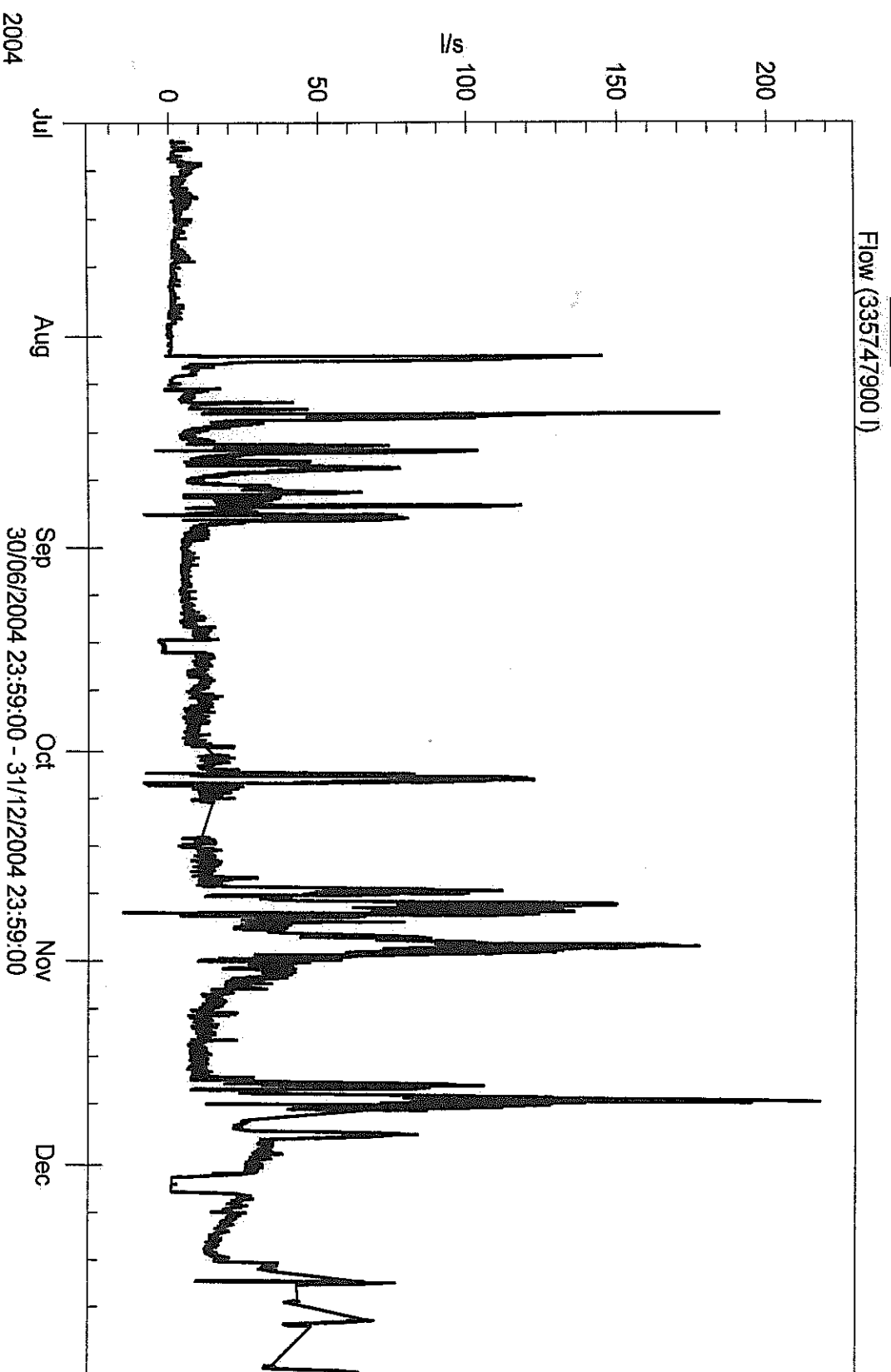
IS: Insufficient amount of sample due to low flow or sampler malfunction.

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochfordsbridge, Co Westm.
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
Dec 2004													
1	8	28	1.44	0.09	5	266	99	1988299	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	107	1957443	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	143	2201859	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				39.90	300.45
21					IS	IS		3389994					
22	7.7	62	1.39	0.05	12	120	169	3390768	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

