

BORD NA MÓNA 

BORD NA MÓNA ENERGY LIMITED
Derrygreenagh, Rochfortbridge, Mullingar, Co-Westmeath.

Annual Environmental Report
IPC LICENCE 501

March 2004

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1 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 244 nett hectares in production in the 2003 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 278 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 148 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 permanant and 3 seasonals, with 3 premanent 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.

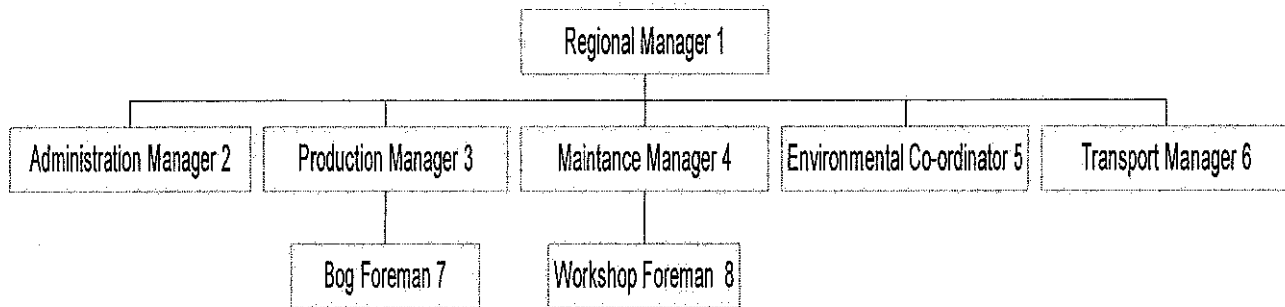
- Power station (EPL)
- Horticultural Factory.

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 Summary Information

2.1 Emissions to Water Summary

2.1.1 Silt Pond Emissions

The following tables contain a summary of the emissions to surface waters from within the Derrygreenagh Group.

Silt Pond No: DH 1						
Reporting Period						
(Jan-Dec 2003)						
Parameter	Jan/Feb/Mar	April/May/June	July/Aug/Sept	Oct/Nov/Dec	E L V	Compliant
	Emission	Emission	Emission	Emission		
	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	
pH units	7.4	7.6	7.5	7.5	~	
Flow (L/sec)	2	0.2	0.15	12.5	~	
Suspended Solids (mg/l)	<5	<5	<5	<5	35mg/l	YES
Total Solids (mg/l)	246	344	428	214	~	
Total Phosphorus (mg/l)	0.08	<0.05	<0.05	<0.05	~	
Ammonia (mg/l)	2.2	2.1	3.04	2.35	~	
Colour (Pt Co units)	110	110	85	132	~	
COD (mg/l)	44	61	63	56	~	

Silt Pond No: DM 6							SW No. 6			
Reporting Period (Jan-Dec 2003)										
Parameter	Jan/Feb/Mar		April/May/June		July/Aug/Sept		Oct/Nov/Dec		E L V	Compliant
	Emission (mg/l)		Emission (mg/l)		Emission (mg/l)		Emission (mg/l)		(mg/l)	
pH units	7.6		8.1		7.7		7.7		~	
Flow (L/sec)	53.8		48.1		80.2		67.5		~	
Suspended Solids (mg/l)	<5		<5		<5		<5		35mg/l	YES
Total Solids (mg/l)	390		514		555		322		~	
Total Phosphorus (mg/l)	<0.05		<0.05		<0.05		<0.05		~	
Ammonia (mg/l)	0.9		<0.2		0.04		0.16		~	
Colour (Pt Co units)	48		52		51		70		~	
COD (mg/l)	28		38		42		31		~	

Silt Pond No: TR 19					SW No. 14		
Reporting Period (Jan-Dec 2003)							
Parameter	Jan/Feb/Mar	April/May/June	July/Aug/Sept	Oct/Nov/Dec	E L V	Compliant	
	Emission (mg/l)	Emission (mg/l)	Emission (mg/l)	Emission (mg/l)			
pH units	7.4	7.7	7.4	7.3	~		
Flow (L/sec)	9	11	2.0	6.1	~		
Suspended Solids (mg/l)	6	<5	<5	<5	35mg/l	YES	
Total Solids (mg/l)	210	250	404	248	~		
Total Phosphorus (mg/l)	<0.05	<0.05	0.07	<0.05	~		
Ammonia (mg/l)	2.0	1.5	2.41	1.97	~		
Colour (Pt Co units)	240	311	73	211	~		
COD (mg/l)	47	77	56	56	~		

Silt Pond No: BN 36 Reporting Period (Jan-Dec 2003)							SW No. 30	
Parameter	Jan/Feb/Mar Emission (mg/l)	April/May/June Emission (mg/l)	July/Aug/Sept Emission (mg/l)	Oct/Nov/Dec Emission (mg/l)	E L V (mg/l)		Compliant	
pH units	7.6	7.4	7.1	7.2	~			
Flow (L/sec)	3.2	7.2	0.26	2.43	~			
Suspended Solids (mg/l)	8	<5	10	<5	35mg/l		YES	
Total Solids (mg/l)	256	428	206	216	~			
Total Phosphorus (mg/l)	0.07	0.15	<0.05	<0.05	~			
Ammonia (mg/l)	0.7	0.9	1.72	1.54	~			
Colour (Pt Co units)	322	144	139	161	~			
COD (mg/l)	79	41	58	57	~			

Silt Pond No: CN 39 Reporting Period (Jan-Dec 2003)							SW No. 32	
Parameter	Jan/Feb/Mar Emission (mg/l)	April/May/June Emission (mg/l)	July/Aug/Sept Emission (mg/l)	Oct/Nov/Dec Emission (mg/l)	E L V (mg/l)		Compliant	
pH units	7.4	7.3	7.5	7.3	~			
Flow (L/sec)	6.76	21	2.7	14.65	~			
Suspended Solids (mg/l)	12	6	31	<5	35mg/l		YES	
Total Solids (mg/l)	290	196	352	212	~			
Total Phosphorus (mg/l)	0.13	0.05	0.12	<0.05	~			
Ammonia (mg/l)	0.8	0.3	0.07	0.47	~			
Colour (Pt Co units)	316	404	214	231	~			
COD (mg/l)	81	121	103	83	~			

Silt Pond No: KD 50		SW No. 43					
Reporting Period (Jan-Dec 2003)		Jan/Feb/Mar	April/May/June	July/Aug/Sept	Oct/Nov/Dec	E L V	
Parameter	Emission (mg/l)	Emission (mg/l)	Emission (mg/l)	Emission (mg/l)	Emission (mg/l)	Compliant	
pH units	7.2	7.5	7.4	7.4	7.4		
Flow (L/sec)	18.7	8.6	6.8	42.7	42.7		
Suspended Solids (mg/l)	<5	<5	<5	<5	<5	YES	
Total Solids (mg/l)	230	210	264	172	172		
Total Phosphorus (mg/l)	0.09	0.05	0.12	<0.05	<0.05		
Ammonia (mg/l)	2.6	2.1	2.26	2.82	2.82		
Colour (Pt Co units)	250	302	189	241	241		
COD (mg/l)	61	92	102	76	76		

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	32	33		63	29	40	25			48		

Note: Due to the unusually dry year, fewer samples were available. In fact no samples were available on the day of sampling in the months March, August, September, November & December.

2.1.3 Composite Sampler Report

The composite sampler was relocated during the reporting period. It is now located at Derryhinch Bog at SW 3 on the outlet of silt pond DH 3. The sampler appears to be operating quite well at this location, although a programme of servicing is due to commence in the forthcoming year during which time the sampler will be out of commission to facilitate service works.

Attached in Appendix 1 are the results of the monitoring carried out using the composite sampler. There were no non-compliance's 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.

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 periods, June – July, July – August, August – September 2003.

June - July

Emission Point	Parameter	Emission (mg/m ² /day)	Emission Limit Value	Compliant
DM 01	Dust	128	(350mg/m ² /Day)	YES
DM 02	Dust	83	(350mg/m ² /Day)	YES
DM 03	Dust	139	(350mg/m ² /Day)	YES

July - Aug

Emission Point	Parameter	Emission (mg/m ² /day)	Emission Limit Value	Compliant
DM 01	Dust	17	(350mg/m ² /Day)	YES
DM 02	Dust	89	(350mg/m ² /Day)	YES
DM 03	Dust	89	(350mg/m ² /Day)	YES

Aug - Sep

Emission Point	Parameter	Emission (mg/m ² /day)	Emission Limit Value	Compliant
DM 01	Dust	24	(350mg/m ² /Day)	YES
DM 02	Dust	42	(350mg/m ² /Day)	YES
DM 03	Dust	136	(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 no non-compliance, in relation to air in the reporting period.

2.3 Waste Arisings

2.3.1 Non-Hazardous Waste

The following table lists the quantities of the wastes generated from January-December 2003 from all of the Derrygreenagh Group.

Waste Type	Quantity (Tonnes)
Silt Pond Waste	387.2
Scrap Metal	39.190
Mixed Municipal Waste	4.950
Total	431.34

2.3.2 Hazardous Waste

The following table is a record of all the hazardous wastes handled by the Derrygreenagh Group from January - December 2003.

WASTE DESCRIPTION	EWC CODE	TONNES	NAME OF CONTRACTOR	DESTINATION	DATE	REJECTED CONSIGNMENTS
Waste Oil	130202	6300L	Atlas Waste Oil	Portlaoise	04/03/03	NA
Lead Acid Batteries	160601	80NR	Returnbatt LTD	Kildare Town	15/04/03	NA
Waste Oil	130202	7850L	Atlas Waste Oil	Portlaoise	16/04/03	NA
Lead Acid Batteries	160601	1.5	Returnbatt LTD	Kildare Town	04/07/03	NA
Oily rags	150201	240L	Atlas Waste Oil	Portlaoise	17/07/03	NA
Waste Oil	130202	4750L	Atlas Waste Oil	Portlaoise	19/09/03	NA
Skip of Oil Filters	160107	2500kg	Atlas Waste Oil	Portlaoise	13/11/03	NA
Waste Oil	130202	6800L	Atlas Waste Oil	Portlaoise	25/11/03	NA
Waste Grease	130899	1 Barrell	Atlas Waste Oil	Portlaoise	28/11/03	NA
Oily rags	150201	240L	Atlas Waste Oil	Portlaoise	15/12/03	NA
Oil Filters	160107	660L	Atlas Waste Oil	Portlaoise	15/12/03	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 2003.

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 2003			
Diesel	99.6	82.6	974.6
Electricity	NA	NA	44.12
Peat Briquettes	NA	338	1690
Total	99.6	420.6	2708.72

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 were no complaints within the Derrygreenagh Group, in the period January - December 2003.

Environmental Complaints	Number of complaints
Complaints received	0
Complaints requiring corrective action	0
Categories of complaint	
Odour	
Noise	
Water	
Air	
Procedural	
Miscellaneous	

3.0 Management of the Activity

3.1 Environmental Management Programme Report 2003

Environmental Management Programme Report 2003	
Project	
Project 1. Reduction of fugitive dust emissions.	Training Training was provided for all personnel during 2002, and will be repeated in 2004. This will be in the form of a Cleaner Production Video, which is currently in production. This video deals with all dust related production issues and identifies good practice and codes of practice for peat production in Dust Sensitive Locations (DSL's). Headland Peat Headland peat is another potential source of dust generation from bog production traffic. This was address by the introduction of a pilot production unit, involving a dedicated unit for the collection of headland peat in the Boora Group of Bogs (IPC 500). This unit, made up of one same field harvester and 4/5 tractor and haku trailers units was in operation in the Boora group during 2003. Its main function was to gather all headland peat from the different units as often as possible, so as to reduce the volumes of loose peat dry peat that can cause dust problems. It has proved successful, and it is proposed to extend this programme in 2004. Hydraulic harrows Plans for the fabrication of hydraulically operated harrows were completed in 2003, and an order was placed for 8 harrows for the 2004 production season.

Project 2. Minimisation of Suspended Solids	Various projects are currently underway to address these issues. As already discussed the Cleaner Production Video examines bad production methods that can lead to waste peat entering the drainage system and subsequently the silt pond network. These can occur during bog maintenance, milling, harrowing, ridging, harvesting and loading. The video highlights these practices and demonstrates improvements that can be achieved through better driving and operation. Other projects such as the hydraulic harrows and the collection of the headland peat are also related to cleaner production which will have a positive impact on waste minimisation and the reduction of waste peat that can potentially find its way into drainage network.
Project 3. Effective spill/leak management of mobile fuelling tanks	Mobile fuelling locations identified, and posted at each tea centre. The upgrading and overhaul of all mobile fuelling units is ongoing, with each unit being brought to the workshop for repairs / improvements. Codes of practice adopted and standard operating procedures in place as well as an emergency response procedure in the event of an oil spillage.
Project 4. Re-use of silt pond waste	No work has been carried out on this project to-date. It was proposed to monitor a silt pond constructed on the headland at Giltown, in the Kilberry group of Bogs. Its close proximity to the production fields and stockpiles made it suitable for potentially reusing the waste peat excavated from the silt pond. This project will be examined again in 2004.
Project 5. Collection, storage and re-use of polythene.	Polythene for recycling has been collected from around the production areas, and stockpiled at a hard surface for baling/collection. A new mechanical method of stripping piles and rolling the polythene on a spool was developed and contracts for fabrication of 20 units externally, was agreed. This will produce a more compact and cleaner method of removing and transporting the polythene to a storage area. Polythene baled and loose has sent for recycling to various contractors and records of these are kept on file at the associated works. (see 2.3 Waste Arising). In total, approximately 1500 tonnes have been baled & collected, 700-800 tonnes of this recycled into pellets.

3.2 Environmental Management Programme Proposal for 2004

Environmental Management Programme for 2004	
Project	
Project 1. Reduction of fugitive dust emissions.	Continue with the completion of the Cleaner Production Video for 2004. A two day internal audit will be conducted on site and will include an assessment of dust protection measures in place at Dust Sensitive Locations Project works for 2004 includes: Hydraulic Harrows Eight Hydraulic Harrows have been fabricated in 2004, specifically for Dust Sensitive Locations. These hydraulic harrows will allow the spoons to be lifted when not on the production fields. This will assist in reducing dust generation by the following: 1. Less harrowing of headlands and passways, will reduce the suspension of dust particles 2. The headland peat will not be broken down and dried as much from harrowing, which will reduce the volumes that may become suspended. 3. It will also leave it a better condition for subsequent collection by the proposed headland peat units. It is proposed to have these 8 new hydraulic harrows in operation by the 2004 production season. There is a 5 year policy in BNM to fabricate an additional 40 hydraulic harrows, which will include some for the 2005 production season. The total cost of this proposed work is circa €650,000 over the 5 years and will represent 15% of the total no. of harrows in operation. Headland Peat Collection Following the success of the headland collection trials in Boora in 2003, a machine design for mass manufacture was agreed and tendered outside BNM for manufacture. These units are planned for mid production season in Derrygreenagh, Mountdillon, Boora, Blackwater, Derryfadda & Littleton. In addition to these machines, 26 Tractor and Haku trailer units will be employed to transport the peat from the headland to the Haku piles, at an over all cost of €1.7 million. All of the above modifications/new methods of production will be assessed, throughout the production year, to measure their performance and identify any potential improvements. The EMP will be updated on a regular basis to reflect these assessments.

Project 2. Minimisation of Suspended Solids	Work on this project is also covered by the Cleaner Production Video. Once completed it will be presented as part of the 2004 training programme and will target all production staff in all of the IPC Licence areas. It will cover all areas of production and will identify cleaner production methods aimed at reducing the generation of waste peat. All of the projects for 2004, covered under Project 1, will also have a positive effect on the minimisation of suspended solids, as it will allow for the collection of more loose peat on the headlands that would previously have been unsuitable as fuel peat.
Project 3. Effective spill/leak management of mobile fuelling tanks	The continuing overhaul of all mobile fuelling units. The training of all relevant personnel in the safe handling of fuels in accordance with the adopted codes of practice and the training of all relevant personnel in the use of emergency spill kits.
Project 4. Re-use of silt pond waste	A silt pond has been constructed, on the headland at Giltown Bog in the Kilberry Group of Bogs, where trials will be carried out to examine the potential for re-using the silt waste from the silt pond as the main product, or as a by-product. This project was due to commence in 2002, but failed to do so, due to the weather conditions during the 2002 production season.
Project 5. Collection, storage and re-use of polythene.	Collection of polythene is on-going. This is mainly the back-log of polythene. There are currently 20 of the new polythene strippers being manufactured and are currently being delivered. All of the strippers will be delivered by the end of April, and will be assigned to the different locations within BNM. An additional 3 – 4 will also be fabricated by the late 04, early 05' this will bring to 25 the no in operation. 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.

3.3 Environmental Expenditure

The table below lists the environmental costs incurred by the Derrygreenagh Group between January – December 2003.

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 2003			
Description	Ballivor Cost	D/Green Cost	Total Cost (€)
Plant @ €40/hour	20,800	180,760	201,560
Labour	6,240	61,532	67,772
Materials	NA	28,252	28,252
Overheads (ESB, Phones, Consumables)	2,000	6,000	8,000
Laboratory Analysis	NA	17,355	17,355
EPA Fees	NA	9,249	9,249
Total	29,040	303,148	332,188

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 metres 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.

Monitoring will be carried out at these same locations in the forthcoming year and reported on in next years AER.

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 09/12/03. The results of this test showed the boiler to be operating at an efficiency level of 82.1%.

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

4.4 Resource consumption Summary

There was a total of 151,409 tonnes of milled peat produced across the licence area in the production season 2003.

There was also a total of 124,859 tonnes of stock peat sold during the reporting period. Of this total 47,849 tonnes were sold to Edenderry Power Limited, 1,505 tonnes to Derrinlough Briquette Factory, 30,500 tonnes to Ballivor Moss Factory, 3,560 tonnes to Kilberry Moss Factory and 41,445 tonnes direct to Dublin Port for export.

4.5 De-silting programme report

Summary Data Table of Ponds De-Silted From Jan-December 2003

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

*: Bog still under development, no production.

**: No production at this Bog.

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 2004.

However in the Ballivor Group, Carranstown bog is currently under development, the works involve production field preparation and drainage works such as piping.

There will be 644.83 nett hectares in production in the 2004 season, yeilding 120,569 tonnes @ 55% moisture content.

Derrygreenagh will account for 45,569 tonnes and 229.5 hectares.

Ballivor will account for 50,000 tonnes and 274.33 hectares and Rossan will account for 25,000 tonnes and 141 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 Summary

With regard to environmental compliance at the Derrygreenagh Group of Bogs, there was one exceedence in the quarterly grab sampling of the ponds in the Surface Water Discharge Monitoring Location Programme.

There were Five non-compliances in relation to the Composite Sampler during the period January to December 2003. Dust monitoring results at the dust sensitive locations were below the Emission Limit Value and 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 Southeastern 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.

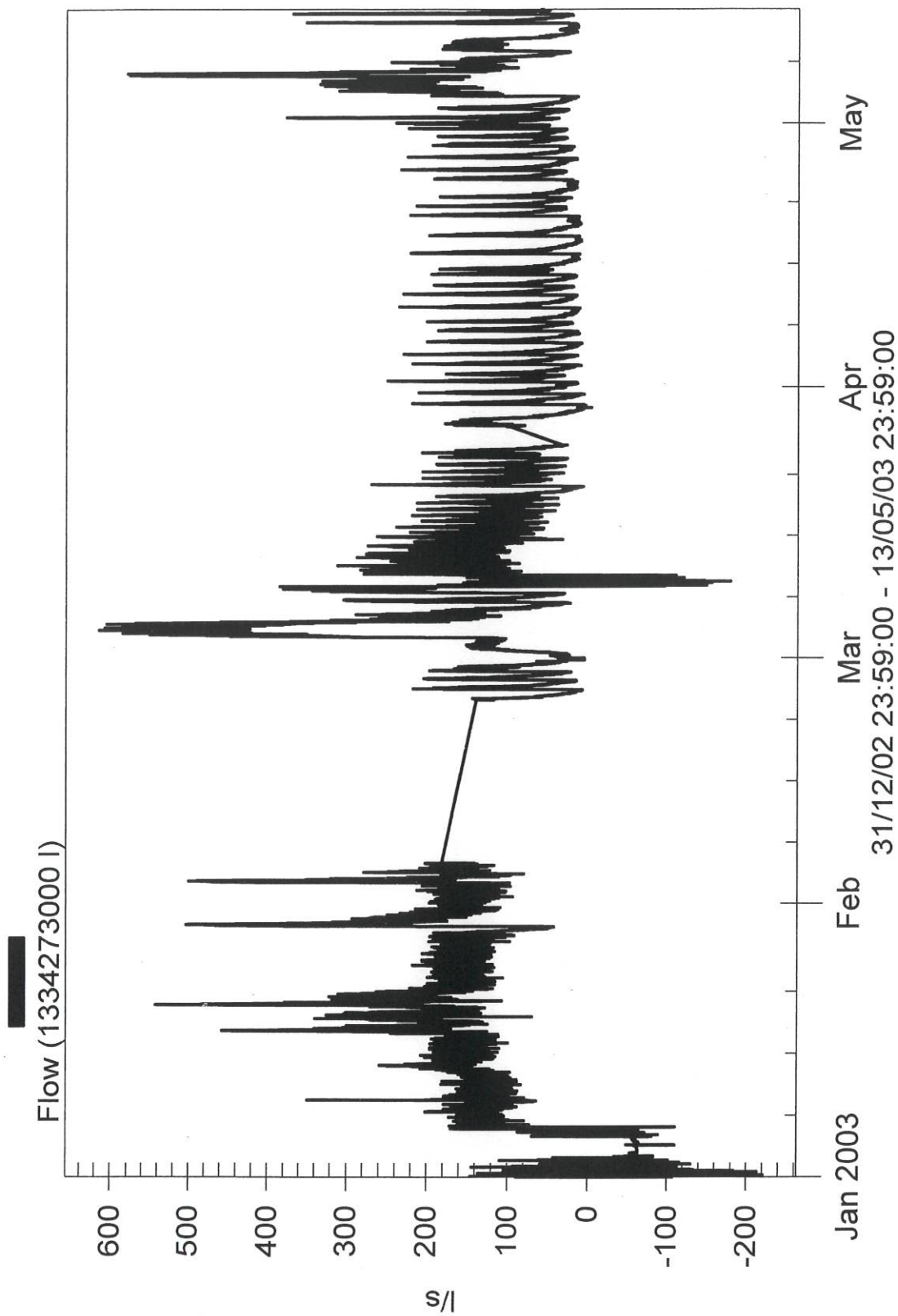
Bord na Mona Energy Ltd would like to take this opportunity to advise the Environmental Protection Agency of its continued commitment to improving its environmental performance by adopting cleaner production methods and improving its environmental protection measures.

APPENDIX 1

Composite Sampler Results

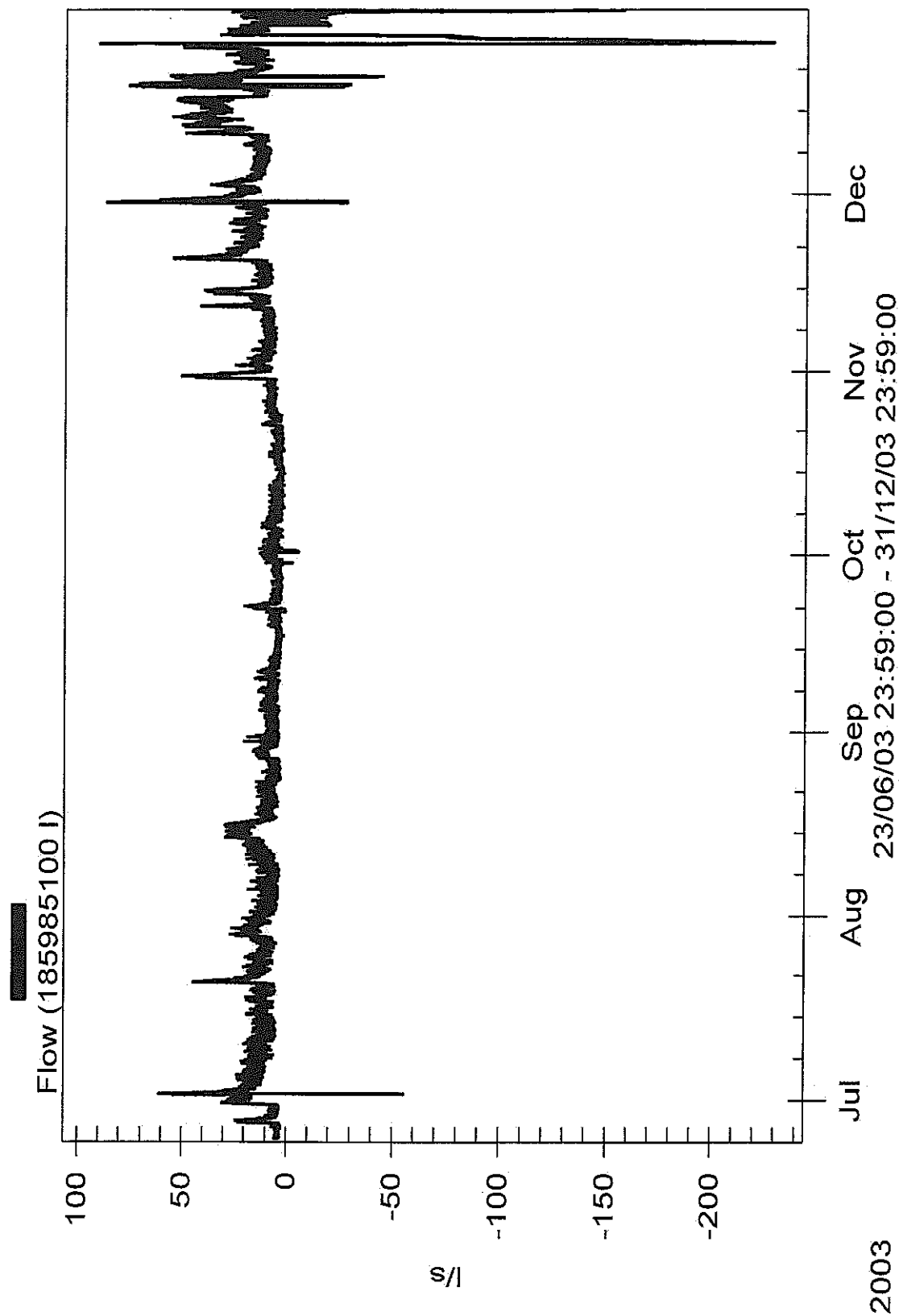
Ballybeg (BB15) Composite Sampler

01/01/03 to 13/05/03



Derryhinch (DH 03) Composite Sampler

24/06/03 to 31/12/03



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		Colour Pt Co units	Flow		COD Kg/Day	Ammonia as Kg/Day	Daily Totals		Suspended Solids Kg/Day	Total Solids Kg/Day
January 2003				Total Phosphorus mg/l	Suspended Solids mg/l	Total Solids mg/l			Daily Total (litres)				Total Phosphorus Kg/Day			
1					IS	IS			7789923							
2					IS	IS			3840880							
3					IS	IS			4769522							
4					IS	IS			5617487							
5	7.4	47	1.5	0.07	7	172	79		4936091	232.00	7.40		0.35		34.55	849.01
6					5	414			6704616						33.52	2775.71
7					6	314			11354790						68.13	3565.40
8					8	358			11995150						95.96	4294.26
9					5	442			10408670						52.04	4600.63
10					5	444			11226370						56.13	4984.51
11					38	488			10953280						416.22	5345.20
12	7.6	32	1.5	0.07	5	266	67		11425600	365.62	17.14		0.80		57.13	3039.21
13					5	304			14855920						74.28	4516.20
14					5	342			13729380						68.65	4695.45
15					5	388			13275410						66.38	5150.86
16					5	379			12878520						64.39	4880.96
17					12	112			20093200						241.12	2250.44
18					6	256			17315590						103.89	4432.79
19	8.1	53	0.9	0.08	5	IS	192		19045700	1009.42	17.14		1.52		95.23	#VALUE!
20					9	188			22261950						200.36	4185.25
21					5	308			21766970						108.83	6704.23
22					5	386			14645310						73.23	5653.09
23					5	408			13480680						67.40	5500.12
24					6	444			13620860						81.73	6047.66
25					6	348			13960700						83.76	4858.32
26	7.9	48	1.2	0.06	5	394	150		13727510	658.92	16.47		0.82		68.64	5408.64
27					5	414			12957410						64.79	5364.37
28					5	408			11891860						59.46	4851.88
29					14	270			18921710						264.90	5108.86
30					6	428			18331520						109.99	7845.89
31					5	466			13782230						68.91	6422.52

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		Ammonia as N		Phosphorus		Colour Pt Co	Flow		COD Kg/Day	Ammonia as N Kg/Day		Daily Totals		Suspended Solids Kg/Day	Total Solids Kg/Day
		mg/l		mg/l		mg/l		units	Daily	Total (litres)		Kg/Day		Phosphorus Kg/Day	Total		
February 2003																	
1									13275810							66.38	4779.29
2	8.1	48		1.2	0.05			153	13068710		627.30	15.68		0.65		65.34	4495.64
3									21821610							109.11	6895.63
4									13829520							69.15	4867.99
5									13318290							66.59	4741.31
6									12052800							60.26	5013.96
7									12052800							60.26	2579.30
8									12052800							60.26	5544.29
9	8.2	53		1.1	0.07			81	12052800		638.80	13.26		0.84		144.63	1687.39
10									12052800							60.26	3495.31
11									12052800							60.26	2627.51
12									12052800							60.26	4917.54
13									12052800							72.32	4893.44
14									12052800							72.32	3567.63
15									12052800								
16	8	36		1.7	0.05			78	12052800		433.90	20.49		0.60		60.26	4821.12
17									12052800							60.26	4797.01
18									12052800							60.26	4097.95
19									12052800							60.26	5688.92
20									12052800							60.26	2386.45
21									12052800							60.26	3013.20
22									12052800							60.26	4652.38
23	8.1	36		1.8	0.05			71	12052800		433.90	21.70		0.60		60.26	2193.61
24									7993264							127.89	3660.91
25									6593746							32.97	1120.94
26									6921965							34.61	3197.95
27									7956093							39.78	2402.74
28									4934699							69.09	1919.60
29																	
30																	
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	pH	COD mg/l	Ammonia as N mg/l	Parameters Total Phosphorus 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
March 2003												
1					34		4273220				145.29	1068.31
2	7.6	76	1.3	0.14	28	144	11126560	845.62	14.46	1.56	311.54	2414.46
3					8		26451060				211.61	6559.86
4					7		44020170				308.14	6426.94
5					5		21269650				106.35	
6					5		12252450				61.26	3455.19
7					5		10234340				51.17	3377.33
8					6		13655460				81.93	3823.53
9	7.9	57	1	0.06	5	173	7690499	438.36	7.69	0.46	38.45	1630.39
10					5		9715159				48.58	2370.50
11					5		14688530				73.44	3407.74
12					5		16016010				80.08	3971.97
13					5		15245720				76.23	3323.57
14					5		12058810				60.29	2870.00
15					5		10011000				50.06	2342.57
16					6		10680300				64.08	2947.76
17	7.9	36	1	0.07	5	80	8334120	300.03	8.33	0.58	41.67	2216.88
18					10		9898372				98.98	3108.09
19					9		8050158				72.45	3075.16
20					17		5815313				98.86	2558.74
21					5		9172562				45.86	3815.79
22					5		7349564				36.75	3175.01
23					5		7452857				37.26	3182.37
24	7.6	44	0.8	0.08	11	78	10149310	446.57	8.12	0.81	111.64	3734.95
25					IS		6755058					
26					IS		8384429					
27					5		9976631					
28					5		8084401				49.88	3571.63
29					5		1231614				40.42	3605.64
30					5		6661695				6.16	576.40
31	8.3	28	0.8	0.05	5	65	6208610	173.84	4.97	0.31	33.31	2611.38
											31.04	2706.95

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

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

Month	Parameters				Colour Pt Co	Flow Daily Total (litres)	COD Kg/Day	Ammonia as N mg/l	Daily Totals	
	pH	COD mg/l	Ammonia as N mg/l	Total Phosphorus mg/l					Total Phosphorus Kg/Day	Suspended Solids Kg/Day
April 2003				Suspended Solids mg/l	Total Solids mg/l					
1				5	336					31.48
2				5	182					33.54
3				5	328					29.03
4				5	463					30.68
5				5	192					14.59
6				5	448					32.64
7	8.5	18	0.2	5	466	71		1.23	0.31	30.72
8				5	224					31.54
9				5	252					9.90
10				5	332					35.00
11				5	442					31.88
12				5	336					31.39
13				5	412					24.49
14	8.3	58	0.2	5	318	69		1.42	0.35	35.41
15				8	232					16.29
16				5	276					33.37
17				5	256					8.24
18				5	254					31.78
19				6	270					11.07
20				5	480					30.44
21	8.3	55	0.9	6	290	62		5.67	0.31	37.77
22				5	312					29.73
23				5	366					13.37
24				5	282					27.58
25				5	364					35.44
26				5	354					17.70
27				5	324					34.19
28	8.2	40	7	5	364	82		48.46	0.35	34.61
29				5	340					31.21
30				5	398					35.38
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	pH		COD mg/l		Ammonia as N mg/l		Parameters		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	
May 2003							Total Phosphorus mg/l																			
1									5		310					10403560							52.02		3225.10	
2									5		138					6945837							34.73		958.53	
3									5		270					3634873							18.17		981.42	
4									5		398					14565200							72.83		5796.95	
5	8.1	57	2	0.06					10		176		223			22919280	1306.40	45.84	1.38				229.19		4033.79	
6									5		190					28150900							140.75		5348.67	
7									5		295					12566500							62.78		3704.17	
8									5		412					8719490							43.60		3592.43	
9									5		432					9764944							48.82		4218.46	
10									5		486					9941591							49.71		4831.61	
11									5		394					2300668							11.50		906.46	
12	8.4	53	0.7	0.05					5		394		83			7088921	375.71	4.96	0.35				35.44		2793.03	
13									5		400					6810333							34.05		2724.13	
14									5		398				*											
15									5		478				*											
16									5		420				*											
17									5		398				*											
18									5		310				*											
19	8.4	64	1	0.05					5		342		143		*											
20									5		334				*											
21									5		385				*											
22									5		266				*											
23									5		332				*											
24									5		278				*											
25									5		270				*											
26	8.1	51	0.51	0.07					5		292		126		*											
27									5		396				*											
28									5		183				*											
29									5		286				*											
30									5		348				*											
31									5		408				*											

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

* Velocity meter malfunction

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

Month	pH	COD		Ammonia as N mg/l	Parameters		Total Solids mg/l	Suspended Solids mg/l	Total Solids mg/l	Colour Pt Co units	Flow		COD Kg/Day	Ammonia as Kg/Day	Daily Totals		Suspended Solids Kg/Day	Total Solids Kg/Day
		mg/l			Phosphorus mg/l	mg/l					Daily	Total (litres)			Phosphorus Kg/Day			
1							5	5	444		*							
2	8.1	59		0.4	0.05		5	5	390	124	*							
3							IS	IS	IS		*							
4							IS	IS	IS		*							
5							IS	IS	IS		*							
6							IS	IS	IS		*							
7							IS	IS	IS		*							
8							IS	IS	IS		*							
9							IS	IS	IS		*							
10							IS	IS	IS		*							
11							IS	IS	IS		*							
12							IS	IS	IS		*							
13							IS	IS	IS		*							
14							IS	IS	IS		*							
15	7.5	48		1.1	0.05		5	5	300	74	*							
16							IS	IS	IS		*							
17							IS	IS	IS		*							
18							IS	IS	IS		*							
19							IS	IS	IS		*							
20							IS	IS	IS		*							
21							IS	IS	IS		*							
22	7.9	55		2.3	0.08		5	5	322	70	*							
23							IS	IS	IS		*							
24							IS	IS	IS			594907						
25							IS	IS	IS			455397						
26							5	5	320			362637				1.81	116.04	
27							5	5	232			343051				1.72	79.59	
28							5	5	256			1179122				5.90	301.86	
29	8.1	36		2	0.06		5	5	318	101		526852	18.97	1.05	0.03	2.63	167.54	
30							5	5	278			423883				2.12	117.84	
31																		

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

* Velocity meter 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 Phosphorus 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
July 2003												
1					228		1648917				8.24	375.95
2					214		2184999				10.92	467.59
3					248		2256312				11.28	559.57
4					286		1424804				7.12	407.49
5					274		1361803				6.81	373.13
6	7.9	86	1.8	0.05	220	142	1286364	110.63	2.32	0.06	6.43	283.00
7					282		1206542				6.03	340.24
8					288		1217167				6.09	350.54
9					294		1068490				5.34	314.14
10					288		961803				4.81	277.00
11					284		1074007				5.37	305.02
12					279		912553				4.56	254.60
13	8.2	60	1.29	0.05	270	129	903490	54.21	1.17	0.05	4.52	243.94
14					282		894642				4.47	252.29
15					298		912440				4.56	271.91
16					292		998282				4.99	291.50
17					292		930873				4.65	271.81
18					284		1108545				5.54	314.83
19					258		961054				4.81	247.95
20	7.7	58	1.26	0.05	228	164	1017374	59.01	1.28	0.05	5.09	231.96
21					182		1712623				8.56	311.70
22					533		1635002				8.18	871.46
23					200		1177241				5.89	235.45
24					234		1210511				6.05	283.26
25					212		1121393				5.61	237.74
26					240		1018582				5.09	244.46
27	8.4	42	1.1	0.07	364	133	859570	36.10	0.95	0.06	4.30	312.88
28					IS		931398					
29					IS		1359661					
30					IS		1507563					
31					IS		1202255					

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			Colour			Flow		COD	Ammonia as		Daily Totals	
	pH	COD mg/l	Ammonia as N mg/l	Total Phosphorus mg/l	Suspended Solids mg/l	Total Solids mg/l	Pt Co units	Daily Total (litres)		Kg/Day	Ammonia as Kg/Day	Total Phosphorus Kg/Day	Suspended Solids Kg/Day
August 2003													
1					IS	IS		1216657					
2					IS	IS		867021					
3					IS	IS		673424					
4	7.5	82	2.57	0.17	5	324	135	753345	61.77	1.94		0.13	3.77
5					5	288		556352					2.78
6					5	304		649228					3.25
7					6	306		681640					4.09
8					13	304		556403					7.23
9					5	292		620766					3.10
10					5	278		740104					3.70
11	7.8	66	2.02	0.06	5	282	176	902347	59.55	1.82		0.05	4.51
12					5	240		1064022					5.32
13					5	196		1232545					6.16
14					5	190		1384606					6.92
15					5	198		1978323					9.89
16					5	172		1941786					9.71
17					5	204		1676179					8.38
18					5	267		854737					4.27
19	8.2	51	2.08	0.08	5	183	133	927954	47.33	1.93		0.07	4.64
20					5	200		801379					4.01
21					5	298		741491					3.71
22					5	320		790722					3.95
23					5	316		857466					4.29
24					5	320		711380					3.56
25					5	296		520021					2.60
26					5	256		546265					2.73
27	8.2	33	2.18	0.05	5	260	97	504069	16.63	1.10		0.03	2.52
28					5	274		751553					3.76
29					5	272		1055509					5.28
30					5	302		820268					4.10
31					5	286		690428					3.45

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

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochforbridge, 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	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
September 2003				Total Phosphorus mg/l								Total Phosphorus Kg/Day			
1						298	5		683919	26.07				3.42	203.81
2	8	43	2.12	0.07		302	5	97	606386		1.29	0.04		3.03	183.13
3						212	5		654350					3.27	138.72
4						242	5		650376					3.25	157.39
5						276	5		558473					2.79	154.14
6						258	5		718577					3.59	185.39
7						262	5		665498					3.33	174.36
8						248	5		755937					3.78	187.47
9	8	41	2.28	0.05		262	5	83	645866	26.48	1.47	0.03		3.23	169.22
10						274	5		606811					3.03	166.27
11						276	5		683454					3.42	188.63
12						206	5		730682					3.65	150.52
13						152	5		516542					2.58	78.51
14						216	5		479354					2.40	103.54
15						214	5		435597					2.18	93.22
16	8	47	2.46	0.05		238	5	90	399751	18.79	0.98	0.02		2.00	95.14
17						322	5		374532					1.87	120.60
18						307	6		360077					2.16	110.54
19						262	7		416900					2.92	109.23
20						242	13		464259					6.04	112.35
21	8.2	58	1.71	0.05		302	12	80	526934	30.56	0.90	0.03		6.32	159.13
22						308	5		517652					2.59	159.44
23						208	5		939921					4.70	195.50
24						240	5		475997					2.38	114.24
25						310	5		420807					2.10	130.45
26						302	5		372426					1.86	112.47
27						328	5		391265					1.96	128.33
28	8	118	2.56	0.05		283	5	78	399226	47.11	1.02	0.02		2.00	112.98
29						294	5		445622					2.23	131.01
30						272	5		458204					2.29	124.63
31															

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

Bord Na Mona Energy Ltd, Derrygreenagh Group, Rochforwardsbridge, 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 Phosphorus mg/l	Suspended Solids mg/l					Total Phosphorus Kg/Day	Suspended Solids Kg/Day
October 2003											
1					5		680897				3.40
2					5		435232				2.18
3					5		638996				3.19
4					5		613388				3.07
5	8.2	46	2.55	0.05	5	62	539049	24.80	1.37	0.03	2.70
6					5		639485				3.20
7					5		661503				3.31
8					5		543380				2.72
9					5		493554				2.47
10					5		449797				2.25
11					5		478011				2.39
12	8.5	48	1.9	0.13	5	90	458761	22.02	0.87	0.06	2.29
13					IS		488883				
14					IS		368510				
15					IS		300843				
16					IS		320665				
17					IS		400150				
18					IS		452340				
19	7.9	46	3.11	0.05	5	85	437491	20.12	1.36	0.02	2.19
20					9		365781				3.29
21					5		352005				1.76
22					6		399766				2.40
23					5		464221				2.32
24					5		581754				2.91
25					5		583514				2.92
26					5		713912				3.57
27	7.9	48	3.06	0.05	8	67	732498	35.16	2.24	0.04	5.86
28					5		684513				3.42
29					5		697046				3.49
30					5		700701				3.50
31					5		1435247				7.18
											292.79

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 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 2003													
1					5	226		2459980				12.30	555.96
2					5	206		1155416				5.78	238.02
3	7.6	34	1.99	0.05	5	212	130	1234556	41.97	2.46	0.06	6.17	261.73
4					5	174		1012736				5.06	176.22
5					5	222		933568				4.67	207.25
6					5	242		850030				4.25	205.71
7					5	232		797618				3.99	185.05
8					5	228		771521				3.86	175.91
9					5	206		830006				4.15	170.98
10					5	232		872315				4.36	202.38
11	8	59	1.77	0.05	5	184	133	822127	48.51	1.46	0.04	4.11	151.27
12					5	260		1416778				7.08	368.36
13					5	224		1384612				6.92	310.15
14					5	152		1336359				6.68	203.13
15					5	228		2540045				12.70	579.13
16					5	146		1089775				5.45	159.11
17					5	121		1005376				5.03	121.65
18	7.9	66	1.37	0.05	5	176	156	1036266	68.39	1.42	0.05	5.18	182.38
19					5	164		1045128				5.23	171.40
20					5	158		1838792				9.19	290.53
21					5	136		2886357				14.43	392.54
22					9	178		2008675				18.08	357.54
23					5	160		1666931				8.33	266.71
24					5	160		1515241				7.58	242.44
25					5	174		1558957				7.79	271.26
26	7.8	74	1.51	0.05	5	168	161	1532837	113.43	2.31	0.08	7.66	257.52
27					5	218		1674860				8.37	365.12
28					5	148		1244711				6.22	184.22
29					5	170		1458541				7.29	247.95
30					5	136		2889230				14.45	392.94
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	pH	COD mg/l	Ammonia as N mg/l	Parameters Total Phosphorus mg/l	Total Solids mg/l	Suspended 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 2003													
1					154	5		2655902				13.28	409.01
2	7.3	39	1.42	0.05	170	5	149	1710196	66.70	2.43	0.09	8.55	290.73
3					158	5		2289279				11.45	361.71
4					218	5		1639936				8.20	357.51
5					170	5		1282496				6.41	218.02
6					159	5		1260128				6.30	200.36
7					204	5		1176520				5.88	240.01
8	7.5	46	1.73	0.05	208	5	131	1129522	51.96	1.95	0.06	5.65	234.94
9					190	5		1096843				5.48	208.40
10					170	5		1343472				6.72	228.39
11					188	5		1282139				6.41	241.04
12					156	5		2617300				13.09	408.30
13					158	5		3352626				16.76	529.71
14					168	5		3279777				16.40	551.00
15	7.9	48	1.32	0.05	160	5	173	3367304	161.63	4.44	0.17	16.84	538.77
16					148	5		2999588				15.00	443.94
17					156	5		3589937				17.95	560.03
18					142	5		1960219				9.80	278.35
19					130	5		1637459				8.19	212.87
20					140	5		4235925				21.18	593.03
21					165	5		2847970				14.24	469.92
22	7.5	91	1.76	0.05	172	5	128	1806098	164.35	3.18	0.09	9.03	310.65
23					144	5		1248067				6.24	179.72
24					180	11		1448075				15.93	260.65
25					130	5		1512514				7.56	196.63
26					IS	IS		2276122					
27					94	5		-11805440					
28					188	5		-3516038				-59.03	-1109.71
29	6.7	19	2.12	0.05	184	5	119	1656186	31.47	3.51	0.08	-17.58	-661.02
30					IS	IS		506681				8.28	304.74
31					IS	IS		1121613					

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