APPENDIX 1.2
IPC Licence Rehabilitation Plan, Owenniny Works

Appendix 1

Condition 9 Bog & PDA Rehabilitation and Aftercare

9.1 Following termination of use or involvement of all or part of the site in the licensed activity, the licensee shall decommission, render safe or remove for disposal/recovery, any soil, subsoils, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution.

9.2 Implement the agreed bog rehabilitation plan (refer Condition 10.2).

9.3 Bog Rehabilitation Plan:

9.3.1 The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for permanent rehabilitation of all the boglands within the licensed area. This plan shall be submitted to the Agency for agreement prior to the commencement of deposit of waste in the PDA.

9.3.2 The plan shall be reviewed every two years and proposed amendments thereto notified to the Agency for agreement as part of the AER. No amendments may be implemented without the written agreement of the Agency.

9.4 The Rehabilitation Plan shall include as a minimum, the following:

9.4.1 A scope statement for the plan; to include outcome of consultations with relevant Agencies, Authorities and affected parties (to be identified by the licensee).

9.4.2 The criteria which define the successful rehabilitation of the activity or part thereof, which ensures minimum impact to the environment.

9.4.3 A programme to achieve the stated criteria.

9.4.4 Where relevant, a test programme to demonstrate the successful implementation of the rehabilitation plan.

9.4.5 A programme for aftercare and maintenance.

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

APPENDIX 1

Condition 9 Bog & PDA Rehabilitation & Aftercare

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

1.2 Following completion of filling of the PDA the licensee shall implement the agreed bog rehabilitation plan (refer Condition 9.3).

1.3 Bog Rehabilitation Plan:

1.3.1 The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for permanent rehabilitation of the all the boglands within the licensed area. This plan shall be submitted to the Agency for agreement prior to the commencement of deposit of waste in the PDA.

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BORD NA MÓNA

BORD NA MÓNA ENERGY LIMITED

REHABILITATION PLAN FOR THE SRAHMORE PEAT DEPOSITION AREA AND ASSOCIATED FACILITIES

February 2005

1. Background

Bord na Móna was granted a Waste Licence by the EPA in October 2004 to deposit peat from the site selected for the Corrib Gas Terminal site at Bellanaboy on a cutover bog area. The Peat Deposition Area is located within the townland of Srahmore, which forms part of the former Bangor peat production area. As part of the Waste Licence (W199-1), a rehabilitation plan must be detailed for permanent rehabilitation of the boglands within the licensed area. This is covered under Condition 9 of the Waste Licence (Appendix 1).

The *Rehabilitation Plan for the Srahmore Peat Deposition Area and Associated Facilities* should be read in conjunction with the *Srahmore Peat Deposition Site Development* EIS (December 2003) in particular Chapters 6 and 7, and *Cutaway Bog Rehabilitation,* the rehabilitation plan for the Oweninny Works (2003).

2. Scope of the Rehabilitation Plan

The scope of the plan follows the guidelines set out by the EPA in Condition 9 of Waste Licence (W199-1). A draft plan was circulated in November 2003 to statutory consultees and other interested parties identified by Bord na Móna. The consultees were:

- EPA
- National Parks and Wildlife Service (*NPWS*)
- North West Regional Fisheries Board (*NWRFB*)
- Mayo County Council
- Coillte
- An Taisce
- Irish Peatland Conservation Council
- Bangor residents
- Other interested parties

Comments were received from *NPWS*, the *NWRFB* and Coillte. There were no additional issues of concern raised and the responses were complementary. It was highlighted however, that the rehabilitation plan should be cross-referenced to other related documents (*NPWS*). It should be noted that site drainage and issues relating to hydrology and water quality monitoring are covered under Condition 8 of Waste Licence (W199-1) and Chapter 8 of the *Srahmore Peat Deposition Site Development* EIS (December 2003). They are dealt with separately but will come under discussion at meetings of the Environmental Monitoring Group (EMG).

3. Characteristics of the activity

A brief outline of the peat deposition facility is provided here to highlight the salient features relevant to the ecological aspects of the development.

Shell (E & P) was granted permission by An Bord Pleanála to transfer *ca.* 450,000m^3 of peat from the Corrib Gas Terminal site at Bellanaboy to a suitable location within the BnM Holdings at Bangor. The peat overburden at the Bellanaboy site consists of a series of former reclaimed grassland fields surrounded by coniferous tree shelterbelts. The former grassland sward has been replaced by a soft rush (*Juncus effusus*) sward due to the increased wetness of the site caused by drainage breakdown, loss of nutrients and an increase in acidity.

The actual peat itself is predominantly a soft brown peat with humification levels increasing as peat depth increases (lower peat layers have high Von Post values, indicating they are highly humified with less structure binding properties). The excavation of the peat will inevitably involve mixing of peat layers – from vegetated top layers and highly humified bottom layers, with minimal contamination from underlying till.

The proposed development requires a suitable area of cutover bog for (a) off-loading the peat on BnM property, (b) subsequent transfer of the peat to the deposition area and (c) a suitable area for deposition of the peat. Support mechanisms include a competent transport and drainage infrastructure and safeguards to mitigate against peat run-off into adjacent watercourses. A rigorous selection process highlighted the most appropriate site for introduction of the peat to the BnM holdings, and this also took the ecological features and rehabilitation potential of the bog area into consideration.

The site selected for off-loading of the peat is at the closest distance from the Corrib Gas Terminal to the BnM Holdings (Fig. 1: Area 5 north of Owenmore River). Development of this site will require the construction of a large concrete hard-standing area and bridges to cross a deepened drain from Area 5 to the adjacent PDA in Area 6. Other associated developments in Area 5 will be the excavation of sedimentation ponds and the provision of parking and/or other service facilities for incoming vehicular transport. A significant area will have to be cleared of peat. This will be dozed over adjacent cutover bog.

The site selected for actual deposition of the peat (Fig. 1: Area 6) is basin shaped and suitable for peat deposition for a number of reasons. These include compartmentalised site, facility to drain the area through a series of silt sedimentation ponds before entering the Munhin River and proximity to the Corrib Gas Terminal Site. Development in Area 6 will involve the creation of suitable foundation for temporary roads on the high fields. Peat will be transported by tractor and trailer on these roads from Area 5, and off-loaded into the low-lying production fields. Introduction of the peat into Area 6 will be in a manner to stabilise the peat (i.e. cambered surface over the spread peat and competent drainage system to eliminate flood events) and this will involve peat handling by excavators and dozing by tracked machines. All of these machine types were utilised for peat production in both Areas 5 and 6 and are adapted for such conditions. Development in Area 6 will also involve the excavation of sedimentation ponds and the provision of an over flow mechanism for high precipitation events.

The provision of the overflow mechanism will result in the overflow of water from Area 6 into an adjacent former production area known as Area 7 (Fig. 1: Area 7). This will be utilised as a 'floodplain' facility. There is no actual development proposed for this area and the use of this area as a floodplain facility is consistent with the activities outlined under the IPC licence *Rehabilitation Plan* for that area (IPC Licence Reg. No. 505). The field drains in Area 7 will be blocked in line with the *Rehabilitation Plan* and the overflow will be a complementary use of Area 7 and not an alternative use.

Following completion of the peat transfer and deposition operations and subsequent monitoring period, the area within the activity boundary will be decommissioned and rehabilitated in agreement with the consultees, the planning authority and the EPA, as detailed in Chapter 6 of the *Srahmore Peat Deposition Site Development* EIS (December 2003).

4. Criteria that define successful rehabilitation of the site

The main criteria[1] defining successful rehabilitation of the Srahmore PDA and associated facility are:
(i) Stabilisation of the deposited peat[2]
(ii) Mitigation of silt run-off

5. Proposed programme of rehabilitation work

Srahmore PDA (Area 6)

The dozers that will be spreading the peat between high fields will carry out the actual rehabilitation work. The peat will be shaped to allow for run-off into drainage channels and left undisturbed to natural revegetation processes.

It is anticipated, due to the high soft rush (*Juncus effusus)* seed content of the Bellanaboy peat, that there will be a flush of rush seedlings established within the first growing season with rapid spread and establishment of vegetation on the site in the following 4 to 5 years. This is based on: (a) a knowledge of the ecology of the soft rush; (b) the successional development of vegetation on bare peat from cutaway bog at Bellacorick, and dozed peat from silt ponds; and (c) Bord na Móna knowledge and expertise that ranges from agricultural activity to encouraging the establishment of wetland communities on a range of peatland types in Ireland.

Soft rush will dominate the vegetation establishing on the introduced peat. This plant has a wide ecological tolerance and is found in a number of plant communities. The plants are known to be the first to establish on peat soils bared by disturbance.

Once the soft rush establishes it is anticipated that the plant roots will bind the introduced peat layer to the underlying cutover peat layer, altering the peat structure to create a homogeneous peat mass and thereby stabilising the peat. The establishment of other species between the tussocks of soft rush will further bind the peat together and eventually lead to a complete cover and stabilisation of the introduced peat.

This confers a number of advantages:

- The vegetation establishing will comprise native species that have a natural ability to establish and spread rapidly on peatland habitats that are drained or disturbed.
- The rapid establishment of vegetation ensures that the peat is stabilised in a relatively short timeframe without using fertilisers or non-native seed.
- The vegetation is akin to a successional vegetative stage of bog development.
- *Juncus*-dominated vegetation is common in north-west Mayo on agricultural fields that have been reclaimed from boglands and as such will blend with the surrounding landscape.

Water over-spill area (Area 7)

This area will be rehabilitated in line with the rehabilitation plan for the Oweninny Works, *Cutaway Bog Rehabilitation* (2003). This will involve field drain blocking and it is anticipated that natural revegetation processes will proceed in this area and over the duration of the peat deposition activity. The overflow facility will be maintained for the duration of the peat deposition and also for a number of years following the activity to ensure that there is no build-up of water on site. When the area is no longer required, the site will be re-surveyed to determine the vegetative condition and whether further rehabilitation work is required (*unlikely to be more than superficial*).

Off-loading facility (Area 5)

Following decommissioning of Area 5, the site will be decommissioned and/or rehabilitated in line with the outcome of consultations with statutory bodies.

[1] These are the basic criteria as identified in the consultation process for development of *The Rehabilitation Plan* for the entire Oweninny Works.
[2] Stabilisation of these areas infers revegetation. Once stabilised there will be no potential peat run-off from the site, which will cover the second criterion for successful rehabilitation.

6. Test programme

The Bord na Móna Bellacorick site has been largely rehabilitated in full, with some rehabilitation work completed at the Bangor site. These areas demonstrate the effectiveness of the rehabilitation processes.

7. Programme for aftercare and maintenance

Vegetation establishment will be monitored to determine the rate and success of the revegetation process. Permanent quadrats and permanent transects will be established to allow for consistency of method and assessment.

Annual assessments of the revegetation will be completed to determine if further rehabilitation measures are required, and there will be annual updates of the condition of the site to the EMG. There will also be an assessment in 5 years following the deposition of the peat to assess the scope for rewetting and/or other long-term rehabilitation measures proposed by the licensee and the consultees as detailed in Chapter 6 of the *Srahmore Peat Deposition Site Development* EIS (December 2003).

It is not anticipated that there will be a requirement for intensive aftercare and maintenance.

8. Timeframes and costing

See preliminary outline below (Table 1)

It is anticipated that peat transfer will commence in spring 2005 and be completed by autumn 2005, depending on suitable operating conditions.

A qualified ecologist will be required to make the site visits and site assessments. Final assessments will have to involve consultation with relevant bodies such as NPWS, etc. Bord na Móna will cover the cost of rehabilitation (details of costing not available at this time).

9. References

Bord na Móna. (2003). *Cutaway Bog Rehabilitation: A document to detail the rehabilitation and aspects of decommissioning of the Oweninny Works in compliance with Condition 10 of IPC Licence Ref. No. 505, and incorporating rehabilitation following the development of the proposed Oweninny wind farm.* Bord na Móna, Mayo.

TES Environmental Consulting Engineers. (December 2003). *Srahmore Peat Deposition Site Development* EIS.

EPA. (2004). Waste Licence (W199-1). EPA, Wexford.

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Table 1 Timeframe and costing

	Task and area	Frequency	Duration	Year	Reason
	Consultation				
1	Pre-deposition phase	Indeterminate	Nov 04 – Mar 05	2004-2005	To agree rehabilitation plan and methods
2	Meetings to review rehabilitation, EMG meetings	Quarterly to annual	May 05-2010	2005-2010	To update consultees on rehabilitation progress To update on monitoring procedures
3	Meeting to discuss long-term rehabilitation	One-off (or several meetings)	Indeterminate: probably summer 2010	2010	To agree on final rehabilitation of PDA
	Srahmore PDA				
1	On-site monitoring of peat condition during actual deposition process	Weekly visits during deposition	For duration of deposition process	2005 – 2006 (May-Sept)	To monitor peat condition and effects of dozing To determine the range of conditions resulting from variation across PDA
2	Establishment of permanent quadrats and transects	One-off	Up to 1 week	2005/2006 (Sept)	To establish fixed areas to monitor rate of revegtation
3	Assessment of vegetation establishment	Immediately following peat deposition	Less than 1 week	2005/2006 (Sept)	To establish a baseline for the first year
		Annual	Up to 1 week and for up to **5** years	2006-2010 (Summer)	To monitor changes in vegetation establishment
4	Final site assessment	One-off	At end of **5** year period	2010 (Summer)	To determine the long-term rehabilitation potential in consultation with relevant bodies
5	Final rehabilitation	One-off	up to 1 month	2010	To implement final work
6	Monitoring of final rehabilitation plan	Annual	Up to 1 week and for up to **2** years	2010-2012 (pending progress)	To monitor effectiveness of work
	Area 7: Overflow area				
1	Rehabilitation	Prior to deposition	1 to 2 weeks	Jan-Mar 2005	To block field drains in line with *Rehabilitation Plan*
2	Assessment of vegetation establishment	Immediately following peat deposition	Less than 1 week	2005 (Sept)	To establish a baseline for the first year
		Annual	Up to 1 week and for up to **5** years	2005-2010 (Summer)	To monitor changes in vegetation establishment
	Area 5: Off-loading facility				
1	Rehabilitation of site following decommissioning using methods outlined	Immediately following decommissioning	up to 1 month	2005 (Oct)	To implement final work
2	Assessment of vegetation establishment	Immediately following rehabilitation	Less than 1 week	2005 (Oct)	To establish a baseline for the first year
		Annual	Up to 1 week and for up to **5** years	2005-2010 (Summer)	To monitor changes in vegetation establishment