

<b>Ecological Survey Report</b>			
<i>Note: This report outlines an ecological survey of the bog. This report should not be taken as a management plan for the site as other land-uses may still be considered. Information within this report may inform the development of other land-uses and identify areas with particular biodiversity value. The report outlines potential options for biodiversity management after industrial peat production has ceased, (if this is the proposed main land-use for the site).</i>			
<b>Bog Name:</b>	<u>Derryadd</u>	<b>Area (ha):</b>	655 ha
<b>Works Name:</b>	Mount Dillon	<b>County:</b>	Longford
<b>Recorder(s):</b>	MMC & DF	<b>Survey Date(s):</b>	26 <sup>th</sup> and 27 <sup>th</sup> July 2012
<b>Photos:</b>	Photos taken – see L:\AI_Data\Boora\Ecology Team\Photos\Derryadd		
<b>Review status:</b> checked by CF ☺ discussed with TE <input type="checkbox"/> discussed with Works manager <input type="checkbox"/> <b>Remaining work:</b>			
<b>Peat production programme and outlook</b> Derryadd Bog is expected to be in peat production until 2030.			
<b>Key biodiversity features of interest</b> <ul style="list-style-type: none"> <li>The majority of the bog is currently in active peat production, however a significant area of cutaway has developed into calcareous grassland and scrub.</li> <li>The margins of the BnM property include some remnant habitats including raised bog (PB1) and bog woodland (WN7) that acts as a refuge for local wildlife.</li> </ul>			
<b>Ecological rating</b> The majority of the site can be rated as having <b>(E) low local ecological value</b> as it is dominated by bare peat production bog. Some parts of the site have a higher value ( <b>National value -B</b> ) as they attract species of conservation significance such as Otter.			
<b>Habitats present (in order of dominance)</b> The most common habitats present at this site include: <ul style="list-style-type: none"> <li>Bare peat (BP) (Codes refer BnM classification of pioneer habitats of production bog. See Appendix I).</li> <li>Pioneer dry heath communities (dHeath)</li> <li>Scrub (eBir, OBir and CBir).</li> <li>Silt Ponds (Silt) with associated habitats such as scrub, Bracken, rank grassland (GS2), dry calcareous grassland (gCal) and typical pioneer communities of disturbed areas (disTuss).</li> </ul> The most common habitats present around the margins at this site include: <ul style="list-style-type: none"> <li>Bog woodland (WN7) (Codes refer to Heritage Council habitat classification, Fossitt 2000), See Appendix I.)</li> </ul>			

- Scrub (WS1) (Gorse scrub and Birch scrub developing of dry high bog around margins)
- Raised bog (PB1)
- Cutover bog (PB4) (several small fragments)
- Wet grassland (GS4).

### Description of site

Derryadd Bog is located approximately 4km to the East of Lanesborough in County Longford. This site is located within one main block. Two mineral islands (Annaghmore and Annaghbeg) are located within the site, these areas are not within the ownership of BnM and are managed as grazing land for domestic animals. A minor road connects the mineral islands with a public road that adjoins the eastern edge of the site. Derryarogue Bog is located immediately to the north of the site (separated by the Longford to Roscommon road). A rail link connects the site with Derryarogue to the north and Lough Bannow to the south. The majority of the site is in active peat production. The peat is used as fuel peat in Lough Ree Power in Lanesborough. Derryadd Bog has been in full peat production since the early 1960's and contains two pumps (south western corner of the site and along the northern boundary).

A relatively large area in the centre of the site has been cutaway for a number of years. This area of cutaway is located on a ridge that extends to the north and south of the mineral islands at the centre of the site. These areas are dry and have colonised by a mixture of calcareous grassland (gCal) and scrub (eBir, oBir and cBir). The scrub is well developed in places and is comprised mainly of Birch, however a proportion of Pine (Scot's Pine and Lodge-pole Pine) along with smaller amounts of Hazel and Ash have also become established. These areas are located on gravel and are dry.

Smaller areas of cutaway have developed across the site; these areas appear to be young and are mainly comprised of pioneer poor fen habitats.

Extensive drainage work was ongoing in the south western corner of the site at the time of the ecological survey.

A watercourse flows through the southern section of the site. This watercourse is a tributary of the River Shannon and has been canalised.

Other habitats along the margins of the site include bog woodland, wet grassland, dry heath and cutover bog. Overall, large areas of the site contain less than 2m of peat and contain exposed marl and gravel; however some small areas of the bog, in the south western corner of the site, are young in terms of peat production and still contain some "red" or "Sphagnum" peat. Two pumps are situated on the site and are used to prevent flooding.

### Forestry and potential forestry on site

There are two small blocks of Conifer plantation on the site and these are comprised of 50 year old Sitka Spruce and Lodge-Pole Pine. Although these areas are in poor condition for their age it may prove financially viable to clear fell these areas. Timber extraction would be relatively easy as they are located directly behind the works area to the north of the site.

Other areas of the site may be considered for planting in the future as there are some elevated areas that are dry and may prove to be suitable for planting.

### Designated areas on site (cSAC, NHA, pNHA, SPA other)

None

Lough Bannow pNHA (site code – 000449) is located 0.6km to the west of the site.

### Adjacent habitats and land-use

Adjacent habitats include lowland depositing river (FW2), wet grassland (GS4), improved agricultural grassland

(GA1), cutaway bog (PB4), Conifer plantation and raised bog (PB1).

#### **Watercourses (major water features on/off site)**

- Tributaries of the River Shannon flow along the eastern and western boundaries of the site.
- A tributary of the River Shannon flows through the southern section of Derryadd.

#### **Peat type and sub-soils**

The majority of Derryadd contains between 1 to 2m of peat, however large areas of the site contain less than 1m of peat and are approaching the end of peat production. The remaining peat on the site appears to be fen peat. The site is underlain with a mix of gravel and marl.

#### **Fauna biodiversity**

##### **Birds**

Several bird species were noted on the site during the survey.

- Heron
- Mallard (4)
- Kestrel
- Skylark (6)
- Willow Warbler (3)
- Grasshopper Warbler
- Other more common species include Wood Pigeon, Meadow pipit, Robin, Blackbird, Grey Crow, Magpie
- Some BnM employees are actively releasing Pheasant onto the site.

##### **Mammals**

Signs of several mammal species were noted on the site during the survey.

- Otter
- Badger
- Pine Marten
- Squirrel (Red or Grey)
- Hare

##### **Other species**

Frog

Butterflies –

Green-veined White, Small Copper, Small Heath, Large White, Meadow Brown

<p><b>Fungal biodiversity</b></p> <p>Wax Cap, Shaggy Ink Cap.</p>
<p><b>Activities on the site</b></p> <p>Activities on the site include:</p> <ul style="list-style-type: none"> <li>• Pheasants are released every year by BnM staff members.</li> <li>• Shooting</li> </ul>
<p><b>Future issues for biodiversity management and/or rehabilitation</b></p> <p>Potential issues for biodiversity management and or rehabilitation once production has ceased include:</p> <ul style="list-style-type: none"> <li>• Large sections of the site will be liable to flood once production ceases on the site. These areas will develop a mosaic of wetland habitats such as open water and reedbed.</li> <li>• Sections of remnant raised bog located along the boundaries of Derryadd are in varying conditions. Overall these areas are small and are drying out. There may be issues with ownership in some of the larger sections.</li> <li>• Boundary issues. The current GIS boundary of the property includes small areas that are obviously managed by other land-owners around the margins of the bog, such as small portions of fields that are managed as farmland.</li> </ul>
<p><b>Potential management options for Biodiversity and/or rehabilitation</b></p> <p>There are several potential management options for this site after industrial peat-cutting has ceased, some of which can be applied to different sections that have different potentials to enhance their biodiversity value. These suggested options do not preclude other land-uses of the site in the future.</p> <ul style="list-style-type: none"> <li>• Drain blocking and installing berms could be used to trap more water in the lower lying sections of the site.</li> <li>• Natural regeneration of habitats is probably the most suitable option for re-colonisation of cutaway bog when peat production ceases.</li> <li>• The small areas of raised bog within the BnM boundary are too small to have potential for restoration of raised bog functions. Some abandoned sections could, however, be retained for biodiversity with no active management required. They offer some potential as a reserve for raised bog species including mosses that may be able to colonise some parts of the cutaway in the future.</li> <li>• The water courses along the boundaries of the site could be re-profiled in order to create more natural habitats.</li> <li>• Butterfly diversity appears to be high on the site (further surveys needed). In some of the drier sections of the site wildflower meadows could be developed to encourage butterfly diversity.</li> </ul>
<p><b>Potential future natural habitats on the site</b></p> <p>This section attempts to predict the development of natural habitats on the site, assuming there is no intervention or changes in land-use. This prediction is based on research and methods used to predict the natural vegetation of Ireland (Cross 2006). Cross (2006) predicted that cutaway bog is likely to develop a mosaic of Birch forest, alder and ash-alder carr, fen and heath in the future. There is no time-line given for the development of these habitats, although it could be expected that the development of natural climax habitats could take hundreds of years. The complexity is the result of small scale variations in the substrate and other</p>

environmental factors such as drainage and ground-water influence.

- Large sections of the site are likely to develop a wetland mosaic (mixture of open water, fen and wet woodland).
- Bog woodland with elements of Oak Ash Hazel woodland are likely to develop on the higher ground towards the centre of the site.
- Bog woodland with Pine are likely to develop along the eastern section of the site; this is probably going to be more extensive along the eastern side of this site than others because the areas to the east will be relatively dry and there already is high frequency of pine establishment on the cutaway to date.
- Dry species poor bog woodland (WN7) is likely to develop along the edges of the site.
- Some remnant areas of high bog (PB1) unused by private sod-peat cutters could be expected to remain open as dry Heather-dominated habitats, with some sections developing bog woodland (WN7) and dry heath mosaics.
- Cutover bog (PB4) is likely to develop bog woodland (WN7) in the long-term, depending on land-use.

**References**

European Commission (1996). Interpretation manual of European Union habitats. Brussels. European Commission, DGXI.  
 Fossitt, J. (2000). A guide to habitats in Ireland. Kilkenny. The Heritage Council.

**HABITAT DESCRIPTIONS**

(See Habitats Description Document for detailed description of each vegetation community not described in this section.)

**HABITAT DESCRIPTIONS**

## Appendix I. Codes used for habitat classification.

### Bord na Moña habitat classification scheme

	General	Vegetation community <sup>1</sup>	BnM habitat code	Equivalent Heritage Council codes <sup>2</sup>
Pioneer habitats of industrial cutaway	Peatland	Bare peat (0-50% cover)	BP	ED2
		Embryonic bog community (containing <i>Sphagnum</i> and Bog Cotton)	PBa	PB
		Embryonic bog community (Calluno-Sphagnion)	PBb	PB
	Flush and Fen	Pioneer <i>Campylopus</i> -dominated community	pCamp	PF2
		Pioneer <i>Juncus effusus</i> -dominated community (Soft Rush)	pJeff	PF2
		Pioneer <i>Eriophorum angustifolium</i> -dominated community (Bog Cotton)	pEang	PF2
		Pioneer <i>Juncus bulbosus</i> -dominated community (Bulbous Rush)	pJbulb	PF2
		Pioneer <i>Triglochin palustris</i> -dominated community (Marsh Arrowgrass)	pTrig	PF2
		Pioneer Caricion davallianae-Community with <i>Cladium</i> (rich fen)	pCladium	PF1
		pioneer <i>Schoenus nigricans</i> community (rich fen)	pSchon	PF1
	pioneer <i>Carex viridula</i> /brown moss community (rich fen)	pVir	PF1	
	Emergent communities	Pioneer <i>Carex rostrata</i> -dominated community (Bottle Sedge)	pRos	PF2/FS1
		Pioneer <i>Phragmites australis</i> -dominated community (Common Reed)	pPhrag	FS1
		Pioneer <i>Typha latifolia</i> -dominated community (Reedmace)	pTyp	FS1
		Pioneer <i>Schoenoplectus lacustris</i> -dominated community (Bulrush)	pSch	FS1
	Open water	Charaphyte-dominated community	pChar	FL2
		Permanent pools and lakes	OW	FL2
		Temporary open water	tOW	
	Woodland and scrub	Emergent <i>Betula/Salix</i> -dominated community (A) (Birch/Willow)	eBir	WS1
		Open <i>Betula/Salix</i> -dominated community (B) (Birch/Willow)	oBir	WS1
		Closed <i>Betula/Salix</i> -scrub community (C) (Birch/Willow)	cBir	WS1
		<i>Ulex europaeus</i> -dominated community (Gorse)	eGor	WS1
		<i>Betula/Salix</i> -dominated woodland (Birch/Willow)	BirWD	WN7
	Heathland	Pioneer dry <i>Calluna vulgaris</i> -dominated community (Heather)	dHeath	HH1
		Dense <i>Pteridium aquilinum</i> (Bracken)	dPter	HD1
	Grassland	Pioneer dry calcareous and neutral grasssland (Centaureo-Cynosuretum)	gCal	GS1
		<i>Dactylis-Anthoxanthum</i> -dominated community (Cocksfoot-Sweet Vernalgrass)	gCo-An	GS2
<i>Anthoxanthum-Holcus-Equisetum</i> community (Sweet Vernalgrass-Yorkshire Fog-Horsetail)		gAn-H-Eq	GS	
<i>Molinia caerulea</i> -dominated community (dry) (Purple Moorgrass)		gMol	GS4	
Marsh (Meadowsweet and other tall herbs) ( <i>Filipendulion ulmariae</i> )		Mar	GM1	
Disturbed	<i>Tussilago farfara</i> -dominated community (vegetation > 50%) (Colt's Foot)	DisCF	ED3	
	<i>Epilobium</i> -dominated community (vegetation > 50%) (Willowherb spp.)	DisWil	ED3	
General	Riparian areas (streams or drain with associated edge habitats (e.g. FW2/4 + WS1, GS2 etc)	Rip	FW2 +	
	Silt Ponds (artificial ponds with associated bank habitats (e.g. FL8 + WS1, GS2, ED2, ED3)	Silt	FL8 +	
	Access (tracks or railways with associated edge habitats (e.g. BL3 + gCal, gMol, eGor etc)	Acc	BL3 +	
	Works areas (predominately built land but can include landscaped and brownfield habitats (e.g. GA2, WS3, WD4, ED2, ED3)	Works	BL3 +	

<sup>1</sup> These are generally pioneer habitats of bare peat and the communities can contain a significant proportion of bare peat. Some habitats are more developed than others. They frequently occur in mosaic with each other.

<sup>2</sup> Not all these communities are equivalent to habitat classes used by The Heritage Council habitat classification scheme (Fossitt 2000) as some are quite rudimentary and undeveloped.

**Heritage Council habitat classification scheme (Fossitt 2000)**

	<b>General</b>	<b>Habitat</b>	<b>Heritage Council code</b>
<b>Semi-natural and modified habitats</b>	Peatlands	Raised Bog	PB1
		Lowland Blanket bog	PB3
		Cutover Bog	PB4
		Rich fen and flush	PF1
		Poor fen and flush	PF2
		Transition mire and quaking bog	PF3
	Woodland and scrub	Oak-Birch-Holly woodland	WN1
		Oak-Ash-Hazel woodland	WN2
		Wet Pendunculate Oak-Ash woodland	WN4
		Riparian Woodland	WN5
		Wet Willow-Alder-Ash woodland	WN6
		Bog woodland	WN7
		Mixed broad-leaved woodland	WD1
		Mixed broad-leaved/conifer woodland	WD2
		Conifer plantation	WD4
		Scrub (Gorse)	WS1
		Emergent Betula-dominated community	WS1
		Closed Betula scrub community	WS1
		Recently-planted woodland	WS2
		Ornamental scrub	WS3
	Short-rotation coppice	WS4	
	Recently-felled woodland	WS5	
	Linear woodland	Hedgerow	WL1
		Treeline	WL2
	Grasslands and Marsh	Improved grassland	GA1
		Amenity grassland	GA2
		Dry calcareous and neutral grassland	GS1
		Dry meadows and grassy verges	GS2
		Dry-humid acid grassland	GS3
		Wet grassland	GS4
	Freshwater Marsh	GM1	
	Heath and Bracken	Dry Heath	HH1
		Dry calcareous Heath	HH2
		Wet Heath	HH3
		Dense Bracken	HD1
	Disturbed ground	Exposed sand, gravel or till	ED1
		Spoil and bare ground	ED2
Recolonising bare ground		ED3	
Active quarry		ED4	
Freshwater	Acid Oligotrophic lakes	FL2	
	Mesotrophic lakes	FW4	
	Artificial ponds (slit ponds)	FL8	
	Depositing rivers	FW2	
	Canals	FW3	
Drains	FW4		
Cultivated and Built land	Stonewalls and other stonework	BL1	
	Earth Banks	BL2	
	Buildings and artificial surfaces	BL3	
	Arable crops	BC1	
	Horticulture	BC2	
	Tilled land	BC3	

### Ecological Survey Report

*Note: This report outlines an ecological survey of this particular bog area. This report should not be taken as a management plan for the site as other land-uses may still be considered. Information within this report may inform the development of other land-uses and identify areas with particular biodiversity value. The report outlines potential options for biodiversity management after industrial peat production has ceased, (if this is the proposed main land-use for the site).*

<b>Bog Name:</b>	<b><u>Derryarogue</u></b> <b><u>(part survey)</u></b>	<b>Area (ha):</b>	21.1 ha (52.1 acres)
<b>Works Name:</b>	Mount Dillon	<b>County:</b>	Co. Longford
<b>Recorder(s):</b>	MMC & DF	<b>Survey Date(s):</b>	1/07/2010
<b>Photos:</b>	Photos taken – see L:\AI_Data\Boora\Ecology Team\Photos\Derryarogue_springs		

**Review status:** checked by CF ☺ discussed with TE  discussed with Works manager

#### Remaining work:

Further survey work is probably required to establish whether the damp hollows are actual active springs. The day of the survey was windy so Butterflies were not too frequent. This site is likely to be rich in species like Butterflies and contains suitable habitat for species such as Marsh Fritillary.

#### Peat production programme and outlook

This site is a 'mineral island' within Derryarogue Bog. There has been no peat production on the island apart from around the margins. The mound has been used as a Works area in the past and there are still travel paths across the sites that are still in use.

#### Key biodiversity features of interest

- Calcareous springs (or hollows collecting tufa-rich groundwater). If classified as tufa-forming (active springs), they qualify as the Annex I habitat ' Petrifying springs with tufa formation (Cratoneurion) (7220) '.
- Species-rich semi-natural dry calcareous grassland (GS1) and wet grassland (GS4) communities.
- This small site is quite diverse and contains a range of typical semi-natural and diverse habitats developed on calcareous substrate, including scrub dominated by Blackthorn and Ash. The site also acts a refuge for wildlife in the area and is likely to be rich in species such as Butterflies.

#### Habitats present (in order of dominance)

The most common habitats present at this site include:

- Scrub dominated by Blackthorn and Ash (WS1) (Codes refer to Heritage Council habitat classification, Fossitt 2000), See Appendix I.) Other scrub communities include Bramble patches.
- Dry calcareous grassland (GS1)
- Dry meadow grassland communities (GS2)
- Species-rich wet grassland (GS4)
- Calcareous springs (FP1) in dry and wet grassland areas)
- Dense Bracken patches (HP1).



- Ash Woodland (WN2)
- Birch dominated scrub (oBir) (Codes refer BnM classification of pioneer habitats of production bog. See Appendix I). Frequently in mosaic with other communities such as dry heath (dheath) or Bracken (dPter)
- Purple Moorgrass-dominated grassland (gMol)
- Pioneer poor fen community dominated by horsetail (pEq)
- Bare peat (BP) (along travel paths)

### Description of site

This site is known as Derryarogue Island and is part of Derryarogue Bog and the Mount Dillon Group of bogs. It is located in Co. Longford to the north-east of Lanesborough and Lough Ree. The River Shannon flows 2 km west of the site. Derryarogue island is a typical 'mineral island' or mound of glacial material and bedrock that protrudes from the surrounding bog (now cutaway and production bog) landscape. There are many examples of these types of small glacial mounds surrounded by bog in this area. The habitats found on these mounds are in contrast to the surrounding bog as they are strongly influenced by the calcareous bedrock and calcareous glacial deposits or sub-soil that underlay the site. Many of these areas are managed as farmland and Derryarogue Island is also mapped as farmland on the 2<sup>nd</sup> edition OSI 6 inch map, prior to the development of the BnM production bog.

The island is surrounded by typical habitats developing on production and production-related bog. These include bare peat fields of the still-active production bog to the south of the site and the developing Birch scrub and dry heath that surrounds the majority of the remainder of the site. There is also frequent cover of other typical habitats found in the transitional zone between cutaway and mineral soil such as Bracken and several grassland communities (gMol, gDa-An). The main part of the island is dominated by scrub and grassland. These habitats are criss-crossed with travel-paths, where there is exposed soil and some rutting where the ground is wet.

The scrub is dominated by Blackthorn and is thick and impenetrable, although there are frequent young and maturing Ash trees developing within the scrub. Other species present include Hawthorn, Elder, Privet, Rowan, Honeysuckle, Bramble, Ivy, Male Fern and Soft Shield Fern. The ground cover is generally quite poor and dominated by Ivy. Some of the Blackthorn-scrub transitions to a band of Gorse or to a Bramble thicket. There are also locations around the margins where there is transition to Birch and Willow scrub. Alder is also present on the site towards the southern end where there has been some clearance in the past for electric lines. A small area to the south of the site was classified as woodland as it was dominated by mature Ash. However, this habitat was surrounded by a band of scrub and Brambles, making it difficult to survey.

There are several different grassland communities present on the site. The vegetation types vary according to hydrology and other environmental factors such as soil depth, amount of peat etc. The main grassland type is a dry calcareous grassland community. This is dominated by species such as Glaucous Sedge, Yellow Sedge, Sweet Vernal-grass, Red Fescue and Bird's-foot Trefoil. Other species present include Knapweed, Perennial Rye-grass, Quaking Grass, False Oat-grass, Yorkshire Fog, Dandelion, Long-leaved Plantain, Broad-leaved Plantain, Nettle, Red Clover, Hawkbit sp., Ox-eye Daisy, Primrose, Creeping Thistle, Timothy, Mouse-ear, Yarrow, Wild Carrot, Ladies-Bedstraw, Purging Flax, Yellow-wort, Mouse-ear Hawkweed, Daisy, White Clover, Milkwort, Common Spotted Orchid and Marsh Hellaborine. Several Dog Rose plants appear in this habitat and single Gorse, Blackthorn and some Hawthorn also appear within the grassland.

The dry grassland frequently grades into damper grassland, sometimes over short distances, which is also significantly influenced by the calcareous-rich soils but is likely to be more prevalent of peaty soils. This community contains frequent Yellow Sedge, Carnation Sedge, Star Sedge and Purple Moorgrass. This community contains species including Common Sedge, Green-ribbed Sedge, Flea Sedge, Hard Rush, Compact Rush, Heath Grass, Knotted Pearlwort, Common Sorrel, Marsh Bedstraw, Bog Thistle, Common Century, Common Chickweed, Self Heal, Mash Horsetail, Crested Dogstail, Devil's-Bit, Rough Meadow-grass, Marsh Valerian, Silverweed, Jointed Rush, Marsh Thistle, Creeping Buttercup, Meadowsweet and Curled Dock. *Calliergonella cuspidata* is frequently found within this grassland type as well as extensive low hummocks of some brown moss species such as *Campylium stellatum*. One small area close to the edge of the scrub contained a small patch of Bladder Sedge. Species more typical of drier areas also appear in this community and vice-versa.

There are some areas where the drainage is impeded to a greater extent and these areas contain frequent Soft Rush and Hard Rush. Other species present included Water Plantain, Spike-rush sp., Water Forget-me-not,

Bulbous Rush and Floating Sweet-grass. Some of the travel paths contained wet grassland vegetation that was dominated by Rush species.

Small springs or damp hollows are found in the largest open grassland area in the centre of the site and along some of the old travel patches around the margins of the site. Most of these did not have any standing water at the time of the survey (after an exceptionally dry May-June period), although they were all damp. Several others contained, probably from heavy rainfall the previous evening. There was no sign of running water, which could be associated with springs. Calcareous-rich groundwater seepage into these shallow hollows with a high water-table could create the same habitats. The hollows were generally 1-5 m in diameter and > 0.5 m deep. The vegetation cover within the hollows was variable, with some hollows being dominated by exposed whitish mud and others dominated by brown mosses. Typical moss species associated with these hollows included brown mosses such as *Scorpidium scorpoides*, *Drepanocladus* spp. and *Campylium stellatum*, as well as *Calliergonella cuspidata*. The majority of the hollows had some development of tufa, generally a calcareous coating on plant material and mosses within the hollow. The tufa was not very well developed. Other species found in these hollows included Yellow Sedge, Silverweed, Marsh Arrowgrass, Lesser Spearwort, Spike-Rush sp., Mint, Jointed Rush, Creeping Bent and Brookweed. The species assemblage varied from hollow to hollow. Several of these hollows seemed to have been created by heavy machinery creating ruts in the travel paths that were subsequently colonised by typical species. The tufa spring indicator moss species, *Palustriella commutata* was searched for but was not recorded.

The meadow type grassland community is a tussocky type of grassland dominated by Cocksfoot, Tufted Hairgrass, Tall Fescue, Yorkshire Fog Purple Moor-grass and Sweet Vernal-grass. This vegetation type occurs on deeper soils and is less diverse than the former two communities. Bramble and Bracken both spread into this grassland type in places. Tussocky Purple Moorgrass and Meadowsweet dominates in one area close to the margins along with Tufted Hairgrass.

There are several places around the main part of the site where there is a little more peat and a dry heath type vegetation develops. This is dominated by Heather and also contains species such as Cross-leaved Heath, Purple Moorgrass, Multi-flowered Woodrush, Tormentil, Slender St John's-wort, and Common Twayblade.

A small area to the south of the site within a small hollow is developing rich fen like vegetation, adjacent to a small area with mature Willow. A small area is dominated by Greater Tussock Sedge and there are also several tussocks of Tufted Sedge. Surrounding vegetation contains Common Bog-cotton, Bottle Sedge, Cuckoo Flower, Water Horsetail, *Calliergonella cuspidata*, *Scorpidium scorpoides*, *Campylium stellatum*, Birch, Eared Willow, Lesser Spearwort, Common Spotted orchid, Angelica, Purple Moor-grass and Devil's-Bit. This very small area also has some Reedmace. This area is likely to have a fluctuating water table with the possibility of flooding during the winter.

The margins of the site generally contain transitional type grassland communities that are similar to pioneer cutaway grassland communities. The main community is dominated by Purple Moorgrass (gMol) and this has developed along some of the old travel paths.

#### **Forestry and potential forestry on site**

There is no potential for plantation forestry at this site. If left unmanaged, the majority of the site is likely to develop scrub and then Ash-dominated woodland as a climax habitat.

#### **Designated areas on site (cSAC, NHA, pNHA, SPA other)**

None

#### **Adjacent habitats and land-use**

The site is surrounded by cutaway habitats that are developing on production and production-related bog.

#### **Watercourses (major water features on/off site)**

- There are no watercourses on this site.

### Peat type and sub-soils

The sub-soil of this area is described as a limestone till. The main soil community has been classified as a poorly drained mineral soil with a peaty top-soil that is derived from mainly calcareous parent material and is assigned to the peaty gley group.

### Fauna biodiversity

#### Birds

Several bird species were noted on the site during the survey.

- Blackcap
- Whitethroat
- Chiffchaff
- Grasshopper Warbler
- More common species included Wren, Reed Bunting, Grey Crow and Robin

#### Mammals

Fox

#### Other species

- Green-veined white butterfly
- Small blue butterfly
- Common Blue

### Fungal biodiversity

### Activities on the site

Activities on the site include:

- The site was a former works area and there are still some old abandoned railway tracks (stacked), old machinery and a tea-hut left on the site.
- There are several travel paths in and around the site that are still being used.
- An electric sub-station is based on the site and there has been some scrub clearance associated with the electricity lines to and from this unit.

### Future issues for biodiversity management

Potential issues for biodiversity management once production has ceased include:

- This site is likely to slowly develop into scrub if it is left unmanaged and the species-rich grassland communities will diminish.
- Heavy machinery travelling on some of the travel paths have the potential to damage some of the small damp hollows that are developing tufa. In contrast, this use of the travel paths by this machinery may also have a positive impact in creating ruts and hollows to develop as these micro-habitats and keeping

some of the grassland open along the tracks.

### **Potential management options for Biodiversity**

There are several potential management options for this site after industrial peat-cutting has ceased, some of which can be applied to different sections that have different potentials to enhance their biodiversity value. These suggested options do not preclude other land-uses of the site in the future.

- The most practical management option at this site is non-intervention in the short-medium term and to let the site develop naturally.
- The main issue on site is traffic along some of the travel paths, which has the potential to damage some of the springs/wet hollows. Some of the travel paths could be closed to non-essential traffic. There is also a requirement for a decommissioning plan for the site.
- This site is likely to develop scrub and then woodland in the long-term if it is left unmanaged. A grazing regime is probably required in the future for the maintenance of the species-rich dry and wet grassland communities found on the site.

### **Potential future natural habitats on the site**

This section attempts to predict the development of natural habitats on the site, assuming there is no intervention or changes in land-use. This prediction is based on research and methods used to predict the natural vegetation of Ireland (Cross 2006). Cross (2006) predicted that cutaway bog is likely to develop a mosaic of Birch forest, alder and ash-alder carr, fen and heath in the future. There is no time-line given for the development of these habitats, although it could be expected that the development of natural climax habitats could take hundreds of years. The complexity is the result of small scale variations in the substrate and other environmental factors such as drainage and ground-water influence.

- The majority of this site is likely to develop Blackthorn-dominated scrub and then Ash-dominated woodland (WN2) in the future if the site is left unmanaged. There are signs that parts of the site are already developing rank grassland, Bramble and Bracken patches that will eventually develop into scrub. The main part of the mineral island will develop Blackthorn-dominated scrub, with a transition zone around the lower margins being dominated by birch where peat begins to dominate.
- The calcareous springs/damp hollows are likely to be maintained on site as wet flushes under the woodland.

### **References**

European Commission (1996). Interpretation manual of European Union habitats. Brussels. European Commission, DGXI.

Fossitt, J. (2000). A guide to habitats in Ireland. Kilkenny. The Heritage Council.

### **HABITAT DESCRIPTIONS**

(See Habitats Description Document for detailed description of each vegetation community not described in this section.)

### **HABITAT DESCRIPTIONS**

## Appendix I. Codes used for habitat classification.

### Bord na Moña habitat classification scheme

	General	Habitat <sup>1</sup>	BnM habitat code	Equivalent Heritage Council codes <sup>2</sup>
Pioneer habitats of industrial cutaway	Peatland	Bare peat (0-50% cover)	BP	ED2
		Embryonic bog community (containing <i>Sphagnum</i> and Bog Cotton)	PBa	PB
		Embryonic bog community (Calluno-Sphagnion)	PBb	PB
	Flush and Fen	Pioneer <i>Campylopus</i> -dominated community	pCamp	PF2
		Pioneer <i>Juncus effusus</i> -dominated community (Soft Rush)	pJeff	PF2
		Pioneer <i>Eriophorum angustifolium</i> -dominated community (Bog Cotton)	pEang	PF2
		Pioneer <i>Juncus bulbosus</i> -dominated community (Bulbous Rush)	pJbulb	PF2
		Pioneer <i>Triglochin palustris</i> -dominated community (Marsh Arrowgrass)	pTrig	PF2
		Pioneer Caricion davallianae-Community with <i>Cladium</i> (rich fen)	pCladium	PF1
	Emergent communities	Pioneer <i>Carex rostrata</i> -dominated community (Bottle Sedge)	pRos	FS1
		Pioneer <i>Phragmites australis</i> -dominated community (Common Reed)	pPhrag	FS1
		Pioneer <i>Typha latifolia</i> -dominated community (Reedmace)	pTyp	FS1
		Pioneer <i>Schoenoplectus lacustris</i> -dominated community (Bulrush)	pSch	FS1
	Open water	Charaphyte-dominated community	pChar	FL2
		Permanent pools and lakes	OW	FL2
		Temporary open water	tOW	
	Woodland and scrub	Emergent <i>Betula/Salix</i> -dominated community (A) (Birch/Willow)	eBir	WS1
		Open <i>Betula/Salix</i> -dominated community (B) (Birch/Willow)	oBir	WS1
		Closed <i>Betula/Salix</i> -scrub community (C) (Birch/Willow)	cBir	WS1
		<i>Ulex europaeus</i> -dominated community (Gorse)	eGor	WS1
		<i>Betula/Salix</i> -dominated woodland (Birch/Willow)	BirWD	WN7
	Heathland	Pioneer dry <i>Calluna vulgaris</i> -dominated community (Heather)	dHeath	HH1
		Dense <i>Pteridium aquilinum</i> (Bracken)	dPter	HD1
	Grassland	Pioneer dry calcareous and neutral grassland (Centaureo-Cynosuretum)	gCal	GS1
		<i>Dactylis-Anthoxanthum</i> -dominated community (Cocksfoot-Sweet Vernalgrass)	gCo-An	GS2
		<i>Anthoxanthum-Holcus-Equisetum</i> community (Sweet Vernalgrass-Yorkshire Fog-Horsetail)	gAn-H-Eq	GS
		<i>Molinia caerulea</i> -dominated community (dry) (Purple Moorgrass)	gMol	GS4
		Marsh (Meadowsweet and other tall herbs) ( <i>Filipendulion ulmariae</i> )	Mar	GM1
	Disturbed	<i>Tussilago farfara</i> -dominated community (vegetation > 50%) (Colt's Foot)	DisCF	ED3
		<i>Epilobium</i> -dominated community (vegetation > 50%) (Willowherb spp.)	DisWil	ED3
General	Riparian areas (streams or drain with associated edge habitats (e.g. FW2/4 + WS1, GS2 etc)	Rip	FW2 +	
	Silt Ponds (artificial ponds with associated bank habitats (e.g. FL8 + WS1, GS2, ED2, ED3)	Silt	FL8 +	
	Access (tracks or railways with associated edge habitats (e.g. BL3 + gCal, gMol, eGor etc)	Acc	BL3 +	
	Works areas (predominately built land but can include landscaped and brownfield habitats (e.g. GA2, WS3, WD4, ED2, ED3)	Works	BL3 +	

<sup>1</sup> These are generally pioneer habitats of bare peat and the communities can contain a significant proportion of bare peat. Some habitats are more developed than others. They frequently occur in mosaic with each other.

<sup>2</sup> Not all these communities are equivalent to habitat classes used by The Heritage Council habitat classification scheme (Fossitt 2000) as some are quite rudimentary and undeveloped.

**Heritage Council habitat classification scheme (Fossitt 2000)**

	<b>General</b>	<b>Habitat</b>	<b>Heritage Council code</b>
<b>Semi-natural and modified habitats</b>	Peatlands	Raised Bog	PB1
		Lowland Blanket bog	PB3
		Cutover Bog	PB4
		Rich fen and flush	PF1
		Poor fen and flush	PF2
		Transition mire and quaking bog	PF3
	Woodland and scrub	Oak-Birch-Holly woodland	WN1
		Oak-Ash-Hazel woodland	WN2
		Wet Pendunculate Oak-Ash woodland	WN4
		Riparian Woodland	WN5
		Wet Willow-Alder-Ash woodland	WN6
		Bog woodland	WN7
		Mixed broad-leaved woodland	WD1
		Mixed broad-leaved/conifer woodland	WD2
		Conifer plantation	WD4
		Scrub (Gorse)	WS1
		Emergent Betula-dominated community	WS1
		Closed Betula scrub community	WS1
		Recently-planted woodland	WS2
		Ornamental scrub	WS3
	Short-rotation coppice	WS4	
	Recently-felled woodland	WS5	
	Linear woodland	Hedgerow	WL1
		Treeline	WL2
	Grasslands and Marsh	Improved grassland	GA1
		Amenity grassland	GA2
		Dry calcareous and neutral grassland	GS1
		Dry meadows and grassy verges	GS2
		Dry-humid acid grassland	GS3
		Wet grassland	GS4
	Freshwater Marsh	GM1	
	Heath and Bracken	Dry Heath	HH1
		Dry calcareous Heath	HH2
		Wet Heath	HH3
		Dense Bracken	HD1
	Disturbed ground	Exposed sand, gravel or till	ED1
		Spoil and bare ground	ED2
Recolonising bare ground		ED3	
Active quarry		ED4	
Freshwater	Acid Oligotrophic lakes	FL2	
	Mesotrophic lakes	FW4	
	Artificial ponds (slit ponds)	FL8	
	Depositing rivers	FW2	
	Canals	FW3	
Drains	FW4		
Cultivated and Built land	Stonewalls and other stonework	BL1	
	Earth Banks	BL2	
	Buildings and artificial surfaces	BL3	
	Arable crops	BC1	
	Horticulture	BC2	
	Tilled land	BC3	

<b>Ecological Survey Report</b>			
<i>Note: This report outlines an ecological survey of the bog. This report should not be taken as a management plan for the site as other land-uses may still be considered. Information within this report may inform the development of other land-uses and identify areas with particular biodiversity value. The report outlines potential options for biodiversity management after industrial peat production has ceased, (if this is the proposed main land-use for the site).</i>			
<b>Bog Name:</b>	<u>Derryarogue</u>	<b>Area (ha):</b>	925 ha
<b>Works Name:</b>	Mount Dillon	<b>County:</b>	Longford
<b>Recorder(s):</b>	MMC & DF	<b>Survey Date(s):</b>	3 <sup>rd</sup> September 2012
<b>Photos:</b>	Photos taken – see L:\AI_Data\Boora\Ecology Team\Photos\Derryarogue		
<b>Review status:</b> checked by CF ☺ discussed with TE <input type="checkbox"/> discussed with Works manager <input type="checkbox"/> <b>Remaining work:</b>			
<b>Peat production programme and outlook</b> Large sections of the site contain less than 1.1m of peat remaining and even larger sections of the site are no longer in peat production. The site is expected to remain in peat production until 2027.			
<b>Key biodiversity features of interest</b> <ul style="list-style-type: none"> <li>• The site contains some establishing pioneer cutaway habitats at various developmental stages. Some of these areas are flooded to various extents and contain developing wetlands.</li> <li>• The establishing cutaway habitats are attracting other typical wildlife, including signs of Otter around the silt pond complex to the west of the site.</li> <li>• The production bog is surrounded by some typical marginal habitats of high local value including intact raised bog (PB1) and bog woodland (WN7).</li> <li>• The River Shannon flows close to the western edge of the bog. The Shannon is an important wildlife corridor along which species can move from one area to another.</li> </ul>			
<b>Ecological rating</b> The majority of the site can be rated as having a <b>low-high local ecological value (E-D)</b> . Bare peat and other intensively managed areas are assessed as having a low local ecological value (E) (although some bare peat areas attract breeding waders). Pioneer cutaway habitats have a moderate local value (D) and act as a refuge for wildlife.			
<b>Habitats present (in order of dominance)</b> The most common habitats present at this site include: <ul style="list-style-type: none"> <li>• Bare peat (Codes refer BnM classification of pioneer habitats of production bog. See Appendix I).</li> <li>• Pioneer Soft Rush-dominated poor fen (pJeff) with less frequent Bog Cotton (pEang) or Bottle Sedge (pRos) -dominated poor fen.</li> <li>• Willow-dominated scrub (eWill) (in mosaic with pJeff) (in those areas that are flooded regularly)</li> <li>• Open water (OW) (permanent) and Temporary open water (TOW)</li> </ul>			

- Birch-dominated scrub (eBir, oBir) (on drier higher ground that is not flooded)
- Pioneer dry heath (dHeath) (mainly in mosaic with Birch scrub)
- Dry pioneer Purple Moorgrass-dominated grassland (gMol)
- Access routes (Acc)
- Riparian zones (Rip) (with drains and associated habitats such as scrub and bog woodland)
- Silt ponds (Silt) with Gorse/Birch scrub and Purple Moorgrass-dominated grassland (gMol)

The most common habitats found around the margins of the site include:

- Raised bog (PB1) (Codes refer to Heritage Council habitat classification, Fossitt 2000), See Appendix I.)
- Cutover Bog (PB4)
- Scrub (WS1)
- Wet (callows-type) grassland (GS4)
- Bog woodland (WN7)
- Dense Bracken (HD1)
- Improved grassland (GA1) around the boundary where the GIS boundary extends into adjacent fields

### Description of site

Derryarogue Bog is located approximately three kilometres to the east of Lanesborough in County Longford. This bog is located within two main sections, a western (smaller) section and an eastern section in which the majority of the site is located. A mineral island is located on the site and this area was previously surveyed and is described in the Derryarogue Springs ecological survey (G:\Ecology Team\management plans\Mount Dillon\Derryarogue). A long section of rail line to the west of the site connects the Roscommon Bogs with the Power Station in Lanesborough. A rail bridge across the River Shannon is also part of the site.

Mount Dillon works area is located in the south of the site, while the N63 Longford to Roscommon Road travels along much of the southern boundary of the site.

The peat that is harvested from Derryarogue is used as fuel peat in the adjacent Lough Ree Power Station. Large areas of Derryarogue are still in active peat production; however large areas of the site are cutaway and have developed a range of cutaway habitats. Numerous power lines cross the site and are in place to power the pumps that are scattered across the site. Derryarogue Bog has been in peat production since 1964.

The northern section of the site is separated from the rest of the site by a rail line that crosses the site in an east west direction. Production is still active in the area, however a range of pioneer habitats have developed in areas that have not been in peat production for a number of years. Habitats that have developed on the older cutaway habitats include closed Birch scrub that was primarily made up of Birch and Willow with Oak and Pine becoming established also. These habitats are at least twenty years old and were located on higher ground. Younger pioneer habitats include gCal, pTrig, eBir and pPhrag. Large areas of exposed gravel are also common across this section of the site. A grey clay type sub-soil is located under this section of the site and it is clearly visible in the field drains. The western side of this section appears to be lower lying than the rest of the section and many of the field drains contained pioneer reed-beds (pPhrag). A flood defence berm was constructed in 2011 along the south western edge of this section in order to prevent flood water from the River Shannon entering the site.

The main section of the site is very varied in terms of habitats that are located there. This area also contains the mineral Island that is dealt with in a separate report. Large areas within this section appear to be cutaway despite the land-use map showing only small areas being out of production. Gravel protrudes from the ground in various locations even in some of the areas that are still in peat production. Pioneer habitats include Birch scrub (eBir, oBir and cBir). The centre of this section of the site appears to be considerably lower than the surrounding areas, surprisingly areas of open water are rare; however this is likely to be a result of the constant pumping of the site.

Two areas of wetland are developing within this section of the site and are mainly comprised of small areas of open water, and a mix of species such as Reed-mace, Soft Rush, Club Rush, Bulbous Rush, Marsh Arrow Grass and Mint. Charophytes were also present to the open water. These areas appeared to have been



developing for a number of years and although they are small they were becoming diverse and provided habitat for Mallard and Snipe. These wetland areas had a quaking feel to them and it would be expected that they would expand across the site once the pumps were turned off.

Other habitats on the site include dry heath (on elevated areas), scrub and areas of pioneer poor fen. A large area of bare peat was located at the western edge of this section and peat production was on going in this area. Peat production in the majority of the section however was confined to individual fields that were scattered throughout.

The eastern section of the site was largely in peat production; however areas of cutaway of varying ages were also present. The areas of cutaway were becoming colonised with pioneer poor fen and scrub. The areas of scrub along the eastern edge were quite well developed and were approaching mature bog woodland.

During the spring of 2012 a honey project was started on the site. Ten bee hives were located on the mineral island. These hives are managed by *Hyland Honey*.

### **Forestry and potential forestry on site**

There are some small patches of conifer plantation located along the southern boundary of the site adjacent to the main Mount Dillon works area. These plantations are generally small and were planted originally as shelter belts approximately 40 years ago. The main species are Sitka Spruce and Lodge-pole Pine. These areas have never received any management work and could be clear felled at this stage.

Some sections of the site may be suitable for forestry in the future depending on the site conditions when peat production ceases.

### **Designated areas on site (cSAC, NHA, pNHA, SPA other)**

None

Lough Bannow pNHA (site code – 000449) is located less than 0.5km from the south of the site.

### **Adjacent habitats and land-use**

Adjacent habitats include wet grassland (GS4), improved agricultural grassland (GA1), raised bog (PB1), scrub (WS1), bog woodland (WD7), conifer plantation along with active and inactive cutover bog (PB4).

### **Watercourses (major water features on/off site)**

- The Templeton Glebe River flows along the north eastern boundary of the site before joining with the River Shannon.
- Another tributary of the River Shannon flows alongside the north western boundary of the site.
- The River Shannon is located less than 0.5km from the site.

### **Peat type and sub-soils**

Gravel underlies the majority of the site. A grey coloured sub soil underlies the peat at the northern end of the site.

### **Fauna biodiversity**

#### **Birds**

Several bird species were noted on the site during the survey.

- Grasshopper Warbler
- Whitethroat
- Buzzard
- Other more common species include Grew Crow, Black Bird, Robin, Wood Pigeon, Swallow, Pied Wagtail, Pheasant,

### **Mammals**

Signs of several mammal species were noted on the site during the survey.

- Pine Marten
- Fox
- Badger
- Hare

### **Other species**

Butterflies include – Brimstone, Speckled Wood, Peacock, Painted Lady, Small Tortshell

Stickleback in drains.

Honey Bees.

### **Fungal biodiversity**

none

### **Activities on the site**

Activities on the site include:

- A Longford Town resident uses the site to exercise his 14 dogs. These dogs are not controlled on the site and are chasing Hares and other wildlife. They may also pose a risk to people on the bog.
- Shooting
- Domestic turf cutting along the edges of the site.
- A flood defence berm has been constructed in the north western corner of the site.
- A honey project started in 2012 has installed ten bee hives on the mineral island at the centre of the site.

### **Future issues for biodiversity management and/or rehabilitation**

Potential issues for biodiversity management and or rehabilitation once production has ceased include:

- Uncontrolled dogs on the site.
- Old plastic has been dumped at various locations around the site.
- Large sections of the site will be liable to flood once production ceases on the site. These areas will

develop a mosaic of wetland habitats such as open water and reedbed. The remaining deeper peat areas are likely to develop wet heath (HH3).

- Sections of remnant raised bog located along the boundaries of Derryrogue are in varying conditions. Some areas are relatively large and have not been ditched; however these sections are still drying out. There may be issues with ownership in some of the larger sections.
- Boundary issues. The current GIS boundary of the property includes small areas that are obviously managed by other land-owners around the margins of the bog, such as small portions of fields that are managed as farmland.
- 

### Potential management options for Biodiversity and/or rehabilitation

There are several potential management options for this site after industrial peat-cutting has ceased, some of which can be applied to different sections that have different potentials to enhance their biodiversity value. These suggested options do not preclude other land-uses of the site in the future.

- Drain blocking and installing berms could be used to trap more water in the lower lying sections of the site.
- Berms could be used to create areas of open water alongside areas where the water levels are controlled in order to allow the development of wet grassland. This management practice could be used to create suitable breeding wader habitat similar to Drinagh cutaway bog in Co Offaly (McCorry *et al.* 2012).
- Natural regeneration of habitats is probably the most suitable option for re-colonisation of cutaway bog when peat production ceases.
- The small areas of raised bog within the BnM boundary are too small to have potential for restoration of raised bog functions. Some abandoned sections could, however, be retained for biodiversity with no active management required. They offer some potential as a reserve for raised bog species including mosses that may be able to colonise some parts of the cutaway in the future.
- The mineral island along with some other raised sections that also contain mineral soil will be suitable for the development of Oak Ash Hazel woodland. Tree planting will speed up this process.
- The water courses along the boundaries of the site could be re-profiled in order to create more natural habitats.
- Butterfly diversity appears to be high on the site (further surveys needed). In some of the drier sections of the site wildflower meadows could be developed to encourage butterfly diversity.
- This site has a high amenity value as it contains a bridge across the Shannon. This bridge is solely used for transporting peat at present but could be used to allow recreational users to cross the Shannon.

### Potential future natural habitats on the site

This section attempts to predict the development of natural habitats on the site, assuming there is no intervention or changes in land-use. This prediction is based on research and methods used to predict the natural vegetation of Ireland (Cross 2006). Cross (2006) predicted that cutaway bog is likely to develop a mosaic of Birch forest, alder and ash-alder carr, fen and heath in the future. There is no time-line given for the development of these habitats, although it could be expected that the development of natural climax habitats could take hundreds of years. The complexity is the result of small scale variations in the substrate and other environmental factors such as drainage and ground-water influence.

- The remnant sections of raised bog along the edges of the site are likely to remain as degraded raised bog (PB1).
- The overall majority of the site is likely to develop a wetland mosaic (mixture of open water, fen and wet woodland).
- The mineral island and some other raised areas are located on mineral soil. These areas will be likely to

develop Oak Ash Hazel woodland.

- Some remnant areas of high bog (PB1) unused by private sod-peat cutters could be expected to remain open as dry Heather-dominated habitats, with some sections developing bog woodland (WN7) and dry heath mosaics.
- Cutover bog (PB4) is likely to develop bog woodland (WN7) in the long-term, depending on land-use.

**References**

European Commission (1996). Interpretation manual of European Union habitats. Brussels. European Commission, DGXI.

Fossitt, J. (2000). A guide to habitats in Ireland. Kilkenny. The Heritage Council.

**HABITAT DESCRIPTIONS**

(See Habitats Description Document for detailed description of each vegetation community not described in this section.)

**HABITAT DESCRIPTIONS**

--

## Appendix I. Codes used for habitat classification.

### Bord na Moña habitat classification scheme

	General	Vegetation community <sup>1</sup>	BnM habitat code	Equivalent Heritage Council codes <sup>2</sup>
Pioneer habitats of industrial cutaway	Peatland	Bare peat (0-50% cover)	BP	ED2
		Embryonic bog community (containing <i>Sphagnum</i> and Bog Cotton)	PBa	PB
		Embryonic bog community (Calluno-Sphagnion)	PBb	PB
	Flush and Fen	Pioneer <i>Campylopus</i> -dominated community	pCamp	PF2
		Pioneer <i>Juncus effusus</i> -dominated community (Soft Rush)	pJeff	PF2
		Pioneer <i>Eriophorum angustifolium</i> -dominated community (Bog Cotton)	pEang	PF2
		Pioneer <i>Juncus bulbosus</i> -dominated community (Bulbous Rush)	pJbulb	PF2
		Pioneer <i>Triglochin palustris</i> -dominated community (Marsh Arrowgrass)	pTrig	PF2
		Pioneer Caricion davallianae-Community with <i>Cladium</i> (rich fen)	pCladium	PF1
		pioneer <i>Schoenus nigricans</i> community (rich fen)	pSchon	PF1
	pioneer <i>Carex viridula</i> /brown moss community (rich fen)	pVir	PF1	
	Emergent communities	Pioneer <i>Carex rostrata</i> -dominated community (Bottle Sedge)	pRos	PF2/FS1
		Pioneer <i>Phragmites australis</i> -dominated community (Common Reed)	pPhrag	FS1
		Pioneer <i>Typha latifolia</i> -dominated community (Reedmace)	pTyp	FS1
		Pioneer <i>Schoenoplectus lacustris</i> -dominated community (Bulrush)	pSch	FS1
	Open water	Charaphyte-dominated community	pChar	FL2
		Permanent pools and lakes	OW	FL2
		Temporary open water	tOW	
	Woodland and scrub	Emergent <i>Betula/Salix</i> -dominated community (A) (Birch/Willow)	eBir	WS1
		Open <i>Betula/Salix</i> -dominated community (B) (Birch/Willow)	oBir	WS1
		Closed <i>Betula/Salix</i> -scrub community (C) (Birch/Willow)	cBir	WS1
		<i>Ulex europaeus</i> -dominated community (Gorse)	eGor	WS1
		<i>Betula/Salix</i> -dominated woodland (Birch/Willow)	BirWD	WN7
	Heathland	Pioneer dry <i>Calluna vulgaris</i> -dominated community (Heather)	dHeath	HH1
		Dense <i>Pteridium aquilinum</i> (Bracken)	dPter	HD1
	Grassland	Pioneer dry calcareous and neutral grasssland (Centaureo-Cynosuretum)	gCal	GS1
		<i>Dactylis-Anthoxanthum</i> -dominated community (Cocksfoot-Sweet Vernalgrass)	gCo-An	GS2
<i>Anthoxanthum-Holcus-Equisetum</i> community (Sweet Vernalgrass-Yorkshire Fog-Horsetail)		gAn-H-Eq	GS	
<i>Molinia caerulea</i> -dominated community (dry) (Purple Moorgrass)		gMol	GS4	
Marsh (Meadowsweet and other tall herbs) ( <i>Filipendulion ulmariae</i> )		Mar	GM1	
Disturbed	<i>Tussilago farfara</i> -dominated community (vegetation > 50%) (Colt's Foot)	DisCF	ED3	
	<i>Epilobium</i> -dominated community (vegetation > 50%) (Willowherb spp.)	DisWil	ED3	
General	Riparian areas (streams or drain with associated edge habitats (e.g. FW2/4 + WS1, GS2 etc)	Rip	FW2 +	
	Silt Ponds (artificial ponds with associated bank habitats (e.g. FL8 + WS1, GS2, ED2, ED3)	Silt	FL8 +	
	Access (tracks or railways with associated edge habitats (e.g. BL3 + gCal, gMol, eGor etc)	Acc	BL3 +	
	Works areas (predominately built land but can include landscaped and brownfield habitats (e.g. GA2, WS3, WD4, ED2, ED3)	Works	BL3 +	

<sup>1</sup> These are generally pioneer habitats of bare peat and the communities can contain a significant proportion of bare peat. Some habitats are more developed than others. They frequently occur in mosaic with each other.

<sup>2</sup> Not all these communities are equivalent to habitat classes used by The Heritage Council habitat classification scheme (Fossitt 2000) as some are quite rudimentary and undeveloped.

**Heritage Council habitat classification scheme (Fossitt 2000)**

	<b>General</b>	<b>Habitat</b>	<b>Heritage Council code</b>
<b>Semi-natural and modified habitats</b>	Peatlands	Raised Bog	PB1
		Lowland Blanket bog	PB3
		Cutover Bog	PB4
		Rich fen and flush	PF1
		Poor fen and flush	PF2
		Transition mire and quaking bog	PF3
	Woodland and scrub	Oak-Birch-Holly woodland	WN1
		Oak-Ash-Hazel woodland	WN2
		Wet Pendunculate Oak-Ash woodland	WN4
		Riparian Woodland	WN5
		Wet Willow-Alder-Ash woodland	WN6
		Bog woodland	WN7
		Mixed broad-leaved woodland	WD1
		Mixed broad-leaved/conifer woodland	WD2
		Conifer plantation	WD4
		Scrub (Gorse)	WS1
		Emergent Betula-dominated community	WS1
		Closed Betula scrub community	WS1
		Recently-planted woodland	WS2
		Ornamental scrub	WS3
	Short-rotation coppice	WS4	
	Recently-felled woodland	WS5	
	Linear woodland	Hedgerow	WL1
		Treeline	WL2
	Grasslands and Marsh	Improved grassland	GA1
		Amenity grassland	GA2
		Dry calcareous and neutral grassland	GS1
		Dry meadows and grassy verges	GS2
		Dry-humid acid grassland	GS3
		Wet grassland	GS4
	Freshwater Marsh	GM1	
	Heath and Bracken	Dry Heath	HH1
		Dry calcareous Heath	HH2
		Wet Heath	HH3
		Dense Bracken	HD1
	Disturbed ground	Exposed sand, gravel or till	ED1
		Spoil and bare ground	ED2
Recolonising bare ground		ED3	
Active quarry		ED4	
Freshwater	Acid Oligotrophic lakes	FL2	
	Mesotrophic lakes	FW4	
	Artificial ponds (slit ponds)	FL8	
	Depositing rivers	FW2	
	Canals	FW3	
Drains	FW4		
Cultivated and Built land	Stonewalls and other stonework	BL1	
	Earth Banks	BL2	
	Buildings and artificial surfaces	BL3	
	Arable crops	BC1	
	Horticulture	BC2	
	Tilled land	BC3	

<b>Ecological Survey Report</b>			
<i>Note: This report outlines an ecological survey of the bog. This report should not be taken as a management plan for the site as other land-uses may still be considered. Information within this report may inform the development of other land-uses and identify areas with particular biodiversity value. The report outlines potential options for biodiversity management after industrial peat production has ceased, (if this is the proposed main land-use for the site).</i>			
<b>Bog Name:</b>	<u>Lough Bannow</u>	<b>Area (ha):</b>	746ha
<b>Works Name:</b>	Mount Dillon	<b>County:</b>	Longford
<b>Recorder(s):</b>	DF	<b>Survey Date(s):</b>	27 <sup>th</sup> and 29 <sup>th</sup> July 2010
<b>Photos:</b>	Photos taken – see L:\AI_Data\Boora\Ecology Team\Photos\Lough Bannow		
<p><b>Review status:</b> checked by CF ☺ discussed with TE <input type="checkbox"/> discussed with Works manager <input type="checkbox"/></p> <p><b>Remaining work:</b></p> <p>Dr. Judith Keleman (waiting for reply)</p> <p>JP Reilly is a source of local knowledge on Lough Bawn and can be contacted through Patsy Cox.</p>			
<p><b>Peat production programme and outlook</b></p> <p>Due to the presence of many gravel ridges and areas of exposed fossil timber, peat production on this site is not estimated to go beyond the next five years (Patsy Cox).</p>			
<p><b>Key biodiversity features of interest</b></p> <ul style="list-style-type: none"> <li>• Calcareous springs (or depressions collecting tufa-rich groundwater). If classified as tufa-forming (active springs), they qualify as the Annex I habitat 'Petrifying springs with tufa formation (Cratoneurion) (7220)'.</li> <li>• Lough Bawn, which contains Transition Mire and Quaking bog (PF3) qualifies as an Annex I EU Habitats Directive habitat-'transition mires and quaking bogs' -7140. (Lough Bawn pNHA 001819)</li> <li>• Extensive bog woodland (WN7) (Annex I habitat) along the western sedges of the transition mire (Lough Bawn site) qualifies as the Annex I habitat 'bog woodland' -91D0.</li> <li>• Pioneer dry calcareous grassland developing on cutaway.</li> <li>• Oak Ash Hazel woodland (WN2) in the north east section of the site.</li> <li>• Areas of Birch (oBir and cBir) dominated scrub that are becoming species rich and likely to develop into Oak-Ash-Hazel woodland (WN2) in the future.</li> <li>• Otters are using the drains in the north eastern section of the site and are likely to be using the drainage system that is connected to the Royal Canal.</li> <li>• Pine Marten are present on the site at numerous locations</li> </ul>			
<p><b>Habitats present (in order of dominance)</b></p> <p>The most common habitats present at this site include:</p> <ul style="list-style-type: none"> <li>• Poor fen (pEang, pJeff, pTyp, pPhrag and pTrig)</li> <li>• Bare peat (BP)</li> <li>• gCal</li> </ul>			

- DisCf
- pCamp
- Rip - riparian areas (streams/drains with fringing habitats)
- Birch dominated scrub (eBir, oBir and cBir) (Codes refer BnM classification of pioneer habitats of production bog. See Appendix I).
- Exposed gravel
- dHeath
- Temporary open water (tow)
- Conifer plantation (WD4)
- Transition mire and quaking bog (PF3)
- Bog woodland (WN7)
- Raised bog (PB1) remnant
- Oak-Ash-Hazel woodland (WN2)
- Possible calcareous springs (FP1)
- Dense Bracken (HD1)
- Wet grassland (GS4) along the fringes of the bog

### Description of site

Lough Bannow Bog is situated approximately seven kilometres south east of Lanesborough, Co. Longford along the R392 Road. The R398 public road runs along the north of the site while a secondary road (Keenagh road) runs along part of the southern section of the road. The Royal Canal passes within 500 metres of eastern edge of the site. Two large mineral islands are located within the site boundaries but are not under BnM ownership. This site has been harvested for milled peat since the late 1960's and the general outlook for peat production on this bog will be for another five years on selected areas of the site, areas of the site that will not be further harvested for peat are located throughout the site and are at various stages of development in terms of revegetation. A large section of failed conifer plantation is located on the site. Overall this site varies greatly from areas that are re-vegetating rapidly since they came out of production to areas that are currently under production (Bare peat). Topographically, the site undulates and has regular small hills of gravel that are exposed between areas of low lying peat, the latter areas being still in production. A rail line crosses the site in an east west direction, dissecting the site into a much larger northern section and a smaller southern section.

Over all the majority of the site is still zoned as production but as the peat resource on this site becomes exhausted small hills and ridges of gravel are being exposed, these hills and ridges are becoming revegetated with Dry grassland mosaic (DisCf, gCal and gAn-H-Eq). Areas between these hills are either still in production or are revegetating with plant species that are indicative of poor fen habitats such as pEang, pTyp and pJeff. Birch scrub is also becoming established on many of the habitats that have been out of production for longer periods of time, particularly the drier areas.

A conifer plantation was planted in 1995 and is comprised of Sitka and Norway spruce. Some sections of this plantation had trees of medium quality and were in need of thinning and fertilisation, however the majority of the area was extremely poor, with dead or dying trees throughout. The most logical reason for the widespread loss of trees in this plantation was the presence of Heather throughout these areas. Heather is extremely well suited to savaging nitrogen from poor soils and will deprive trees such as Sitka Spruce of nitrogen, causing them to go into check followed by eventual death. Birch and Scots Pine had become established in areas of the plantation and appeared to be doing much better than the spruce.

Immediately to the east of the conifer plantation a large area of the site was largely revegetated with a mixture of cBir, oBir, dHeath, BP and pEang. Much of the cBir was dense and was developing into bog woodland. Other areas beyond the cBir were younger and were a mosaic of wet and dry habitats (depending on the topography of the site), intermixed with areas of bare peat. To the south east of the conifer plantation a row of three small hills were at different levels of development, mainly Birch scrub, but the notable feature of these areas was the



presence of Oak and Hazel.

A large mineral island is located within the site boundaries in the centre of the site. This "Island" is connected to the public road that runs close to the northern boundary of the site via a small track. This area is not owned by BnM and is managed as agricultural grassland. To the south of the mineral island the site is a mixture of pioneer habitats including DisCf, BP, eBir, pJeff and gCal. To the south of the revegetating areas the site is still in production.

The central-eastern part of the site is largely a mixture of dry grassland mosaics and wet grassland mosaics (gCal, DisCf, eBir, oBir, pJeff, pEang, pPhrag, pTyp), with areas of bare peat scattered throughout, some of the areas of bare peat were large but some areas were much smaller and were comprised of a couple of short fields between gravel ridges.

A small works area is located along the railway line close to the eastern end of the line. This works area is comprised of a large tea centre with large amounts of machinery stored around it. Immediately to the north of the works area an area of scrub (cBir) that was developing some of the components of Oak Ash Hazel woodland. This woodland is young and is still developing with Birch, Oak, Rowan, Holly, Hawthorn, Hazel, Guelder Rose, Bramble, Raspberry, Herb-Robert, Meadow-sweet, Honey-suckle, Tufted Sedge, Purple Moor-grass and Male Fern. Paths through this area of the site were in regular use by BnM machinery and relatively large areas of Meadow-sweet dominated wet grassland was located along the access routes. A large rectangular shaped area had been excavated in this area and was filled with water resulting in the presence of an artificial pond. This pond did not contain many macrophytes apart from Reedmace, Floating Sweet Grass with some Water Crow's-foot also. The wet grassland areas contained Meadow Sweet, Knapweed, Willow, Plantain, Vetch, Sweet Vernal-grass, Devil's Bit-Scabious, Hogweed, Horsetails, Red Clover and Creeping Bent Grass. A small wet hollow was also located close to this area and further investigations may be needed in order to determine if this is an actual spring. Although this spot was damp with no standing or flowing water at the time of the ecological survey it did contain tufa which may indicate the presence of springs in this area.

Moving north from this area towards the north eastern corner of the site, the bog again comprises a mosaic of habitats including pJeff, pEang, eBir, gCal, pEus and DisCf, the largest single habitat consists of a large area of pJeff and oBir along the western edge of the north east corner of the site. An old, disused, railway line is located close to the eastern edge of the site and has been colonised with gMol, dHeath and eGor, several old railway carriages are still located on the track.

The north eastern corner of the site also contains two small mineral islands that contain Birch, Oak, Blackthorn, Ash and Hazel along with Male fern, Bramble, Lords and Ladies, Hogweed, Harts Tongue Fern, Honeysuckle, Wood Anemone and Herb Robert. Sections of these mounds contain large mature Oak (older than 100 years).

Moving westwards from the mire onto sections of cutover, the site again becomes a mosaic of habitats, mainly pJeff, oBir and bare peat before encountering a mineral island. This mineral island is similar to the one that has already been described to the north of the railway line.

Moving west a large area of bare peat is located before the site again becomes a mosaic of pioneer poor fen and pioneer grassland habitats.

The south west corner of the site is mainly bare peat with pTrig, pRos and pTyp becoming established along the drains, this area is marked on the 2<sup>nd</sup> edition OSI 6 inch map as a small lake called Lough Anpastia. This lake no longer exists and there is no evidence of it ever having been present on the ground. A pump was in operation close to this area.

This site is dry because of constant pumping and at least three pumps are located on the site. Some of the drains in the east of the site have been excavated down to limestone bedrock, Otter spraint were found in one of these drains in the northern section of the site, this drainage ditch is connected to the nearby Royal Canal.

#### Lough Bawn pNHA 001819

This area is located along the eastern edge of the site. It is bordered by remnant raised bog to the south, west and north while an area of woodland on mineral soil borders Lough Bawn to the east. The south eastern corner of the site is bordered by conifer plantation, part of which was clear felled in the past few years and replanted. The majority of the Lough is in Bord na Mona ownership with a small section owned by Coillte.

The sections of raised bog that surround part of the Lough were in moderate to poor condition overall and the most westerly sections had been ditched many years ago. The ditched sections were dominated by Heather; however the most southerly section of raised bog were in some what better condition with a more varied flora.

Lough Bawn is fringed with woodland through out. This woodland varies from wet bog woodland (WN7) to dry Oak Ash Hazel woodland (WN2) along its eastern side. The woodland that fringes the Lough to the west, north and south is bog woodland (WN7) that varies from sparse cover to denser cover; these sections of bog woodland were quaking and had a high cover of Sphagnum moss in general. These sections of woodland are classed as Annex I habitats (91D0) and are considered to be a rare habitat in Ireland with an estimated nation wide land cover of 150ha approximately (NPWS - Bog woodland (91D0) Conservation Status Assessment report).

The areas of bog woodland ranged to thick, dense areas of woodland to areas that had a lesser density of trees. The main tree species were Birch and Scot's Pine along with Alder, Eared Willow and some gorse. There was extensive evidence that the water levels fluctuate throughout these areas, with some areas being permanently water logged with a quaking feel throughout. Species within the areas of bog woodland included Bog Myrtle, Devil's-bit Scabious, Bog Bean, Honeysuckle, Soft Rush, Sphagnum palustre, Ivy, Bramble, Sweet Vernal Grass, Heather, Star Sedge, Wood Horsetail, Grey Willow, Holly, Broad Buckler Fern, Cow wheat, mint, Water Horsetail, Hogweed, Calliargon sp., Ragged Robin, Lesser Spearwort, Lousewort, *Aulacomnium palustre*, Spotted Marsh Orchid, Marsh Bedstraw, Yorkshire Fog, Heath Wood-Rush and *Epilobium obscurum*.

A section of mature Oak-Ash-Hazel (WN2) is located on the eastern side of Lough Bawn, this woodland was relatively dry and was located on mineral soil. Species here included Birch, Scot's Pine, Ash, Alder, Willow, Hazel, herb Robert, Spindle, Enchanter's nightshade, Ivy, Honeysuckle, Wood False Broome, Hypnum sp., Bramble, Viola sp., Blackthorn, Rowan, Wavy hair Grass, Meadow Sweet, Wood horsetail, Wild strawberry, Holly, hawthorn, Blackthorn, Gorse, Glaucous Sedge, Sycamore, Bush Vetch, Cock's foot, Beech, Rough meadow Grass, Spear Thistle, Wood dock, Wood Sanicle, wood Sedge, Primrose, Lady Fern, Sorrell, Male Fern, Hart's Tongue Fern, Yew, Wytch Elm, *Polytrichum commune*, Yellow rattle, Cep, Bay Bolete, Common Puffball and Trooping Funnel Cap.

A section to the east of this woodland has been fenced off and is grazed, the grazed area ran along the entire eastern edge of the woodland.

The Coillte owned woodland to the south east of Lough Bawn is a mixture of recently felled conifer plantation and mature plantation with sitka Spruce, Norway Spruce and Lodgepole Pine, the edge of these sections were a mixture of species such as Oak, Birch and Hazel with some Yew also.

Lough Bawn had been a lake up until 1964 when drainage of the lake begun, after this initial drainage the water levels shrink until the lake was mostly terristrailized by the late 1960's. This area is classed as transition mire and quaking bog (PF3) according to Fossitt, 2000.

At present the lough has filled in with very small amounts of open water remaining and the entire area has a quaking feel to it. The Lough is covered with a mat of vegetation containing hummocks of vegetation interspersed with shallow water. The Lough is dominated with mosses and sedges and individual trees have spread across the surface of the Lough. Plant species in the area of the lough include Purple Moor Grass, Eared Willow, Birch, Bog Asphodel, Bog Bean, Devil's-bit Scabious, Star Sedge, Purple Loosestrife, Greater Tussock Sedge, Bottle Sedge, Sphagnum palustre (tussock forming) *S. subnitens*, Heather, Lesser tussock Sedge, Marsh cinquefoil, *Aulacomnium palustre* (tussock forming), marsh Pennywort, Round-leaved Sundew, Wild Angelica, Marsh Thistle, Ragged Robin, Reedmace, Alder, Mint, Water Horsetail, Creeping Bent-grass, *Eriophorum angustifolium* and Lousewort. *Usnea* sp. lichen was growing on the branches of many of the trees.

One of the BnM employees on the site reported the presence of springs at locations around the site.

There are records of Black Headed Gull, Snipe and Lapwing using this site.

Old BnM plastic has been dumped in one section of the site.

### Forestry and potential forestry on site

A conifer plantation is located in the north of the site. This plantation is mainly Sitka Spruce with some Norway Spruce, these trees are in poor condition with the majority of the trees in check or dying. However, there are some areas within the plantation where there has been moderate tree growth and these areas could be thinned and fertilised. The best approach for this plantation is to employ a shelter-wood silvicultural system. This would entail felling and clearing areas along the eastern edge of the plantation and thus leaving taller trees to the south east where the taller trees would provide shelter from the prevailing winds. The sections of spruce that have failed all had a thick ground layer of Heather. Heather will out-compete spruce in terms of obtaining nitrogen from poor soils and this is one of the likely reasons for the failure of the plantation. In a shelter-wood silvicultural system the cleared areas would be replanted immediately with Scot's Pine which would be vastly more suited to the ground conditions that are present on this site.

Numerous small mineral islands are located around the site, some of these areas are already developing Oak-Ash-Hazel (WN2) woodland, in the future it would be envisioned that this habitat would expand across the site in time. An old section of Oak-Ash-Hazel woodland is located in the north east of the site and some of the trees are estimated to be older than 100 years.

A band of bog woodland (WN7) encircles most of the transition mire area in the south east of the site. This woodland is mainly Scot's Pine and Birch and qualifies as the Annex I habitat "bog woodland (91D0)" and is considered to be a priority habitat.

Coillte own the section of woodland to the south east of Lough Bawn. This forested area consists of recently felled conifer plantation with some mature conifer woodland to the east.

There is the potential to enter the woodland to the east of Lough Bawn into the Native Woodland Scheme under Element I of the scheme. Some of the higher mounds could also be used to develop areas of native woodland depending on future hydrological changes.

### Designated areas on site (cSAC, NHA, pNHA, SPA other)

Lough Bawn is situated in the south eastern corner of the site and was formally a lake until the late 1960's. The lake dried out after intensive drainage works and is now classified as a 'Transition mire and quaking bog' pNHA 001819.

### Adjacent habitats and land-use

Adjacent habitats include improved agricultural grassland (GA1), wet grassland (GS4), conifer plantation (WD4), raised bog (PB1), recently planted woodland (WS2) and cutover bog (PB4). The Royal Canal (FW3) is located approximately 0.5km to the east of the site.

### Watercourses (major water features on/off site)

- The Bilberry River begins at the southern boundary of the site, this river flows southwards before flowing into Lough Ree
- A tributary of the Bilberry River begins in the south western corner of the site.
- A tributary of the River Shannon starts in the north of the site before flowing northwards.
- All of the watercourses are part of the Shannon catchment.
- The Royal Canal flows within 0.5km of the eastern edge of the site.

### Peat type and sub-soils

As the peat resource becomes exhausted gravel ridges and hills are exposed, these hills are composed of

Limestone gravel.

### **Fauna biodiversity**

Several bird species were noted on the site during the survey.

- Raven (2)
- Sky Lark
- Sand marten
- Common Gull
- Snipe (3)
- Swans are reported to be using the flooded areas during the winter.
- Other more common species include Meadow Pipits, Swallow, Dunnock, Blackbird, Chaffinch, Wood Pigeon, Pheasant and Magpie.

### **Mammals**

- Otter spraint found in a drainage ditch in the north east of the site, this drain is connected to the nearby Royal Canal.
- Pine Marten
- Badger
- Fox
- Hare
- Rabbit

### **Invertebrates**

- Silver-washed Fritillary Butterfly
- Peacock Butterfly
- Green-veined White Butterfly
- Large Heath Butterfly
- Large White Butterfly
- Small Heath Butterfly
- Small Copper Butterfly
- Painted Lady Butterfly

### **Fish**

- Stickleback in the drains

### **Fungal biodiversity**

The Oak-Ash-Hazel woodland along the eastern boundary of the site is rich in fungal diversity with Ceps, Bay Bolete, Razor Strop and Trooping Funnel Cap observed.

### **Activities on the site**

Activities on the site include:

- Peat production is still carried out at various locations around the site however as time goes by more

and more areas are coming out of production and are becoming re-vegetated.

- Most of the site is pumped to prevent water logging, when production is finished it is assumed that these pumps will be turned off resulting in many areas developing areas of open water between dry gravel hills and ridges.
- Some old railway carriages have been abandoned on the site
- Cattle have been grazing sections of woodland along the eastern boundary of the site.
- Some old BnM plastic has been discarded on sections of the bog.

### **Future issues for biodiversity management**

Potential issues for biodiversity management once production has ceased include:

- Once production has ceased it is assumed that the water pumps will be turned off, this will result in the site becoming a mosaic of dry and wet habitats. Natural basins on the site will quickly develop wetland habitats interspersed with higher, drier habitats.
- Natural regeneration appears to be capable of establishing vegetation on this site quite quickly

### **Potential management options for Biodiversity**

There are several potential management options for this site after industrial peat-cutting has ceased, some of which can be applied to different sections that have different potentials to enhance their biodiversity value. These suggested options do not preclude other land-uses of the site in the future.

- Bunds could be constructed on the site such as the north east corner and the south west corner in order to create wetlands. This would also re-develop a wetland on the area that was once occupied by Lough Anpastia.
- In the area of the conifer plantation the dying spruce could be replaced with Scot's Pine. This species would be better suited to conditions on the site while also proving beneficial to nature conservation. This area could be managed jointly with Coillte as a biodiversity area.
- Lough Bawn area managed as a key nature conservation site. There is potential for this area to be part of a LIFE project with development bog sites (Largest bog woodland Annex I habitat on BnM property). Works to be carried out in this area could include drain blocking.
- Development of excavated trenches as ponds.
- Development of woodlands on the drier mounds under the Native Woodland Scheme.

### **Potential future natural habitats on the site**

This section attempts to predict the development of natural habitats on the site, assuming there is no intervention or changes in land-use. This prediction is based on research and methods used to predict the natural vegetation of Ireland (Cross 2006). Cross (2006) predicted that cutaway bog is likely to develop a mosaic of Birch forest, alder and ash-alder carr, fen and heath in the future. There is no time-line given for the development of these habitats, although it could be expected that the development of natural climax habitats could take hundreds of years. The complexity is the result of small scale variations in the substrate and other environmental factors such as drainage and ground-water influence.

- Wetlands will develop once the water pumps cease, the extent of these wetlands will depend on the level of water after the pumping stops.
- Woodlands will develop in the drier areas such as on top of the gravel mounds, these woodlands are likely to be a mixture of Oak-Ash-Hazel (WN2) woodland and Bog woodland (WN7).
- The areas of wet grassland along the western edge of the site are likely to become wet woodland if

grazing does not occur.

- Lough Bawn, depending on future hydrological developments may continue to dry out or become wetter with the development of a larger area of open water.
- Potential rich fen may develop where springs are present.

**References**

European Commission (1996). Interpretation manual of European Union habitats. Brussels. European Commission, DGXI.

Fossitt, J. (2000). A guide to habitats in Ireland. Kilkenny. The Heritage Council.

**HABITAT DESCRIPTIONS**

(See Habitats Description Document for detailed description of each vegetation community not described in this section.)

**HABITAT DESCRIPTIONS**

## Appendix I. Codes used for habitat classification.

### Bord na Moña habitat classification scheme

	General	Habitat <sup>1</sup>	BnM habitat code	Equivalent Heritage Council codes <sup>2</sup>
Pioneer habitats of industrial cutaway	Peatland	Bare peat (0-50% cover)	BP	ED2
		Embryonic bog community (containing <i>Sphagnum</i> and Bog Cotton)	PBa	PB
		Embryonic bog community (Calluno-Sphagnion)	PBb	PB
	Flush and Fen	Pioneer <i>Campylopus</i> -dominated community	pCamp	PF2
		Pioneer <i>Juncus effusus</i> -dominated community (Soft Rush)	pJeff	PF2
		Pioneer <i>Eriophorum angustifolium</i> -dominated community (Bog Cotton)	pEang	PF2
		Pioneer <i>Juncus bulbosus</i> -dominated community (Bulbous Rush)	pJbulb	PF2
		Pioneer <i>Triglochin palustris</i> -dominated community (Marsh Arrowgrass)	pTrig	PF2
		Pioneer Caricion davallianae-Community with <i>Cladium</i> (rich fen)	pCladium	PF1
	Emergent communities	Pioneer <i>Carex rostrata</i> -dominated community (Bottle Sedge)	pRos	FS1
		Pioneer <i>Phragmites australis</i> -dominated community (Common Reed)	pPhrag	FS1
		Pioneer <i>Typha latifolia</i> -dominated community (Reedmace)	pTyp	FS1
		Pioneer <i>Schoenoplectus lacustris</i> -dominated community (Bulrush)	pSch	FS1
	Open water	Charaphyte-dominated community	pChar	FL2
		Permanent pools and lakes	OW	FL2
		Temporary open water	tOW	
	Woodland and scrub	Emergent <i>Betula/Salix</i> -dominated community (A) (Birch/Willow)	eBir	WS1
		Open <i>Betula/Salix</i> -dominated community (B) (Birch/Willow)	oBir	WS1
		Closed <i>Betula/Salix</i> -scrub community (C) (Birch/Willow)	cBir	WS1
		<i>Ulex europaeus</i> -dominated community (Gorse)	eGor	WS1
		<i>Betula/Salix</i> -dominated woodland (Birch/Willow)	BirWD	WN7
	Heathland	Pioneer dry <i>Calluna vulgaris</i> -dominated community (Heather)	dHeath	HH1
		Dense <i>Pteridium aquilinum</i> (Bracken)	dPter	HD1
	Grassland	Pioneer dry calcareous and neutral grassland (Centaureo-Cynosuretum)	gCal	GS1
		<i>Dactylis-Anthoxanthum</i> -dominated community (Cocksfoot-Sweet Vernalgrass)	gCo-An	GS2
		<i>Anthoxanthum-Holcus-Equisetum</i> community (Sweet Vernalgrass-Yorkshire Fog-Horsetail)	gAn-H-Eq	GS
		<i>Molinia caerulea</i> -dominated community (dry) (Purple Moorgrass)	gMol	GS4
		Marsh (Meadowsweet and other tall herbs) ( <i>Filipendulion ulmariae</i> )	Mar	GM1
Disturbed	Pioneer dry <i>Tussilago farfara</i> -dominated community (vegetation > 50%) (Colt's Foot)	DisCF	ED3	
	<i>Epilobium</i> -dominated community (vegetation > 50%) (Willowherb spp.)	DisWil	ED3	
General	Riparian areas (streams or drain with associated edge habitats (e.g. FW2/4 + WS1, GS2 etc)	Rip	FW2 +	
	Silt Ponds (artificial ponds with associated bank habitats (e.g. FL8 + WS1, GS2, ED2, ED3)	Silt	FL8 +	
	Access (tracks or railways with associated edge habitats (e.g. BL3 + gCal, gMol, eGor etc)	Acc	BL3 +	
	Works areas (predominately built land but can include landscaped and brownfield habitats (e.g. GA2, WS3, WD4, ED2, ED3)	Works	BL3 +	

<sup>1</sup> These are generally pioneer habitats of bare peat and the communities can contain a significant proportion of bare peat. Some habitats are more developed than others. They frequently occur in mosaic with each other.

<sup>2</sup> Not all these communities are equivalent to habitat classes used by The Heritage Council habitat classification scheme (Fossitt 2000) as some are quite rudimentary and undeveloped.

**Heritage Council habitat classification scheme (Fossitt 2000)**

	<b>General</b>	<b>Habitat</b>	<b>Heritage Council code</b>
<b>Semi-natural and modified habitats</b>	Peatlands	Raised Bog	PB1
		Lowland Blanket bog	PB3
		Cutover Bog	PB4
		Rich fen and flush	PF1
		Poor fen and flush	PF2
		Transition mire and quaking bog	PF3
	Woodland and scrub	Oak-Birch-Holly woodland	WN1
		Oak-Ash-Hazel woodland	WN2
		Wet Pendunculate Oak-Ash woodland	WN4
		Riparian Woodland	WN5
		Wet Willow-Alder-Ash woodland	WN6
		Bog woodland	WN7
		Mixed broad-leaved woodland	WD1
		Mixed broad-leaved/conifer woodland	WD2
		Conifer plantation	WD4
		Scrub (Gorse)	WS1
		Emergent Betula-dominated community	WS1
		Closed Betula scrub community	WS1
		Recently-planted woodland	WS2
		Ornamental scrub	WS3
	Short-rotation coppice	WS4	
	Recently-felled woodland	WS5	
	Linear woodland	Hedgerow	WL1
		Treeline	WL2
	Grasslands and Marsh	Improved grassland	GA1
		Amenity grassland	GA2
		Dry calcareous and neutral grassland	GS1
		Dry meadows and grassy verges	GS2
		Dry-humid acid grassland	GS3
		Wet grassland	GS4
	Freshwater Marsh	GM1	
	Heath and Bracken	Dry Heath	HH1
		Dry calcareous Heath	HH2
		Wet Heath	HH3
		Dense Bracken	HD1
	Disturbed ground	Exposed sand, gravel or till	ED1
Spoil and bare ground		ED2	
Recolonising bare ground		ED3	
Active quarry		ED4	
Freshwater	Acid Oligotrophic lakes	FL2	
	Mesotrophic lakes	FW4	
	Artificial ponds (slit ponds)	FL8	
	Depositing rivers	FW2	
	Canals	FW3	
Drains	FW4		
Cultivated and Built land	Stonewalls and other stonework	BL1	
	Earth Banks	BL2	
	Buildings and artificial surfaces	BL3	
	Arable crops	BC1	
	Horticulture	BC2	
	Tilled land	BC3	