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Terrestrial Ecological Baseline Evaluation

Bord na Móna Peat Fuel Supply Bogs

October 2018

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	29 May 2018	B. Madden D. McLoughlin	D. Hassett	P. Kelly	Draft Issue for Client Review
B	11 Oct 2018	B. Madden D. McLoughlin	D. Hassett	P. Kelly	Final for Issue

Information class: Standard

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1 Introduction

1.1 Overview of the Project

The Electricity Supply Board (ESB) operates two peat fired power plants (West Offaly Power Plant and Lough Ree Power Plant) with milled peat supplied by Bord na Móna.

The ESB proposes to submit planning applications relating to the co-firing of peat and biomass at these two power plants in 2018. As part of the planning applications, the ESB will be preparing Environmental Impact Assessment Reports (EIAR's) and Natura Impact Statements (NIS) to include assessments of the indirect environmental impacts associated with the harvesting and supply of milled peat to the two power plants.

In order to inform the ESB's planning application documentation, the ESB has requested that Bord na Móna provide the ESB with a baseline terrestrial ecological evaluation of the peat bogs which will continue to supply milled peat to West Offaly Power Plant and Lough Ree Power Plant.

Bord na Móna commissioned Mott MacDonald to manage the preparation and delivery of the baseline terrestrial ecological evaluations of the peat fuel supply bogs, which will then be used by the ESB to inform their EIAR's and NIS.

The baseline evaluations presented in this report have been prepared by BioSphere Environmental Services (BES) Limited. BES are highly experienced peatland ecologists, having previously completed terrestrial and ornithological assessments of the bog units presented in Table 1 below.

The terrestrial baseline evaluations presented in this report are based on a combination of field studies previously carried out by BES and reviews of land use mapping provided by Bord na Móna in October 2017.

1.2 Overview of WOP and LRP

1.2.1 West Offaly Power Plant

West Offaly Power Plant (WOP) is located in Shannonbridge in County Offaly and is the largest peat fired power plant in Ireland. Approximately 1.245 million tonnes of peat (supplied by a spur from Bord na Móna's peatland rail network and via the public road network) was supplied to WOP in 2017. Peat is exclusively supplied to the power plant from Bord na Móna bogs, operating under Integrated Pollution and Control (IPC) licences issued and regulated by the EPA.

WOP is owned and operated by the ESB. The ESB are in the process of preparing a planning application to co-fuel the power plant with biomass. It is expected that the planning application will be submitted in 2018.

The ESB operates the power plant in accordance with the conditions of an Industrial Emissions Licence (Registration Number P0611-02), issued and regulated by the EPA.

1.2.2 Lough Ree Power Plant

Lough Ree Power Plant (LRP) is located in Lanesborough, County Longford. Approximately 835,000 tonnes of peat (supplied by a spur from Bord na Móna's peatland rail network and via the public road network) was supplied to Lough Ree Power Plant in 2017. Peat is exclusively supplied to the power plant from Bord na Móna bogs, operating under Integrated Pollution and Control (IPC) licences issued and regulated by the EPA.

LRP is owned and operated by the ESB. The ESB are in the process of preparing a planning application to co-fuel the power plant with biomass. It is expected that the planning application will be submitted in 2018.

The ESB operates the power plant in accordance with the conditions of an Industrial Emissions Licence (Registration Number P0610-02), issued and regulated by the EPA.

1.3 Overview of IPC Licensed Bog Units

Table 1 overleaf provides an overview of the IPC licensed bog units that supply peat to West Offaly Power Plant (WOP) and Lough Ree Power Plant (LRP).

It should be noted that the harvesting and supply of milled peat from nine of the 71 bog units highlighted in Table 1 were previously subject to EIA and AA by An Bord Pleanála under planning consent reference PL 19.245295.

Table 1: Peat Bogs Supplying WOP and LRP

Bog Name	End User	Approx. Area (ha)	Description	Location	Approx % Land Assigned to Milled Peat Production	Subject to EIA and AA
P0500-01		Boora				
Bellair North	WOP	567	Bellair North is situated approximately Ca. 6 km south of Moate in Co Westmeath along the Westmeath/Offaly county border. The Athlone to Dublin railway line separates Bellair North from Bellair South.	Offaly/Westmeath	80%	No
Bellair South	WOP	229	Bellair Bog South is located adjacent to the Co. Westmeath border, Ca. 5 km west of Ballycumber and 7 km north of Ferbane. Bellair North is located to the north of the site while there is a rail link to Leamonaghan to the south. The Dublin-Portarlinton-Athlone railway passes along part of the northern boundary of the site.	Offaly	83%	No
Derrinboy	WOP	309	Derrinboy bog is located in south Co. Offaly, close to Cadamstown Village and approximately 3.5 km south of Kilcormac Town. It is somewhat isolated from the rest of the adjacent Boora complex and is currently being milled for horticultural peat. There is no rail link from the bog to the Boora complex	Offaly	72%	No
Derryclure	WOP	330	Derryclure is located approximately 6 km south of Tullamore, Co. Offaly. The main section of bog is under peat production (Derryclure Bog). The N80 Tullamore to Mountmellick road passes along the western edge of the production site.	Offaly	55%	No
Killaun	WOP	534	Killaun Bog is situated approximately 5 kilometres east of Birr in Co Offaly. The Birr to Kilcormac road forms a boundary with the north of the site while the R440 Birr to Kinnitty Road forms a boundary with the south of the site. A works area is located at the northern end of the site and there is no established rail network on the bog.	Offaly	56%	No
Lemanaghan	WOP	1302	Lemanaghan Bog is located approximately 4 km east of Ferbane in Co Offaly. The R436 Ferbane-Clara Road passes along much of the southern end of the site (two small sections of the site are located to the south of this road) while the N62 Ferbane to Athlone Road forms a boundary with some of the western edge of the site. Pollagh village is located approximately 3.5 kilometres to the south of the site. The bog is spread out over four main sections, one large main bog with three isolated, smaller bogs, 'cut' off by roads. An old pilgrim path (walking trail) follows the eastern boundary of the site. This trail connects Clonmacnoise with Ballycumber and is a way-marked trail	Offaly	64%	No
Monnetia	WOP	709	Monnetia Bog is located on the Offaly/Laois county boundary approximately 3 kilometres south/west of Killeigh and approximately 11.5 kilometres south of Tullamore. No main roads pass directly along the boundaries of the site, although several small bog roads allow access to the site from all sides. The site is accessed via a short private road off the Killeigh to Killurin Road. A works area is located in the northern end of the site. Private domestic sod peat cutting is very active on this site around the margins with large sections of cutover bog located along the southern and western boundaries of the site. The site boundary of the site extends at the south-east corner to the River Barrow channel.	Laois/Offaly	70%	No
P0501-01		Derrygreenagh				
Ballivor	WOP / LRP	646	Ballivor Bog is located approximately 5 km east of Raharney along the R156 Raharney to Ballivor Road. A works area is located at the northern end of the site. This area consisted of offices, sheds, roads and areas where lorries are loaded with peat. A Bord na Móna railway network extends from the loading area into the bog and to other bogs in the Ballivor Group to the north of the site.	Meath/Westmeath	48%	No
Ballybeg	WOP / LRP	837	Ballybeg is located between Croghan Hill and the town of Rhode in Co. Offaly. Ballybeg is situated in a group of Bord na Móna bogs that includes Derryarkin to the north and Cavemount to the south. The most southern part of the site is adjacent to the Grand Canal pNHA. This is a pumped bog with main pumps located near the centre of the site and connected to a drainage system that discharges through a series of silt ponds to the Yellow River via tributary.	Offaly	36%	Yes
Bracklin	WOP / LRP	752	Bracklin Bog is located close to Raharney and Ballivor adjacent to the Co. Westmeath - Co. Meath border. It is part of the Ballivor Bog group with Lisclougher Bog East and West located to the north and Carranstown Bog located to the south of the site. A railway links the milled production bog to Carranstown and the rest of the Ballivor bog group and there is an old abandoned railway link to Lisclougher to the north.	Meath/Westmeath	18%	No
Carranstown	WOP / LRP	306	Carranstown Bog is located approximately 5 km east of Raharney along the R156 Raharney to Ballivor Road. It is part of the Ballivor Bog group and a Bord na Móna railway links the site to Ballivor Bog to the south, with the road marking the southern boundary. There are further rail links to Bracklin bog to the north	Meath/Westmeath	65%	No
Derryhinch	WOP / LRP	335	Derryhinch is located ca. 5 km east of Rochfortbridge. The new M6 motorway passes directly to the western edge of the site. Construction of this new motorway 'cut off' some of the original bog area along the western boundary. The boundary of the bog now extends to the base of the motorway embankment. This site is situated close to several other Bord na Móna Bogs in Derrygreenagh including Derryarkin and Drumman. There is an industrial railway through the site that is a link to the greater Derrygreenagh network	Offaly/Meath/Westmeath	66%	Yes
Drumman	WOP / LRP	1121	Drumman is located along the Co. Offaly/Westmeath border, ca. 3 km east of Rochfortbridge and adjacent to the R400 Rochfortbridge to Rhode road. The new M4 motorway is adjacent the northern boundary. This site is situated close to several other Bord na Móna Bogs in Derrygreenagh including Derryarkin and Derryhinch, and is also located adjacent to the Bord na Móna offices at Derrygreenagh. The Offaly/Westmeath county boundary follows the path of the Mongagh River, which flows through the site. There is an industrial railway through the site that is part of the greater Derrygreenagh network. A large section of cutaway has also been developed since 2001 for sand and gravel extraction by a joint venture between Roadstone and Bord na Móna (Derryarkin Sand & Gravel Ltd).	Offaly/Westmeath	21%	Yes

Bog Name	End User	Approx. Area (ha)	Description	Location	Approx % Land Assigned to Milled Peat Production	Subject to EIA and AA
Rossan (Kinnegad)	WOP / LRP	354	Rossan is located approximately 1km south of Kinnegad in Meath	Meath	72%	No
Toar	WOP / LRP	428	Torr Bog is located approximately 4.3 km south of Tyrrelspass. It is part of the Derrygreenagh Bog group. The M6 motorway passes by the western boundary of the site. The Westmeath/Offaly county border runs along the south east corner of Torr. The site is linked by Bord na Móna railway to the rest of Derrygreenagh via Derryarkin to the east. The Bord na Móna railway extends along the northern margin of the site.	Offaly/Westmeath	66%	Yes
P0502-01	Blackwater					
Ballaghurt/Glebe	WOP	672	Ballaghurt Bog is located approximately 5.9km south of Ballynahown in County Offaly. The bog is contained within three main sections – eastern section, western section and Clonlyon Glebe pNHA. The eastern section of the site is bisected by a minor public road	Offaly	70%	No
Belmont	WOP	334	Belmont Bog is located in Co. Offaly, approximately 1km north-west of Belmont Village. and is located on the east side of the Blackwater River, adjacent to Blackwater Bog, with a railway bridge and travel bridge connecting the two sites. There is also access to the bog via a farmyard in Clonbonniff	Offaly	30%	No
Blackwater	WOP	2402	Blackwater is located in west Offaly adjacent to Shannonbridge and located approximately 0.3km east of the River Shannon. The Blackwater Works is located at the southern end of the site and there is one main track that runs in a NE-SW direction towards ash waste facility. A railway also runs along this track and there are other branch railways on either side that divide the rest of the site into several main blocks.	Offaly	35%	No
Bloomhill	WOP	889	Bloomhill is located approximately 4km south-west of Ballynahown in County Offaly (a small portion of the site is located within Co Westmeath). Bloomhill is connected to Blackwater main bog to the south via a rail line. Bloomhill is also connected to Bunahinly/Kilgarvan bog to the north via a rail link. The River Shannon flows within 0.5 km of the western edge of the site. Bloomhill Bog can be divided into five main sections of bog that are all in full peat production	Offaly/Westmeath	68%	No
Boughill	WOP / LRP	417	Boughill Bog is located approximately 3.5 km to the south of Ballygar in County Galway. The bog is located within one main block and there is no rail network on the site, however a railway line connects the southern boundary of the site with Gowla bog	Roscommon/Galway	75%	No
Bunahinly/Kilgarvan	WOP	189	Bunahinly Bog is located approximately 1km south of Athlone in Co. Westmeath. It is also adjacent to the River Shannon, which is located approximately 50-150m away from the western boundary of the site	Westmeath	68%	No
Castlegar	WOP / LRP	571	Castlegar Bog is located approximately 7.7 km to the North East of Ahascragh in County Galway. A railway line connects the North of the site with Derryfadda Bog. The River Suck forms a boundary with the eastern edge of the site.	Roscommon/Galway	57%	No
Clooniff	WOP	531	Clooniff Bog is located approximately 6km to the north of Shannonbridge in Co Roscommon. The bog is divided into four individual units with a long rail link that connects it with Cornaveagh Bog located ca. 1km to the south. Access to Clooniff Bog can be gained from public roads located to the north and to the south of the site respectively.	Roscommon	75%	No
Cornafulla	WOP	491	Cornafulla is located approximately 8.5km south-west of Athlone (south of the R446 Old Athlone to Ballinasloe road). The site has been in active industrial peat production since 1987. Clooniff Bog is located less than 1km to the south of Cornafulla Bog.	Roscommon	71%	No
Cornaveagh	WOP	500	Cornaveagh is located approximately 1.5 km west of Shannonbridge in Co. Roscommon. Cornaveagh is part of the Blackwater group of bogs and there is a railway link from Cloniff to the north and Cullighmore to the west to Cornaveagh and on to Garryduff via a bridge over the River Suck. This bog is located close to the confluence of the River Suck and River Shannon, with the southern margin extending to the River Suck and the eastern margin running parallel to the River Shannon Callows. It is bordered to the north-west by an esker ridge. The bog is bisected by the R357 Shannonbridge to Ballinasloe Road, with the largest section of production bog to the north of the road	Roscommon/Galway	76%	No
Cullighmore	WOP	446	Cullighmore Bog is located approximately 4km south-east of Ballinasloe in Co. Roscommon. It is part of the Blackwater Bog group and is one of the outlier bogs, being 7km from Shannonbridge. There is a rail connection from Cullighmore through farmland to Cornaveagh. Cullighmore is also located adjacent to the River Suck, which flows along the southern boundary. There are local access and tracks along the western margin to access cutover bog, and along the southern margin to access callow grassland along the river	Roscommon/Galway	88%	No
Derryfadda	WOP / LRP	611	Derryfadda Bog is located approximately three kilometres south west of Ballyforan in Co. Galway (the River Suck forms the county boundary between Roscommon and Galway). The Suck forms a boundary along the north and eastern edge of the bog, with the bog being located on the Galway side of the River. a rail link connects Derryfadda Bog with Castlegar Bog to the south and Gowla Bog to the west. A minor public road runs along much of the western edge of the bog. Two bog tracks cross the bog dividing it into three sections	Roscommon/Galway	72%	No
Garryduff	WOP	972	Garryduff is located in east Galway, approximately 1 km south of Shannonbridge. The River Suck flows along the northern boundary and meets the River Shannon, which flows along the eastern boundary	Galway	77%	No
Gowla	WOP / LRP	688	Gowla Bog is located in east Galway along the River Suck. It is part of the Derryfadda bog group and is located approximately 3 km west of Ballyforan. The site is divided into two main sections by a minor road between Mountbellew Bridge and Ballyforan	Galway	48%	No
Kilmacshane	WOP	1299	Kilmacshane is located in east Galway, 2 km north of Banagher and adjacent to the River Shannon (Galway-Offaly county boundary). The site is bisected by one main railway line running roughly NW-SE and this is situated	Offaly/Galway	39%	No

Bog Name	End User	Approx. Area (ha)	Description	Location	Approx % Land Assigned to Milled Peat Production	Subject to EIA and AA
Lismanny	WOP	451	on the old route of the Ballinasloe section of the Grand Canal, which has been in-filled. A small Workshop is located at the north-west end of the site. Lismanny is located in eastern Co. Galway adjacent to the River Suck and 4 km from the River Shannon. The bog is located 4.5 km west of Shannonbridge. It is one of a group of bogs along the River Suck floodplain in Co. Galway with Garryduff positioned to the east and Kellysgrove positioned to the NW of this site. The bog is divided into a northern and southern section by a railway	Roscommon/Galway	71%	No
P0503-01 Allen						
Ballykeane	WOP / LRP	451	Ballykeane is located approximately four kilometres west of Walsh Island in Co Offaly. A Bord na Móna railway line runs along the northern boundary of the site, this railway line connects the site with Mountlucas bog to the north. The Cushina River flows along the south-western margin of the site.	Offaly	81%	Yes
Clonad	WOP / LRP	448	Clonad Bog is located 3 km south of Daingean Town in Co. Offaly. There are Bord na Móna railway connections through the site to Daingean Townparks (Daingean Bog NHA) to the west and Mountlucas to the east. A local road separates the site from the adjacent Mountlucas bog and Windfarm	Offaly	57%	Yes
Esker	WOP / LRP	590	Esker bog is located in Offaly, 4 km south of Rhode. The bog is linked to Cavemount Bog to the west and Ballycon bog is situated to the south of the site. The Esker River flows along the southern side of the bog and forms a natural boundary.	Offaly	75%	Yes
Garrymore	WOP / LRP	448	Clonad Bog is located 3 km south of Daingean Town in Co. Offaly. There are Bord na Móna railway connections through the site to Daingean Townparks (Daingean Bog NHA) to the west and Mountlucas to the east. A local road separates the site from the adjacent Mountlucas bog and Windfarm	Offaly	57%	Yes
Mountlucas	WOP / LRP	1229	Mountlucas Bog is located approximately eight kilometres south-east of Daingean in Co Offaly. It is situated in a group of bogs that includes Ballycon and Derrycricket to the east of the site, Clonad to the west and Cavemount to the north of the site. Part of the former site adjacent to Ballycon Workshop is leased by FÁS who run a construction skills training facility at this location. A Bord na Móna railway line runs through the site and is quite active with trains crossing a number of times a day. Bord na Móna has recently completed construction of a 28 turbine (80 MW) windfarm at Mount Lucas. This windfarm is now operational. Turbines have been placed at various locations around the site on the cutaway and are connected via a series of roads (21 km constructed) and other infrastructure. The overall footprint of the new infrastructure is relatively small (4% of the overall area).	Offaly	19%	Yes
P0504-01 Mountdillon						
Begnagh	LRP	265	Begnagh Bog is located ca. 4km to the North of Killashee in County Longford. This site is located within one main block. A rail link connects the site with Knappogue to the west and Clooneeny to the east, the rail line crosses the site close to the southern boundary. The Royal Canal is located along the western boundary of the site while the Falan River lies adjacent to the eastern boundary of the site.	Longford	82%	No
Clooneeny	LRP	359	Clooneeny Bog is located approximately 5km to the west of Longford Town, Co. Longford. The site is located in two separate sections, a large section that is in full industrial peat production and a much smaller section that is used extensively for domestic sod turf production. These sections are located approximately 1km apart. The N63 Longford to Roscommon Road passes along the southern boundary of the site. Begnagh Bog is located to the west of this site. A rail connection connects these sites.	Longford	71%	No
Cloonshannagh	LRP	496	Cloonshannagh Bog is located approximately four kilometres to the north west of Tarmonbarry in County Roscommon. Rail lines to the north of the site connect the site with Derrymoylin, while a southern rail link connects the site with Derrycashel.	Roscommon	70%	No
Coolcraff	LRP	461	Coolcraff Bog is accessed from a secondary road that leads off the main Castlepollard-Granard Road (R396), approximately 6.5km south of the town of Granard in Co. Longford. The River Inny borders the bog to the east and south, agricultural land forms a border to the site along its western side while coniferous forestry and agricultural land form a border to the north and north east of the bog. The site is linked by rail to Milkernagh and Coolnagun bogs	Longford/Westmeath	48%	No
Coolnagun	LRP	594	Coolnagun Bog is located in Co. Westmeath, approximately 7 km west of Castlepollard. The River Inny flows along the east side of the site. There is a rail connection from Coolnagun Bog towards Milkernagh Bog to the north. This railway is positioned along the eastern margin of the production bog.	Westmeath	50%	No
Corlea	LRP	164	Corlea Bog is located in Co. Longford, 7.5 km north-west of Ballymahon Lough Bannow bog is located immediately to the north of the site and Derrycolumb bog to the west of this site. In 1984 an Iron Age track way was found in the bog towards the east side of the site. This section of the site was handed over to the Office of Public Works. Part of the track way has been preserved in the bog and in 1994 a visitor centre on the site was developed. The track way, visitor centre and associated habitats have now been fenced off from the production bog area. A BnM railway runs along the north-western boundary of the production bog.	Longford	50%	No
Derraghan	LRP	323	Derraghan Bog is a long, relatively narrow section of bog that is located approximately 7km south-east of Lanesborough along the R392 Lanesborough to Ballymahon Road. The bog is bisected by a BnM rail line that runs in an east west orientation through the site, resulting in a northern and southern section.	Longford	44%	No
Derryadd 1	LRP	657	Derryadd Bog is located approximately 4km to the east of Lanesborough in County Longford. Two mineral islands (Annaghmore and Annaghbeg) are located within the site, these areas are not within the ownership of BnM and are managed for agriculture (livestock grazing). 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	Longford	63%	No

Bog Name	End User	Approx. Area (ha)	Description	Location	Approx % Land Assigned to Milled Peat Production	Subject to EIA and AA
			the Longford to Roscommon road). A rail link connects the site with Derryarogue to the north and Lough Bannow to the south			
Derryadd 2	LRP	328	Derryadd 2 Bog is located approximately 1km to the west of Killashee in County Longford. Killashee Bog is located immediately to the north of the site (separated by the Longford to Roscommon Road), while Derryadd bog is located to the west. A rail link connects the site with Killashee Bog to the north and Derryadd to the west.	Longford	63%	No
Derryarogue	LRP	902	Derryarogue Bog is located approximately three kilometres to the east of Lanesborough in County Longford. 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. The Mountdillon 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 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	Longford	51%	No
Derrycashel	LRP	389	Derrycashel bog is located in Co. Roscommon along the River Shannon. It is situated 5 km north of Lanesborough and the N5 Dublin-Westport Road is situated within 1 km to the north of the site. A railway passes through the centre of Derrycashel and connects bogs to the north with the Mountdillon network	Roscommon	15%	No
Derrycolumb	LRP	456	Derrycolumb Bog is located approximately 9.5km to the west of Ballymahon in County Longford. This site is divided into three main sections by minor public roads. Derraghan Bog is located immediately adjacent to two sections of the site and a rail link connects Derrycolumb Bog with Derraghan Bog to the north and Edera Bog to the south	Longford	77%	No
Derrymoylin	LRP	556	Derrymoylin Bog is located approximately four kilometres to the north west of Tarmonbarry in County Roscommon. The bog is relatively long and narrow and runs in a north south orientation. An unpaved access track crosses the site before running along the eastern boundary of the site. This site is the most northerly of the Mountdillon group of bogs. A rail line to the south of the site connects the site with Cloonshannagh	Roscommon	32%	No
Derryshannoge	LRP	453	Derryshannoge Bog is located approximately 6.7 kilometres to the East of Lanesborough in County Longford. This bog is located within one main section that surrounds a privately owned mineral island. Rail lines to the south of the site connect the site with Derraghan. The Derrygeel stream flows through the site	Longford	66%	No
Edera	LRP	282	Edera Bog is located approximately 9km to the west of Ballymahon in County Longford. This site is located on the shore of Lough Ree. The Bilberry River flows through the site and a relatively large section of wet grassland and remnant section of raised bog still exists on the site. There are two crossing points that machinery and trains use to cross this river. A rail line connects Edera bog with Derrycolumb Bog to the north.	Longford	65%	No
Erenagh	LRP	94	Erenagh Bog is located approximately four kilometres to the north west of Lanesborough in County Roscommon. This bog is located within one main section and is relatively small (100ha) compared to other neighbouring bogs. The village of Clontuskert is located adjacent to the site. A high voltage power line passes through the site. The area under which this power line is not used for industrial peat production and is therefore higher than the surrounding industrial peat production areas.	Roscommon	70%	No
Granaghan	LRP	213	Granaghan Bog is located approximately 7km to the north of Lanesborough in County Roscommon, just off the R371 Lanesborough to Strokestown road. This site is located within one main block; however a narrow section to the south of the site connects Granaghan with Mountdillon. Two minor public roads cross the site. A rail link connects the site with Mountdillon Bog to the South. The Curraroe Stream flows across the site. The mid-section of the site that lies between the two public roads is not used for industrial peat production. A rail line and a travel path are located in this area and are used to connect Granaghan and Mountdillon bog.	Roscommon	74%	No
Killashee	LRP	111	Killashee Bog is located approximately 4km to the east of Lanesborough in County Longford. This site is located within one main block. A rail link connects the site with Derryadd 2 to the South	Longford	79%	No
Knappoge	LRP	314	Knappoge Bog is located approximately 1km from Cloondara in Co Longford. The River Shannon forms a boundary to the west of the site while the Royal Canal forms a boundary along the eastern edge of the site.	Longford	14%	No
Lough Bannow/Derryadd 3	LRP	744	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	Longford	50%	No
Milkernagh	LRP	629	Milkernagh is located in west Co. Westmeath, 8 km west of Castlepollard and 12 km east of Edgeworthstown. There is a BnM railway through the site linking Coolnagun to Milkernagh Tippler loading facility. The site is split into two main sections by the R395 Road between Castlepollard and Edgeworthstown. The River Inny flows south close to the east side of the site towards Lough Derravaragh	Longford/Westmeath	46%	No
Moher	LRP	485	Moher Bog is located approximately 2.6km to the West of Lanesborough in County Roscommon. Erenagh Bog is located immediately to the north of the site. Small rivers flow through the mid section of the site, along the southern boundary and along the north eastern boundary of the site. These rivers are tributaries of the River Shannon and Lough Ree.	Roscommon	73%	No
Mountdillon	LRP	593	Mountdillon Bog is situated approximately two kilometres north of Ballyleague in Co Roscommon. The Mountdillon works area is located just south of the small village of Cloontuskert. The works area is located approximately 200m from the main road and has a tree lined avenue leading up to it. The R371 Ballyleague to Rooskey Road passes along the western edge of the site, while the River Shannon passes close to the eastern edge of the site. Several small secondary roads allow access to the north of the site. Derrycashel bog is located	Longford/Roscommon	36%	No

Bog Name	End User	Approx. Area (ha)	Description	Location	Approx % Land Assigned to Milled Peat Production	Subject to EIA and AA
			immediately to the north of the site, with a minor road separating the two sites			
P0506-01	Kilberry					
Gilltown	WOP / LRP	345	Gilltown Bog is located ca. 5 km north-west of Prosperous in Co. Kildare. Prosperous Bog is located ca. 3 km to the south-east. Donadea Forest Park is located ca. 2 km to the east of the site	Kildare	74%	No
Ummeras	WOP / LRP	293	Ummeras Bog is located along the west Co. Kildare border, ca. 3 km north of Monasterevin. The Grand Canal is located to the east of the site. The Slate River flows to the north of the site and meets the Figile, where it then flows south to meet the Barrow.	Kildare/Offaly	69%	No
P0507-01	Coolnamona					
Cashel	WOP	194	Cashel Bog is located in Co. Laois, 5 km south of Portlaoise. It is part of the Cuil na Móna Bog Group and is separated from the main Cuil na Móna bog by the N7 Dublin-Cork Road that passes over a natural ridge with mineral soil. This road passes along the west side of the site. The site can also be accessed by two other tracks to the north and south of the site, which also access adjacent domestic sod-peat cutting areas and a Coillte conifer plantation.	Laois	60%	No
Coolnacartan	WOP	568	Coolnacartan is located in Co. Laois to the south of Portlaoise and between the N7 and N8 roads. The Cuil na Móna Bord na Móna works are located at the northern end of Coolnacartan at Togher and there are also rail links from the works area to Cashel Bog and Cuil na Móna bog. Private peat cutting around the margins has been extensive and has cut into a significant portion of the bog in places, reducing the diameter of the production bog and dividing it into several lobes, along with the construction of the Bord na Móna railway.	Laois	34%	No
Coolnamona	WOP	654	Coolnamona is located in Co. Laois and is situated on the west side of the outskirts of Portlaoise. The M9 motorway is located along the eastern margin of the site and some of the former margin has been used during its construction. There is a railway that connects Coolnamona to Coolnacartan bog.	Laois	45%	No

Source: Bord na Móna

1.4 Report Layout

Chapter 2 of this report provides a description of peat harvesting activities, as they relate to West Offaly and Lough Ree Power Plants.

Chapter 3 outlines the methodologies applied in carrying out the Terrestrial Ecological Assessments.

Chapter 4 to Chapter 10 present the Terrestrial Ecological Assessments for each Bog Group.

Mapping illustrating the locations of the bogs that supply peat to West Offaly Power Plant and Lough Ree Power Plant is presented in Appendix A *Mapping*.

2 Description of Peat Harvesting Activities

2.1 Overview

West Offaly Power Plant and Lough Ree Power Plant combust milled peat produced and supplied by Bord na Móna.

Milled peat is the term used to describe peat in granulated or crumb form which has been mechanically harvested from a bog.

Milled peat supplied to West Offaly Power Plant and Lough Ree Power Plant is currently, and will continue to be, exclusively sourced from bogs operating under Integrated Pollution and Control (IPC) licences issued and regulated by the EPA as detailed in Table 1 of this report.

Land use mapping illustrating the locations of milled peat production on the bog units that supply peat to West Offaly Power Plant and Lough Ree Power Plant is presented in Appendix A *Mapping*. It should be noted that sod peat and sod moss are also produced on the bog units. Sod peat is the term used to describe peat produced in block form and used for domestic heating and cooking. Sod moss is the term used to describe peat produced in block form for horticultural use.

An overview of the milled peat production process is provided below.

2.2 Milled Peat Production

The milled peat that supplies West Offaly Power Plant and Lough Ree Power Plant is sourced from peat production areas that have previously been drained. Drainage water from the peat production areas is discharged to the nearest watercourse via a silt pond treatment system. Typically drains have been installed at approximately 15 metre intervals across the bog and connect to outfall or collector drains that convey the water to a series of settlement / silt ponds.

Milled peat production requires good drying conditions and can commence anytime from mid-April onwards, once suitable drying conditions exist. There are four stages to the production of milled peat;

1. **Milling** - During the milling process the top 10-15 mm of the surface of each field is broken into peat crumbs by powered milling drums towed behind agricultural tractors. This layer of crumbed or milled peat is called a crop and has a moisture content of about 80% when milled;
2. **Harrowing** - After milling, the peat crop is dried. To assist in this drying, the loose peat is harrowed, or turned over. The harrow consists of a series of spoons which are towed behind an agricultural tractor;
3. **Ridging** - When the milled material has dried to 45-55% moisture content it is gathered into ridges in the centre of each field. The ridger consists of a pair of blades towed in an open V behind an agricultural tractor. The open V blades rest on the bog and channel the loose crop into a triangular ridge in the centre of each field. This ridge is now ready to be harvested; and
4. **Harvesting** - Harvesting is the final stage of the production process. Each individual ridge is lifted mechanically, by a machine called a harvester, transferred and dropped on top of the

adjoining field's ridge, until five ridges have been accumulated into a single large ridge. This ridge forms the final lift into the peat storage stockpile.

Every 11th field is typically used to stockpile the peat from the output of five fields either side; this is referred to as the 'Peco' method. In some areas a system known as "Haku" is utilized where the harvested peat is deposited into trailers and transported to a central stockpile on the headland.

A stock field typically receives the crops from 10 fields i.e. five fields on either side. Weather permitting, the miller follows the harvester and the production cycle recommences in the emptied fields. Each production cycle is known as a harvest. In a year, of average weather conditions, approximately 12 harvests are completed. When the production season is over, the stockpiles are covered to keep the peat dry, unless the peat is scheduled for immediate sale. Peat is stored in these stockpiles until they are required for use.

Figure 1: Milling



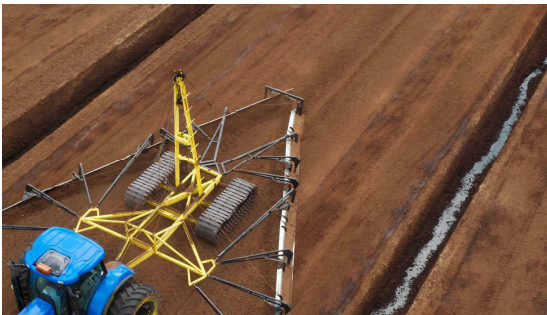
Source: Bord na Móna

Figure 2: Harrowing



Source: Bord na Móna

Figure 3: Ridging



Source: Bord na Móna

Figure 4: Ridging



Source: Bord na Móna

Figure 5: Harvesting (Peco)

Source: Bord na Móna

Figure 6: Harvesting (Peco)

Source: Bord na Móna

Figure 7: Stock Protection

Source: Bord na Móna

A network of permanent rail tracks connect Bord na Móna's peat production areas to West Offaly Power Plant and Lough Ree Power Plant. All loads transported by truck are covered and are required to use pre-specified road haulage routes.

3 Methodology

3.1 Introduction

The subsequent sections provide baseline terrestrial ecological evaluations of the peat bogs which supply the West Offaly Power Plant and the Lough Ree Power Plant.

The terrestrial baseline evaluations presented in this report are based on a combination of field studies previously carried out by BES and reviews of land use mapping provided by Bord na Móna in October 2017.

3.2 Methodology

The terrestrial ecological assessments for the various sites were carried out by a combination of desk review and site surveys.

3.2.1 Desk Review

The following sections provide an overview of the sources of information used in the baseline assessments.

3.2.1.1 Habitats/flora

Site descriptions and habitat maps are derived mainly from the baseline ecological reports prepared by the Bord na Móna ecology team (i.e. the Site Rehabilitation Plans). These reports are based on detailed field surveys carried out between 2010 and 2016, with all reports reviewed by the ecology team in 2017.

Aerial photography was also reviewed during the compilation of the habitat descriptions, i.e. the OSI series of photographs (for years 2000 and 2005) as well as publicly available aerial imagery (e.g. the BING map series).

3.2.1.2 Birds

The descriptions of the wintering and breeding birds associated with a selection of the sites were made largely on detailed field surveys of sites carried out by BioSphere Environmental Services between 2012 and 2017. These surveys followed standard methodologies, including use of transect sampling and Vantage Point observations.

Detailed data for winter and breeding birds for some of the sites in the Mountdillon Group was available from the Environmental Impact Statement for the proposed Derryard Wind Farm development.

3.2.1.3 Mammals and Other Fauna Interests

Information on mammals and other fauna is taken from the Bord na Móna site reports, with incidental observations of mammal presence recorded during site visits also included.

A baseline survey for bats was carried out by Bord na Móna in 2013 for various sites in the Derrygreenagh and Allen Groups.

3.2.2 Site Surveys

A site visit(s) was made to each site between June and November 2016. All visits were carried out by Dr Brian Madden and Dr Derek McLoughlin.

Although all habitats of conservation interest were targeted during the site visits, due to the predominant peatland nature of the sites, the main focus was to assess the areas of high bog which were identified on the Bord na Móna habitat maps and to consider habitats of conservation interest lying outside of the Bord na Móna property boundary but potentially affected by the peat harvesting activities (such areas initially identified from aerial photography). In addition, the site visits were useful in determining changes within the sites since the habitat maps were compiled, i.e. areas that may be now in commercial production but were of ecological interest at the time of the field survey for the Bord na Móna habitat mapping.

The site visits comprised walk-over surveys of the habitats of interest, with notes made on key attributes, particularly the following:

- The area or extent of the habitat (estimated approximately);
- The presence of typical species of the relevant habitats;
- The wetness of the surface in the case of high bog habitats, and especially whether the water table was at or near the surface;
- The approximate extent of bog moss (*Sphagnum spp.*) coverage, with crude coverage categories of 0-25%, 25-50%, >50%;
- The condition of the habitat - in the case of high bog especially (i) whether there were drains (recent or old) on the surface or along the margins, (ii) whether the habitat has been subjected to burning, and (iii) whether there were bare peat patches and/or tear patterns;
- The presence of 'negative species', such as conifers or *Sarracenia purpurea*, or the dominance of one or two bog species, such as *Trichophorum germanicum* or *Calluna vulgaris*;
- The potential of the habitat to support important species of conservation importance, especially Annex I bird species (Birds Directive), Annex II species (Habitats Directive), and Red-listed species (various lists);
- Potential connectivity with Natura 2000 sites and potential use by Qualifying Interests or Special Conservation Interests of such sites; and
- Future prospects in the case of high bog where: (i) a maintained hydrological regime appears possible or (ii) whether there appears to be potential for rewetting in the case of damaged bog.

During the site surveys, casual records of birds or species such as badger were also collected.

3.2.3 Classification of Habitats

Habitats are classified according to Fossitt (2000). As bogs were a principal focus of the study, it is noted that the relevant categories are as follows:

- PB1 Raised bog – refers to areas of high bog; and
- PB4 Cutover bog - refers to areas where part of the original peat mass has been removed.

The PB1 raised bog category is linked to three Annex I habitats of the EU Habitats Directive as follows:

- [7110] Active raised bogs (priority status);
- [7120] Degraded raised bogs still capable of natural regeneration; and

- [7150] Depressions on peat substrates of the *Rhynchosporion*.

Owing to the conservation importance of Annex I habitats, the definitions as contained in the Interpretation Manual of European Union Habitats (July 2007) are presented here.

- **Active raised bogs (priority status):**
 - Acid bogs, ombrotrophic, poor in mineral nutrients, sustained mainly by rainwater, with a water level generally higher than the surrounding water table, with perennial vegetation dominated by colourful Sphagna hummocks allowing for the growth of the bog (*Erico-Sphagnetalia magellanici*, *Scheuchzerietalia palustris* p., *Utricularietalia intermededio-minoris* p., *Caricetalis fusca* p.). Typically pools may be present in western UK, Ireland, Finland and Sweden. The term “active” must be taken to mean still supporting a significant area of vegetation that is normally peat forming, but bogs where active formation is temporarily at a standstill, such as after a fire or period of drought, are included.
- **Degraded raised bogs still capable of natural regeneration**
 - These are raised bogs where there has been disruption (usually anthropogenic) to the natural hydrology of the peat body, leading to surface desiccation and/or species change or loss. Vegetation on these sites usually contains species typical of active raised bog as the main component, but the relative abundance of individual species is different. Sites judged to be still capable of natural regeneration will include those areas where the hydrology can be repaired and where, with appropriate rehabilitation management, there is a reasonable expectation of re-establishing vegetation with peat-forming capability within 30 years. Sites unlikely to qualify as SACs are those that consist largely of bare peat, that are dominated by agricultural grasses or other crops, or where components of bog vegetation have been eradicated by closed canopy woodland.
- **Depressions on peat substrates of the Rhynchosporion**
 - Highly constant pioneer communities of humid exposed peat or, sometimes sand, with *Rhynchospora alba*, *R. fusca*, *Drosera intermedia*, *D. rotundifolia*, *Lycopodiella inundata*, forming on stripped areas of blanket bogs or raised bogs, but also on naturally seep- or frosted-eroded areas of wet heaths and bogs, in flushes and in the fluctuation zone of oligotrophic pools with sandy, slightly peaty substratum. These communities are similar, and closely related, to those of shallow bog hollows (51.122) and of transition mires (54.57).”

In addition, reference is made to a document prepared by the Department of Arts, Heritage and the Gaeltacht (2014) entitled “*Review of Raised Bog Natural Heritage Area Network*”. Of particular relevance is Addendum 2 “*Current Eco-Hydrological Condition Ireland’s Raised Bog NHAs and Non Designated Sites*”. This describes a model developed to describe the potential for raised bog restoration. The methodology developed to undertake the eco-hydro assessments makes use of detailed topographic data for each raised bog site obtained from LiDAR surveys to assess the potential for the bog surface to support active raised bog. By using the detailed topographic survey data, it is possible to model eco-hydrological conditions (based on the raised bog’s slope, drainage patterns and rainfall) and relate these conditions to recent ecological surveys. In this way it is possible to determine the area of a bog that has suitable conditions for the development of active raised bog habitat, whether or not active raised bog currently occurs on that area. The eco-hydrological modelling process can therefore quantify the restoration potential of a raised bog. The assessment is based on the assumption that drains on the high bog and cutover bog are present but that the underlying peat substrate remains intact. Where deep drains have been cut through the underlying peat substrate into the

mineral soils, a much greater loss of water may be occurring which cannot be addressed by the current modelling process.

In the present study, classification of bog as the Annex I Degraded Raised Bog habitat was in compliance with the definition as given in the Interpretation Manual of European Union Habitats. It is noted however, that application of the recently developed model (as described above) may show that some of these high bog areas have low or negligible potential for restoration to active bog.

3.2.4 Evaluation of Conservation Importance of Sites

The ecological assessment of the importance of a site, or part of a site, is made in accordance with the system devised by the National Roads Authority - *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2009). Whilst the NRA guidelines were devised specifically for road schemes, they can be applied to general environmental impact assessment. The NRA system uses the following five-point scale:

- International Importance
- National Importance
- County Importance
- Local Importance (higher value)
- Local Importance (lower value)

For sites supporting winter wetland bird populations, reference is made to the standard 1% thresholds for national (all-Ireland) and international importance (see Crowe 2006, Boland & Crowe 2012, Crowe & Holt 2013, Wetlands International 2012).

Evaluation of bird populations at sites may also be made on the basis of the presence of species listed in Annex I of the EU Birds Directive or species listed as 'Birds of Conservation Concern', either on the Red List (High conservation concern) or Amber List (Medium conservation concern) (after Colhoun & Cummins 2013). As evaluating sites due to the presence of such is not quantitative, a subjective assessment may need to be made – for instance, the regular presence within the site of a breeding pair of merlin (Annex I species) or curlew (red-listed) would be of more significance than the occasional record of hunting or passing birds.

4 Boora Bog Group

4.1 Bellair North Bog

4.1.1 Ecological Baseline

Bellair North Bog is located on the Westmeath/Offaly border approximately 6 km south of Moate. The site is connected to Bellair South Bog by a Bord na Móna rail line, with the Athlone to Dublin rail line running between the two sites. Bellair North can be divided into two sectors, a large eastern section and a smaller western section, with a narrow strip joining the two sectors. The majority of the site is currently in active production for milled peat.

The Boora River flows from the south-western tip of the site.

The surrounding habitat type is largely agricultural land though areas of remnant high bog and cutover adjoin the site in parts.

4.1.1.1 Habitats and Vegetation

The majority of Bellair North Bog is in active commercial production and comprises bare peat (ED2). There is very little regenerating cutaway (Recolonising bare ground ED3).

High bog (PB1) and cutover bog (PB4) are well represented in the marginal areas of the site. The remnant high bog varies in extent and quality. Within the western sector, there are two substantial areas of high bog. In the extreme west, there is a remnant area of high bog (mostly outside Bord na Móna property) which extends to the rail line. This bog is largely intact, has a typical raised bog flora and is noticeably wet in places with *Rhynchospora alba* frequent. Sphagnum cover is good. This relatively intact bog adjoins a large area of bog to the east (and continuing east to the commercial peat fields) that is no longer in active production but is classified as 'Re-activated/Development Bog'. While drained in the past, there appears to have been little removal of peat from the bog here and re-vegetation has been good. Most of the drains are naturally filling in with Sphagnum spp., *Rhynchospora alba* and *Eriophorum angustifolium*. The eastern margin which adjoins the active peat fields is drier than the rest. This complex of high bog (extending from west of Bord na Móna property to the commercial peat fields) is classified as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120], with the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] well represented in the sector that is considered mostly intact bog.

A further area of high bog occurs to the north of the local road (in northwest sector of site). This area has not been ditched though there are some old drains that are now largely filled in. The condition of this bog is variable, partly due to a fire event in recent years. However, parts are wet and support good Sphagnum growth. This bog is also classified as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120].

In the larger, eastern sector of the site, there are areas of high bog (PB1) and cutover bog (PB4) along the north boundary but the high bog areas are much disturbed from turbary and the surface is generally dry. A substantial area of high bog also occurs along the eastern margin (mostly outside of Bord na Móna property). This is variable in quality and parts have been burnt in the past. However, it generally has a well-developed flora and is noticeably wet in places with

good Sphagnum development. *Rhynchospora alba* is frequent in places. This complex of bog is classified as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. The Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] is well represented.

Various areas of cutover bog (PB4) are associated with the marginal areas of the site, and these support bog woodland (WN7) and scrub (WS1) in places.

4.1.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Bellair North Bog.

4.1.1.3 Wintering Birds

Meadow pipit (Red listed) is widespread in the marginal areas and snipe (Amber listed) has been recorded. Also, woodcock (Red listed) has been recorded in the degraded bog in the western sector of the site.

4.1.1.4 Breeding Birds

No specific survey information is available for the site though meadow pipit (Red-listed) and skylark (Amber-listed) were considered to be widespread in marginal areas in summer 2016. A local (reliable) source indicated that curlew (Red-listed) was present on the degraded bog in the western sector of the site in summer 2016. Snipe could be expected to breed on the large areas of high bog in the western and eastern sectors of the site.

4.1.1.5 Mammals

Badger and the Irish hare occur on site.

Bellair North Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

4.1.2 Designated Sites

There are no designated sites in the immediate vicinity of Bellair North Bog. Clonydonnin Bog NHA (code 0565) is located approximately 2 km to the west (west side of R444 road).

4.1.3 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The high bog remnants at the western, north-western and eastern boundaries of the site have considerable conservation value – these areas of high bog qualify as the Annex I habitat 'Degraded raised bogs still capable of regeneration' [code 7120] and support the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150]. These bog areas are rated as **County Importance**. The other areas of marginal high bog, and also the areas of cutover bog, are rated as **Local Importance (higher value)**.

The Red-listed meadow pipit breeds on the various high bog and cutover bog areas, and it appears curlew may also breed. A further Red-listed species, woodcock, has been recorded in winter.

Figure 1: Bellair North Bog: west end. Image (looking northwards and mostly outside Bord na Móna property) shows an area of largely intact raised bog that is classified as the Annex I habitat Degraded raised bog. The Annex I habitat Depressions on peat substrates (Rhynchosporian) is also represented



Source: BioSphere Environmental Services

Figure 2: Bellair North Bog: west end. Image of well-vegetated high bog that has been ditched and probably scraped of surface vegetation in the past. However, the bulk of the peat mass is still present and drains are becoming filled in with vegetation. This area is considered as the Annex I habitat Degraded raised bog



Source: BioSphere Environmental Services

Figure 3: Bellair North Bog: east end (looking south). Image of area of high bog that adjoins commercial peat field – this large area is classified as Degraded raised bog and includes good examples of the Annex I habitat Depressions on peat substrates (Rhynchosporian)



Source: BioSphere Environmental Services

Figure 8: Bellair North Bog: east end. Image (looking southwards) of deep drain between high bog and commercial peat field



Source: BioSphere Environmental Services

4.2 Bellair South Bog

4.2.1 Ecological Baseline

Bellair South Bog is located in Co. Offaly on the Westmeath border approximately 5 km west of Ballycumber. The site is connected to Bellair North Bog by a Bord na Móna rail link, with the Athlone to Dublin rail line between the two sites. It is linked by rail to Leamanaghan Bog to the south. Bellair South is a relatively young production bog and is almost entirely in active production for milled peat.

The Boor River flows north of the site.

The surrounding habitat type is largely agricultural land.

4.2.1.1 Habitats and Vegetation

The majority of Bellair South Bog is in active commercial production and comprises bare peat (ED2). There is very little regenerating cutaway (Recolonising bare ground ED3) in the production fields.

High bog (PB1) and cutover bog (PB4) occur along parts of the margins of the site. High bog is best represented at the western end of the site where there is a strip of high bog that is relatively intact (outside of Bord na Móna property). This area has been disturbed in the past and is dry (dominated by *Calluna vulgaris*) but there are still some wet areas with moderate Sphagnum cover. Bog woodland occurs along the western margin of this high bog area. Further high bog and cutover occurs along much of the northern boundary and as a narrow strip along the eastern boundary. All of these areas are highly disturbed from turbary.

A small area of cutaway is located in the southeast of the site to the south of the Bord na Móna rail line. Production does not seem to have been extensive in this area though the fields were cleared of vegetation and the area was ditched. The surface is now generally dry and the vegetation is dominated by *Calluna vulgaris*, *Eriophorum vaginatum* and the moss *Campylopus introflexus*. Birch scrub is invading in parts.

4.2.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Bellair South Bog.

4.2.1.3 Wintering Birds

Meadow pipit (Red-listed) is widespread in the marginal areas and snipe (Amber-listed) has been recorded.

4.2.1.4 Breeding Birds

No specific survey information is available for the site though meadow pipit (Red-listed) and skylark (Amber-listed) were considered to be widespread in marginal areas in summer 2016. Sparrowhawk bred in 2016 in bog woodland in the remnant high bog area at the west end of the site.

4.2.1.5 Mammals

Badger and the Irish hare occur on site.

Bellair South Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

4.2.2 Designated Sites

There are no designated sites in the immediate vicinity of Bellair South Bog. Clonydonnin Bog NHA (code 0565) is located approximately 1 km to the northwest (west side of R444 road).

4.2.3 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The high bog remnants and cutover bog along the boundaries of the site have local biodiversity value and are rated as **Local Importance (higher value)**. Also assigned this rating is the area of cutaway in the southeast sector of the site.

The Red-listed meadow pipit breeds on the various high bog and cutover bog areas.

4.4 Derrinboy Bog

4.4.1 Ecological Baseline

Derrinboy Bog is located approximately 3.5 km south of Kilcormac in south Co. Offaly. The site is divided into two sections by a local road. Derrinboy is an outlier bog and not directly connected to other Bord na Móna sites.

The majority of the site is currently in production for horticultural peat. Most of the margins are edged by remnant high bog or cutover bog. The Black River flows close to the eastern boundary.

Most of the site is surrounded by agricultural land, though there is further bog habitat to the northwest and east.

4.4.1.1 Habitats and Vegetation

The majority of Derrinboy Bog is in active commercial production and comprises bare peat (ED2). There are no significant areas of regenerating cutaway within the site.

High bog (PB1) and cutover bog (PB4) are well represented in the marginal areas of the site. The remnant high bog varies in extent and quality, with much of it comprising relatively narrow strips that are subject to turbarry. These tend to be dry and dominated by *Calluna vulgaris*, with *Sphagnum* cover variable.

An area of high bog in the northeast of the western sector of the site (outside of Bord na Móna property) is largely intact and supports a typical raised bog flora, including *Sphagnum* mosses. Although small in size (<5 ha) this bog, which is relatively undisturbed and situated within an oval shaped basin, is considered to qualify as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. The Annex I habitat Depressions on peat substrates (*Rhynchosporian*) [7150] is also represented.

Extensive stands of bog woodland (WN7) dominated by birch occur on some of the cutover areas of bog along the margins of the site.

4.4.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson et al. 2016) associated with Derrinboy Bog.

4.4.1.3 Wintering Birds

Meadow pipit (Red-listed) is widespread in the marginal areas during winter. Snipe is also present.

4.4.1.4 Breeding Birds

No specific survey information is available for the site though meadow pipit (Red-listed) and skylark (Amber-listed) were considered to be widespread in marginal areas in summer 2016.

4.4.1.5 Mammals

Badger and the Irish hare occur on site.

Derrinboy Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of

bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

4.4.2 Designated Sites

The Slieve Bloom Mountains SPA (code 04160) is located approximately 1.5 km from Derrinboy Bog. The Special Conservation Interest of this SPA is Hen Harrier (*Circus cyaneus*) (A082)

4.4.3 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The high bog remnants along the boundaries of the site have conservation value – it is considered that the area of bog in the northeast of the western sector qualifies as the Annex I EU Habitats Directive habitat 'Degraded raised bogs still capable of regeneration' [code 7120] and also supports the Annex I habitat Depressions on peat substrates (*Rhynchosporian*) [7150]. This bog complex is rated of **County Importance**. The other areas of high bog, and also the areas of cutover bog, are rated as **Local Importance (higher value)**.

The Red-listed meadow pipit breeds on the various high bog and cutover bog areas.

Figure 9: Derrinboy bog: northeast end of western sector (looking eastwards). View is of intact high bog (outside of but adjoining Bord na Móna property), which supports the Annex I habitats Degraded raised bog and Depressions on peat substrates (Rhynchosporian)



Source: BioSphere Environmental Services

Figure 10: Derrinboy bog: northeast end of western sector (looking southeast). View of deep drain along edge of commercial peat field.



Source: BioSphere Environmental Services

4.5 Derryclure Bog

4.5.1 Ecological Baseline

Derryclure Bog is located approximately 6 km south of Tullamore in Co. Offaly. The N80 Tullamore to Mountmellick road passes close to the western boundary of the site, and there is a bog track along much of the southern boundary. Derryclure is an outlier bog and not directly connected to other Bord na Móna sites. A landfill site has been constructed on bog along the western margin of the site.

The majority of the site is currently in production for horticultural peat. However, a substantial part is classified as a Bord na Móna biodiversity area.

Most of the site is surrounded by agricultural land.

4.5.1.1 Habitats and Vegetation

The majority of Derryclure Bog is in active commercial production and comprises bare peat (ED2). There are no significant areas of regenerating cutaway within the site.

High bog (PB1) remnants and cutover bog (PB4) are represented in the southeast and southwest sectors. Here the remnant high bog areas comprised relatively narrow strips that are subject to turbarry. These tend to be dry and dominated by *Calluna vulgaris*, with *Sphagnum* cover variable. Extensive stands of bog woodland (WN7) dominated by birch occur on the cutover areas.

Two substantial areas of high bog towards the centre of the site have not been cut though surface drains had been inserted over much of the area. These areas, which are zoned as a Bord na Móna Biodiversity Area, are mainly wooded, mostly with Scot's pine and a mix of deciduous species especially birch. Research by Bord na Móna has shown that bog woodland has been present on site here since at least the second edition of the OSI 6 inch map (mapped as mixed conifers). It appears that part of this woodland was planted at some stage and since then there has been natural colonisation of the open bog areas. Open high bog areas remain with parts being fairly wet and with good *Sphagnum* cover. Examples of the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] are present.

4.5.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derryclure Bog.

4.5.1.3 Wintering Birds

Meadow pipit (Red-listed) is widespread in the marginal areas during winter. Snipe is also present. Golden plover (Annex I species) has been recorded roosting on the bare peat.

4.5.1.4 Breeding Birds

No specific survey information is available for the site though meadow pipit (Red-listed) and skylark (Amber-listed) were considered to be widespread in marginal areas in summer 2016. The Red-listed woodcock would be expected in the woodland and the habitat appears suitable for nesting merlin.

4.5.1.5 Mammals

Badger and the Irish hare occur on site.

Derryclure Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

4.5.2 Designated Sites

Hawkswood Bog NHA (code 2355) is located approximately 1 km southwest of Derryclure Bog. Charleville Wood SAC is located approximately 2.9 km from Derryclure Bog.

4.5.2.1 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The high bog remnants and cutover bog along the southeast and southwest boundaries of the site have conservation value at a local level and are rated as **Local Importance (higher value)**.

The Bord na Móna Biodiversity Area has been rated of **County Importance** on the basis of the long history of woodland on the bog and also for substantial remaining areas of high bog which support in parts the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150].

The Red-listed meadow pipit breeds and winters on the various high bog and cutover bog areas.

Figure 11: Derryclure Bog: view of high bog with mixed woodland (looking northwards over eastern block). This area has been zoned a Bord na Móna biodiversity area.



Source: BioSphere Environmental Services

Figure 12: Derryclure Bog: view of high bog with encroaching pine trees within the Bord na Móna biodiversity area



Source: BioSphere Environmental Services

Figure 13: Derryclure Bog: parts of the remaining open high bog are wet and support the Annex I habitat Depressions on peat substrates (Rhynchosporian)



Source: BioSphere Environmental Services

Figure 14: Derryclure Bog: the biodiversity area is edged by deep drains – this is contributing to the drying of the high bog which aids the spread of pine trees into the remaining open areas of high bog



Source: BioSphere Environmental Services

4.6 Killaun Bog

4.6.1 Ecological Baseline

Killaun Bog is located approximately 5 km east of Birr in Co. Offaly. The R440 road forms a boundary with the southern margin of the site, while the Birr to Kilcormac local road skirts the northern boundary. The site is an outlier and not directly connected to other Bord na Móna sites.

The majority of the site is currently in production for horticultural peat. Most of the margins are edged by remnant high bog or cutover bog, with an extensive complex of bog habitats in the southernmost part of the site (latter used by a school in Birr as educational resource, with a boardwalk in place). There are also bog areas in active production to the northwest and northeast of the main site.

The surrounding habitats include further remnant high bog and cutover bog, afforestation and agricultural land.

4.6.1.1 Habitats and Vegetation

The majority of Killaun Bog is in active commercial production and comprises bare peat (ED2). There are no significant areas of regenerating cutaway within the site.

High bog (PB1) and cutover bog (PB4) are well represented in the marginal areas of the site. The remnant high bog varies in extent and quality, with much of it comprising relatively narrow strips that have been ditched in the past. These tend to be dry and dominated by *Calluna vulgaris*, with *Sphagnum* cover variable. Trees from nearby plantations have invaded parts of high bog, especially along the western margins.

A substantial complex of high bog and old cutover in the south of the site is considered to qualify as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. The Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] is also represented. An area of rich fen, which may correspond to the Annex I habitat, Alkaline Fens [code 7230], occurs in the extreme southeast of the site. This fen has developed in an area of cutover bog. The Annex II listed mollusc *Vertigo geyeri* has been recorded here (source: Bord na Móna Rehabilitation Plan). Extensive stands of bog woodland (WN7) dominated by birch are also found here.

4.6.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Killaun Bog.

4.6.1.3 Wintering Birds

Meadow pipit (Red-listed) is widespread in the marginal areas during winter. Snipe is also present, while hen harrier (Annex I listed) has been recorded on site.

4.6.1.4 Breeding Birds

No specific survey information is available for the site though meadow pipit (Red-listed) and skylark (Amber-listed) were considered to be widespread in marginal areas in summer 2016. Snipe could be expected to breed on the large high bog area in the southern sector of the site.

4.6.1.5 Mammals

Otter (Annex II listed species) has been recorded in the southern sector of the site. Badger and the Irish hare occur on site.

Killaun Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

4.6.2 Designated Sites

Dovegrove Callows SPA is located approximately 2.9 km from Killaun Bog.

4.6.3 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The high bog remnants along the boundaries of the site have conservation value – the large area of bog in the southern sector qualifies as the Annex I EU Habitats Directive habitat 'Degraded raised bogs still capable of regeneration' [code 7120] and also supports the Annex I habitat 'Depressions on peat substrates (Rhynchosporian)' [7150]. A further Annex I habitat, Alkaline fen, appears to be present along with the Annex II species, *Vertigo geyeri*. This bog complex is rated at least of **County Importance** but could be up-rated to **National Importance** should the population of *Vertigo geyeri* be found to be still present and to have a favourable conservation status. The other areas of high bog, and also the areas of cutover bog, are rated as **Local Importance (higher value)**.

The occurrence of otter on site (probably on an occasional basis) is of note as otter is listed on Annex II of the EU Habitats Directive.

The Red-listed meadow pipit breeds on the various high bog and cutover bog areas.

Figure 15: Killaun Bog: view of high bog in southern sector (looking northeast). This large area is classified as Degraded raised bog and supports the Annex I habitat Depressions on peat substrates (Rhynchosporian)



Source: BioSphere Environmental Services.

Figure 16: Killaun Bog: view of deep drain along edge of high bog in southern sector (looking eastwards). Note also the wet peat that has been sprayed onto the edge of the bog during drain maintenance operations



Source: BioSphere Environmental Services.

4.7 Leamanaghan Bog

4.7.1 Ecological Baseline

Leamanaghan Bog is located approximately 4 km east of Fermoy in Co. Offaly. The site is connected by rail link to Bellair South Bog to the north and to the Blackwater Group to the west. The R436 Fermoy-Clara road passes along much of the southern boundary – one large area of production bog, Derrynagun, occurs to the south of the road. The N62 Fermoy to Athlone road skirts the extreme western tip of the site. A local road passes through the northern part of the site and cuts off the northernmost sector.

A mineral island containing farmland and associated habitats is located close to the centre of the main section of the bog and is partially owned by Bord na Móna. A roadway extends through the bog to this mineral island. A relatively large area of the main site has been given over to private sod-peat production.

Various tributaries of the Boora River flow along the margins of the site.

The surrounding habitat type is largely agricultural land though further areas of remnant high bog and cutover adjoin the site in parts.

4.7.1.1 Habitats and Vegetation

The majority of the Leamanaghan Bog is in active commercial production and comprises bare peat (ED2).

There are several bands of cutaway vegetation several fields wide that have developed in the southern half of the main sector of the site and also to the west of the mineral island (Recolonising bare ground ED3).

High bog (PB1) and cutover bog (PB4) are well represented in the marginal areas of the site. The remnant high bog varies in extent and quality. In the northernmost sector, the milled peat fields are edged on both sides by high bog (mostly outside Bord na Móna property) – this is variable in quality with parts wet and with moderate Sphagnum cover as well as locally frequent *Rhynchospora alba*. Other areas of high bog and cutover occur along the margins though these are all of relatively small size.

A large area of high bog occurs to the south of the R436 road (known as Curragalassa Bog) – this has been taken out of production as it has cultural interests. This area is considered to qualify as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. Further degraded bog, which is classified as ‘sod peat’ occurs just north of the R436 though this has been ditched in the past and the surface is fairly dry and dominated by *Calluna vulgaris*.

4.7.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Leamanaghan Bog.

4.7.1.3 Wintering Birds

Recent winter surveys have shown that the majority of Leamanaghan Bog is of low value for wintering birds. The remnant high bog and cutover bog habitats and the regenerating cutaway attract hunting hen harrier on a fairly regular basis though there are no known night roosts within the site. Whooper swans, which winter at several sites in the wider area, may use the site on

occasions (though in small numbers) when ponds form during wet periods. Meadow pipit, a Red-listed species, occurs widely on site, along with various Amber-listed species including kestrel, sparrowhawk, snipe, skylark, stonechat and linnet. Also, woodcock (Red listed) has been recorded in the degraded bog in the western sector of the site.

4.7.1.4 Breeding Birds

A survey of breeding birds in 2016 showed that the site has relatively low interest. Meadow pipit (Red-listed) is widespread in marginal areas of high bog and cutover, along with skylark (Amber-listed). Snipe breeds on site, along with stonechat, mistle thrush and linnet (all Amber listed).

4.7.1.5 Mammals

Badger and the Irish hare occur on site.

Lemanaghan Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

4.7.2 Designated Sites

There are no designated sites in the immediate vicinity of Leamanaghan Bog. Fermanagh Bog SAC (code 0575) is located approximately 1.1 km to the west. The Grand Canal pNHA (code 02104) is located to the south of the site.

4.7.3 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The various high bog remnants along the margins of the site, as well as the cutover and re-generating cutaway bog areas, all provide useful biodiversity and are rated as **Local Importance (higher value)**.

Curragehalassa Bog to the south of the R436 has considerable conservation value and supports the Annex I habitat 'Degraded raised bogs still capable of regeneration' [code 7120] – this bog area is rated as **County Importance**.

The Red-listed meadow pipit breeds on the various high bog and cutover bog areas. Hen harrier (Annex I) is regular on site in winter and woodcock (Red-listed) has been recorded.

Figure 17: Leamanaghan Bog: view of high bog alongside commercial peat fields in extreme northern sector of site (looking southwards). This high bog is of Local conservation interest.



Source: BioSphere Environmental Services

Figure 18: Leamanaghan Bog: view of high bog alongside commercial peat fields in extreme northern sector of site (looking southwards). This high bog is of Local conservation interest



Source: BioSphere Environmental Services

4.8 Monnetia Bog

4.8.1 Ecological Baseline

Monnetia Bog is located on the Laois/Offaly border approximately 3 km southwest of Killeigh. The site is an outlier and not directly connected to other Bord na Móna sites. The majority of the site is currently in production for horticultural peat. There is extensive private and sod peat production along the margins.

The eastern tip of the site is very close to the main channel of the River Barrow. The Clodiagh River flows close to the western boundary of the site.

The surrounding habitat type is largely agricultural land.

4.8.1.1 Habitats and Vegetation

The majority of Monnetia Bog is in active commercial production and comprises bare peat (ED2).

There is very little regenerating cutaway (Recolonising bare ground ED3), with some strips dominated by rushes in marginal areas.

High bog (PB1) and cutover bog (PB4) are well represented in the marginal areas of the site. The remnant high bog varies in extent and quality. Much of that along the west boundary is quite dry and subject to local turbary. This is dominated by *Calluna vulgaris*, with *Sphagnum* cover low. A large area of relatively intact high bog occurs along the south-eastern boundary. While this has been ditched in the past, the surface drains are mostly filled in with *Sphagnum*, *Rhynchospora alba* and *Eriophorum angustifolium*. Overall, the surface is damp to wet and there are some pools with *Menyanthes trifoliata*. This area of bog is considered to qualify as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. The Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] is also well represented here.

Areas of cutover bog (PB4) are associated with the marginal areas, with stands of bog woodland (WN7) and scrub (WS1) in places.

4.8.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Monnetia Bog.

4.8.1.3 Wintering Birds

Meadow pipit is widespread in the marginal areas and woodcock has been recorded (both Red-listed). Snipe and Jack snipe (both Amber-listed) have been recorded on the remnant high bog and cutover bog areas.

4.8.1.4 Breeding Birds

No specific survey information is available for the site though meadow pipit (Red-listed) and skylark (Amber-listed) were considered to be widespread in marginal areas in summer 2016. Snipe could be expected to breed on the large high bog area in the south-eastern sector of the site.

4.8.1.5 Mammals

Otter (Annex II listed species) has been recorded in the southern sector of the site. Badger and the Irish hare occur on site.

Monettia Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

4.8.2 Designated Sites

The River Barrow and River Nore SAC (code 02162) intersects the bog unit, with a silt pond draining direct to the river channel. The SAC is selected for the following Annex I habitats and Annex II species:

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Reefs [1170]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]
- European dry heaths [4030]
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
- Petrifying springs with tufa formation (*Cratoneurion*) [7220]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Alosa fallax fallax* (Twaite Shad) [1103]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Trichomanes speciosum* (Killarney Fern) [1421]
- *Margaritifera durrovensis* (Nore Pearl Mussel) [1990]

The Slieve Bloom Mountains SPA (code 04160) is located approximately 4km from the bog. The Special Conservation Interest of this SPA is Hen Harrier (*Circus cyaneus*) (A082)

4.8.3 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The high bog remnant within the south-eastern sector of the site has substantial conservation value and qualifies as the Annex I EU Habitats Directive habitat 'Degraded raised bogs still capable of regeneration' [code 7120] and also supports the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150]. This bog complex is rated as **County Importance**. The other areas of high bog, and also the areas of cutover bog, are rated as **Local Importance (higher value)**.

The occurrence of otter on site (probably on an occasional basis) is of note as otter is listed on Annex II of the EU Birds Directive.

The Red listed meadow pipit breeds on the various high bog and cutover bog areas, woodcock (also Red-listed) has been recorded in winter.

The nearby River Barrow is part of an SAC and is rated as of **International Importance**.

Figure 19: Monettia Bog: view of high bog in southeast sector. This large area is classified as Degraded raised bog and supports the Annex I habitat Depressions on peat substrates (Rhynchosporian). Surface drains have now mostly filled in with *Sphagnum* spp., *Rhynchospora alba* and *Eriophorum angustifolium*



5 Derrygreenagh Bog Group

5.1 Ballivor Bog

5.1.1 Ecological Baseline

Ballivor Bog is located just over two kilometres west-southwest of Ballivor village. Access is available through the Bord na Móna Works Area from the R156 road which runs north of the site. The site is connected by a rail link to Carranstown Bog to the north.

A substantial part of Ballivor Bog is in commercial peat production, though much of the site is out of production and classified as cutaway. A small sector of regenerating cutaway is classified as 'Re-activated/Development Bog' and may be brought into production in the future.

Ballivor Bog is almost entirely surrounded by farmland though there are stands or strips of woodland (conifers and mixed) to the northwest, southwest and east, along with some remnant bog to the northwest.

5.1.1.1 Habitats and Vegetation

The largest portion of Ballivor Bog is in commercial peat production and comprises bare peat (ED2). An extensive area of cutaway occurs in the western sector, with regenerating birch scrub (WS1) and poor fen (PF2) vegetation in parts. Further regenerating cutaway occurs in the northeast sector.

A substantial area of relatively intact high bog occurs along the southwest boundary of the site. This has a typical raised bog flora and is wet in places. This complex of bog is classified as the Annex I habitat Degraded raised bog. Also represented here is the Annex I habitat Depressions on peat substrates (Rhynchosporian).

Small areas of high bog (PB1) occur along the margins elsewhere within the site. Old cutover bog (PB4) occurs in marginal areas of the site, with Bog woodland (WN7) well developed in places.

5.1.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Ballivor Bog.

5.1.1.3 Wintering Birds

Ballivor bog has limited potential for wintering birds of conservation importance.

Golden plover has been recorded roosting on bare peat, while peregrine has been observed resting on peat ridge (both Annex I listed species).

Meadow Pipit, a species Red-listed due to declines in the breeding population, is widespread on site through the winter.

Various Amber-listed species have been recorded on site in winter, including sparrowhawk, kestrel, snipe, Jack snipe and skylark.

5.1.1.4 Breeding Birds

Ballivor bog has limited potential for breeding birds of conservation importance.

Two Red-listed species have been recorded breeding on site, woodcock and meadow pipit. Various Amber-listed species also breed, including sparrowhawk, snipe, skylark, mistle thrush, stonechat and linnet.

5.1.1.5 Mammals

Badger and the Irish hare occur on site.

Ballivor Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

5.1.2 Designated Sites

There are no sites designated for conservation within the immediate area of Ballivor Bog.

The River Boyne and River Blackwater SAC (code 02299) is located approximately 1.1 km to the south of the site.

5.1.3 Conservation Evaluation of Site

The area of the site that is in current commercial production for industrial peat harvesting has no intrinsic conservation value.

The cutaway bog in the western and north-eastern sectors of the site comprises a range of vegetation communities including scattered wetlands and is considered of high biodiversity value. On the basis of habitats and associated breeding birds, a rating of **Local Importance (higher value)** is assigned to the cutaway bog areas.

The high bog along the southwest boundary of the site is largely intact and of significant size. While damaged by turbary in places, the bog has substantial conservation value and qualifies as the Annex I habitat 'Degraded raised bogs still capable of regeneration' [7120]. The associated Annex I habitat Depressions on peat substrates (Rhynchosporian) is also represented here. This high bog complex is rated of **County Importance**.

The other remnant areas of high bog and cutover bog areas, including areas of bog woodland, are rated as **Local Importance (higher value)**.

The site supports an important population of the Red-listed meadow pipit, as well as woodcock (also Red-listed).

Figure 20: View of intact high bog along southwest boundary of Ballivor Bog. The Annex I habitats Degraded raised bogs still capable of regeneration and Depressions on peat substrates (Rhynchosporian) are represented here.



Source: BioSphere Environmental Services

Figure 21: Ballivor Bog - view of regenerating cutaway vegetation in western part of site.



Source: BioSphere Environmental Services

5.2 Ballybeg Bog

5.2.1 Ecological Baseline

Ballybeg Bog is located to the west of the R400 road and between Croghan Hill and the town of Rhode. It is contiguous with Derryarkin bog to the north and Cavemount bog to the south. The most southern sector is an outlier from the main site and lies between a local road and the Grand Canal pNHA.

In addition to commercial peat production, a large area (c.60 ha) of cutaway east of the railway line has been planted with alder as a biomass trial for West Offaly Power. The northeast section of the site has been used for gravel extraction.

Ballybeg is a pumped bog with main pumps being located near the centre of the site and connected to a drainage system that flows through a series of silt ponds and onto the Yellow River via a tributary.

The site is adjoined by slivers of bog to the east and north-west, with agricultural land to the south and west.

5.2.1.1 Habitats and Vegetation

Ballybeg Bog is sharply divided into three main ecological units: the northern part which has been out of production for some time and is re-vegetating cutaway, the southern part which is in commercial industrial production, and the small southern outlier of largely intact raised bog, known as Coole bog.

The northern cutaway sector contains a range of habitats but is dominated by birch scrub (WS1) or developing bog woodland (WN7). There are some small wetlands with permanent or temporary water. Wetland vegetation, however, is poorly developed and is mainly a Soft Rush dominated vegetation. Poor fen (PF2) vegetation is developing in parts. Bare peat (ED2) still occurs in places. As noted, a substantial portion of the cutaway has been developed as an Alder biomass trial, and is classified as short rotation coppice (WS4).

The southern part of the site is in commercial peat production and most of this comprises bare peat (ED2). A portion to the east of the railway line and west-southwest of the Works area comprises disturbed ground associated with the old Rhode Power Station. This area is dominated by a range of cutaway habitats characteristic of drier substrates, with scrub (WS1), dense bracken (HD1) and dry grassland (GS).

An area of undeveloped high bog (PB1) occurs in the southernmost sector of the site (part of this bog is not within Bord na Móna ownership). This is largely intact bog though there is active turbary along the western margin and a network of surface drains had been inserted in the past. This bog is considered to qualify as the Annex I habitat 'Degraded raised bogs still capable of regeneration' [7120]. A remnant strip of high bog also occurs along the northeast boundary, while patches of cutover bog (PB4) occur in places along the margins of the site.

5.2.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Ballybeg Bog.

A notable plant species, blue fleabane (*Erigeron acris*), was recorded at several locations in the northern part of the site in a survey in August 2010. The plants were growing on old spoil

heaps. This plant is listed in the Irish Red Data Book (Curtis & McGough 1988). Blue fleabane is an annual species of dry pastures and sandy and gravelly habitats such as esker ridges. Naturally it would not be expected within bog habitats.

5.2.1.3 Wintering Birds

Ballybeg bog has limited potential for wintering birds of conservation importance. Hen harriers have been recorded passing through the site, while the Red-listed meadow pipit is widespread throughout the site. A range of Amber-listed species occur, including kestrel, sparrowhawk, snipe, skylark, starling and linnet. The bare peat sector of the site attracts roosting golden plover. Whooper swans pass over the site but there is no suitable habitat to support feeding or roosting swans.

5.2.1.4 Breeding Birds

Ballybeg bog has limited potential for breeding birds of conservation importance. Snipe (Amber listed) breed on site (at least 2 pairs), along with wetland species such as mallard and moorhen.

Meadow pipit (Red-listed) breeds widely in the northern cutaway bog area, as well as on the raised bog in the south. Skylark is also a widespread breeding species, with at least 2 pairs of linnet (both are Amber-listed species).

5.2.1.5 Mammals

Signs of badgers have been noted within the site. The Irish hare is frequent throughout. Pine marten is likely to occur in the area of woodland and scrub in the northern end of the site.

The baseline survey for bats carried out in 2013 recorded three species of bat present on site, as follows: soprano pipistrelle, common pipistrelle and leisler's. Most of the bats were recorded along scrub vegetation and water bodies. No bats were recorded in areas of open peat habitat.

5.2.2 Designated Sites

There are no sites designated for conservation within the Ballybeg site. The Grand Canal pNHA is located adjacent to the site at the southern end. The pNHA includes an area of raised bog (part of Coole bog) which adjoins the Bord na Móna property.

5.2.3 Conservation Evaluation of Site

The area of the site that is in current commercial production for industrial peat harvesting has no intrinsic conservation value. This is essentially the entire southern sector of the main site (extending to public road).

The cutaway bog in the northern sector of the site comprises a range of vegetation communities including scattered wetlands and is considered of high local biodiversity value. This sector of the site supports breeding snipe, skylark and meadow pipit (latter Red-listed). On the basis of habitats and associated breeding birds, a rating of **Local Importance (higher value)** is assigned to this area.

The raised bog in the southernmost part of the site (between public road and canal) is largely intact and of significant size. While damaged by turbary along its western margin, the bog has substantial conservation value and qualifies as the Annex I habitat 'Degraded raised bogs still capable of regeneration' [7120]. This high bog is rated of **County Importance**. The other remnant areas of high bog and the cutover bog areas are rated as **Local Importance (higher value)**.

The presence of a substantial population (in several locations) of blue fleabane is **of Local Importance (higher value)**. The long-term presence of this species on site will depend on the availability of exposed gravel substrates.

5.3 Bracklin Bog

5.3.1 Ecological Baseline

Bracklin Bog is located approximately 4 km to the northwest of Ballivor village. It is contiguous with the north-west corner of Carranstown bog and lies just south of Lisclogher and Lisclogher West bogs (separated from latter sites by a third class road). Access is available from a series of tracks to the south and also from the road to the north.

Apart from the westernmost sector which is in commercial peat production, Bracklin has been out of commercial production for a long period (parts since the 1980s) and comprises a substantial area of regenerating cutaway bog as well as areas of remnant high bog and cutover bog.

Further cutover or remnant bog adjoins the site to the east and to some extent to the north but otherwise the site is surrounded by agricultural land.

5.3.1.1 Habitats and Vegetation

The western sector of Bracklin Bog is in commercial peat production and comprises bare peat (ED2).

The majority of the site comprises cutaway where re-generation is well advanced. Vegetation includes swards of degraded bog dominated by *Calluna vulgaris*, bog woodland (WN7) and scrub (WS1). Birch is the commonest tree species. Substantial areas of remnant high bog also occur, some of which may be classified as the Annex I habitat Degraded raised bog. Old cutover areas are found along the margins of the site.

5.3.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Bracklin Bog.

5.3.1.3 Wintering Birds

Bracklin bog provides useful habitat for wintering birds. Hen harrier has been recorded during winter surveys and there is potential within the site for roosting birds. Meadow pipit and woodcock (both Red-listed) occur in winter, along with various Amber-listed species, including kestrel, snipe and linnets.

5.3.1.4 Breeding Birds

While Bracklin bog is a large site with substantial areas of regenerating bog, it has limited potential for breeding birds of conservation importance due to the prevalence of scrub and the absence of any substantial area of wetland habitat. However, it does support breeding woodcock and meadow pipit (both Red-listed) and a range of Amber-listed species including sparrowhawk, snipe, skylark, mistle thrush, stonechat and linnets.

5.3.1.5 Mammals

Badger and the Irish hare have been recorded on site.

Bracklin Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of

bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

5.3.2 Designated Sites

The site is approximately 780 metres from the River Boyne and River Blackwater SAC/SPA.

5.3.3 Conservation Evaluation of Site

The western sector of the site that is in current commercial production for industrial peat harvesting has no intrinsic conservation value.

The majority of the site comprises regenerating cutaway communities and there are substantial areas of high bog (parts of which may qualify as the Annex I habitat Degraded raised bog). These habitats provide useful local biodiversity and are rated at least of **Local Importance (higher value)**.

5.4 Carranstown Bog

5.4.1 Ecological Baseline

Carranstown Bog is located approximately two kilometres west-northwest of Ballivor village. It adjoins Ballivor bog to the south (though split by the R156) and the southeast end of Bracklin to the northwest. Access is available from the R156 road which runs south of the site.

The majority of Carranstown is in commercial production. Regenerating cutaway bog and some high bog remnants occur along the margins in the north-east, east and southeast and to a lesser extent along the western margin.

Carranstown bog is generally surrounded by agricultural lands, though strips of remnant and cutover bog occur along the north-northeast and eastern margins, as well as to the southwest. Some areas of scrub occur on the cutover. A conifer plantation skirts the southeast margin

5.4.1.1 Habitats and Vegetation

The largest portion of Carranstown Bog is in commercial peat production and comprises bare peat (ED2).

The eastern sector of the site had not been fully developed and contains a mosaic of high bog (PB1), cutover bog (PB4), and bog woodland (WN7) dominated by birch. A sward of *Calluna vulgaris* is developing on a cutaway area. A triangular-shaped sector of regenerating cutaway (classified as 'peat production related') also occurs along the westernmost margin of the site. A small area of remnant high bog dominated by scrub occurs to the west of the site (separated by a local road).

5.4.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Carranstown Bog.

5.4.1.3 Wintering Birds

Carranstown bog has limited potential for wintering birds of conservation importance.

Golden plover and lapwing have been recorded in winter surveys resting on bare peat within the site. Meadow pipit, a species Red-listed due to declines in the breeding population, occurs on site during the winter. Various Amber-listed species occur on site during winter, mostly at the eastern end, and include sparrowhawk, kestrel, snipe, skylark and stonechat.

5.4.1.4 Breeding Birds

Carranstown bog has limited potential for breeding birds of conservation importance.

Two Red-listed species have been recorded breeding on site, woodcock and meadow pipit. Various Amber-listed species also breed, including sparrowhawk and skylark.

5.4.1.5 Mammals

Carranstown Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the

margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

5.4.2 Designated Sites

The River Boyne and River Blackwater SPA/SAC is located approximately 1.8 km from Carranstown Bog.

5.4.3 Conservation Evaluation of Site

The area of the site that is in current commercial production for industrial peat harvesting has no intrinsic conservation value.

The remnant high bog areas, the cutover and the regenerating cutaway bog in the eastern sector and to a lesser extent the westernmost sector comprises a range of vegetation communities and provide useful local biodiversity – these areas are rated as of **Local Importance (higher value)**.

5.5 Derryhinch Bog

5.5.1 Ecological Baseline

Derryhinch bog is located along the Co. Offaly/Westmeath border, c.1.5 km east of Milltownpass. Derryhinch is connected by rail to Drumman Bog, which is located approximately 1 km to the south-southwest. The entire western boundary of the bog is bounded by the M6 motorway.

A substantial area of cutover bog, including some remnant high bog, adjoins the site to the east and northeast. Agricultural land occurs to the north and southwest, while there are stands of commercial conifer forest to the south and southeast.

5.5.1.1 Habitats and Vegetation

Derryhinch Bog is presently almost entirely bare peat (ED2), with industrial production still in progress over much of the area.

A small mineral island (classified as 'peat production related') is located in the mid-west section and is dominated by birch scrub (WS1). Further stands of birch dominated scrub occur in the extreme northwest corner of the site and along the south end of the eastern boundary. Fringe habitats found along the boundaries of the site include dry grassland (GS1) and scrub (WS1), along with recolonising pioneer bog communities of poor fen vegetation (PF2).

An area of cutover and remnant high bog along the southern boundary (south of the railway) is the most significant feature of biodiversity interest within the site (classified as 'sod peat'). This is mostly old cutover (PB4) with a mosaic of developing habitats ranging from birch dominated woodland (varying from scrub WS1 to bog woodland WN7) to regenerating wet bog with good Sphagnum growth. A small area of high bog (raised bog PB1) is located in the northwest corner of this complex. This is largely intact bog though there has been some surface cutting in the past. Some of the damaged sections are now dominated by wet bog with frequent *Rhynchospora alba* - this corresponds with the Annex I habitat 'Depressions on the peat substrates of the Rhynchosporian' [7150].

Drainage ditches (FW4) are located along the site's southern and northern boundaries and there are several silt ponds (FL8) on site. Two watercourses (FW2) are located to the south of the site – the Milltown River and the Mongagh River are situated approximately 200 m and 400 m respectively from the southern boundary of the site. Both rivers drain east towards the Boyne catchment. A third stream/drain also flows along part of the northern boundary. This stream drains towards the Kinnegad River and is also within the Boyne catchment.

5.5.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derryhinch Bog.

However, a notable plant species, blue fleabane (*Erigeron acris*), was recorded on the railway track running along the south boundary of the site in 2009. This plant is listed in the Irish Red Data Book (Curtis & McGough 1988). However, only a single specimen was present in October 2009. Blue fleabane is an annual species of dry pastures and sandy and gravelly habitats such as esker ridges. Naturally it would not be expected within bog habitats.

5.5.1.3 Wintering Birds

Derryhinch bog has limited potential to support wintering birds of conservation importance reflecting the extent of the commercial peat fields at this site.

Golden plover, an Annex I Birds Directive species, occurs regularly on and around the site, with birds often resting or roosting on the bare peat. A high count of 250 was recorded resting on the bare peat on 11th November 2013.

Peregrine (Annex I species) was recorded several times during winter surveys, with a bird observed hunting golden plover on one occasion. Peregrines may also use the peat ridges as perching posts. Meadow pipit (Red-listed) occurs in the areas of remnant high bog and cutover bog. A range of Amber-listed species occur on site in winter, including kestrel (hunts along margins), snipe and linnet.

5.5.1.4 Breeding Birds

Derryhinch bog has limited potential to support breeding birds of conservation importance reflecting the extent of the commercial peat fields at this site. Meadow pipit (Red-listed), skylark (Amber-listed) and linnet (Amber-listed) breed in the marginal remnant and regenerating bog areas above the commercial peat fields.

5.5.1.5 Mammals

Signs of badgers have been recorded on site, as well as tracks of pine marten in the southern section of the site. The Irish hare is widespread throughout the site.

5.5.2 Designated Sites

There are no sites designated for conservation within or adjoining Derryhinch bog.

5.5.3 Conservation Evaluation of Site

The area of the site that is in current commercial production has no intrinsic conservation value

The cutover bog in the south of the site, which includes a small area of mostly intact high bog with the Annex I habitat Depressions on the peat substrates of the Rhynchosporian, provides useful biodiversity and is rated as **Local Importance (higher value)**. Also in this category are the narrow strips of scrub and grassland along the boundaries of the site, as well as strips of re-colonising bog vegetation.

While the localised blue fleabane has been recorded on site, only one individual was present in 2009. Further survey is required to establish its present status before a rating can be assigned (if still present).

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5.6 Drumman Bog

5.6.1 Ecological Baseline

Drumman Bog is located along the Co. Offaly/Westmeath border, ca.3 km east of Rochfortbridge. The northwest boundary skirts the M6 motorway, while the R400 road skirts its western boundary. Drumman is connected by a rail line to Derryhinch bog to the north and Derryarkin bog (out of production) to the west.

Commercial peat production is now limited to the southern and north-easternmost sectors of the site, with a large area classified as 'Peat Production Related'. Other landuses within the site are sand and gravel quarrying (Bord na Móna/Roadstone venture) and the stockpiling of cut trees. A substantial conifer plantation (8% of site area) was planted by Coillte in the 1990s. The Bord na Móna Derrygreenagh offices occur on site.

The Mongagh River flows through the central area of the site and provides a natural division between the cutaway bog to the north and the remaining commercial peat fields to the south and east.

The site is adjoined by slivers of bog to the east and north-west, with agricultural land to the south.

5.6.1.1 Habitats and Vegetation

The areas of the site which are in commercial peat extraction production comprise mainly bare peat (ED2). Included is a sector in the northeast (Carrick bog), which is somewhat separated from the rest of the site by the Mongagh River and local topography.

Scattered throughout the commercial peat fields and the zone classified as peat production related are strips and patches of pioneering vegetation of cutaway bog, mostly birch scrub (WS1), dry grassland (GS1) and poor fen communities (PF2).

An extensive area of cutaway bog (PB4) occurs north of the Mongagh River. A large wetland area with ponds and standing water has been created in the northeast section after an outfall was blocked in 2005. The open water forms a mosaic with emergent reedbeds (FS1) and extensive fringing poor fen communities (PF2). Strips of birch scrub (WS1) are also present.

There are two main areas of remnant high bog (PB1) associated with the site, one in the north-western sector (mostly outside Bord na Móna property) and one to the east of Carrick Bog (entirely outside of Bord na Móna property). Strips of cutover bog (PB4) occur along much of the eastern boundary of the site.

The gravel and sand extraction area to the south of the cutaway includes a large artificial lake (FL8) and large mounds of aggregates (ED4).

The Mongagh River (FL2), which is within the Boyne catchment, is the main watercourse associated with the site. The channel has been deepened and is skirted by large berms. Natural riparian zones are poorly developed along the river.

5.6.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Drumman Bog.

However, a notable plant species, blue fleabane (*Erigeron acris*), was recorded at several locations around the site in a survey in October 2009. The main population (500-1,000 plants) was alongside the main access road into the quarry. This plant is listed in the Irish Red Data Book (Curtis & McGough 1988). Blue Fleabane is an annual species of dry pastures and sandy and gravelly habitats such as esker ridges. Naturally it would not be expected within bog habitats.

5.6.1.3 Wintering Birds

Drumman Bog is of significant conservation importance for wintering birds.

The quarry ponds in the northern sector provide potential for feeding and/or roosting whooper swans. In winters 2012/13 and 2015/16, the main quarry lake was used as a night roost by whooper swans, which fed on improved grassland outside of the site.

Golden plover were recorded regularly over the site and on occasions flocks were observed landed on the bare peat.

The site provides excellent hunting habitat for birds of prey, with hen harrier, merlin and peregrine each recorded several times on site during winters 2013/14 to 2016/17.

Meadow pipit (Red-listed) is widespread on site during winter. A range of Amber-listed species occur on site in winter, including mute swan, kestrel, snipe and linnet.

5.6.1.4 Breeding Birds

The wetlands in the northeast sector and the quarry ponds provide suitable wetland habitat for breeding ringed plover, lapwing (Red-listed) and snipe, as well as mute swan and little grebe. Tufted duck (Red-listed) has bred and great crested grebe has been recorded in summer and could possibly breed. Black-headed gull (Red-listed) had been recorded prospecting here in 2010 (has bred nearby at Derryarkin).

Meadow pipit (Red-listed) breeds widely on the site, with a range of other Amber-listed species recorded nesting, including skylark (widespread), sand martin (at quarries) and linnet.

It is considered that the proximity of the main wetland area to a mature forestry plantation (which gives cover to predators) is likely to reduce the number of breeding waders present.

5.6.1.5 Mammals

Signs of badgers have been recorded in the northern cutaway area, while signs of pine marten have been recorded in bog woodland along the southern margin of the site. The Irish hare is frequent throughout the site.

The baseline survey for bats carried out in 2013 recorded five species of bat present on site, as follows: soprano pipistrelle, common pipistrelle, daubenton's, myotis whiskered/Brandt's and leisler's. The majority of the bats were recorded along the riparian habitat, mineral banks or between the scrub vegetation and the waterbodies edge. All daubenton's bats were recorded along the water's edge in the northern part of the site. No bats were recorded in areas of open peat extraction.

5.6.2 Designated Sites

There are no sites designated for conservation within or adjoining Drumman bog.

5.6.3 Conservation Evaluation of Site

The areas of the site that are in current commercial production for industrial peat harvesting have no intrinsic conservation value.

The conifer plantations on site have no intrinsic conservation value from a habitat perspective but provide cover for a range of mammal and bird species – these are rated as **Local Importance (lower value)**.

The cutaway bog to the north of the Mongagh River comprises a wide range of vegetation communities including developing wetlands and is considered of high biodiversity value. This sector of the site is rated on the basis of habitats as **Local Importance (higher value)**. The remnant areas of high bog and the cutover strips are also rated of **Local Importance (higher value)**.

The presence of a substantial population of the localised blue fleabane is of importance at the **Local (Higher level) of Importance**. The long-term presence of this species on site will depend on the availability of exposed gravel substrates.

The site is rated as of **County Importance** for both wintering and breeding birds (breeding birds of interest occur mainly north of Mongagh River).

5.7 Rossan (Kinnegad) Bog

5.7.1 Ecological Baseline

Rossan or Kinnegad bog is located approximately 1 km south of Kinnegad town in County Westmeath. It is an isolated bog with no rail connections to other Bord na Móna bog sites. The site is managed as a horticultural bog. The M5 motorway runs just a little to the north of the site, while the R401 road runs close to the eastern side of the site.

The site is almost entirely surrounded by agricultural land. A cement and quarry works occurs to the west of the bog site.

5.7.1.1 Habitats and Vegetation

The majority of Kinnegad Bog is bare peat (ED2), with industrial production still in progress over much of the area.

There are several fields in the central area of the site which are presently out of production. Re-generating dry bog and scrub occur here, along with a silt pond.

A substantial area of high bog (PB1) occurs in the westernmost part of the site (classified as 'cutaway'). This was prepared for development in the 1980s but never fully put into production. While deep drains still occur, it has since regenerated into degraded bog dominated by a sward of *Calluna vulgaris*. A mosaic of high bog remnants and cutover bog (PB4) occurs in the northeast of the site, with fragments of remnant bog and cutover elsewhere along the margins.

A mineral island is located at the southern end of the site. An area of hazel dominated woodland occurs here (WN2). Patches of bog woodland (WN7) and scrub (WS1) occur elsewhere along the margins.

5.7.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Kinnegad Bog.

5.7.1.3 Wintering Birds

Kinnegad bog has limited potential to support wintering birds of conservation importance reflecting the extent of the commercial peat fields at this site.

Golden plover, an Annex I Birds Directive species, occurs regularly on and around the site, with birds often resting or roosting on the bare peat.

Peregrine (Annex I listed) breeds locally and birds use the site for hunting and at times roost on peat mounds.

The marginal areas of remnant bog and cutover bog support meadow pipit (Red-listed), while kestrel, snipe and linnet (all Amber-listed) occur on a regular basis.

5.7.1.4 Breeding Birds

Kinnegad Bog has limited potential for breeding birds of conservation importance.

However, the remnant and cutover bog habitats along the margins support breeding meadow pipit (Red-listed). Snipe (at least one pair) occur on site, along with a range of other Amber

listed species including skylark, stonechat and linnet. Site provides hunting habitat for kestrel and buzzard (both considered to nest nearby).

5.7.1.5 Mammals

Signs of badgers have been recorded on site. The Irish hare is widespread throughout the site.

The baseline survey for bats carried out in 2013 recorded three species of bat present on site, as follows: soprano pipistrelle, common pipistrelle and leisler's. All the bats were recorded along the linear features of well developed hedgerows at the north western side of the bog. No bats were recorded in areas of open peat habitat.

5.7.1.6 Designated Sites

The nearest designated site for conservation is Mount Heavy Bog SAC, which is located approximately 3.1 km to the north of Kinnegad Bog.

5.7.2 Conservation Evaluation of Site

The area of the site that is in current commercial production has no intrinsic conservation value.

The areas of remnant high bog and cutover bog provide useful local biodiversity and are rated **Local Importance (higher value)**. Other habitats on site including the hazel woodland and patches of bog woodland are also given this rating.

Site at times supports golden plover (Annex I listed), as well as peregrine (Annex I) and meadow pipit (latter Red-listed).

5.8 Toar (Torr) Bog

5.8.1 Ecological Baseline

Toar bog is located approximately 4.3 km south of Tyrrellspass in County Westmeath. The M6 motorway skirts the western boundary while the eastern end of the site is connected by a rail link corridor to Derryarkin bog to the northeast.

Toar bog is a relatively young bog in terms of peat production and much of the site consists of red Sphagnum peat. The majority of Toar is in full commercial production and there is no area that is zoned as cutaway. However, there are substantial old cutover areas and some remnant high bog at the eastern and western ends of the site.

Apart from small areas of remnant and cutover bog to the southwest and southeast, the site is almost entirely surrounded by agricultural land. Raheenmore Bog SAC and Nature Reserve is located just over 1 km south-southeast of Toar.

5.8.1.1 Habitats and Vegetation

Toar bog can be conveniently divided into three main sectors: the central area of commercial production, a relatively small area of old cutover and remnant high bog at the western end of the site, and a substantial area of old cutover and remnant high bog at the eastern end of the site.

The central area, which comprises the majority of the site, is in full commercial production and is classified as bare peat (ED2).

The western cutover sector comprises a mix of bog woodland (WN7), dry heath (HH1), poor fen (PF2) and scrub (WS1). The bog woodland is dominated by Birch and Willow. Small strips of remnant raised bog (PB1) occur along the margins of the commercial peat fields.

The eastern cutover sector is also a mosaic of the above listed habitats. Local turbarry for domestic purposes is active in this area. A small isolated section of the site is located to the southeast of the main site and consists of an area of remnant high bog (PB1) that is in active turf production. Some bog woodland and other cutover habitats also occur here.

Narrow strips of degraded raised bog occur along the northern and southern margins of the site.

5.8.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Toar Bog.

5.8.1.3 Wintering Birds

Toar bog has limited potential for wintering bird species of conservation importance. In winter 2013/14, hunting hen harriers were recorded along the marginal bog habitats on three occasions and peregrines were recorded flying over and, on one occasion, landing within the site. Golden plover also flew over the site on several occasions and could be expected to land on the bare peat at times. The Red-listed meadow pipit occurs in the cutover areas during winter. Site attracts Amber-listed species including kestrel, sparrowhawk, snipe and linnet.

5.8.1.4 Breeding Birds

Toar Bog has limited potential for breeding bird species of conservation importance. However, an area of wetland habitat to the southeast of the site supported breeding lapwing and snipe, as well as mute swan. The cutover habitats support a range of breeding passerine species,

including meadow pipit (Red-listed) and various Amber listed species (sparrowhawk, skylark, linnet).

5.8.1.5 Mammals

Badger setts were recorded within the site in February 2012.

The baseline survey for bats carried out in 2013 recorded two species of bat present on site, as follows: soprano pipistrelle and common pipistrelle. All the records were from linear features of well developed hedgerows at the north-eastern side of the site. No bats were recorded in areas of open peat extraction.

5.8.2 Designated Sites

There are no sites designated for conservation within or adjoining Toar bog. As noted, Raheenmore Bog SAC and Nature Reserve is located just over 1 km south-southeast of Toar.

5.8.3 Conservation Evaluation of Site

The area of the site that is in current commercial production for industrial peat harvesting has no intrinsic conservation value.

The cutover habitats at the eastern and the western ends of the site support a range of habitats and vegetation communities, especially bog woodland. Remnant high bog is also present though this is limited in extent and has been disturbed by local turf cutting. These bog habitats support hunting hen harriers, breeding meadow pipits (Red-listed) and various Amber-listed bird species. Overall, a rating of **Local Importance (higher value)** is assigned to the cutover and remnant high bog areas of the site.

6 Blackwater Bog Group

6.1 Ballaghurt / Glebe Bog

6.1.1 Ecological Baseline

Ballaghurt/Glebe Bog is located approximately 6 km south of Ballynahown in Co. Offaly. The site comprises four separate entities – a large eastern sector, a western sector, Clonlyon Glebe pNHA (latter located within a small topographical basin), and a small bog at Cor More and Cor Beg that is not in commercial production. The complex is connected to the main Blackwater Bog by a rail link. The River Blackwater flows through the eastern sector of the site.

The site is mostly surrounded by agricultural land. Areas of remnant high bog and cutover bog border the site in places, along with scrub and wet grassland.

6.1.1.1 Habitats and Vegetation

The majority of the site is in active production and is classified as bare peat (ED2). Clonlyon Glebe bog was developed by Bord na Móna in the 1980s and 1990s but has only come into full commercial production in recent years. Some of the fields in the easternmost sector of the site have only recently been cleared of surface vegetation and still support remnants of plants of *Calluna vulgaris*, *Eriophorum angustifolium* and the moss *Campylopus introflexus*.

Areas of remnant high bog (PB1) and cutover bog (PB4) occur along the various margins of the site (some outside Bord na Móna property). Apart from two exceptions, the areas of high bog are relatively small in extent, with surfaces mostly dry and tending to be dominated by *Calluna vulgaris*. Cover by bog mosses (*Sphagnum* spp.) is mostly low.

A substantial area of largely intact high bog occurs in the northeast of the site, north of the road between Doon and Clonmacnoise (R444). Some surface drains had been inserted in the southern sector though these are now mostly infilled with *Sphagnum* mosses and other bog plants. This bog supports a typical raised bog flora, and has wet areas dominated by *Rhynchospora alba*. This bog is considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. The related Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] is also represented. The Cor More and Cor Beg bog comprises relatively intact high and cutover – the high bog is classified as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120].

Parts of the cutover bog have developing bog woodland (WN7) and scrub (WS1).

6.1.1.1 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Ballaghurt / Glebe Bog.

6.1.1.2 Wintering Birds

Ballaghurt / Glebe Bog has low potential to support wintering birds of conservation importance. Golden plover would be expected to roost on the bare peat fields at times.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site. Snipe (Amber-listed) were flushed from several areas of remnant and cutover bog in November 2016.

6.1.1.3 Breeding Birds

Meadow pipit (Red-listed) breeds in the various areas of high bog and cutover bog.

6.1.1.4 Mammals

Badger and Irish hare have been recorded within marginal habitats around the site.

Otter (Annex II listed species) has been recorded on site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.1.2 Designated Sites

While Clonlons Glebe is a pNHA, it is understood that an NPWS survey to select raised bogs for designation as actual Natural Heritage Areas reviewed the status of Clonlons Bog (Derwin et al. 2002) and did not recommend its further designation as an NHA "as 80% of the bog has been drained" and it was considered too damaged to be designated at that stage.

Fin Lough (Offaly) SAC is located approximately 1.4 km from Ballaghurt / Glebe Bog.

6.1.3 Conservation Evaluation of Site

The majority of this site is in commercial peat production and has no intrinsic conservation value.

Apart from the two exceptions as noted, the various areas of remnant high bog are all relatively small in size and/or in a degraded state – such areas are rated as **Local Importance (higher value)**, as are the various areas of cutover bog. Other habitats such as bog woodland are also given this rating.

The high bog north of the road between Doon and Clonmacnoise is considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120] and supports the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] – this area of bog is rated as of **County Importance**. The high bog at Cor More and Cor Beg is also given this rating.

Otter, an Annex II listed species and a qualifying interest for the SAC, occurs on the site.

Meadow pipit, a Red-listed species, is widespread on the marginal bog habitats.

Figure 22: View of intact bog to north of road, northeast sector of Ballaghurt Bog. This bog supports the Annex I habitats Degraded raised bog and Depressions on peat substrates (Rhynchosporian). View is looking westwards



Source: BioSphere Environmental Services

Figure 23: View of road and marginal strip (c.20 m wide) which separates the intact high bog from commercial peat fields. View is looking eastwards



Source: BioSphere Environmental Services

Figure 24: View of southern margin of Clonlyons Bog pNHA. The site has been developed commercially, with remnant strips of high bog adjoining the peat fields. View is looking eastwards from southwest corner of site



Source: BioSphere Environmental Services

6.2 Belmont Bog

6.2.1 Ecological Baseline

Belmont Bog is located on the east side of the Blackwater River and lies adjacent to Blackwater Bog. The bog has developed in two connecting basins, with the northern basin being the larger of the two. These basins or bog units are separated by a ridge of high ground that has been developed as a conifer plantation by Coillte.

The northern bog unit is orientated northwest to southeast with the Blackwater River flowing along the northwestern margin. The northern part of this sector is out of production (classified as 'cutaway') and is dominated by well-established regenerating vegetation. A further small area of cutaway and cutover bogs occurs in the southernmost part of the site. A large part of this sector of the site is classified as peat production related. A feature of Belmont is the appearance of two relatively large gravel mounds through the centre of the site, as well as several smaller lower mounds. One of these mounds (Derries Hill) was planted with Oak and Sitka Spruce in the 1960's-1970's. Gravel is also exposed around the site in several places, particularly along the north-west margin.

The southern bog unit (Kilcummin) is mostly in active milled peat production. The site includes commercial forest plantations.

Apart from commercial forestry, the main land-use in surrounding areas is agricultural grassland. Some small areas of remnant high bog and cutover occur along the margins of the site.

6.2.1.1 Habitats and Vegetation

The majority of the Kilcummin component and the southern part of the main bog unit is in active peat production and comprises bare peat ED2. There are substantial areas of re-generating cutaway in varying stages of development (classified largely as Recolonising bare ground ED3) in the northern (out of production) and central areas of the main bog. Habitats here vary from bare ground to permanently ponded areas, with birch scrub a feature in parts.

Areas of remnant high bog (PB1) and cutover bog (PB4) occur at various locations along the margins of the site. These are mostly small in extent and in a degraded state. One substantial area of remnant high bog and cutover (classified as cutaway) occurs in the southernmost sector of the main bog unit. A series of surface drains are now mostly filled in with *Sphagnum* spp. Wet areas dominated by *Rhynchospora alba* are present and such areas conform to the Annex I habitat Depressions on peat substrates (Rhynchosporian).

A substantial area of Bog woodland (WN7) occurs on the western side of Kilcummin Bog.

6.2.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Belmont Bog.

6.2.1.3 Wintering Birds

Belmont Bog comprises part of the Blackwater Bog wetland system and is frequented at times by wintering whooper swans (Annex I species) and other wetland birds. Up to 100 swans have been recorded. Most activity is associated with the wet areas of the northernmost part of the

site. Lapwing and golden plover (latter Annex I species) have been recorded roosting on bare peat in the central sector of the main bog unit.

6.2.1.4 Breeding Birds

The regenerating cutaway zones support nesting lapwing (Red-listed) and ringed plover.

Meadow pipit (Red-listed) and skylark (Amber-listed) breed in the cutaway zone as well as in the various areas of remnant high bog and in the cutover bog.

6.2.1.5 Mammals

Badger, Irish hare and pine marten have been recorded in the marginal habitats around the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with woodland and scrub habitats both within the site and along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.2.2 Designated Sites

Moyclare Bog SAC [Site Code 0581] is located approximately 700 m from Belmont Bog. This is a relatively intact raised bog site.

6.2.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields provide a roost site for wintering golden plover, an Annex I bird species.

The developing wetland and scrub vegetation on cutaway bog and the area classified as peat production related in the northern and central areas of the main bog unit is rated as of **Local Importance (varying from lower to higher value)**. Of note is that this area supports wintering wetland birds on occasions, including a population of whooper swan that frequents the Blackwater Bog complex and other areas. The area also supports breeding birds of interest, including lapwing and meadow pipit (both Red-listed).

The various areas of cutover bog and degraded remnant high bog associated with the site, as well as bog woodland and scrub, provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

An area of remnant high bog and cutover in the southernmost part of site supports the Annex I habitat Depressions on peat substrates (Rhynchosporian) – this bog area is rated at least of **Local Importance (higher value)**.

6.3 Blackwater Bog

6.3.1 Ecological Baseline

Blackwater is one of a cluster of bogs that has developed along the floodplains of the River Shannon. It is one of a group of bogs in the area, which includes Kilmacshane and Garryduff, that frequently becomes wet during winter. It is located just northeast of Shannonbridge and southwest of Clonmacnoise in County Offaly.

The Blackwater Works is located at the southern end of the site and there is one main track that runs in a north-east to south-west direction towards a large ash waste facility (storage of ash produced by West Offaly Power). A railway also runs along this track and there are other branch railways on either side that divide the rest of the site into several main blocks. The other main topographical features are a mineral island containing farmland at Leitra Townland, which is excluded from the site, and the Gowlan River, which flows north to south through the central part of the site and also around the north eastern boundary.

The vast majority of Blackwater is in active production or is cutaway with re-colonising vegetation. There are several BOGFOR experimental forestry plots and two rehabilitated constructed wetlands.

Part of the site adjoins the seasonally flooded River Shannon callow grasslands to the west. Belmont Bog adjoins the site to the southeast and Ballaghurt Bog adjoins it to the northeast. Mongan Bog lies to the north. Esker ridges are a feature of the area to the north and northwest. Areas of remnant raised bog and cutover bog occur in some of the adjoining areas. Improved agricultural grassland occurs to the north and south.

6.3.1.1 Habitats and Vegetation

This is a large and complex site, supporting a high diversity of remnant and developing habitats.

The majority of the site is in peat production and comprise bare peat (ED2). This includes areas classified as 'Haku Peat Production' and Peat Production related'. There are, however, substantial areas of re-generating cutaway in varying stages of development (classified largely as Recolonising bare ground ED3). These areas include permanent ponded areas with swamp vegetation, developing fen, scrub and birch dominated woodland. Two areas of the site have been zoned as Biodiversity Areas.

Areas of remnant high bog (PB1) and cutover bog (PB4) occur at various locations along the margins of the site. Substantial areas of remnant bog occur along the northeast and southeast boundaries (A and B on map). These areas, which are largely outside of Bord na Móna property, are considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120] and both support the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150]. Elsewhere the remnant high bogs are mostly small in area, dry and very degraded. Some of the marginal bogs support Bog woodland (WN7).

The site includes much of Fin Lough. This wetland, which is designated as an SAC, supports alkaline fen and the Annex II listed snail *Vertigo geyeri*. There is a fine example of transition from fen to raised bog habitat.

6.3.1.2 Rare Flora

There are no known legally protected plant species [Flora (Protection) Order 2015] or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Blackwater Bog.

6.3.1.3 Wintering Birds

Blackwater Bog is a known site of importance for wintering whooper swans (Annex I species) and other wetland birds.

In a detailed survey in winter 2014 / 2015 whooper swan numbers were of national importance in the early part of the winter and on one date exceeded the threshold for international importance. The survey indicated that the site provides both feeding (mostly *Eriophorum* dominated wet bog) and roosting habitat for the swans. The swans which use the Blackwater Bog site are considered as part of the Middle Shannon Callows whooper swan population (which is rated of international importance). A total of 286 whoopers was present within the site on 2nd February 2018 (source: Bord na Móna). The site also supported a nationally important population of Teal (i.e. >340) and smaller numbers of mallard, wigeon and pintail. Golden plover and lapwing pass over the site fairly regularly and at times land within the site. Numbers, however, were relatively low for these species.

Blackwater Bog is an important site for birds of prey. Of particular note is that the site supports a regular winter night roost for hen harrier and birds also forage over the site. Merlin and peregrine also use the site, as well as sparrowhawk, buzzard and kestrel.

The site supports a range of other species of conservation interest. Meadow pipit, Red-listed on basis of breeding population, occurs throughout much of the site. Other Amber-listed species recorded on site included little grebe, snipe, skylark, stonechat, starling and linnet.

6.3.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. The re-vegetating areas of cutaway bog would be expected to support breeding lapwing and ringed plover, as well as various wildfowl species.

Meadow pipit (Red-listed) and skylark (Amber-listed) breed on the various areas of high bog and in the cutover bog. The site has good potential for breeding black-headed gull.

6.3.1.5 Mammals

Badger, Irish hare and pine marten have been recorded in the marginal habitats around the site.

Signs and sightings of otter have been recorded within the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with woodland and scrub habitats both within the site and along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.3.2 Designated Sites

Blackwater Bog unit is intersected by the Fin Lough (Offaly) SAC and the River Shannon Callows SAC and the Middle Shannon Callows SPA.

Mongan Bog SAC is located approximately 200 m from Blackwater Bog.

Pilgrim's Road Esker SAC is located approximately 1.3 km from Blackwater Bog.

Lough Nanag Esker pNHA [site code 0910] lies adjacent to the north-western boundary of Blackwater Bog. The site consists of a series of esker ridges which support calcareous grassland and a suite of rare plants. The Lough Nanag basin (now partly infilled) is located within the Bord na Móna property.

6.3.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields provide a roost site for wintering golden plover, an Annex I bird species which is a Special Conservation Interest for the Middle Shannon Callows SPA.

The developing wetland vegetation on cutaway bog in the central area of the site is rated as of **Local Importance (varying from lower to higher value)**. Of note is that this area supports wintering wetland birds on a regular basis, including a population of whooper swan that has at times exceeded the threshold for International Importance. The area also supports breeding birds of interest, including lapwing and meadow pipit (both Red-listed).

The various areas of cutover bog and degraded remnant high bog associated with the site, as well as bog woodland and scrub, provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The two areas of relatively intact high bog which are considered to conform to the Annex I habitat Degraded raised bog are rated of **County Importance** (it is noted that the majority of these areas are outside of the Bord na Móna property). A further Annex I habitat, Depressions on peat substrates (Rhynchosporian), occurs on both of these bogs.

Much of the Fin Lough SAC is within the boundary of Blackwater Bog, while some marginal parts of the site overlap with the Shannon Callows SAC and the Middle Shannon Callows SPA – such areas are, by default, of **International Importance**.

Otter, an Annex II listed species and a qualifying interest of the River Shannon Callows SAC, occurs on the site.

Figure 25: View of high bog along northeast boundary of Blackwater Bog (looking eastwards). This bog is considered to conform to the Annex I habitat Degraded raised bog and supports the Annex I habitat Depressions on peat substrates (Rhynchosporian)



Source: BioSphere Environmental Services

Figure 26: View of drain along southwest boundary of Fin Lough SAC (looking eastwards). Image shows raised bog which merges with Annex I habitat Alkaline Fen



Source: BioSphere Environmental Services

6.4 Bloomhill Bog

6.4.1 Ecological Baseline

Bloomhill Bog is located approximately 4 km southwest of Ballynahown in Co. Offaly (a small portion of sites extends into Co. Westmeath). It is connected to Blackwater Bog via a rail link to the southwest and to Bunahinly/Kilgarvan Bog via a short rail link to the north. The bog completely surrounds a large mineral island known as Bloomhill. Peat production began at Bloomhill in 1981. There is a small southern outlier which adjoins Mongan Bog to the southwest. The River Shannon skirts the western and north-western margins of the site.

The site is mostly surrounded by agricultural land, with callow grasslands occurring between the bog margin and the main Shannon channel. Areas of remnant high bog and cutover bog border the site in places, along with scrub and wet grassland.

6.4.1.1 Habitats and vegetation

The majority of the site is in active production and is classified as bare peat ED2. There is little or no regenerating cutaway in the production areas.

Areas of remnant high bog (PB1) and cutover bog (PB4) occur along the various margins of the site (some outside Bord na Móna property). The areas of high bog are relatively small in extent. The surfaces are mostly dry and tend to be dominated by *Calluna vulgaris*. Cover by bog mosses (*Sphagnum* spp.) is mostly low. Cutover bog areas are often dominated by bog woodland (WN7) and scrub (WS1).

6.4.1.2 Rare flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Bloomhill Bog.

6.4.1.3 Wintering birds

Bloomhill Bog has low potential to support wintering birds of conservation importance. Golden plover, which are widespread along the Shannon system, would be expected to roost on the bare peat fields at times.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site. Snipe (Amber-listed) were flushed from several areas of remnant and cutover bog in November 2016.

6.4.1.4 Breeding Birds

Meadow pipit (Red-listed) breeds in the various areas of high bog and cutover bog.

In 2012, Curlew was present on remnant bog in the northern areas of the site and the area was considered to have potential to support a nesting attempt.

6.4.1.5 Mammals

Badger, Irish hare and pine marten have been recorded within marginal habitats around the site.

Otter (Annex II listed species) has been recorded on site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.4.2 Designated Sites

Bloomhill Bog is intersected by

- the Fin Lough (Offaly) SAC
- the Mongan Bog SAC/SPA – to the south/southwest
- the Pilgrim's Road Esker SAC to the southwest
- the River Shannon Callows SAC and
- the Middle Shannon Callows SPA.

The River Shannon Callows SAC (code 0216) and the Middle Shannon Callows SPA (code 04096) occur close to the west and northwest margins of the site. There is a small overlap between the bog site and the designations in the extreme west of the site – this comprises the marginal area of a peat field (now classified as birch scrub and peat production related) with no apparent significant ecological importance.]

6.4.3 Conservation Evaluation of Site

The majority of this site is in commercial peat production and has no intrinsic conservation value.

The various areas of remnant high bog are all relatively small in size and/or in a degraded state – such areas are rated as **Local Importance (higher value)**, as are the various areas of cutover bog. Other habitats such as bog woodland are also given this rating.

While technically the area of the site which overlaps with the SAC/SPA is classified as of **International Importance**, the habitats here are not included as qualifying interests for the SAC or do not support the Special Conservation Interests of the SPA.

Otter, an Annex II listed species and a qualifying interest for the SAC, occurs on the site.

Meadow pipit, a Red-listed species, is widespread on the marginal bog habitats. Curlew, a further Red-listed species, was recorded in suitable breeding habitat on site in 2012.

Figure 27: View of Mongan Bog SAC (right of rail track in picture). The Bloomhill Bog production area is separated from the SAC by a public road



Source: BioSphere Environmental Services

6.5 Bunahinly/Kilgarvan Bog

6.5.1 Ecological Baseline

Bunahinly/Kilgarvan Bog is located approximately 1 km south of Athlone in Co. Westmeath. The site comprises two bog units, linked by a narrow corridor of just over one kilometre. There is a short rail link from the southern end of the site to the northeast end of Bloomhill Bog. The River Shannon flows close (< 100 m in places) to the western boundary of the site. The two bogs only came into production in the 1990s.

A national rail line skirts the northeast corner of the bog and there is an industrial park to the other side of the rail line. Otherwise, the site is mostly surrounded by agricultural land, with callow grasslands occurring between the bog margin and the main Shannon channel to the west. Areas of remnant high bog and cutover bog border the site in places, along with scrub and wet grassland.

6.5.1.1 Habitats and Vegetation

Both sectors of the site are in active production, with bare peat (ED2) the principal habitat present. There is little or no regenerating cutaway in the production areas.

Narrow strips of remnant high bog (PB1) and cutover bog (PB4) occur around much of the southern sector (Kilgarvan). In places, the cutover bog is dominated by bog woodland (WN7) and scrub (WS1).

Production in the northern (Bunahinly) sector has extended recently into the northwest side-arm (shown as vegetated in 2013 habitat map). A small area of ditched high bog that has not been developed occurs in the extreme north of this side-arm (classified as 'remnant bog'). The drains in this high bog, which is classified as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120], have been blocked in autumn 2016. North of this degraded bog (and outside of the Bord na Móna property) there is a large area of relatively intact high bog which supports the Annex I habitats Degraded raised bog still capable of natural regeneration [7120] and Depressions on peat substrates (Rhynchosporian) [7150].

A substantial area of high bog in the northeast of the site has been taken out of production. The former drains have now been blocked and bog vegetation is becoming re-established mainly with *Calluna vulgaris* and *Eriophorum angustifolium*. However, cover by bog mosses (*Sphagnum* spp.) is very low throughout and there are still bare patches. Self-seeded conifers are established throughout much of the area. While this area of high bog has characters of the Annex I habitat Degraded raised bog still capable of natural regeneration [7120], it is considered a poor example.

6.5.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Bunahinly Kilgarvan Bog.

6.5.1.3 Wintering Birds

Bunahinly Kilgarvan Bog has low potential to support wintering birds of conservation importance. Golden plover, which are widespread along the Shannon system, would be expected to roost on the bare peat fields at times.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site. Snipe (Amber-listed) were flushed from several areas of remnant and cutover bog in November 2016.

6.5.1.4 Breeding Birds

Meadow pipit (Red-listed) breeds in the various areas of high bog and cutover bog.

6.5.1.5 Mammals

Badger and Irish hare have been recorded within marginal habitats around the site.

Otter (Annex II listed species) has been recorded on site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.5.2 Designated Sites

The River Shannon Callows SAC (code 0216) and the Middle Shannon Callows SPA (code 04096) occur approximately 10 metres from the western margins of the site.

Lough Ree SAC/SPA are located approximately 3.5 km from Bunahinly



6.5.3 Conservation Evaluation of Site

The majority of this site is in commercial peat production and has no intrinsic conservation value.

The various areas of remnant high bog are mostly small in size and/or in a degraded state – such areas are rated as **Local Importance (higher value)**, as are the various areas of cutover bog. Other habitats such as bog woodland are also given this rating.

The high bog in the extreme northwest of the site (much of which is outside of the Bord na Móna property) is considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120] and supports the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] – this area of bog is rated as of **County Importance**.

The area of high bog in the northeast of the site, which is being restored by Bord na Móna, has characters of the Annex I habitat Degraded raised bog still capable of natural regeneration [7120] and is considered at least of **Local Importance (higher value)**.

Otter, an Annex II listed species and a qualifying interest for the SAC, has been recorded within the site.

Meadow pipit, a Red-listed species, is widespread on the marginal bog habitats.

Figure 28: View of high bog in extreme northwest sector of Bunahinly Bog. View is looking northwards over a recently blocked surface drain. This bog conforms to the Annex I habitat Degraded raised bog



Source: BioSphere Environmental Services

Figure 29: View of high bog to northwest of Bord na Móna site (looking north towards Athlone). This bog supports the Annex I habitats Degraded raised bog and Depressions on peat substrates (Rhynchosporian)



Source: BioSphere Environmental Services

Figure 30: View of high bog in northeast sector of Bunahinly Bog. View is looking north-eastwards over a recently blocked surface drain. This bog shows characters of the Annex I habitat Degraded raised bog



Source: BioSphere Environmental Services

6.6 Clooniff Bog

6.6.1 Ecological Baseline

Clooniff Bog is located approximately 6 kilometres north of Shannonbridge in Co. Roscommon. It is connected by rail links to Cornafulla Bog to the northeast and Cornaveagh Bog to the southwest. The River Shannon flows close to the eastern and north-eastern sectors of the site.

Clooniff essentially comprises four separate bogs (in a clockwise direction from the south these are referred to as sectors A-D below) . The majority of the site is in active production.

Extensive areas of remnant high bog and cutover bog occur along the margins. Otherwise the site is surrounded mainly by agricultural land, with callow grasslands occurring between the bog margin and the main Shannon channel.

6.6.1.1 Habitats and vegetation

The majority of the site is in active production and is classified as bare peat (ED2). There are two areas of regenerating cutaway in sectors B and D – these areas, which represent the habitat Recolonising bare ground ED3, include wetland vegetation with pools and marginal wetland vegetation such as *Typha latifolia*. The wetland area in sector D is classified as cutaway by Bord na Móna.

Areas of remnant high bog (PB1) and cutover bog (PB4) occur along various margins, notably the northwest of sector A, the northwest and southeast of sector B, the north of sector C, and the north and northeast of sector D. These areas of high bog are mostly relatively small in extent and/or of poor quality. A very large expanse of relatively intact raised bog occurs to the north of sector C (outside of Bord na Móna property) – this bog is considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. One very wet area which has pools with *Menyanthes trifoliata* supports the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] – this wet zone is located just north of the track which separates the bog from the Bord na Móna fields.

6.6.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Clooniff Bog.

6.6.1.3 Wintering Birds

While there appears to be no available regular surveys for this site, whooper swans have been recorded on at least two occasions on regenerating cutaway (sector D), with 8 in November 2016 and 47 on 2nd February 2018. Golden plover, which are widespread along the Shannon system, would be expected to roost on the bare peat fields at times.

Substantial numbers of mallard and teal have been recorded on various silt ponds, cutaway areas and channels which flow through the site, with approximately 40 mallard present in November 2016.

A hen harrier was recorded on site in February 2018.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site. Other Amber-listed species recorded in November 2016 were kestrel, snipe and stonechat.

6.6.1.4 Breeding Birds

Meadow pipit (Red-listed) would certainly breed in the various areas of high bog and cutover bog.

It is possible that breeding waders such as lapwing could attempt to nest on the regenerating cutaway vegetation in sectors B and D.

6.6.1.5 Mammals

Badger, Irish hare and pine marten have been recorded within marginal habitats around the site.

Otter (Annex II listed species) has been recorded on site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.6.2 Designated Sites

The River Shannon Callows SAC (code 0216) and the Middle Shannon Callows SPA (code 04096) intersect the bog along the east and northeast margins of the site, which includes some remnant high bog, with the eastern part of sector B, as well as a silt pond outlet in sector D.

6.6.3 Conservation Evaluation of Site

The majority of the sector of the site that is in commercial peat production has no intrinsic conservation value.

The various areas of remnant high bog are all small in size and/or in a degraded state – such areas are rated as **Local Importance (higher value)**, as are the various areas of cutover bog.

One substantial area of high bog is classified as the Annex I habitat Degraded raised bog and this supports the Annex I habitat Depressions on peat substrates (Rhynchosporian).

While technically the area of the site which overlaps with the SAC/SPA is classified as of **International Importance**, the habitats here are not included as qualifying interests for the SAC.

Otter, an Annex II listed species and a qualifying interest for the SAC, occurs on the site.

Whooper swans (Annex I species) were recorded on regenerating cutaway in November 2016 and may be regular in this sector of the site. Whooper swan is a Special Conservation Interest for the SPA. Meadow pipit, a Red-listed species, is widespread on the marginal bog habitats.

Figure 31: View of regenerating cutaway bog, sector D (looking westwards). Whooper swans have been recorded here



Source: BioSphere Environmental Services

Figure 32: View of extensive area of raised bog to north of sector C (looking northwards). This bog is classified as Degraded high bog.



Source: BioSphere Environmental Services

Figure 33: View of Annex I Degraded raised bog to north of sector C. A wet area close to the southern margin supports the Annex I habitat Depressions on peat substrates (Rhynchosporian). Species such as *Menyanthes trifoliata* were recorded in July 2016 (photo taken in November 2016)



Source: BioSphere Environmental Services

6.7 Cornafulla Bog

6.7.1 Ecological Baseline

Cornafulla Bog is located approximately 8.5 kilometres southwest of Athlone in County Roscommon. It is connected by a rail link to Cloniff Bog (approximately 1 kilometre to the southwest). The River Shannon flows a little to the south and southeast of Cornafulla.

The site comprises two separate sectors, a main rectangular-shaped bog and a much smaller square-shaped bog to the west. The majority of the site is in active production.

Extensive areas of remnant high bog and cutover occur along the eastern and southern margins. Agricultural land occurs to the west and north though there is further cutover as well.

6.7.2 Habitats and Vegetation

The majority of the site is in active production and is classified as bare peat (ED2). There is practically no re-generating cutaway bog vegetation at present.

Extensive areas of remnant high bog (PB1) and cutover bog (PB4) occur along virtually the entire eastern and south-eastern sectors of the main bog area. Much of this is outside of, but adjoining, the Bord na Móna property. The high bog areas are generally intact and in places are noticeably wet. The majority of the intact high bog is considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. The Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] is also well represented. One area of high bog is quaking bog and has numerous pools and lawns which are rich in bog mosses (*Sphagnum* spp.) and supports species such as *Menyanthes trifoliata* - this appears to represent an area of the Annex I priority habitat Active raised bog [7110]. Included within this complex of high bog is an area of Degraded raised bog that has been ditched in the past but which has retained surface vegetation.

6.7.2.1 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Cornafulla Bog.

6.7.2.2 Wintering Birds

While there appears to be no available information, it is expected that Cornafulla Bog would be used as a roost site at times by golden plover, an Annex I Birds Directive species that is widespread along the Shannon system.

A sighting of hen harrier (Annex I species) was made on site in March 2012 and this species can be expected along the marginal habitats at times.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site. A range of Amber-listed species occur on site during winter, including kestrel, snipe and stonechat.

6.7.2.3 Breeding Birds

Meadow pipit (Red-listed) would certainly breed in the various areas of high bog and cutover bog.

6.7.2.4 Mammals

Badger and the Irish hare have been recorded within marginal habitats around the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.7.3 Designated Sites

The River Shannon Callows SAC [Site Code 0216] and the Middle Shannon Callows SPA [Site Code 04096] intersect the southeast and southern margins of the site. A silt pond outlet in the southwest of the site passes through the designated area.

Pilgrim's Road Esker SAC and Mongan Bog SAC are located approximately 390m and 640m respectively from the bog.

6.7.4 Conservation Evaluation of Site

The majority of the sector of the site that is in commercial peat production has no intrinsic conservation value.

The site is notable for the extensive area of mostly intact high bog that straddles the eastern and south-eastern boundaries of the site. The majority of this is of good quality and conforms to the Annex I habitat Degraded raised bog.

Also well represented is the Annex I habitat Depressions on peat substrates (Rhynchosporian). A small core of wet, quaking bog appears to confirm to the Annex I priority habitat Active raised bog [7110]. Due to the scale of this complex of relatively intact high bog habitats (parts of which are within the Bord na Móna site), the bog associated with Cornafulla is rated at least of **County Importance** (further survey of this bog complex could result in the rating being upgraded to **National Importance**).

A further area of more disturbed high bog in the southwest sector is rated as **Local Importance (higher value)**, as are the various areas of cutover bog.

Meadow pipit, a Red-listed species, is widespread on the marginal bog habitats. The Annex I listed hen harrier has been recorded on site and it is expected that wintering golden plover would use the bare peat fields as roost sites.

Figure 34: View of high bog at northeast end of Cornafulla Bog (looking northwest). This area is considered to conform to the Annex I habitat Degraded raised bog



Source: BioSphere Environmental Services

Figure 35: View of drain at edge of high bog at northeast end of Cornafulla Bog (looking southeast). Note wet peat thrown up on edge of high bog from recent drain clearing



Source: BioSphere Environmental Services

Figure 36: View of quaking area of wet bog with pools in southeast sector of Cornafulla Bog – this area appears to conform to the Annex I habitat Active raised bog



Source: BioSphere Environmental Services

Figure 37: View of Annex I Degraded high bog in southeast sector – this area has been ditched in the past



Source: BioSphere Environmental Services

Figure 38: While the surface of the area of the high bog has been ditched, good recovery has occurred in places. View is wet bog which supports the Annex I habitat Depressions on peat substrates (Rhynchosporian)



Source: BioSphere Environmental Services

Figure 39: View of Annex I Degraded high bog in southeast sector of Cornafulla Bog – this area of high bog has a central wet zone with pools and supports the Annex I habitat Depressions on peat substrates (Rhynchosporian)



Source: BioSphere Environmental Services

6.8 Cornaveagh Bog

6.8.1 Ecological Baseline

Cornaveagh Bog is one of a cluster of bogs that has developed along the floodplains of the River Shannon. It is located approximately 1.5 kilometre west of Shannonbridge in County Roscommon, and is bisected by the R357 Shannonbridge to Ballinasloe Road. The largest section of production bog is to the north of the R357 road.

There is a railway link from Cloniff Bog to the north and from Cullighmore to the west, with a link to Garryduff via a bridge over the River Suck. This bog is located close to the confluence of the River Suck and River Shannon, with the southern margin extending to the River Suck and the eastern margin running parallel to the River Shannon Callows. It is bordered to the north-west by an esker ridge.

The site is largely surrounded by agricultural grassland but there are some fringing areas of remnant raised bog and cutover bog, as well as birch woodland, scrub and wet grassland.

6.8.1.1 Habitats and Vegetation

The northern (and largest) sector of Cornaveagh Bog is nearly all in milled-peat production (bare peat ED2), with virtually no development of typical pioneer cutaway habitats.

A substantial area of cutover bog (PB4) occurs along the eastern and southeastern margins of the peat fields in the northern section. Developing birch woodland (WN7) is often associated with the cutover bog here. Some small strips of remnant high bog (PB1) also occur along the eastern margin – these are very dry and dominated by *Calluna vulgaris*.

Two areas of high bog (PB1) occur just outside the northern margin of the Bord na Móna property. These are relatively intact and support typical raised bog vegetation. The northernmost one is the larger of the two.

The smaller sector of the site to the south of the R357 is roughly two-thirds in milled-peat production (ED2) and one third undeveloped high bog. This area of high bog was classified as development bog and while ditched was never fully developed for production. It is now zoned as a Bord na Móna biodiversity area. There is a deep drain dividing this area of high bog from the adjoining peat fields. While surface drains were inserted these are now mostly filled in with bog mosses (*Sphagnum* spp.), *Rhynchospora alba* and *Eriophorium angustifolium*. Of particular interest is a relatively large wet quaking area with abundant *Sphagnum* cover in the western end of the bog. Other species here include *Menyanthes trifoliata*, *Vaccinium oxycoccus* and *Rhynchospora* lawns. This area of wet bog is considered to qualify as the Annex I priority habitat Active raised bog [7110], with the remainder of the high bog qualifying as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. The Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] is also represented.

6.8.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Cornaveagh Bog.

6.8.1.3 Wintering Birds

Cornaveagh bog has limited potential to support wintering birds of conservation importance reflecting the extent of the commercial peat fields at this site.

However, should the site flood it could attract whooper swans (Annex I species) which winter in substantial numbers along the Shannon/Suck system and at times use the nearby Garryduff and Kilmacshane bogs.

Golden plover, a further Annex I Birds Directive species, is widespread along the Shannon/Suck system and could at times be expected to use the bare peat fields for roosting (as has been observed at other Bord na Móna cutaway bogs).

Meadow pipit (a Red-list species) would occur on the various areas of high bog and cutover bog along the margins of the site. A range of Amber-listed species would be expected on site during winter, including kestrel and snipe.

6.8.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed at least in the area of high bog in the southernmost part of the site.

6.8.1.5 Mammals

Signs of badgers have been recorded along the margins of the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.8.2 Designated Sites

The bog habitats within Cornaveagh are not part of any designated area. However, the railway line which runs south of the bog and over the River Suck is within the River Suck Callows SPA (code 04097) and the Suck River Callows NHA (code 0222).

The eastern boundary of the site is within approximately 80 m of the River Shannon Callows SAC (code 0216) and the Middle Shannon Callows SPA (code 4096).

6.8.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for wintering golden plover, and whooper swans may take refuge at the site when in flood (both Annex I bird species).

The areas of remnant high bog and cutover bog, including developing birch woodland, along parts of the margins of the northern sector of the site provide useful habitat for wildlife, including the Red-listed meadow pipit, and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The area of relatively intact high bog in the southernmost part of the site has considerable conservation value and supports the Annex I habitats Active raised bog, Degraded raised bog and Depressions on peat substrates (*Rhynchosporian*). This sector, which has been zoned a Biodiversity Area by Bord na Móna, is rated of **County Importance**.

While the railway line which runs south of the bog and over the River Suck has no intrinsic ecological interest, it is within the River Suck Callows SPA (code 04097) and therefore is part of an **Internationally Important** site.

Figure 40: View of wet, quaking area on Cornaveagh Bog. This area supports active bog and Depressions on peat substrates (Rhynchosporian)



Source: BioSphere Environmental Services

Figure 41: View of drain along edge of the high bog at Cornaveagh. Water seeps from the cut peat face



Source: BioSphere Environmental Services

6.9 Culliaghmore Bog

6.9.1 Ecological Baseline

Culliaghmore is one of a cluster of bogs that has developed along the floodplains of the River Shannon. It is located approximately 4 kilometres southeast of Ballinasloe in County Galway and is connected to Cornaveagh Bog by a rail link through farm land. The bog is located along the River Suck, which flows along part of the southern boundary. An esker ridge skirts the northern boundary of the site.

The majority of the site is in active production. To the south and west, the site adjoins areas of seasonally flooded callow grassland associated with the River Suck. Extensive areas of remnant high bog and cutover occur along the eastern and western margins.

6.9.1.1 Habitats and Vegetation

The majority of the site is in active production and is classified as bare peat ED2.

Areas of remnant high bog (PB1) and cutover bog (PB4) occur along the northeast, east and western boundaries. The high bog areas in the northeast and west are highly disturbed and fragmented from turbary and drainage.

The high bog area to the east (much of which is outside of Bord na Móna property) is substantial in area and is relatively intact. The surface here is noticeably wet in places. Some self-seeded conifers are present though these are mostly stunted in growth. This complex of high bog is considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120] and supports the Annex I habitat Depressions on peat substrates (Rhynchosporian).

6.9.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Culliaghmore Bog.

6.9.1.3 Wintering Birds

While there appears to be no available information on wintering birds associated with Culliaghmore Bog it is noted that a large population of whooper swans (Annex I species) frequent the nearby Garryduff and Kilmacshane bogs and could at times use Culliaghmore Bog when in flood.

Similarly, golden plover, a further Annex I Birds Directive species, is widespread along the Shannon and Suck system and could at times be expected to use the bare peat fields for roosting (as has been observed at other Bord na Móna cutaway bogs).

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site. A range of Amber-listed species occur on site during winter, including kestrel and snipe.

6.9.1.4 Breeding Birds

Meadow pipit (Red-listed), skylark and stonechat (both Amber-listed) breed on the various areas of high bog and cutover bog.

6.9.1.5 Mammals

Badger and the Irish hare have been recorded within marginal habitats around the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.9.2 Designated Sites

The River Suck Callows SPA [Site Code: 04097] and the Suck River Callows NHA [Site Code: 0222] adjoin parts of the southern and western boundaries of Culliaghmore Bog, with some marginal areas of the bog site (mostly silt ponds) within the designated sites.

6.9.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for wintering golden plover, an Annex I bird species. Also, when flooded the site may support whooper swans (Annex I species).

The area of re-generating cutaway bog in the southwest sector has low intrinsic conservation value **Local Importance (varying from lower to higher value)**.

The areas of degraded remnant high bog and cutover bog along the northeast and western boundaries, as well as some small bog fragments and strips of scrub along the southern boundary, provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The area of high bog along the eastern boundary (mostly outside Bord na Móna property) is considered to conform to the Annex I habitat Degraded raised bog and supports the Annex I habitat Depressions on peat substrates (Rhynchosporian) and is rated of **County Importance**.

Several marginal parts of the site overlap with the River Suck Callows SPA – while comprising mainly silt ponds, such areas are, by default, of **International Importance**.

Meadow pipit, a Red-listed species, is widespread on the marginal bog habitats. The site has potential to support the Annex I bird species whooper swan and golden plover.

Figure 42: View of high bog at eastern end of Cullighmore Bog. This area is considered to conform to the Annex I habitat Degraded raised bog



Source: BioSphere Environmental Services

Figure 43: The high bog at the eastern end of Cullighmore Bog also supports the Annex I habitat Depressions on peat substrates (Rhynchosporian)



Source: BioSphere Environmental Services

6.10 Derryfadda

6.10.1 Ecological Baseline

Derryfadda Bog is located approximately three kilometres south west of Ballyforan, in Co. Galway (the River Suck forms the county boundary between Roscommon and Galway). The Suck forms a boundary along the north and eastern edge of the bog, with the bog being located on the Galway side of the River. Derryfadda is part of the Derryfadda group of bogs and a rail link connects Derryfadda Bog with Castlegar Bog to the south and Gowla Bog to the west. A minor public road runs along much of the western edge of the bog. Two bog tracks cross the bog dividing it into three sections. Peat production first began on Derryfadda Bog in 1981. Several sections of remnant raised bog are located along the margins of the site; these areas are small and dry and are actively used for the production of domestic turf.

The Taghboy River separates the southern section of the site from the central section. This river is mainly bounded by remnant sections of raised bog, cutover bog, scrub and wet grassland. Significant areas of cutover bog and remnant raised bog in this area are not in the ownership of Bord na Móna and are used for domestic turf cutting.

The central section of the site is dominated by bare peat. A mineral island is located in the centre of the site and is accessed by way of a bog track; a small works area is located on the mineral island.

A ridge of mineral land separates the central section from the northern section.

The site is largely surrounded by riparian wetland habitats, cutover bog, conifer woodland, bog woodland and scrub. Some fringing areas of agricultural and wet grassland occur around the site.

6.10.1.1 Habitats and Vegetation

The majority of Derryfadda Bog comprises bare peat (ED2).

Domestic sod peat cutover (PB4) bog is extensive along the margins of the southern and central sectors of the site. These areas are re-vegetating in parts with a mix of poor fen (PF2) species such as *Juncus effusus*, *Eriophorum angustifolium*, and *Molinia caerulea*. Willow and birch scrub (WS1) has also colonised on several of these areas. The associated areas of high bog (PB1) are dry and *Calluna vulgaris* dominates. Only a few, generally small, areas of high bog with typical raised bog occur on the Derryfadda site and these are located to the north west along the railway line, and at the southern tip. The area at the southern tip of the site supports a small area of the Annex I habitat Degraded raised bog capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150].

Other habitats along the margins of the site include bog woodland (WN7), riparian woodland (WN5), wet grassland (GS4), and tall herb swamp (FS2) along the River Suck (FW2). Conifer woodland (WD4) occurs adjacent to the site.

6.10.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derryfadda Bog.

6.10.1.3 Wintering Birds

The Annex I whooper swan regularly use this site during the winter where areas of surface water accumulate. Greenland white-fronted geese regularly fly over the site and occasionally forage in the River Suck Callows adjacent to the site. Both species are amongst the Special Conservation Interests for the adjacent River Suck Callows SPA.

The Red-listed golden plover (Annex I) which is also a Special Conservation Interest for the River Suck Callows SPA, occurs regularly on site, along with Amber-listed snipe, hen harrier (Annex I) and kestrel. Golden plover is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Meadow pipit (a Red list species) would occur on the various areas of high bog and cutover bog along the margins of the site.

6.10.1.4 Breeding Birds

The commercial active peat fields at this site would not support breeding birds. Meadow pipit (Red listed) and skylark (Amber listed) breed at least in the area of high bog around the periphery of the site. Snipe (Amber-listed) would be expected to breed on the remnant raised bog and wetland areas in the southwest of the site.

6.10.1.5 Mammals

Signs of badgers and otters have been recorded throughout the margins of the site with otter being recorded along the east of the site. A population of red squirrel is known to occur in the wooded areas of the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.10.2 Designated Sites

The River Suck Callows SPA (Site Code: 004097) runs adjacent to and within the eastern boundary of the site. It includes some small areas that are in active peat production in the east of the site.

The Suck River Callows NHA (Site Code: 000222) also runs adjacent to and within the eastern boundary of the site and includes some peat production area.

Castle Ffrench East Bog NHA (Site Code: 001244) is located approximately 1.8 km north west of the site.

Annaghbeg Bog NHA (Site Code: 002344) is located approximately 1.7 km south of the site.

6.10.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value.

However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, whooper swan and golden plover, both of which are Special Conservation Interests of the River Suck Callows SPA.

The relatively small area of high bog at the southern tip of the site supports the Annex I habitat Degraded raised bog capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150] it is rated **Local Importance (higher value)**.

The areas of disturbed remnant high bog to the north west, revegetating cutover bog and fringing habitats including bog woodland and scrub provide useful habitat for wildlife and have biodiversity value – these areas are rated **Local Importance (higher value)**.

The wetland habitats that form the Special Conservation Interests for the River Suck Callows SPA along the eastern boundary of the site and features of interest for the Suck River Callows NHA, particularly wetland habitats, are rated of **International Importance**.

Figure 44: High bog at southern tip of Derryfadda Bog that supports Degraded raised bog and Depression of peat substrate of the *Rhynchosporion*



Source: BioSphere Environmental Services

Figure 45: Drain between high bog in the south and the production area



Source: BioSphere Environmental Services

6.11 Garryduff

6.11.1 Ecological Baseline

Garryduff is one of a cluster of bogs that has developed along the floodplains of the River Shannon. Along with nearby Kilmacshane Bog (to the east) and Lismanny Bog (to the west), it frequently becomes wet during winter periods. It is located approximately 1.0 kilometre southwest of Shannonbridge in County Galway. The River Suck flows along the northern boundary and meets the River Shannon, which flows along the eastern boundary. The site is bisected by a main railway line running roughly northwest by southeast and this is situated on the old route of the Ballinasloe section of the Grand Canal, which has been in-filled.

Much of Garryduff is now being harvested using the Haku peat production system so former high fields are now in production, separated by a series of low fields, now developing as cutaway. These low-lying fields are re-vegetating quite quickly with typical pioneer cutaway species. There is some typical milled peat production in an area of deeper peat in the westernmost sector of the site. The site includes some areas of remnant high bog and cutover. Parts of the cutover are dominated by birch scrub.

Garryduff adjoins extensive areas of seasonally flooded callow grassland associated with the Suck and Shannon rivers. Large areas of remnant raised bog and cutover bog adjoin the site to the east and northwest respectively. Conifer woodland has been planted along parts of the southern boundary.

6.11.1.1 Habitats and Vegetation

The majority of the site is classified as bare peat ED2 and Recolonising bare ground ED3. The dominant re-vegetating species of the cutaway are *Eriophorum angustifolium* and *Triglochin palustris*, with *Typha latifolia* common in drains. Birch scrub is also developing in cut areas.

Areas of remnant high bog (PB1) and cutover bog (PB4) occur at various locations along the margins of the site. A substantial area of remnant bog occurs along the eastern boundary. This bog is wet in places with good Sphagnum development and supports the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150]. This complex of high bog is considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. A further area of high bog, which is within the River Shannon Callows SAC and SPA, occurs in the northeast corner. This is a relatively small area of disturbed bog which is being invaded by conifer trees. A large area of high bog occurs in the southwest sector of the site. While the surface is relatively dry, the bog is mostly intact and is considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. A further relatively small area of high bog occurs along the southeast boundary of the site.

Bog woodland (WN7) dominated by birch occurs in various areas of the site.

6.11.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Garryduff Bog.

6.11.1.3 Wintering Birds

Garryduff Bog is used regularly by whooper swans (Annex I species) when in flood. The birds are part of a population that also uses several bog sites (including Kilmacshane) and other sites

along the River Shannon. Particularly high numbers (up to 890) were present in February 2010. Systematic surveys in winter 2014/15 recorded between 159 and 323 whooper swans from November to March. It was observed that the swans were frequently using the large water bodies on the western side of the bog as feeding/roosting sites during the initial survey period. In December these swans were noted using water bodies on both the western and eastern side of the bog. During the latter half of the surveys (January- March) it was noted that as the eastern side of the bog became flooded, whooper swans had for the most part moved to the large water bodies in the eastern side of the bog and were rarely recorded in feeding/roosting in the western half of the bog.

A range of other wetland birds occur on Garryduff, though in relatively small numbers.

Golden plover, a further Annex I Birds Directive species, is widespread along the Shannon system and could at times be expected to use the bare peat fields for roosting (as has been observed at other Bord na Móna cutaway bogs).

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site. A range of Amber-listed species occur on site during winter, including kestrel and snipe.

6.11.1.4 Breeding Birds

The re-vegetating areas of cutaway bog support breeding Lapwing (Red-list species).

Meadow pipit (Red-listed) and skylark (Amber-listed) breed on the various areas of high bog and in the cutover bog.

6.11.1.5 Mammals

Badger and the Irish hare are widespread within marginal habitats around the site. Signs of pine marten have been noted along the rail tracks.

Bord na Móna staff have reported signs and sightings of otter on site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with woodland and scrub habitats both within the site and along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.11.2 Designated Sites

The River Shannon Callows SAC [Site Code 0216] and the Middle Shannon Callows SPA [Site Code 04096] include some small areas of high bog along the eastern boundary of Garryduff Bog.

The River Suck Callows SPA (code 04097) and the Suck River Callows NHA (code 0222) intersect the northern boundary of Garryduff Bog, with some small marginal areas of the bog within the designated sites.

6.11.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the sector where peat is extracted using the Haku method supports some regenerating wetland vegetation and is rated as having **Local Importance (varying from lower**

to higher value). When in flood, the areas in Haku production supports a regular population of whooper swan (Annex I species), which in some winters exceeds the threshold for international importance. The bare peat fields are expected to provide a roost site for wintering golden plover, a further Annex I bird species. Whooper swan and golden plover are Special Conservation Interests for the Middle Shannon Callows SPA and River Suck Callows SPA. The cutaway vegetation in the Haku production areas also supports breeding birds of interest, including lapwing (Red-listed).

The various areas of woodland associated with the site, and the areas of cutover bog and degraded remnant high bog, provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The various areas of relatively intact high bog which are considered to conform to the Annex I habitat Degraded raised bog are rated of **County Importance** (it is noted that parts of these areas are outside of the Bord na Móna property). A further Annex I habitat, Depressions on peat substrates (Rhynchosporian), occurs on at least one of these bog remnants.

Several marginal parts of the site overlap with the Shannon Callows SAC, the Middle Shannon Callows SPA, and the River Suck Callows SPA – such areas are, by default, of **International Importance**.

Otter, an Annex II listed species and a qualifying interest of the River Shannon Callows SAC, occurs on the site.

Figure 46: View of high bog in east of survey area. This bog is considered to conform to the Annex I habitat Degraded raised bog. The picture shows a wet area of bog with the Annex I habitat Depressions on peat substrates (Rhynchosporian)



Source: BioSphere Environmental Services

Figure 47: View of high bog in northeast of survey area. This raised bog is within the Shannon Callows SAC and SPA sites



Source: BioSphere Environmental Services

Figure 48: View of high bog in southwest of survey area. This extensive area of bog conforms to the Annex I habitat Degraded raised bog. The picture shows the high bog and the drain (on left) which separates it from the commercial peat fields



Source: BioSphere Environmental Services

6.13 Gowla

6.13.1 Ecological Baseline

Gowla Bog is located in east Galway along the River Suck approximately 3 km west of Ballyforan. The site is divided into two main sections by a minor road between Mountbellew Bridge and Ballyforan. The majority of the bog is in active milled peat production. There is also a relatively old large area of cutaway associated with the site as well as some other features, such as conifer plantation and blocks of scrub and other marginal habitats. The site is somewhat unusual in that it is located adjacent to Castle Ffrench East Bog NHA and the NHA designation significantly overlaps with the production bog area and cutaway.

Gowla Bog was developed in the 1950's to produce grass-meal for cattle and to extract peat to fire an industrial furnace. The plantation of narrow bands of conifers on site probably related to these operations. The harvesting of milled peat commenced in the 1970's and '80's.

The bog can be divided into several main sections by the natural topography and land-use around the site. The northern section is divided from the rest of the bog by a minor road. A Bord na Móna railway is situated along the east side of the bog and provides access between Derryfadda and Boughill. This railway divides a small area of recently developed high bog from the rest of the site. A small Works area with some derelict workshops and a newer hut is located towards the centre of the site and there are also a series of silt ponds through the centre along a channelized stream. A large area of cutaway is located to the west of the site with a narrow band of conifers marking the boundary of this area. There are several other small marginal areas with no active management where there are developing habitats.

The site is largely surrounded by agricultural grassland, cutover bog, conifer woodland, bog woodland and scrub along with fringing areas of remnant high bog and wet grassland.

6.13.1.1 Habitats and Vegetation

The majority of Gowla Bog comprises bare peat (ED2).

Considerable areas of intact high bog (PB1) occur near the site boundary, although these are generally separated by coniferous plantations (WD4). The two areas of high bog that are of particular note occur in the north west of the site. The first of these is Castle Ffrench East Bog NHA that covers an area of 74 ha, of which 11.95ha comprises the Annex I (priority) Active raised bog [7110] habitat. The site also supports the Annex I habitats Degraded raised bog capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150] (Raised bog NHA review, DAHG 2014). This NHA also covers approximately 120ha of low conservation importance habitats primarily comprising bare peat (PB2) of the commercial peat fields and conifer woodland (WS4). Scrub (WS1) and wet grassland (GS4) also occurs in this area of the NHA. The inclusion of these habitats within the NHA is likely to be a mapping error as commercial milling commenced in this area in the early 1990's at approximately the time the NHA was identified.

The second area of high bog is approximately 200m north of Castle Ffrench NHA and comprises approximately 27ha of high bog. It supports a small proportion of the Annex I (priority) Active raised bog [7110] habitat, along with Annex I habitats Degraded raised bog capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150].

Other areas of high bog are fragmented and highly disturbed including an area in the east of the site that has been recently ditched to develop for peat extraction. Less than 3ha of non-ditched

high bog remains in the area and this supports typical raised bog flora. The drier degraded areas tend to be dominated by *Calluna vulgaris* and are in a very degraded state with little or no *Sphagnum* cover.

An area of bog woodland (WN7) and wetland habitats including reed and large sedge swamp (FS1) and wet grassland (GS4) occurs in the footprint of the former Lough Aunaculskey. Maps of the area still show a lake (marked as a Turlough in the 6inch map) present but this appears to have been drained many years ago.

Several domestic sod peat areas are located along the margins of the south east of the site. The cutover bog (PB4) is re-vegetating in parts with a mix of poor fen (PF2) species such as *Juncus effusus*, *Eriophorum angustifolium* and also *Molinia caerulea*. The associated areas of high bog are dry and *Calluna vulgaris* dominates.

A relatively large area of cutover bog in the west of the site has re-vegetated primarily with scrub (WS1), including some conifer species. Lines of conifers occur along the western margin of the site, probably planted for the purpose of creating a wind-break to establish grass crops in the 1950's and 60's.

6.13.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Gowla Bog.

6.13.1.3 Wintering Birds

The Annex I whooper swan regularly fly over the site and may opportunistically use any flooded areas. Whooper swan is listed as one of the Special Conservation Interests for the nearby River Suck Callows SPA.

The Red-listed golden plover (Annex I) is expected to occur at Gowla Bog. The Amber-listed snipe, kestrel and Green-listed buzzard were also recorded on site. Golden plover is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Meadow pipit (a Red list species) would occur on the various areas of high bog and cutover bog along the margins of the site.

6.13.1.4 Breeding Birds

The commercial active peat fields at this site would not support breeding birds. Meadow pipit (Red listed) and skylark (Amber listed) breed at least in the area of high bog around the periphery of the site. Snipe (Amber-listed) would be expected to breed on the remnant raised bog and wetland areas in the northwest of the site.

6.13.1.5 Mammals

Signs of badgers have been recorded throughout the margins of the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.13.2 Designated Sites

Castle Ffrench East Bog NHA (Site Code: 001244) occurs within the northwest boundary of the site. Castle Ffrench West Bog NHA (Site Code: 000280) occurs ca.750 m west of the site.

The Suck River Callows NHA (Site Code: 000222) runs approximately 1.2km east of the site.

The River Suck Callows SPA (Site Code: 004097) runs approximately 985 m east of the site..

6.13.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species golden plover, which is a Special Conservation Interests of the River Suck Callows SPA.

Castle Ffrench West Bog NHA supports the Annex I (priority) Active raised bog [7110] habitat, Degraded raised bog capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150]. It is rated of **National Importance**.

The high bog to the north of Castle Ffrench West Bog NHA also supports the Annex I (priority) Active raised bog [7110] habitat, Degraded raised bog capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150]. Much of this area is somewhat disturbed and it is rated of **County Importance**.

The areas of very disturbed remnant high bog to east, re-vegetating cutover bog and fringing habitats including bog woodland and scrub provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

Figure 49: Photograph facing south along conifer plantation that separates the production area from Castle Ffrench Bog NHA. A deep drain also occurs at this point



Source: BioSphere Environmental Services

6.15 Kilmacshane Bog

6.15.1 Baseline Ecology

Kilmacshane is located in east Galway, approximately 2.0 kilometres north of Banagher and adjacent to the River Shannon (Galway-Offaly county boundary). The site is bisected by one main railway line running northwest to southeast and this is situated on the old route of the Ballinasloe section of the Grand Canal, which has been in-filled. A small Workshop is located at the north-west end of the site

It frequently becomes wet during winter periods.

Kilmacshane is linked by rail to Garryduff Bog to the northwest. On-going commercial production is confined to the eastern end and a relatively small area at the western end though much of the central sector of the site is classified as 'Re-activated/Development Bog'.

The site adjoins the seasonally flooded River Shannon Callow grasslands to the north and east. Improved agricultural grassland occurs to the south and west. Areas of remnant raised bog and cutover bog occur in some of the adjoining areas.

6.15.1.1 Habitats and Vegetation

The western and eastern sectors of the site are currently in milled-peat production and comprise bare peat ED2.

The central section of the site is currently out of commercial production but may come back into production in the future. Habitats present are bare peat and re-vegetating cutaway bog in varying stages of development (latter classified largely as Recolonising bare ground ED3). There are some permanent ponded areas and much of this area is subject to flooding (see Figure 31).

Areas of remnant high bog (PB1) and cutover bog (PB4) occur at various locations along the margins of the site and especially in the northern sector. Two substantial areas of remnant bog along the north-west margin of the site and a complex of bog in the north-east are of substantial size and relatively intact and are considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120].

All three bog areas adjoin the callow grasslands of the River Shannon and part of the north-eastern section is within the River Shannon Callows SAC and SPA. A further area of remnant high bog along the southern boundary of the site (outside of Bord na Móna property) is also considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. This substantial area of relatively intact bog also supports the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150]. A large complex of degraded high bog and cutover bog occurs along the southwest boundary of the site.

Woodland and scrub is well represented on the site, with stands of Bog woodland (WN7) dominated by birch, Wet willow-alder-ash woodland (WN6) and Mixed broadleaved/conifer woodland (WD2).

6.15.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Kilmacshane Bog.

6.15.1.3 Wintering Birds

Kilmacshane Bog is used regularly by whooper swans (Annex I species). The birds are part of a population that also uses Garryduff Bog and other sites along the River Shannon. A large flock of 349 was counted in January 2010, with a recent count of 413 birds on 2nd February 2018 (source: Bord na Móna). A range of other wetland birds occur, including teal and wigeon.

Golden plover, a further Annex I Birds Directive species, is widespread along the Shannon system and could at times be expected to use the bare peat fields for roosting (as has been observed at other Bord na Móna cutaway bogs).

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site. A range of Amber-listed species would be expected on site during winter, including kestrel and snipe.

6.15.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. The re-vegetating areas of cutaway bog (mainly the area classified as Re-activated/Development Bog) support breeding lapwing, ringed plover and possibly redshank.

Meadow pipit (Red-listed) and skylark (Amber-listed) breed on the various areas of high bog and cutover bog.

6.15.1.5 Mammals

Badger and the Irish hare are widespread within marginal habitats around the site. Pine marten has been recorded in the mixed conifer woodland on site.

Signs and sightings of otter have been recorded within the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with woodland and scrub habitats both within the site and along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.15.2 Designated Sites

The River Shannon Callows SAC (code 0216) and the Middle Shannon Callows SPA (code 04096) skirt much of the northern and eastern boundaries of Kilmacshane Bog. There are several locations where the bog site overlaps with the designations.

6.15.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for wintering golden plover, an Annex I bird species which is a Special Conservation Interest for the Middle Shannon Callows SPA.

The developing wetland vegetation on cutaway bog in the central area of the site (classified as Re-activated/Development Bog) is rated as of **Local Importance (varying from lower to higher value)**. Of note is that this area supports wintering wetland birds on a regular basis, including a population of whooper swan that has at times exceeded the threshold for

International Importance. The area also supports breeding birds of interest, including lapwing and meadow pipit (both Red-listed).

The various areas of woodland associated with the site, and the areas of cutover bog and degraded remnant high bog, provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The areas of relatively intact high bog which are considered to conform to the Annex I habitat Degraded raised bog are rated of **County Importance** (it is noted that parts of these areas are outside of the Bord na Móna property). A further Annex I habitat, Depressions on peat substrates (Rhynchosporian), occurs on at least one of these bogs.

Several marginal parts of the site overlap with the Shannon Callows SAC and the Middle Shannon Callows SPA – such areas are, by default, of **International Importance**.

Otter, an Annex II listed species and a qualifying interest of the River Shannon Callows SAC, occurs on the site.

Figure 50: Much of the central area of Kilmacshane is re-generating cutaway– whooper swans winter here



Source: BioSphere Environmental Services.

Figure 51: View of high bog in northwest sector of survey area. Part of this bog conforms to the Annex I habitat Degraded raised bog



Source: BioSphere Environmental Services.

Figure 52: View of margin of high bog in northeast sector of survey area. This area of bog is mostly within the River Shannon Callows SAC and the Middle Shannon Callows SPA. Looking southwards along drain between high bog and peat field



Source: BioSphere Environmental Services.

Figure 53: View of southern part of high bog in northeast sector of survey area. This area of bog is partly within the River Shannon Callows SAC and the Middle Shannon Callows SPA. Looking north-eastwards over high bog



Source: BioSphere Environmental Services.

6.16 Lismanny Bog

6.16.1 Ecological Baseline

Lismanny is located in eastern Co. Galway, adjacent to the River Suck. Along with nearby Garryduff and Kilmacshane bogs (to the east), it frequently becomes wet during winter periods.

It is located approximately 4.0 kilometres west of Shannonbridge in County Galway. The site is bisected by one main railway line running roughly northwest to southeast and this is situated on the old route of the Ballinasloe section of the Grand Canal, which has been in-filled. A small section at the southwest end is cut off from the main site by a public road.

The majority of the site is in active production, with only a small area of the site developing as regenerating cutaway bog.

To the north and east, the site adjoins extensive areas of seasonally flooded callow grassland associated with the River Suck. Extensive areas of remnant high bog and cutover occur along the margins and adjoining areas. Patches of bog woodland also adjoin the site and there is a large conifer plantation to the southwest.

6.16.1.1 Habitats and Vegetation

The majority of the site is in active production and is classified as bare peat ED2.

Some re-generating cutaway occurs in the southwest sector (classified as Recolonising bare ground ED3), with birch scrub, dry heath and poor fen vegetation present.

Areas of remnant high bog (PB1) and cutover bog (PB4) occur along the northwest, north and northeast margins of the site. The high areas are generally small in extent, disturbed and are mostly dry with *Calluna vulgaris* frequent.

A substantial area of relatively intact high bog occurs in the extreme southwest sector to the south of a public road. While part of the surface was ditched in the past the drains are now mostly filled in. This complex of high bog, which is classified as a Biodiversity Area, is considered to conform to the Annex I habitat Degraded raised bog still capable of natural regeneration [7120].

Bog woodland (WN7) and Scrub (WS1) has developed in some of the marginal areas of the site.

6.16.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Lismanny Bog.

6.16.1.3 Wintering Birds

While there appears to be no available information, it is expected that Lismanny Bog would be used at times by whooper swans (Annex I species) when in flood. A large population of this species frequents nearby Garryduff and Kilmacshane bogs and other sites along the rivers Suck and Shannon.

Golden plover, a further Annex I Birds Directive species, is widespread along the Shannon and Suck system and could at times be expected to use the bare peat fields for roosting (as has been observed at other Bord na Móna cutaway bogs).

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site. A range of Amber-listed species occur on site during winter, including kestrel and snipe.

6.16.1.4 Breeding Birds

The re-vegetating areas of cutaway bog in the southwest may support breeding lapwing (Red-listed).

Meadow pipit (Red-listed) and skylark (Amber-listed) breed on the various areas of high bog and in the cutover bog.

6.16.1.5 Mammals

Badger and the Irish hare are widespread within marginal habitats around the site. Pine marten and red squirrel have also been recorded on site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with woodland and scrub habitats both within the site and along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

6.16.2 Designated Sites

The River Suck Callows SPA [Site Code: 04097] and the Suck River Callows NHA [Site Code: 0222] adjoin part of the northern boundary of Lismanny Bog, with some marginal areas of the bog within the designated sites.

6.16.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for wintering golden plover, an Annex I bird species. Also, when flooded, the site may support whooper swans (Annex I species).

The area of re-generating cutaway bog in the southwest sector has low intrinsic conservation value - **Local Importance (varying from lower to higher value)**.

The various areas of degraded remnant high bog and cutover bog, as well as the areas of woodland associated with the site, provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The area of relatively intact high bog in the extreme southwest sector of the site is considered to conform to the Annex I habitat Degraded raised bog and is rated of **County Importance**. This area is zoned as a Biodiversity Area by Bord na Móna.

Several marginal parts of the site overlap with the River Suck Callows SPA – such areas are, by default, of **International Importance**.

Meadow pipit, a Red-listed species, is widespread on the marginal bog habitats.

Figure 54: View of high bog in southwest sector of Lismanny Bog. This area, which is zoned Biodiversity, is considered to conform to the Annex I habitat Degraded raised bog



Source: BioSphere Environmental Services

7 Allen Bog Group

7.1 Ballykeane

7.1.1 Ecological Baseline

Ballykeane Bog is located approximately 1 kilometre west of the village of Walsh Island and 3 kilometres east of Geashill. The site lies approximately 1 km south of Mountlucas Bog and the two sites are connected by a railway link.

The majority of Ballykeane is in active peat production and is classified as bare peat. Two narrow strips running north to south are currently out of production (classified as Peat production related). A fringe of cutover bog and fragments of high bog surround most of the margins. A small outlier plot of remnant high bog used for sod peat occurs several hundred metres south of the main site. Ballykeane is underlain with a mixture of gravel and shell marl.

Tributaries of the Cushina river flow along both the east and west boundaries of Ballykeane.

The site is surrounded by agricultural land, with some small areas of woodland scrub in the northwest and quarry activity along the western boundary.

7.1.1.1 Habitats and Vegetation

The majority of Ballykeane bog is in active commercial production and comprises bare peat (ED2). There is some pioneering cutaway vegetation developing in a sector of the central area of the site (area is out of production). This area of Recolonising bare ground (ED3) has a sparse covering of soft rush (*Juncus effusus*) on shallow peat.

Marginal habitats around the site include cutover bog (PB4) and remnant high bog (PB1). The largest area of high bog, which is mostly outside of the Bord na Móna site, is in the southernmost part of the site. Bog woodland (WN7) and scrub (WS1) has developed in places.

Silt ponds (FL8) occur in the northeast and southeast sectors.

7.1.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Ballykeane Bog.

7.1.1.3 Wintering Birds

Ballykeane bog has limited potential for wintering birds of conservation importance as it largely comprises bare peat fields. Whooper swans have been recorded in small numbers on grassland and a quarry lake to the west of the site.

Meadow pipit (Red-listed) occurs in the marginal areas of remnant and cutover bog, along with species such as kestrel, sparrowhawk, snipe and skylark (all Amber-listed). A high count of 52 snipe was made in a small area of cutover to the south of the site on 14th November 2016.

7.1.1.4 Breeding Birds

Ballykeane bog has limited potential to support breeding birds of conservation importance. meadow pipit (Red-listed) breeds in the marginal strips of remnant and cutover bog habitats, along with skylark and linnet (both Amber-listed).

Wet grassland to the west (associated with an active quarry) and southwest of the site supported breeding lapwing and an estimated four pairs of snipe, with a further pair of snipe on cutover/remnant bog to south of site.

7.1.1.5 Mammals

Signs of badgers have been recorded within the site. The Irish Hare occurs on site.

The baseline survey for bats carried out in 2013 recorded two species of bat present on site, as follows: common pipistrelle and leisler's. All the bats were recorded along the linear features of a gravel track with a hedgerow on one side. No bats were recorded in areas of open peat habitat.

7.1.2 Designated Sites

There are no sites designated for conservation within or adjoining Ballykeane bog.

7.1.3 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The marginal remnant and cutover habitats, as well as the regenerating strips of cutaway, are limited in extent but provide local biodiversity and support meadow pipit (Red-listed) and several Amber-listed bird species – these are rated as **Local Importance (higher value)**.

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Figure 55: View of high bog which adjoins the southernmost sector of Ballykeane bog, looking southwards. The surface of this bog remnant is dry due to local cutting (November 2016)



Source: BioSphere Environmental Services

7.2 Clonad Bog

7.2.1 Ecological Baseline

Clonad Bog is located approximately 3 kilometres south of Daingean town. The site is contiguous with Mountlucas bog to the east and Daingean (Townparks) to the northwest. There are two main lobes to the bog that are separated by a narrow connection with some cutaway habitats developing.

Clonad bog is primarily bare peat that is under commercial production. The western side has a variable topography and there are glacial ridges and mounds underlying the peat that are visible in the overlying peat. A grassy pioneer vegetation is developing where sub-soil is exposed.

A relatively large area of remnant high bog and cutover bog occurs in the northeast sector, though the bog has been degraded in part by private sod-peat cutting.

Clonad bog is on the boundary between the Shannon and Barrow river catchments. The Philipstown River forms part of the boundary along the northeast lobe of undeveloped bog.

The surrounding habitat type is almost entirely agricultural land.

7.2.1.1 Habitats and Vegetation

The majority of Clonad bog is in active commercial production and largely comprises bare peat (ED2). There is some pioneering cutaway vegetation developing (Recolonising bare ground ED3), including a dry grassland mosaic in the area of glacial ridges and mounds in the northwest sector.

An area of regenerating cutaway between the western and eastern lobes of the site is dominated by birch scrub (WS1) and pioneering poor fen (PF2).

The northeast sector of the site comprises remnant high bog (PB1) and old cutover bog (PB4). While the high bog is degraded in parts and has been burnt in the last few years, there is a central wet area on the bog with good Sphagnum cover (>50%) including *S. papillosum*, *S. subnitens* and *S. tenellum*. Areas dominated by *Rhynchospora alba* are also present. The intact high bog merges into an area of cutover bog (PB4) that is quite disturbed by cutting. Small stands of bog woodland (WN7) and scrub (WS1) occur in the cutover. This area of wet bog is considered to qualify as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. The Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] is also represented. A track separates the commercial peat field (to south) from the high bog.

Small areas of remnant high bog and cutover bog also occur in the extreme northwest sector and along the west/southwest boundary.

7.2.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Clonad Bog.

7.2.1.3 Wintering Birds

Clonad bog has limited potential for wintering birds of conservation importance. Golden plover were recorded during winter surveys roosting on the bare peat (peak of 350 February 2013).

Meadow pipit (Red-listed) is widespread on the remnant and cutover bog in the northeast and this area also supports snipe, skylark and linnet (Amber-listed species).

7.2.1.4 Breeding Birds

Clonad bog has limited potential to support breeding birds of conservation importance.

One pair of snipe was recorded on remnant bog in the extreme northwest of the site. Meadow pipit (Red-listed) breeds widely in the remnant high bog and cutover bog habitats, along with skylark (Amber listed). Other Amber-listed species breeding on site include stonechat and linnet.

7.2.1.5 Mammals

Signs of badgers have been recorded within the site. The Irish hare occurs widely on site.

The baseline survey for bats carried out in 2013 recorded four species of bat present on site, as follows: common pipistrelle, soprano pipistrelle, myotis whiskered/Brandt's and leisler's. The majority of the bats were recorded along the riparian habitat and hedgerow in the eastern part of the site. Bats were also recorded along a mineral bank on the western side of the bog. No bats were recorded in areas of open peat habitat.

7.2.2 Designated Sites

No part of Clonad Bog is within a site designated for nature conservation. However, the site adjoins the Daingean Townparks NHA (code 02033) to the northwest (separated by a local road).

7.2.3 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The undeveloped raised bog in the northeast section has conservation value and qualifies as the Annex I EU Habitats Directive habitat 'Degraded raised bogs still capable of regeneration' (code 7120). A further Annex I habitat, Depressions on peat substrates (Rhynchosporian), is also represented. This sector of the site is rated as **County Importance**.

The remnant areas of high bog in the extreme northwest and along the west boundary of the site, along with strips of cutover bog elsewhere along the margins, are also rated as **Local Importance (higher value)**. The few examples of developing cutaway habitats in the main area of the site are rated as of **Local Importance (lower value)**.

Golden plover (Annex I species) utilises the bare peat fields as roost sites. The Red-listed meadow pipit breeds on the various high bog and cutover bog areas. Various Amber-listed bird species also breed on site, including snipe, stonechat and skylark.

Figure 56: View of intact high bog in northeast sector of Clonad bog, looking northwards. This bog is classified as the Annex I habitat Degraded Raised Bog (November 2016)



Source: BioSphere Environmental Services

Figure 57: View of surface of the intact high bog at Clonad. The Annex I habitat Depressions on peat substrates (Rhynchosporian) is well represented in the wetter zone (November 2016)



Source: BioSphere Environmental Services

7.3 Esker Bog

7.3.1 Ecological Baseline

Esker Bog is located to the east of the R400 road and to the north of the R402 road. Cavemount Bog occurs approximately 1 kilometre to the west, with Ballycon to the south and Cloncreen to the southeast.

The Esker River flows along part of the southern boundary of the bog and continues in an east-southeast direction. A tributary of the Esker, the Doden River, flows north to south through the site and divides the bog into two main units. A further unnamed tributary of the Esker flows along the western boundary of the site.

The main part of the site is to the west of the Doden River and is almost in complete commercial production. A smaller unit occurs east of the Doden River and the majority of this is also in full production (part is classified as Peat Production related). Most of the site is edged by narrow strips of remnant or developing cutaway habitats, mostly birch scrub but also some raised bog remnants.

In the extreme southeast, there is an outlying plot of cutover bog that is dominated by bog woodland and scrub.

The site is entirely surrounded by farmland on its southern and western sides. Small areas of bog adjoin the site at the northeast and eastern margins. Conifer plantations occur to the north-northeast.

7.3.1.1 Habitats and Vegetation

Esker Bog can be conveniently divided into western and eastern sectors, with the Doden River providing a natural division. The western sector is by far the largest and is almost entirely in commercial production (classified as bare peat ED2), apart from one sector classified as Peat Production related and marginal strips of remnant high bog and cutover habitats. The marginal strips comprise mostly bog woodland (WN7) and scrub (WS1) dominated by birch and willow, with gorse and dense bracken in places. Much of the remnant high bog (PB1) still has bog vegetation but this is usually dominated by *Calluna vulgaris* reflecting the drying conditions. The largest such area is in the northeast of the site but this is highly disturbed due to local cutting.

The smaller section of the site to the east of the Doden River is now mostly in production, though there is a sector of out-of-production cutaway with developing pioneer cutaway vegetation, including poor fen (PF2) and birch scrub (WS1). The production area is edged along the eastern boundary by a near continuous strip of remnant high bog (outside of Bord na Móna site boundary). However, this is highly disturbed from ongoing local cutting.

7.3.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Esker Bog.

7.3.1.3 Wintering Birds

Esker Bog has limited potential for wintering bird species of conservation importance. Golden plover is attracted to the site for roosting purposes, while peregrine and merlin pass through on

occasions and both were recorded resting on bare peat (all Annex I EU Bird Directive species). Supports several Amber-listed species, including kestrel and snipe.

7.3.1.4 Breeding Birds

Esker bog has limited potential to support breeding birds of conservation importance.

Meadow pipit (Red-listed) breeds within the marginal strips, along with skylark and linnet (both Amber-listed species).

7.3.1.5 Mammals

Signs of badgers and pine martens have been noted along the margins of the site. The Irish Hare occurs on site.

Otter could be expected along the local watercourses.

The baseline survey for bats carried out in 2013 recorded five species of bat present on site, as follows: soprano pipistrelle, common pipistrelle, daubenton's, myotis whiskered/Brandt's and leisler's. All bat contacts were recorded along the linear features of well-developed hedgerows at the northern side of the bog. All daubenton's bats were recorded at a large drainage pond near the entrance to Esker Bog. No bats were recorded in areas of open peat extraction.

7.3.2 Designated Sites

There are no sites designated for conservation within or adjoining Esker Bog.

7.3.3 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The marginal habitats, and especially the remnant high bog, cutover bog and bog woodland, provide habitat diversity and are rated as **Local Importance (higher value)**. An area of regenerating out-of-production cutaway in the eastern sector is rated as **Local Importance (lower to higher value)**.

Golden plover (Annex I species) utilises the bare peat fields as roost sites. The Red-listed meadow pipit breeds on the high bog and cutover bog areas. Various Amber-listed bird species also breed on site, including kestrel, snipe, stonechat and skylark.

Figure 58: View of remnant high bog along eastern margin of Esker Bog, looking southwards. This bog is in a disturbed state mainly due to local cutting. November 2016



Source: BioSphere Environmental Services

7.4 Garrymore Bog

7.4.1 Ecological Baseline

Garrymore Bog is located to the immediate west of the larger Garryhinch Bog. While it is a relatively young production bog, almost the entire site has been fully developed and is bare peat. Garrymore is not connected by rail link to the other sites in the group. The margins of the site comprise strips of cutover bog and some remnant high bog. Much of the cutover has been exhausted by private sod peat production.

Garrymore bog is located in the River Barrow catchment, with the main channel of the Barrow within 1 km of the southwest boundary of the site. A small stream, called Cottoner's Brook, flows along the east side of the bog, with a further stream along the southwest sector.

Garrymore is almost entirely surrounded by farmland. Some conifer plantation occurs to the south, north and northwest.

7.4.1.1 Habitats and Vegetation

The majority of Garrymore bog is in active commercial production and comprises bare peat (ED2).

The margins of the site comprise old cutover bog (PB4) and patches of remnant high bog (PB1). The northern margin is the least disturbed and contains remnant high bog with relatively high Sphagnum cover in places, including *Sphagnum cuspidatum*, *S. capillifolium*, *S. papillosum* and *S. subnitens*. The high bog in the northern and north-eastern areas of the site are considered to qualify as the Annex I habitat 'Degraded raised bogs still capable of regeneration' [code 7120]. The Annex I habitat 'Depressions on peat substrates (Rhynchosporian)' [7150] is also represented here.

Much of the old cutover is vegetated by a dry heath community, with *Calluna vulgaris* and bog cotton (*Eriophorum* spp.) frequent. Birch scrub (WS1) is occasional. The eastern and southern margins are dominated by old cutover, while the western margin has mostly been developed for milled peat.

7.4.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Garrymore Bog.

A notable plant species, alder buckthorn (*Frangula alnus*), occurs along the Cottoner's Brook stream in the southeast of the site (M. McCorry pers., comm.). This plant is listed in the Irish Red Data Book (Curtis & McGough 1988).

7.4.1.3 Wintering Birds

The majority of Garrymore bog has low potential to support wintering birds of conservation importance.

However, surveys have shown that the marginal remnant and cutover bog habitats attracted hunting hen harriers (with a winter roost in the adjacent Garryhinch bog). Merlin has also been recorded, while golden plover have been observed roosting on the bare peat. The Red-listed meadow pipit is widespread in the marginal areas during winter. Sparrowhawk and kestrel have been recorded, along with snipe, stonechat and linnet (all Amber listed species).

7.4.1.4 Breeding Birds

Meadow pipit (Red-listed) breeds widely in the cutover and remnant high bog habitats, along with skylark, stonechat and linnet (all Amber-listed). Displaying snipe and woodcock were recorded within a complex of bog habitat to southwest of site.

7.4.1.5 Mammals

Signs of badgers have been recorded within the site. The Irish hare occurs on site.

The baseline survey for bats carried out in 2013 recorded two species of bat present on site, as follows: common pipistrelle and soprano pipistrelle. Most of the bat records were from the scrub vegetation and mature deciduous trees along the eastern border of the bog. No bats were recorded in areas of open peat extraction.

7.4.2 Designated sites

There are no sites designated for conservation within or adjoining Garrymore bog.

The River Barrow and River Nore SAC (code 02162) flows approximately 640 m to the southwest margin of the site.

7.4.3 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The remnant high bog and cutover bog habitats are extensive in area and provide local biodiversity – these are rated as **Local Importance (higher value)**.

The remnant high bog in the north and northeast of the site has good Sphagnum development and is considered to qualify as the Annex I habitat 'Degraded raised bogs still capable of regeneration' [code 7120]. The Annex I habitat 'Depressions on peat substrates (Rhynchosporian)' [7150] is also well represented here. The high bog areas in the north and northeast of the site are rated as **County Importance**.

The remnant high bog and cutover habitats support meadow pipit (Red-listed) and several Amber listed bird species.

Figure 59: View of remnant high bog at northern end of Garrymore Bog, looking westwards. This high bog area is classified as the Annex I habitat degraded raised bog



Source: BioSphere Environmental Services

Figure 60: Parts of the high bog are wet, with *Sphagnum* mosses and *Rhynchospora alba* frequent



Source: BioSphere Environmental Services

Figure 61: Garrymore Bog, north end. View of deep drain along edge of commercial peat field, looking westwards.



Source: BioSphere Environmental Services

7.5 Mountlucas Bog

7.5.1 Ecological Baseline

Mountlucas bog is located approximately 8 kilometres southeast of Daingean town. The present assessment includes only the southern and western sectors of the site as the greater part of the site is now an operating wind farm (classified as cutaway). Mountlucas is contiguous with Clonad bog to the west and is linked by rail to Ballykeane bog to the south.

Mountlucas South and West is primarily bare peat that is under commercial production. Some strips of remnant high bog and cutover bog occur along the margins.

The surrounding habitat type is largely agricultural land.

7.5.1.1 Habitats and Vegetation

The majority of the area under review at Mountlucas is in active commercial production and comprises bare peat (ED2).

An area of out-of-production cutaway vegetation extends to the western boundary and separates the northern and southern production areas. The cutaway is mostly vegetated and includes several small wetlands with open water and emergent species. Pioneering poor fen (PF2) and developing birch scrub (WS1) are also present in the cutaway.

The north-western sector is bordered to the east and west by substantial areas of remnant high bog (PB1). The western bog has a wet core area with good Sphagnum cover (>50%) and is considered to qualify as the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. The Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] is also represented, with lawns dominated by *Rhynchospora alba*. The eastern sector of intact high bog is more disturbed and the surface is drier being dominated by *Calluna vulgaris* and *Eriophorum vaginatum* – this area is considered a poor example of the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. Further small areas of high bog occur along the southern margin of the site. Areas of cutover bog (PB4) are associated with the marginal areas, with stands of bog woodland (WN7) and scrub (WS1) in places.

7.5.1.2 Rare Flora

A population of the legally protected basil thyme (*Clinopodium acinos*) was discovered along the railway tracks in the northern sector of the wind farm site in 2010/11. However, this may now be extinct as there have been no records in the last four years (M. McCorry pers, comm.)

A localised plant species, blue fleabane (*Erigeron acris*), is widespread along the gravel tracks throughout the entire site. While not listed on the Irish Vascular Plant Red List (Wyse Jackson *et al.* 2016), blue fleabane is listed in the Irish Red Data Book (Curtis & McGough 1988).

7.5.1.3 Wintering Birds

Golden plover (ca.200) have been recorded in October roosting on the bare peat in the northwest sector. Snipe are considered widespread on site. A hen harrier was seen flying into the site in winter 2012/13.

The Red-listed meadow pipit occurs on site in winter, while Amber-listed species such as snipe and kestrel are also present on site.

7.5.1.4 Breeding Birds

No specific information is available on the southern and western sectors of the site but lapwing (Red-listed) and snipe breed within the wind farm site. Meadow pipit (Red-listed) would be expected to be a widespread breeding species in areas of remnant high bog and cutover bog.

7.5.1.5 Mammals

Otter has been recorded along the large drains on site. Badger and the Irish hare occur on site.

Mountlucas was not included in the 2013 baseline bat survey of Bord na Móna properties. However, a survey for bats was carried out at Mountlucas in 2008 for the wind farm development and two species were recorded as follows: common pipistrelle and soprano pipistrelle. Records were from marginal hedgerows.

7.5.2 Designated Sites

There are no sites designated for conservation within or around Mountlucas bog.

7.5.3 Conservation Evaluation of Site

The majority of the site is in current commercial production for industrial peat harvesting and has no intrinsic conservation value.

The high bog remnants along the north-western part of the site have conservation value and qualify as the Annex I EU Habitats Directive habitat 'Degraded raised bogs still capable of regeneration' (code 7120). A further Annex I habitat, Depressions on peat substrates (Rhynchosporian), is also represented in the western remnant. The western high bog is rated as **County Importance**, while that along the eastern margin is rated as **Local Importance (higher value)**. The various smaller high bog remnants and the cutover bog are rated as of **Local Importance (higher value)**.

The presence of the scarce plant blue fleabane along the railway embankments is considered of **Local Importance (higher value)**.

The occurrence of otter on site (probably on an occasional basis) is of note as Otter is listed on Annex II of the EU Birds Directive.

Golden plover (Annex I species) utilises the bare peat fields as roost sites. The Red-listed meadow pipit breeds on the high bog and cutover bog areas. Various Amber-listed bird species also breed on site, including snipe and skylark.

Figure 62: View of high bog along northwest margin of Mountlucas bog, looking southwards. This bog remnant is largely intact. November 2016



Source: BioSphere Environmental Services

Figure 63: View of surface of high bog along northwest margin of Mountlucas bog. The surface of this bog remnant is wet in places with good Sphagnum cover. November 2016



Source: BioSphere Environmental Services

Figure 64: View of cut edge and drain along remnant high bog at northwest margin of Mountlucas bog, looking southwards. November 2016



Source: BioSphere Environmental Services

Figure 65: View of high bog along northeast margin of Mountlucas bog, looking north-eastwards. The surface of this bog remnant is relatively dry and has been disturbed in places. November 2016



Source: BioSphere Environmental Services

8 Mountdillon Bog Group

8.1 Begnagh

8.1.1 Ecological Baseline

Begnagh Bog is located approximately 4km to the North of Killashee in County Longford. This site is located within one main block. A rail link connects the site with Knappogue to the west and Clooneeny to the east, and the rail line crosses the site close to the southern boundary. The majority of the site is in active peat production and full production commenced in the early 1980's. The site has one pump.

The Royal Canal flows along the western boundary of the site and the Fallan River flows alongside the eastern boundary of the site.

The site is largely surrounded by agricultural grassland, conifer woodland, scrub and riparian habitats, along with fringing areas of remnant raised bog, cutover bog, bog woodland and wet grassland.

8.1.1.1 Habitats and Vegetation

The majority of the site is under commercial peat production and comprises bare peat (PB2).

Although not indicated on the land use map which accompanies this report, several sectors of the production bog appear to be cutaway (PB4) and are re-vegetating in parts with a mix of poor fen (PF2) species such as *Juncus effusus* and *Phragmites australis*. Where gravel protrudes, dry neutral and calcareous grassland (GS1) has established.

High bog (PB1) occurs in fragmented areas around the site, particularly in the east and south, and in general is dominated by *Calluna vulgaris* and *Trichophorum germanicum* and is in a disturbed state with little or no *Sphagnum* cover.

Habitats along the fringes of the site include bog woodland (WN7) and wet grassland (GS4).

8.1.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Begnagh Bog.

8.1.1.3 Wintering Birds

The Red-listed golden plover was recorded on the site. Golden plover, an Annex I Birds Directive species, is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts. Other species expected to use the site include the Amber-listed snipe and kestrel.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site.

8.1.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed in the remnant areas of high bog and re-vegetated cutover bog around the fringes of the sites. Buzzard (Green-listed) was recorded nesting in woodland near the main access track to the east of the site. Mallard, which is also Green-listed, have previously been recorded on site.

8.1.1.5 Mammals

Signs of badgers have been recorded along the margins of the site and the Irish hare is widespread on the site. Otter occur along the Royal Canal to the west of the site and are also likely to occur on the Fallan River, along the eastern boundary of the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.1.2 Designated Sites

Royal Canal pNHA (Site Code: 002103) is located along the western boundary of the site.

Brown Bog SAC / NHA (Site Code: 002346) is located 1.7km northeast of the site boundary.

Lough Forbes Complex SAC (Site Code: 001818) is located approximately 346 m north of the site.

Ballykenny-Fisherstown Bog SPA (Site Code: 004101) is located approximately 332 m north of the site.

8.1.3 Conservation Evaluation of Site

The areas of the site that are in commercial peat production have no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

The areas of cutover bog, including the developing poor fen in the centre of the site, provide a useful habitat for wildlife and form an area with some biodiversity value – these areas are rated as **Local Importance (higher value)**.

Areas of high bog adjacent to the site have a biodiversity value and are considered **Local Importance (higher value)**.

8.2 Clooneeny

8.2.1 Ecological Baseline

Clooneeny Bog is located approximately 5km west of Longford Town, Co. Longford. The site is located in two separate sections, a large section that is in full peat production and a much smaller section that is used extensively for domestic sod turf production. These sections are located approximately 1km apart. The N63 Longford to Roscommon Road passes along the southern boundary of the site. Begnagh Bog is located to the west of this site and a rail connection connects these sites.

This site has been in peat production since 1985 and there are still significant amounts (>2.6m) of “Sphagnum” peat remaining in the site, the majority of which is in active peat production. The site is drained by a single pump in the north of the site.

The site is largely surrounded by agricultural grassland, conifer woodland and scrub, but there are some fringing areas of remnant raised bog, cutover bog, as well as bog woodland and wet grassland.

8.2.1.1 Habitats and Vegetation

The majority of the site is under commercial peat production and comprises bare peat (PB2).

Several areas of cutover bog (domestic turf cutting areas) are located around the margins of the site. The cutover bog (PB4) is re-vegetating in parts with a mix of poor fen (PF2) species such as *Juncus effusus*, *Eriophorum vaginatum* and *Salix* species.

High bog (PB1) occurs in fragmented areas around the site and in general is dominated by *Calluna vulgaris* and is in a disturbed state with little or no *Sphagnum* cover.

A considerable area (ca.37ha) of high bog (PB1) at the southern tip of the site has a typical raised bog flora and supports the Annex I habitats Degraded raised bog still capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150]. Domestic turf cutting is ongoing along the north-eastern edge of this area. This sector is separated from the main production area by the N63 road and a strip of approximately 100m of disturbed high bog.

Habitats along the fringes of the site include bog woodland (WN7) and wet grassland (GS4).

8.2.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Clooneeny Bog.

8.2.1.3 Wintering Birds

The Red-listed golden plover was recorded on the site. Golden plover, an Annex I Birds Directive species, is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Other species expected to use the site include the Amber-listed snipe and kestrel.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site.

8.2.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed in the remnant areas of high bog and revegetated cutover bog around the fringes of the site.

8.2.1.5 Mammals

Signs of badgers have been recorded along the margins of the site and the Irish hare is widespread on the site. Otter are likely to occur along the Fallan River, just west of the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.2.2 Designated Sites

Royal Canal pNHA (Site Code: 002103) is located approximately 250m south of the site and Brown Bog SAC / NHA (Site Code: 002346) is located approximately 827m north of the site boundary.

Mount Jessop Bog NHA (Site Code: 004150) is located approximately 1.2km southeast of the site.

Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101) are located approximately 1.4 km northwest of the site.

8.2.3 Conservation Evaluation of Site

The areas of the site that are in commercial peat production have no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

The areas of cutover bog, developing poor fen and scrub provide a useful habitat for wildlife and are form an area with some biodiversity value – these areas are rated as **Local Importance (higher value)**.

Areas of high bog adjacent to the site have a biodiversity value and are considered **Local Importance (higher value)**.

The area of high bog in the south of the site supports Degraded raised bog still capable of natural regeneration [7120] and Depressions on peat substrate of the *Rhynchosporion* [7150]. This area covers ca. 37 ha and is separated from the main production area by a national primary road. It is considered of **County Importance**.

Figure 66: High Bog to the South of the Production Fields



8.3 Cloonshanagh

8.3.1 Ecological Baseline

Cloonshannagh Bog is located approximately four kilometres to the northwest of Tarmonbarry in County Roscommon. This bog is located within one main section. A mineral island is located close to the centre of the site. Cloonshannagh Bog has only been in peat production since 1985 and some sections of the bog still retain a significant depth of peat ("sphagnum" peat). A relatively large section (c. 35ha) of raised bog is present on the site, which was restored (involving drain blocking) during the winter of 2014/15. A considerable proportion of this area supports the Annex I (priority) habitat Active raised bog [7110]. It has been zoned a biodiversity area by Bord na Móna.

Rail lines to the north of the site connect the site with Derrymoylin, while a southern rail link connects the site with Derrycashel.

The majority of the site is in active peat production although peat depths are low overall across the site (mostly less than 2m of peat). Two pockets of deep peat are located in the north eastern and north western corners of the site and these areas contain in-excess of 2.6m of peat.

The site is largely surrounded by agricultural grassland along with some fringing areas of remnant raised bog and cutover bog, as well as bog woodland, conifer woodland, scrub and wet grassland.

8.3.1.1 Habitats and Vegetation

The majority of the site is under commercial peat production and comprises bare peat (PB2).

A relatively large area (c.35ha) of high bog (PB1) occurs in the northeast of the site. Between 10 and 15 ha of this area appears to support the Annex I (priority) habitat Active raised bog [7110] which occurs in the centre of the area of high bog. The majority of the remainder supports the Annex I habitats Degraded raised bogs still capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150]. Much of this area had previously been ditched but a process of rehabilitation through drain blocking was completed during the winter of 2014/2015. The vegetation along the dry area of the bank face comprise *Calluna vulgaris*, *Salix* sp. and *Rubus fruticosus*

Other fragmented areas of high bog occur in small areas around the site and in general are dominated by *Calluna vulgaris* and are in a very disturbed state with little or no *Sphagnum* cover.

Areas of cutover bog (PB4) (domestic turf cutting areas) are located around the margins of the site. The cutover bog is re-vegetating in parts with a mix of poor fen (PF2) species such as *Juncus effusus*, *Trichophorum germanicum*, *Rhynchospora alba*, *Eriophorum vaginatum* and in places *Sphagnum* cover exceeds 30%.

A mineral island is located close to the centre of the site and habitats include wet grassland (GS4), dense bracken (HD1), bog woodland (WN7), scrub (WS1) and treelines (WL2).

Other habitats along the margins of the site include bog woodland, wet grassland, improved agricultural grassland (GA1) and cutover bog.

8.3.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Cloonshannagh Bog.

8.3.1.3 Wintering Birds

The Annex I golden plover is expected to periodically use the bare peat areas during the winter. Golden plover is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

The Red-listed curlew has previously been recorded along the eastern boundary of the site.

Meadow pipit (a Red list species) would occur on the various areas of high bog and cutover bog along the margins of the site. A range of Amber-listed species would be expected on site during winter, including kestrel and snipe.

8.3.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red listed) and skylark (Amber listed) breed at least in the area of high bog around the periphery of the site. Snipe (Amber-listed) would be expected to breed on the main area of raised bog in the northeast of the site.

8.3.1.5 Mammals

Signs of badgers have been recorded along the margins of the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.3.2 Designated Sites

Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101) are located approximately 1.6km east of the site.

Clooneen Bog SAC (Site Code: 002348) is located approximately 2.5km northeast of Cloonshannagh Bog. Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

The areas of re-vegetating poor fen, high bog and bog woodland that occur around the fringes of the site provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The semi-natural habitats occurring on the mineral island in the centre of the site, including wet grassland, scrub and treelines, are considered **Local Importance (higher value)**.

The area of remnant high bog in the northeast of the site has a considerable conservation value and supports the Annex I (priority) habitat Active raised bog [7110] and the Annex I habitats Degraded raised bogs still capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150]. It has been zoned a biodiversity area by Bord na Móna, and is rated of **County Importance**.

Figure 67: Photo facing north along western face of high bog at Cloonshannagh Bog



Source: BioSphere Environmental Services

Figure 68: Dominance of *Calluna vulgaris* in dry areas around drains that have been blocked as part of rehabilitation process of high bog at Cloonshannagh



Source: BioSphere Environmental Services

8.4 Coolcraff

8.4.1 Ecological Baseline

Coolcraff Bog is located approximately 6.5km south of the town of Granard in Co. Longford and is accessed from a secondary road that leads off the main Castlepollard-Granard Road (R396). The River Inny borders the bog to the east and south and there is some private commercial peat production on peatland to the south of the site adjacent to the River Inny. The majority of the site has been brought into full milled peat production capability in recent years, although almost 100 ha of high bog occur in the north of the site, most of which is within the Bord na Móna site boundary. The majority of the high bog within the Bord na Móna boundary has previously been ditched. Approximately 20 ha of this area has been zoned a Biodiversity Area by Bord na Móna.

The site is largely surrounded by riparian wetland habitats, a lowland river, raised bog, bog woodland and conifer woodland along with fringing areas of wet grassland and agricultural grassland.

8.4.1.1 Habitats and Vegetation

The majority of Coolcraff Bog comprises bare peat (ED2).

An area of high bog (PB1) occurs in the northeast of the site adjacent to a mineral spur on which a small works area is located. This sector comprises an area c.12 ha of high bog to the west with typical raised bog flora in which a small amount of domestic turf-cutting takes place, and a larger area of c.32ha that has been recently drained and milled peat extracted. The high bog to the west of this sector supports the Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150]. A mineral island occurs within this sector and comprises scrub (WS1) and bog woodland (WN7).

The north-eastern sector of the site covers c. 30ha and also comprises relatively intact bog and previous ditched high bog. Although there is active domestic turf cutting in the eastern part of this sector, both the intact and previously ditched areas support the Annex I habitats Degraded raised bog still capable of natural regeneration [7120] and Depressions on peat substrates (Rhynchosporian) [7150]. Approximately 20 ha of the wettest part of this sector is mapped as a Bord na Mona Biodiversity Area.

An area of c. 7ha of high bog (PB1) in the southeast of the site that has been drained and ditched within the past two years is marked as 'Bog remnant' in the associated land use maps.

Other habitats along southern margins of the site include bog woodland (WN7), riparian woodland (WN5), wet grassland (GS4) tall herb swamp (FS2) along the River Inny (FW2) and cutover bog (PB4). Improved agricultural grassland (GA1) also occurs within the fringes of the site.

8.4.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Coolcraff Bog.

8.4.1.3 Wintering Birds

The Annex I listed whooper swan regularly passes over the site and will occasionally use flooded areas where they occur. These birds are probably associated with Loughs Kinale and Derragh, and the River Inny. Greenland white-fronted geese have been recorded overflying the

site during the autumn migration period, possibly en route to Lough Iron SPA, where the species is a Special Conservation Interest.

The Red-listed golden plover (Annex I) was recorded along with Amber-listed snipe, kestrel sparrowhawk, and the Green-listed buzzard was also recorded on site. Golden plover is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Meadow pipit (a Red list species) would occur on the various areas of high bog and cutover bog along the margins of the site.

8.4.1.4 Breeding Birds

The commercial active peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed at least in the area of high bog around the periphery of the site. Snipe (Amber-listed) would be expected to breed on the remnant raised bog in the north and southwest of the site.

The Amber-listed sand martin has previously been recorded nesting in an old quarry on site.

8.4.1.5 Mammals

Signs of badgers and otters have been recorded along the margins of the site with otters being recorded moving along drains throughout the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.4.2 Designated Sites

Lough Kinale and Derragh Lough SPA (Site Code: 004061) and NHA (Site Code: 000985) are situated ca. 325m north of the site.

Derragh Bog SAC is located ca. 764m from the site.

8.4.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover and occasionally whooper swan.

The areas of re-vegetating cutover bog and fringing habitats including bog woodland, scrub and tall reed swamp provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The recently ditched high bog in the southwest of the site is rated as **Local Importance (higher value)**.

The River Inny is notably important with a diversity of associated semi-natural habitats and species including the Annex II otter. It is rated of **County Importance**.

The area of high bog in the northern part of the site has considerable conservation value and supports the Annex I habitats Degraded raised bog and Depressions on peat substrates of the

Rhynchosporion and comprises a Bord na Móna Biodiversity Area. From the present assessment, the overall rating for this area is given as of **County Importance**

Figure 69: Photograph facing north in the northeastern sector of the Coolcraff site showing area of Degraded raised bog capable of natural regeneration



Source: BioSphere Environmental Services

Figure 70: Recently screw-levelled bog on site



Source: BioSphere Environmental Services

8.5 Coolnagun

8.5.1 Ecological Baseline

Coolnagun Bog is located in Co. Westmeath, 7 km west of Castlepollard. Lough Derravarragh is located c. 1 km to the east of Coolnagun and the River Inny flows along the east side of Coolnagun and enters Lough Derravarragh. There is a rail connection from Coolnagun Bog towards Milkernagh Bog to the north. This railway is positioned along the eastern margin of the production bog has only been constructed in the past few years. Other bogs within the Mostrim group are scattered around Coolnagun, but there are no rail connections. A Works area is located along the eastern margin of the site.

There is extensive private milled peat production on adjoining bogs to the north and east of Coolnagun and adjacent to the River Inny.

Coolnagun Bog was formerly a sod peat bog and supplied sod peat fuel to the local area but began harvesting milled peat in 2007. Several low-lying areas were inundated (2000) prior to silt-ponds and pumps being installed by 2004.

There are signs of former sod peat production within some of the high bog margins around the current production area. A former sod peat production area (White's Bog) to the south of the site was leased for private sod peat production in the past but is now being partially developed for milled peat. The southern part of White's bog is still privately leased for sod peat production, which is on a large scale.

Part of Coolnagun at the southern end of the site is now leased to a third party (Inny Junction production bog area). It is separated from the rest of the site by a local un-named river, although there is a small bridge.

The site is largely surrounded by agricultural grassland, bog woodland, remnant high bog, cutover bog and conifer woodland, along with fringing areas of wet grassland, riparian wetland habitats and scrub.

8.5.1.1 Habitats and Vegetation

The majority of Coolnagun Bog comprises bare peat (ED2) which runs in an approximately east-west direction with a southern section, that is separated from the main area by an unnamed stream (FW2), running northwest – southeast towards the River Inny (FW2).

Small areas of high bog (PB1) occurs throughout the Coolnagun Bog site. This high bog is primarily located along the northern and southern fringes of the site, although several of these areas are quite fragmented and disturbed.

Along the northern fringe, high bog that supports the Annex I habitats Degraded raised bog capable of natural regeneration [7120] and Depressions on peat substrates (*Rhynchosporion*) [7150], occurs in the north west (c.10ha) and north east (c.12ha) corners. Both of these areas of high bog have deep drains and bank faces along their southern edge and sod peat extracted from around their northern peripheries.

Lough Ruddan, a small acidic lake (FL1/FL2), poor fen (PF2) and associated wetland habitats, is located in the southeast corner of the site.

Garriskill SAC and SPA is located c.800m of the southern boundary of the site. Qualifying Interests for the site comprise: Active raised bogs [7110], Degraded raised bogs still capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150].

An area of heavily disturbed high bog in the mid-west of the site is subject to relatively intense grazing by livestock.

Some areas of bog woodland (WN7) and scrub (WS1) occur along the south and northeast fringes of the site.

Cattle grazed wet grassland (GS4) dominated by *Juncus effusus* and the grasses *Holcus lanatus* and *Anthoxanthum odoratum* occur along the unnamed stream towards the south of the site.

Several areas of cutover bog domestic and commercial sod peat areas are located along the south east of the site. The cutover bog (PB4) is re-vegetating in parts with a mix of poor fen (PF2) species such as *Juncus effusus* and *Eriophorum angustifolium*.

Other habitats along the margins of the site include bog woodland (WN7), riparian woodland (WN5), tall herb swamp (FS2) along the River Inny (FW2). Improved agricultural land (GA1) also occurs in the centre of the site, although is not in Bord na Móna ownership.

8.5.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Coolnagun Bog.

8.5.1.3 Wintering Birds

The Annex I whooper swan regularly passes over the site and will occasionally use flooded area where they occur. These birds are probably associated with Lough Derravaragh and the River Inny. Greenland white-fronted geese have been recorded overflying near the site during the autumn migration period, possibly en route to Lough Iron SPA, where the species is a Special Conservation Interest.

The Red-listed golden plover (Annex I) was recorded along with Amber-listed snipe, kestrel sparrowhawk and the Green-listed buzzard. Golden plover is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Meadow pipit (a Red list species) would occur on the various areas of high bog and cutover bog along the margins of the site.

8.5.1.4 Breeding Birds

The commercial active peat fields at this site would not support breeding birds. Meadow pipit (Red listed) and skylark (Amber listed) breed at least in the area of high bog around the periphery of the site. Snipe (Amber-listed) would be expected to breed on the remnant raised bog in the north and south of the site.

8.5.1.5 Mammals

Signs of badgers and otters have been recorded along the margins of the site with otters being recorded moving along the main stream running through the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species

recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.5.2 Designated Sites

Garriskill Bog SPA (Site Code: 004102) and SAC (Site Code: 000679) is located to the south of Coolnagun Bog and runs approximately 760m from the peat production area.

Lough Derravaragh NHA (Site Code: 000684) is located approximately 300m east of Coolnagun Bog site.

Lough Derravaragh SPA (Site Code: 004043) is located approximately 480 m south east of the site. Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover and occasionally whooper swan, a conservation interest of Lough Derravaragh SPA.

The areas of revegetating cutover bog and fringing habitats including bog woodland, scrub, and wet grassland areas riparian zones provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The area of highly disturbed high bog measuring c. 60ha in the south of the site has a local biodiversity value and is rated as **Local Importance (higher value)**.

The River Inny is notable importance with a diversity of associated semi-natural habitats and species including the Annex II otter. It is rated **County Importance**.

Some of the areas of high bog identified in the northern parts of the site have considerable conservation value and support the Annex I habitats Degraded raised bog and Depressions on peat substrates (Rhynchosporion). Although it is disturbed through past and ongoing drainage activities, these areas are considered of **Local Importance (higher value)**.

8.6 Corlea

8.6.1 Ecological Baseline

Corlea Bog is located in Co. Longford, approximately 7.5 km north-west of Ballymahon. The site is nearing the end of production and although not indicated on the landuse map, a large proportion appears to be cutover and revegetating poor fen and willow/birch scrub. A sector of this area in the north of the site is classified as a biodiversity area. An Iron Age trackway in the east of the site has been preserved in the bog and in 1994 an OPW visitor centre was developed on the site. The trackway, visitor centre and associated habitats are removed from the production bog area.

The site is largely surrounded by cutover bog (PB4), conifer woodland (WD4), and agricultural grassland (GA1) but there are some fringing areas of high bog (PB1), birch woodland (WN7), scrub (WS1) and wet grassland (GS4).

8.6.1.1 Habitats and Vegetation

The southern half of the site is largely under commercial peat production and comprises bare peat (ED2). The mid- and northeast section of the site are largely re-vegetating predominantly with *Juncus effusus*, forming poor fen (PF2) habitat in places. Birch and willow are emerging in some of the cutover (PB4) parts of the site.

High bog (PB1) occurs in small areas around the site and in general is dominated by *Calluna vulgaris* and is in a degraded state with little or no Sphagnum cover. Two areas of high bog in the southeast and northwest have a somewhat more typical raised bog flora but drainage from past turf cutting activities, along with their area of cover, has eliminated any prospect of preventing further drying out.

An area of high bog in the east of the site has been preserved and attempts have been made to maintain its hydrology using a membrane to prevent significant water loss from the bog. The high bog still shows signs of degradation and is spongy. The alien pitcher plant occurs in this section and appears to be spreading.

Several artificial ponds have also been created on the site and these generally contain open water with some Sphagnum growth around the margins. The most easterly and lowest pond contained emergent *Eriophorum angustifolium* and *Carex rostrata*-dominated vegetation with a mat of *Sphagnum cuspidatum*.

Some open water occurs in the northeastern sectors, along with the associated poor fen (PF2) vegetation, including *Phragmites australis*, and provides a suitable habitat for water birds. Much of this area has been classified at a biodiversity area.

There is a small conifer plantation with Lodgepole Pine located in the north-west corner of the site.

8.6.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Corlea Bog.

8.6.1.3 Wintering Birds

During winter bird surveys of the nearby Derryadd 3 (Lough Bannow) Bog site in the 2014/2015 season single observations of merlin and whooper swan (both Annex I species) and sparrowhawk were recorded on site. The Amber-listed kestrel and buzzard (Green-listed), were regularly recorded.

Golden plover, an Annex I Birds Directive species, are widespread throughout the winter on open agricultural land and on bare peat fields where it roosts. It occasionally uses the open areas of the Corlea site.

The Amber-listed lesser black-backed gull and Green-listed mallard were recorded in August 2016 on the developing wetland in the northeast of the site.

8.6.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed in the remnant areas of high bog and re-vegetated cutover bog around the fringes of the sites.

Breeding surveys near the site in 2015 found that the Amber-listed sparrowhawk occurs within the hinterland of the site. Curlew (Red-listed) was recorded displaying during the 2015 breeding season on high bog approximately 800m northeast of Corlea.

8.6.1.5 Mammals

Signs of badgers have been recorded along the margins of the site and the Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.6.2 Designated Sites

Corlea Bog is located within 1 kilometre of 3 designated sites. Lough Bawn pNHA (Site Code: 001819) is located approximately 400 metres northeast of the site and is separated by a local road.

The Royal Canal pNHA (Site Code: 002103) runs in a north-south direction and passes approximately 500 metres from the eastern edge of the site.

Derry Lough pNHA (Site Code: 001444) is located approximately 1 kilometre southwest of the site.

8.6.3 Conservation Evaluation of Site

The areas of cutover bog, including developing wetland in the northeast, provide useful habitat for wildlife and have been selected as biodiversity areas by Bord na Móna – these areas are rated as County Importance.

Pioneering poor fen and birch/willow scrub within the areas zoned for peat production along with the remnant areas of high bog adjacent to the site have a biodiversity value and are considered Local Importance (higher value).

The area of the site that is in commercial peat production has no intrinsic conservation value.

8.7 Derraghan

8.7.1 Ecological Baseline

Derraghan Bog is a long, relatively narrow section of bog that is located approximately 7 kilometres south east of Lanesborough along the R392 Lanesborough to Ballymahon Road. The bog is dissected in two parts by a Bord na Móna rail line that runs in an east-west orientation through the site, resulting in a northern and southern section. The majority of the site is out of production and is re-vegetating at a steady rate. Much of the re-vegetating area has been classified as a Bord na Móna biodiversity area. An ash landfill site is located close to the middle of the site and this facility is used to store ash that is produced from the nearby power station in Lanesborough.

The site is largely surrounded by agricultural grassland and active peat fields but there are some fringing areas of remnant raised bog and cutover bog, as well as birch woodland, scrub and wet grassland.

8.7.1.1 Habitats and Vegetation

The northern section is mostly out of production apart from some fields running along the western and eastern side of the site. The majority of the mid- and northern section of the site is best described as a transition between scrub and birch woodland (WN7). This woodland is dominated by birch with rowan and willow with a ground flora of *Calluna vulgaris*, *Juncus effusus* and *Molinia caerulea*. This area grades into more mature establishing woodland with ash and oak saplings amongst the species assemblage.

Occasional areas of pioneer rich (PF1) and poor (PF2) fen and flush occur in small pockets throughout the northern and central segments of the site.

Small areas of remnant raised bog occur to the northwest and northeast of the site, and in the south east. These are in poor condition, are dominated by *Calluna vulgaris*, and have little or no Sphagnum cover.

The southern section of the site, which borders Derrycolumb Bog, is largely dominated by bare peat with some areas re-vegetating with similar scrub described above.

8.7.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derraghan Bog.

8.7.1.3 Wintering Birds

Derraghan Bog provides a good range of bird habitats including modified wetlands, scrub / woodlands, and bare peat. During winter bird surveys of the site during the 2014/2015 season the golden plover (Annex I listed) was recorded along with amber-listed snipe and sparrowhawk. Whooper swan (Annex I listed) was recorded in flight nearby.

Golden plover, an Annex I Birds Directive species and listed for Lough Ree SPA, is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site. The range of Amber-listed species on site during winter also includes kestrel.

8.7.1.4 Breeding Birds

The re-vegetating scrub/woodland areas of the site provides suitable breeding habitat for common passerine species including Amber-listed robin.

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed at least in the area of high bog around the periphery of the site.

Barn owl (Red-listed) has been recorded in the vicinity of the Derraghan Bog site and possibly breeds nearby.

8.7.1.5 Mammals

Signs of badgers and pine marten have been recorded along the margins of the site and on within the areas of re-vegetating scrub/woodland. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.7.2 Designated Sites

Forthill Bog NHA is located approximately 1.6 kilometres south of the site boundary and Derry Lough pNHA (Site Code 001444) located approximately 2 kilometres southeast of the site.

Cordara Turlough pNHA (Site Code 001821) runs approximately 2.3 kilometres west of the site.

Lough Ree SAC (site code 000440) and SPA (site code 004064) are located approximately 2 kilometres south of Derraghan Bog.

8.7.3 Conservation Evaluation of Site

The areas of cutover bog, including developing birch woodland in the northeast, provide useful habitats for wildlife and have been selected as biodiversity areas by Bord na Móna – these areas are rated as **County Importance**.

Birch/willow scrub within the areas zoned for peat production along with the remnant areas of high bog adjacent to the site have a biodiversity value and are considered **Local Importance (higher value)**.

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

8.8 Derryadd 1

8.8.1 Ecological Baseline

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 Bord na Móna 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. Derryadd Bog has been in full peat production since the early 1960's and contains two pumps which are located in the southwest corner and along the northern boundary of the site.

The site is largely surrounded by agricultural grassland (GA1), cutover bog (PB4) and conifer woodland (WD4) but there are some fringing areas of high bog, birch woodland, scrub and wet grassland.

8.8.1.1 Habitat and Vegetation

A considerable proportion of this site is in active peat production and comprises bare peat (ED2). A band of scrub (WS1) running along a ridge to the north and south of the mineral island has also become established throughout the site and is dominated by willow and birch, with occasional Scot's and lodgepole pine, some of which is relatively mature. In some areas dense bracken (HD1) occur, often along with patches of Dry neutral and calcareous grassland (GS1) and Dry meadow and grassy verges (GS2). Small areas of poor fen (PF2) habitat have also developed across the site.

A small area of high bog (PB1) occurs in the southwest of the site that supports a typical raised bog flora. Other small areas of high bog occur around the site and in general are dominated by *Calluna vulgaris* and are in a degraded state with little or no *Sphagnum* cover.

8.8.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derryard 1 Bog.

8.8.1.3 Wintering Birds

During winter bird surveys of the Derryadd 1 Bog site during 2014/2015 the Annex I species golden plover, hen harrier and merlin were observed flying through the site. Golden plover, which are widespread during the winter, use the open bare peat areas for roosting. Whooper swans were observed on a number of occasions flying through the site and were recorded landing on standing water on one occasion in the northeast of the site during October.

The Amber-listed snipe regularly use high bog and woodcock (Red-listed) occur within the re-vegetating scrub/woodland habitats on site.

8.8.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed), skylark and snipe (Amber-listed) breed in the remnant areas of high bog and re-vegetated cutover bog around the fringes of the sites.

Breeding surveys near the site in 2015 found that the Amber-listed sparrowhawk and Green-listed Buzzard occur within the hinterland of the site. Ringed plover was observed near standing water on the site in April though evidence of breeding was not recorded.

8.8.1.5 Mammals

Evidence of badger, otter, Irish hare, and pine marten were recorded on the site. Evidence of otter, which is an Annex II species, was recorded in the west of the site along a stream that forms a tributary of the River Shannon.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.8.2 Designated Sites

Lough Bannow pNHA (Site Code: 000449) is located approximately 400m west of the northwestern corner of the site. This pNHA is separated from Derryadd 1 Bog by improved agricultural grassland.

8.8.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species golden plover and areas of standing water may be used during the winter season by whooper swan.

Pioneering poor fen and birch/willow scrub within the areas zoned for peat production along with the remnant areas of high bog adjacent to the site have a biodiversity value and are considered **Local Importance (higher value)**.

The pockets of remnant raised bog around the fringes of the site are considered **Local Importance (higher value)**.

8.9 Derryadd 2

8.9.1 Ecological Baseline

Derryadd 2 Bog is located approximately 1 kilometre to the west of Killashee in County Longford. This site is located within one main block. Killashee Bog is located immediately to the north of the site (separated by the Longford to Roscommon Road), while Derryadd 1 bog is located to the west. A rail link connects the site with Killashee Bog to the north and Derryadd to the west. The majority of the site is in active peat production, however approximately 40% of the site is cutaway with further areas nearing the end of peat production. Derryadd 2 Bog has been in full peat production since the early 1960's and contains one pump in the north of the site.

The site is largely surrounded by agricultural grassland and cutover bog, and fringing areas of remnant raised bog and birch woodland, scrub and wet grassland.

8.9.1.1 Habitats and Vegetation

The majority of the site is in active peat production and comprises bare peat ED2. Peat harvesting has exposed marl in some areas of the west and north of the site. There are substantial areas of re-generating cutaway in the centre of the site on which poor fen (PF2) and birch and willow scrub (WS1) has become established. This scrub is relatively mature in places.

Areas of high bog (PB1) and cutover bog (PB4) occur around the fringes of the site. These areas tend to be dominated by *Calluna vulgaris* and are in a degraded state. An area of high bog in the east has somewhat more typical raised bog flora.

Other habitats along the margins of the site include birch woodland (WN7) and wet grassland (GS4).

8.9.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derryadd 2 Bog.

8.9.1.3 Wintering Birds

During winter bird surveys of the site over the 2014/2015 season the golden plover (Annex I listed) was recorded, along with amber-listed snipe and sparrowhawk. The Annex I whooper swan was recorded in flight just east of the site and opportunistically uses areas of standing water during the winter period.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site.

The range of Amber-listed species on site during winter also includes kestrel.

8.9.1.4 Breeding Birds

The re-vegetating scrub/woodlands areas of the site provides suitable breeding habitat for common passerine species including Amber-listed robin. The Green-listed buzzard was recorded nesting in woodland to the northeast of the site and mallard occasionally nest in the drains around the periphery of the site.

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed at least in the area of high bog around the periphery of the site.

8.9.1.5 Mammals

Signs of badgers, otter a- scrub/woodland. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.9.2 Designated Sites

The Royal Canal pNHA (Site Code: 002103) runs in a north-south direction and passes approximately 200 metres from the eastern edge of the site.

8.9.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover and occasionally whooper swan.

The various areas of cutover bog and degraded remnant high bog associated with the site, as well as bog woodland and scrub, provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

8.10 Derryarogue

8.10.1 Ecological Baseline

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. The eastern sector is dissected by a railway line that crosses the site in an east-west direction. 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.

Derryarogue Island is a mineral island that occurs in the centre of the site and has been classified as a Bord na Móna biodiversity area. The potential presence of the Annex I habitats Petrifying springs with tufa formation (Cratoneurion) [7220] (priority habitat) is notable, along with Semi-natural grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) [6210]. The Annex II marsh fritillary butterfly was recorded in this area during 2016.

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

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 site is largely surrounded by agricultural grassland, cutover bog, bog woodland, conifer woodland, and fringing areas of remnant raised bog, scrub and wet grassland.

8.10.1.1 Habitats and Vegetation

Approximately half of Derryarogue is still in active peat production and comprises bare peat (ED2).

A large proportion of the remainder of the site is at various stages of re-vegetation with habitats comprising re-colonising bare ground (ED3), grassland types including dry neutral and calcareous (GS1), dry meadows and grassy verges (GS2), wet grassland (GS4), scrub (WS1) and established (>20 year old) birch and willow woodland (WN7). In the more mature areas of woodland, oak and pine are also becoming established.

Other former cutover habitats include wetland areas that comprise relatively well-developed systems that are dominated by *Typha latifolia*, *Juncus effusus*, *Triglochin palustris* and a range of broad-leaved herbs including *Hydrocotyle vulgaris* and *Mentha aquatica*.

Areas of high bog (PB1) and cutover bog (PB4) occur around the fringes of the site. These tend to be small areas in a degraded state and often dominated by *Calluna vulgaris*. An area of high bog in the southeast of the site has somewhat more typical raised bog flora and supports the Annex I habitat 'Degraded raised bog still capable of natural regeneration' [7120].

A mineral island occurs in the centre of the site and has been classified as a biodiversity area due to the presence of semi-natural habitats including Semi-natural grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) [6210]. A small area (c.0.2ha) of *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] also occurs in this area. Deposits of tufa occur on the island - although indicative of the presence of the Annex I habitat Petrifying springs with tufa formation (Cratoneurion) [7220] (priority habitat), the presence of diagnostic brown mosses and especially *Cratoneurion commutatum* (now named *Palustriella communtata*) has not been confirmed.

8.10.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derryarogue Bog.

8.10.1.3 Wintering Birds

During winter bird surveys of the Derryarogue Bog site over 2014/2015 the Annex I species golden plover, hen harrier and peregrine were observed flying through the site. Whooper swans were recorded roosting on bare peat near standing water towards the centre of the site, and appear to use the site regularly when flooded areas form. 192 whooper swans were recorded during November 2016 at the adjacent Knnapogue site and these birds may also use Derryarogue periodically. Golden plover, which are widespread during the winter, use the open bare peat areas for roosting.

The Amber-listed snipe regularly uses high bog, while the Red-listed woodcock occurs within the re-vegetating scrub/woodland habitats on site.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site.

The Green-listed buzzard and Amber-listed kestrel were also recorded on site.

8.10.1.4 Breeding Birds

The re-vegetating scrub/woodland areas of the site provides suitable breeding habitat for common passerine species. The Green-listed buzzard was recorded foraging on the site and mallard occasionally nest in the drains around the periphery of the site.

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed in the areas of remnant high bog around the periphery of the site and within some of the re-vegetating areas.

Kestrel (Amber-listed) breeds nearby and throughout the site.

8.10.1.5 Mammals

Signs of badgers and otter have been recorded along the margins of the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.10.2 Designated Sites

Lough Bannow pNHA (Site Code: 000449) is located approximately 100m south of the site. This pNHA is separated from Derryarogue Bog by the N63 road.

Lough Ree SAC (site code 000440) and SPA (site code 004064) are located approximately 480 m west of Derryarogue Bog. Whooper swan are listed as a Special Conservation Interest for the SPA.

8.10.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover. Flooded areas of the site will also be used by whooper swan, a conservation interest of Lough Ree SPA..

The various areas of cutover bog and degraded remnant high bog associated with the site, as well as developing bog woodland and scrub, provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The area of remnant high bog to the southeast of the site supports the Annex I habitat ‘Degraded raised bog still capable of natural regeneration’ and is considered to be of **County Importance**.

Derryarogue Island mineral island located in the centre of the site supports small areas of the Annex I habitats: Semi-natural grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) [6210], and *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]. The associated Annex II listed species, marsh fritillary, has previously been recorded in this area. Formations of tufa occur on the Island – tufa formation such as this is indicative of the presence of the Annex I habitat Petrifying springs with tufa formation (*Cratoneurion*) [7220] (priority habitat). However, the presence of diagnostic brown mosses and especially *Cratoneurion commutatum* has not been confirmed. This area has been classified as a Biodiversity Area by Bord na Móna and is rated of **County Importance**.

Figure 71: Tufa formation on Derryarogue Island biodiversity area



Source: BioSphere Environmental Services

8.11 Derrycashel

8.11.1 Ecological Baseline

Derrycashel Bog is located in Co. Roscommon along the River Shannon. It is situated approximately 5 km north of Lanesborough and the N5 Dublin-Westport Road runs within 1 km of the north of the site. Mountdillon bog is situated immediately to the south of Derrycashel while there are other bogs to the north and on the east side of the River Shannon in Co. Longford. A railway passes through the centre of Derrycashel and connects bogs to the north with the Mountdillon network. The main landscape feature in this area is the River Shannon and its associated riparian zone and floodplain. Derrycashel Bog is situated below the level of the River Shannon and its drainage system is heavily dependent on pumps.

A section of the site (60 ha) to the northeast of the central rail line has been classed as cutaway and has been the subject of rehabilitation work during the 2014/15 winter months. This work involved creating peat berms along with dismantling old drainage systems in-order to re-wet this area of the bog.

Derrycashel bog is a relatively old production bog, with production commencing in 1951. The majority of the production bog is now developing pioneer cutaway habitats. Current milled peat production is mainly confined to peripheral areas along the southern and eastern margins. Pioneer cutaway habitats are extensive and the more heavily vegetated areas are considered production-related cutaway. The fields are orientated north-east to south-west and arranged in blocks that are separated by major drainage channels.

The drainage system has a series of pumps with one pump pumping into the next section, which is subsequently pumped on and so on until the water reaches the outflow drainage system.

The site is largely surrounded by riparian wetland habitats, raised bog, wet grassland, bog woodland and agricultural grassland but there are some fringing areas of cutover bog and improved agricultural grassland.

8.11.1.1 Habitats and Vegetation

Derrycashel Bog is dominated by pioneering habitats in various stages of development. These include scrub (WS1), establishing willow/birch woodland (WN7), and areas of poor fen (PF2) which are dominated by *Typha longifolia*, *Phragmites australis* and *Juncus effusus*. Other re-vegetating areas where underlying gravel protrudes the surface have become Dry neutral and calcareous grassland (GS1) and Dry meadows and grassy verges (GS2).

An area of cutover bog occurs to the north of the site and has been the subject of rehabilitation works. In parts typical wetland plants including *Carex rostrata* and *Eriophorum angustifolium* have become established within patches of willow scrub. This area regularly floods throughout the winter period.

A small area in the southern end of the site has been sown with cereal crops including oats and linseed to act as a sacrificial feeding area for song birds.

Areas of high bog (PB1) occur around the fringes of the site. Many of these areas tend to be dominated by *Calluna vulgaris* and are in a degraded state.

Two of the areas, however, have more typical raised bog flora. A relatively large area of c. 60ha in the east of the site supports what is considered to be the Annex I priority habitat Active raised bog [7110], with the remainder of the high bog qualifying as the Annex I habitat Degraded

raised bog still capable of natural regeneration [7120]. The Annex I habitat Depressions on peat substrates (Rhynchosporian) [7150] is also represented. This area is mapped as a Bord na Móna biodiversity area.

The second notable area of high bog occurs in the west of the site and supports the Annex I habitats Degraded raised bog still capable of natural regeneration [7120] and Depressions on peat substrates (Rhynchosporian) [7150].

Of particular note on the high bog at Derrycashel is the occurrence of the introduced pitcher plant, which occurs abundantly throughout the areas of high bog on the site. This invasive species was introduced into Ireland from Canada in the early 1900s.

Other habitats along southern margins of the site include willow/birch woodland (WN7), wet grassland (GS4) and cutover bog (PB4).

8.11.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derrycashel Bog.

The presence of the localised non-native pitcher plant is noted.

8.11.1.3 Wintering Birds

During winter bird surveys of the site during the 2014/2015 season the Annex I whooper swan was recorded on several occasions and this species probably uses the flooded areas of the site regularly during the winter period.

Golden plover (Annex I listed) was recorded, along with the Amber-listed snipe, sparrowhawk, and the Green-listed buzzard. Golden plover is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Meadow pipit (a Red list species) would occur on the various areas of high bog and cutover bog along the margins of the site.

8.11.1.4 Breeding Birds

The commercial active peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed at least in the area of high bog around the periphery of the site. Snipe (Amber-listed) would be expected to breed on the remnant raised bog on the southern point of the site.

The Red-listed species, curlew, was recorded on the site in late April 2015. The Red-listed lapwing and redshank were recorded breeding during surveys in 2011 along with the Amber-listed snipe. Ringed plover, formerly Amber listed, was also recorded.

8.11.1.5 Mammals

Signs of badgers have been recorded along the margins of the site with otters being recorded along the northern boundary of the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species

recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.11.2 Designated Sites

Lough Ree SAC/SPA is located approximately 5.4 km from Derrycashel Bog.

8.11.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

The areas of cutover bog and other revegetating areas provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**. Some of the revegetating wetland habitats towards the centre of the site are important to relatively rare breeding waders including the Red-listed lapwing and redshank and are considered of **County Importance**.

The area of relatively intact high bog in the eastern part of the site has considerable conservation value and supports the Annex I habitats Active raised bog (priority habitat), Degraded raised bog and Depressions on peat substrates (Rhynchosporian). This sector, which has been zoned a biodiversity area by Bord na Móna and covers a total area of approximately 60 ha, is rated of **National Importance**.

Figure 72: Invasive pitcher plant on intact high bog in the southeast of the Derrycashel Bog site



Source: BioSphere Environmental Services.

Figure 73: Image facing south of deep drain between peat fields and high bog in the southeast of the Derrycashel Bog site



Source: BioSphere Environmental Services

8.12 Derrycolumb

8.12.1 Ecological Baseline

Derrycolumb Bog is located approximately 9.5km to the west of Ballymahon in County Longford. This site is located within three main sections that are divided by minor public roads. Derragh Bog is located immediately adjacent to two sections of the site and a rail link connects Derrycolumb Bog with Derragh Bog to the north and Edera Bog to the south. The majority of the site is in active peat production. Derrycolumb Bog has been in full peat production since the mid 1980s. A number of pumps are located on the site.

The site is largely surrounded by agricultural grassland but there are some fringing areas of remnant raised bog and cutover bog, as well as birch woodland, scrub and wet grassland. A small area in the south-eastern corner of this section is within the area that is designated as the Derry Lough pNHA. The pNHA consists of wet grassland, fen, fen woodland and open water and is adjacent to the peat production area.

8.12.1.1 Habitats and Vegetation

Derrycolumb Bog is divided in three main sections – south-eastern, mid and northern-western sections which are separated by minor public roads.

The north-western sector is in milled-peat production (bare peat ED2) with some parts comprising recolonising bare ground (ED3) which is dominated by *Juncus effusus*. The southern part of this section comprises cutover bog (PB4), birch/willow scrub (WS1) and bog woodland (WN7). A small area of high bog in the northern part of this supports some typical raised bog vegetation but it is in a disturbed state due to impacts from past and ongoing drainage activities.

The mid section is the largest portion of the site and this area curves around a section of farmland that is located to the north. The majority of this section is in active peat production (PB2), although pioneering *Juncus effusus*, *Salix* spp., and *Betula pubescens* has colonised a cutaway section to the northeast.

The south/eastern section of the site is largely under milled peat production (PB2) and is fringed by improved and semi-improved agricultural grassland (GA1 and GS4), birch woodland (WN7), and remnant raised bog (PB1). Although relatively small in size this area of raised bog is dominated with bog mosses (*Sphagnum* spp.), *Rhynchospora alba*, *Eriophorum angustifolium* and *Calluna vulgaris* and represents the Annex I habitat Degraded raised bog still capable of natural regeneration [7120].

This area of raised bog adjoins a canalised river and Derry Lough pNHA. The pNHA consists of wet grassland, fen, fen woodland and open water.

Other habitats along southern margins of the site include birch woodland, wet grassland and cutover bog.

8.12.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derrycolumb Bog

8.12.1.3 Wintering Birds

Derrycolumb bog has limited potential to support wintering birds of conservation importance reflecting the extent of the commercial peat fields at this site.

However, should the site flood it could attract whooper swans (Annex I species) which winter in substantial numbers on Lough Ree SPA, for which it is listed as a Species of Conservation Interest.

Golden plover, a further Annex I Birds Directive species, listed for Lough Ree SPA, is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Meadow pipit (a Red list species) would occur on the various areas of high bog and cutover bog along the margins of the site. A range of Amber listed species would be expected on site during winter, including kestrel and snipe.

8.12.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red listed) and skylark (Amber listed) breed at least in the area of high bog around the periphery of the site. Snipe (Amber listed) would be expected to breed on the remnant raised bog on the southern point of the site.

8.12.1.5 Mammals

Signs of badgers and otters have been recorded along the margins of the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.12.2 Designated Sites

Derry Lough pNHA (Site Code 001444) overlaps the southern sector of the site. The pNHA consists of wet grassland, fen, fen woodland and open water.

Lough Ree SAC (site code 000440) and SPA (site code 004064) are located approximately 300 m south of Derrycolumb Bog.

Forthill Bog NHA is located c.700 m south of the site boundary and The Royal Canal pNHA (Site Code 002103) runs approximately 2 km east of the site.

8.12.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

The areas of re-vegetating cutover bog, including developing birch woodland in the northeast, and high bog provide useful habitat for wildlife, including the Red listed meadow pipit, and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The area of relatively intact high bog in the southeast of the site has considerable conservation value and supports the Annex I habitat Degraded raised bog. This area is adjacent to Derry Lough pNHA, of which a section is within the Bord na Móna site boundary, and is rated of **National Importance**.

Figure 74: Annex I Degraded raised bog habitat at southern tip of Derrycolumb site



Source: BioSphere Environmental Services.

8.13 Derrymoylin

8.13.1 Ecological Baseline

Derrymoylin Bog is located approximately four kilometres north west of Tarmonbarry in County Roscommon. This bog comprises one main section. The bog is relatively long and narrow and runs in a north south orientation. An unpaved access track crosses the site before running along the eastern boundary of the site. This site is the most northerly of the Mountdillon group of bogs. There are no pumps in Derrymoylin Bog.

The boundary map shows that there are many small segments of raised bog in Bord na Móna ownership to the east of the site. These sections contain some areas of raised bog that are in relatively good condition, and are removed from the peat production area. Domestic turf cutting is widespread along the margins of these sections.

A good deal of intact high bog, some of which is in Bord na Móna ownership occurs around the southern peripheries of the site and lies adjacent to a section of the bog comprising c. 45 ha that was screw levelled in 2012 and came into production thereafter.

The site is largely surrounded by agricultural grassland, cutover bog and raised bog, along with fringing areas of bog woodland, conifer woodland, scrub and wet grassland.

8.13.1.1 Habitats and Vegetation

The majority of the site is under commercial peat production and comprises bare peat (PB2).

A considerable area of intact high bog (PB1), comprising three separate sectors, occurs along the southern boundary of the site, a good deal of which is in Bord na Móna ownership. These areas are adjacent to a section of the bog comprising c. 45 ha that was screw levelled in 2012 and came into production thereafter. The three sectors of remaining high bog occur to the southwest, south and east of this production area. The high bog area to the southwest and south both support the Annex I habitats Degraded raised bogs still capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150]. Both of these areas are separated from the main peat production area by local vehicular tracks. The high bog area to the east is very degraded and continues to dry out from past and ongoing commercial peat harvesting and domestic turfcutting activities.

Other fragmented areas of high bog occur in small areas around the site and in general are dominated by *Calluna vulgaris* and *Trichophorum germanicum* and are in a disturbed state with a low *Sphagnum* cover.

Areas of cutover bog (PB4) (domestic turf cutting areas) are located around the margins of the site. These areas are re-vegetating in parts with scrub (WS1), and a mix of poor fen (PF2) species such as *Juncus effusus*, *Trichophorum germanicum*, *Rhynchospora alba*, and *Eriophorum vaginatum*.

Small areas of wet grassland (GS4), dense bracken (HD1), bog woodland (WN7), scrub (WS1) and treelines (WL2) occur along the fringes of the site and adjacent to the various vehicular tracks on the site.

8.13.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derrymoylin Bog.

8.13.1.3 Wintering Birds

The Annex I golden plover is expected to periodically use the bare peat areas during the winter. Golden plover is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Meadow pipit (a Red list species) would occur on the various areas of high bog and cutover bog along the margins of the site. A range of Amber-listed species would be expected on site during winter, including kestrel and snipe.

8.13.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red listed) and skylark (Amber listed) breed at least in the area of high bog around the periphery of the site. Snipe (Amber-listed) would be expected to breed on the main area of raised bog on the southern boundary of the site.

8.13.1.5 Mammals

Signs of badgers and otter have been recorded along the margins of the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.13.2 Designated Sites

Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101) are located approximately 1.4 km southeast of Derrymoylin Bog.

Clooneen Bog SAC (Site Code: 002348) is located approximately 1.1 km northeast of Derrymoylin Bog.

Aghnamona Bog NHA (Site Code: 000422) is located approximately 2.5km northeast of the site.

8.13.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

The areas of re-vegetating cutover bog, re-vegetating poor fen, high bog and bog woodland that occur around the fringes of the site provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The area of remnant high bog along the southern margins of the site has a considerable conservation value and supports the Annex I habitats Degraded raised bogs still capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150]. It is considered of **County Importance**.

Figure 75: Photograph facing northeast along bog road between recently developed peat field on the right and intact high bog that supports the Annex I habitats Degraded raised bog and Depression of the *Rhynchosporion*



Source: BioSphere Environmental Services

8.14 Derryshanoge

8.14.1 Ecological Baseline

Derryshannoge Bog is located approximately 6.7 kilometres to the East of Lanesborough in County Longford. This bog is located within one main section that surrounds a privately owned mineral island. Derryshannoge Bog has only been in peat production since 1985, some sections of the bog still retain a significant depth of peat. A relatively large section of intact raised bog is still present on the site. Rail lines to the south of the site connect the site with Derraghan. The majority of the site is in active peat production.

The site is largely surrounded by agricultural grassland but there are some fringing areas of remnant raised bog and cutover bog, as well as birch woodland, scrub and wet grassland.

8.14.1.1 Habitats and Vegetation

The majority of the site is under commercial peat production and comprises bare peat (ED2).

Although no areas on the site are zoned as regenerating cutaway, significant areas close to the centre would appear to be regenerating cutaway. Significant areas of cutover bog (domestic turf cutting areas) are located around the margins of the site. The cutover bog (PB4) is re-vegetating in parts with a mix of poor fen (PF2), with species such as *Juncus effusus*, *Eriophorum vaginatum* and *Salix* spp., although in places *Sphagnum* comprises >40% cover.

High bog (PB1) occurs in small areas around the site and in general is dominated by *Calluna vulgaris* and is in a very degraded state with little or no *Sphagnum* cover. Two areas of high bog in the east and southeast have a somewhat more typical raised bog flora but drainage from past turf-cutting activities along with their area of cover, has eliminated any prospects of preventing further drying out.

The Derrygeel stream flows through the site. The area occupying both sides of this stream appear to be cutaway and have become re-vegetated with a mix of scrub (WS1) and poor fen (PF2) vegetation.

A small area of high bog in the north of the site is relatively intact and is separated from the main peat production area by a local road.

8.14.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derryshannoge Bog.

8.14.1.3 Wintering Birds

During winter bird surveys of the site over the 2014/2015 season golden plover (Annex I listed) was recorded along with Amber-listed sparrowhawk and snipe. If the site should flood, it could attract whooper swans, which are listed for Lough Ree SPA as a Species of Conservation Interest.

Golden plover, an Annex I Birds Directive species, listed for Lough Ree SPA, is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site.

8.14.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed in the remnant areas of high bog and revegetated cutover bog around the fringes of the sites.

Breeding surveys of the site in 2015 found that the Amber-listed kestrel and Green-listed Buzzard occur within the hinterland of the site.

8.14.1.5 Mammals

Signs of badgers have been recorded along the margins of the site and the Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.14.2 Designated Sites

Cordara Turlough pNHA (Site Code: 001821) is located approximately 800m west of the site boundary and Fortwilliam Turlough SAC (Site Code: 000448) is located approximately 1.8km west of the site.

Lough Bannow pNHA (Site Code: 000449) is located approximately 1.1km north of the site.

Lough Ree SAC (site code 000440) and SPA (site code 004064) are located approximately 2.5 km northwest of Derryshannoge Bog.

8.14.3 Conservation Evaluation of Site

The areas of cutaway bog, including developing poor fen in the centre of the site provide a useful habitat for wildlife and form an area with some biodiversity value – these areas are rated as **Local Importance (higher value)**.

Areas of high bog adjacent to the site have a biodiversity value and are considered **Local Importance (higher value)**.

The area of high bog to the north of the site supports is approximately 7.5 ha in extent and is separated from the main production area by a local road. It is considered of **Local Importance (higher value)**.

The areas of the site that are in commercial peat production have no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

8.15 Edera

8.15.1 Ecological Baseline

Edera Bog is located approximately 9 km to the west of Ballymahon in County Longford. This site is located on the shore of Lough Ree. The majority of the site is in active peat production. The peat is used as fuel peat in Lough Ree Power in Lanesborough. The Bilberry River flows through the site and a relatively large section of wet grassland, remnant raised bog and other wetland habitats still exist on the site. A rail line connects Edera Bog with Derrycolumb Bog to the north. Edera Bog is underlain with both marl and gravel.

The Bilberry River, which has previously been partly-canalised, flows through the site and there are two bridge crossing points that machinery and trains use to cross this river.

The main section of production bog to the south of the Bilberry River has only been in production since 2003 and still retains a dome in most areas. The bog is gravity drained and does not have any pumps.

Archaeological excavations in 2007 located five Bronze Age trackways on the southern part of the Edera site.

8.15.1.1 Habitat and Vegetation

The majority of Edera Bog is in active peat production and comprises bare peat (ED2). Some small sections of the production area appear to have been cut to the point that marl protrudes. In these areas *Phragmites australis* has become established forming recolonising bare ground (ED3). A significant area of scrub (WS1), bog woodland (WN7), raised bog (PB1), reed and large sedge swamps (FS1) and wet grassland (GS4) is located in the west of the site. This area is located next to Lough Ree and has never been in peat production; however, some domestic turf cutting has been carried out in this area in the past. The remnant section of raised bog does not appear to contain deep peat and is located in the transition zone between what was the former intact raised bog (Edera) and the wet grassland that borders the lake.

Small areas of remnant raised bog (PB1) and cutaway bog (PB4) are located along the north eastern and south eastern boundaries of the site. These areas are used extensively for domestic turf production.

8.15.1.2 Rare Flora

Betony *Betonica officinalis* has been recorded from N05 10 km square (BSBI atlas) that includes the western part of the site. Betony, which is protected under the Flora (Protection) Order 2015, occurs mainly on light acidic, neutral or calcareous soils on grassland, heaths and woodland edges.

Also recorded from N05 10 km square (BSBI atlas) is alder buckthorn *Frangula alnus*, - this localised species is listed in the Irish Red Data Book (Curtis & McGough 1988) though is not listed on the Irish Red List of vascular plants (Wyse Jackson *et al.* 2016). Alder buckthorn grows in damp woods, scrub, fens, and heaths but avoids very wet or very dry habitat.

Neither of these plants would be expected within the peat production footprint.

8.15.1.3 Wintering Birds

The peat production area itself can be expected to be used by golden plover for foraging and roosting during the winter. Golden plover is listed on Annex I of the Birds Directive (also Red-

listed) and forms one of the Species of Conservation Interest for Lough Ree SPA. The Bilberry River is used by both mallard and little grebe, both of which are also Species of Conservation Interest of Lough Ree SPA. A range of Amber-listed species occur on site including snipe, woodcock, kestrel, sparrowhawk, and linnet. Hen harrier and the rare marsh harrier have previously been recorded on site in the vicinity of Bilberry River.

8.15.1.4 Breeding Birds

The Edera bog production area itself has low potential to support species of conservation concern. Mallard and little grebe, both of which are Species of Conservation Interest of Lough Ree SPA use the Bilberry River during the breeding season and may breed within the boundary of the site. Adjacent areas of semi-natural vegetation are suitable for a range of breeding birds. The Red-listed meadow pipit breeds on the remnant bog area. The Amber-listed species that breed on site include skylark, linnet, kestrel, sparrowhawk, stonechat and snipe. Sand martins nest in some sections of face bank in banks of the cutover bog to the northeast of the site. Other species recorded over or within 500 m of the site include buzzard, little grebe, mallard, swallow, and spotted flycatcher.

8.15.1.5 Mammals

Evidence of badger, otter, Irish hare, mink, and pine marten were recorded on the site. Otter, which are an Annex II Qualifying Interest for Lough Ree SAC, were recorded at the western bridge over the Bilberry River and appear to regularly use the Bilberry River.

8.15.2 Designated Sites

Lough Ree SAC (site code 000440) and SPA (site code 004064) overlap with a section of the western edge of the site.

The Royal Canal pNHA (Site Code 002103) runs approximately 1.6 km east of the site and Derry Lough pNHA (Site Code 001444) is located approximately 0.7 km north of the site.

8.15.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

The areas of remnant high bog and cutover bog within the northeast and southwest sectors of the site have been exploited extensively for domestic peat though still have some ecological value as peatland habitats – these areas are rated as of **Local Importance (higher value)**.

The Bilberry River and associated wetland habitat provides contiguity with the Special Conservation Interest of Wetland and Waterbirds of Lough Ree SPA. It is also used by little grebe and mallard, both of which form SCIs of the SPA. The Bilberry River is used by the Annex II otter, a Qualifying Interest for Lough Ree SAC.

The area to the west of the site supports wetlands, including some remnant high bog, that can be considered in the Annexed 'Wetland and Waterbirds' Special Conservation Interest of the SPA. This area is considered of **National Importance**.

Figure 76: Drain between remnant high bog in the west of the site and the peat production area



Source: BioSphere Environmental Services

Figure 77: Reed and large sedge swamp (FS1) and wet grassland (GS4) adjacent to Bilberry River



Source: BioSphere Environmental Services

Figure 78: Bilberry River that flows through the Edera site facing west from vehicular bridge.



Source: BioSphere Environmental Services

8.16 Erenagh

8.16.1 Ecological Baseline

Erenagh Bog is located approximately four kilometres north west of Lanesborough in County Roscommon. This bog is located within one main section and is relatively small (100ha) compared to other neighbouring bogs. The village of Cloontuskert is located adjacent to the site.

A rail line connects the site with Moher Bog to the south and with Mount Dillon Bog to the north east.

A high voltage power line passes through the site. The area under which this power line is located is not used for peat production and is therefore higher than the surrounding production areas.

The site is largely surrounded by agricultural grassland and cutover bog but there are some fringing areas of remnant raised bog, as well as bog woodland, scrub and wet grassland.

8.16.1.1 Habitats and Vegetation

The majority of the site is under commercial peat production and comprises bare peat (ED2).

The margins of the site are a mixture of scrub (WS1), wet grassland (GS4), high bog (PB1) and cutover bog (PB4). The south west corner of the site contains a mixture of scrub, remnant raised bog and cutover bog. This area is used extensively for domestic turf production.

High bog (PB1) which occurs in small areas around the site, including under the north-south 110kV line in the centre of the site is dominated in general by *Calluna vulgaris* and is in a disturbed state with little or no *Sphagnum* cover.

8.16.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Erenagh Bog.

8.16.1.3 Wintering Birds

While there appears to be no available information, it is expected that Erenagh Bog would be used at times by golden plover, an Annex I species that is widespread through the midlands of Ireland during the winter season.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site. A range of Amber-listed species occur on site during winter, including kestrel and snipe. The Green-listed buzzard has been recorded on site.

8.16.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed in the remnant areas of high bog and revegetated cutover bog around the fringes of the sites.

8.16.1.5 Mammals

Signs of badgers and otters have been recorded along the margins of the site and the Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.16.2 Designated Sites

Lough Ree SAC / SPA is located approximately 2.7 km from Erenagh Bog.

8.16.3 Conservation Evaluation of Site

The areas of cutover bog and scrub provide a useful habitat for wildlife and are form an area with some biodiversity value – these areas are rated as **Local Importance (lower value)**.

Areas of high bog adjacent to the site have a biodiversity value and are considered **Local Importance (higher value)**.

The areas of the site that are in commercial peat production have no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

8.17 Granaghan

8.17.1 Ecological Baseline

Granaghan Bog is located approximately 7km to the north of Lanesborough in County Roscommon, just off the R371 Lanesborough to Strokestown road. This site is located within one main block; however, a narrow section to the south of the site connects Granaghan with Mountdillon Bog. A small section of active production bog to the south is part of Granaghan despite being located immediately next to Mountdillon Bog. Two minor public roads cross the site. The mid-section of the site that lies between the two public roads is not used for industrial peat production.

A rail link connects the site with Mountdillon Bog to the south. The majority of the site has been in active peat production since the late 1980's. There are no pumps on the site.

The majority of the site is classed as bare peat and is in active peat production. A large proportion of the site contains in excess of 2.6m of peat.

The site is largely surrounded by agricultural grassland, but fringing areas comprise raised bog, wet grassland, bog woodland and cutover bog.

8.17.1.1 Habitats and Vegetation

The majority of the site is under commercial peat production and comprises bare peat (PB2).

The Curraroe Stream (FW2) flows across the site. This watercourse is highly modified and has been canalised and riparian vegetation consists of a mix of scrub (WS1) and wet grassland (GS4).

An area of high bog (PB1) in the mid- sector of the site is relatively intact and supports the Annex I habitat Degraded raised bog still capable of natural regeneration [7120]. This area is adjacent to the travel path and rail line that connect Granaghan Bog production area to Mountdillon Bog.

An area of high bog (PB1) to the northeast of the site, which is outside of the Bord na Móna property and separated from the main harvesting area by a local road, has a somewhat typical raised bog flora but drainage from past turf-cutting activities, along with its relatively small area of cover, has eliminated any prospects of preventing further drying out.

Habitats along the margins of the site include birch woodland (WN7), scrub (WS1), remnant sections of raised bog (PB1) and wet grassland (GS4). The areas of birch woodland and scrub are poorly developed and are dominated by birch, gorse, willow, bracken and bramble. The wet grassland areas are managed by local farmers.

8.17.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Granaghan Bog.

8.17.1.3 Wintering Birds

The peat production area itself can be expected to be used by the Annex I golden plover for foraging and roosting during the winter. Golden plover is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts. A range of Amber-listed species

including snipe and kestrel, and the Red-listed woodcock occur on site and are associated with remnant high bog, scrub and wet grassland.

Meadow pipit (a Red-list species) would occur on the various areas of high bog and cutover bog along the margins of the site.

8.17.1.4 Breeding Birds

The commercial active peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed in the area of high bog around the periphery of the site. Snipe (Amber-listed) would be expected to breed on the remnant raised bog in the mid-section of the site.

8.17.1.5 Mammals

Signs of badgers have been recorded along the margins of the site with signs of otters being recorded along The Curraroe Stream. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.17.2 Designated Sites

Lough Ree SAC / SPA is located approximately 4.6 km from Granaghan Bog.

8.17.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

The areas of wet grassland, birch woodland, scrub, and stream channel provide useful habitats for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The areas of intact high bog in the mid- sector of the site supports the Annex I habitat Degraded raised bog. This area covers c. 7.5ha and is rated **Local Importance (higher value)**.

Other areas of high bog adjacent to the site are relatively small in area, are disturbed, and are considered **Local Importance (higher value)**.

Figure 79: High Bog in the mid- sector of Granaghan Bog supporting the Annex I habitat Degraded raised bog.



Source: BioSphere Environmental Services.

Figure 80: One of two drains alongside vehicular route that run adjacent to remnant high bog in the mid- sector of Granaghan Bog



Source: BioSphere Environmental Services.

8.18 Killashee

8.18.1 Ecological Baseline

Killashee Bog is located approximately 4km to the East of Lanesborough in County Longford. This site is located within one main block. A rail link connects the site with Derryadd 2 to the South. The site is in active peat production and the peat is used as fuel peat in Lough Ree Power in Lanesborough. There are no rail lines along the margins of the site and there are no pumps on the site.

Killashee Bog has been in peat production since 1985, and the bog still retains a significant amount of “sphagnum” peat.

The site is largely surrounded by agricultural grassland, bog woodland, conifer woodland, and fringing areas of remnant raised bog, scrub and wet grassland.

8.18.1.1 Habitats and Vegetation

The vast majority of the site is in active peat production and comprises bare peat (ED2).

Areas of high bog (PB1) and cutover bog (PB4) occur around the fringes of the site. These areas tend to be dominated by *Calluna vulgaris* and *Molinia caerulea* and are in a degraded state with sparse *Sphagnum* cover.

An area of high bog in the west has somewhat more typical raised bog flora and supports the Annex I habitats ‘Degraded raised bog still capable of natural regeneration’ [7120] and ‘Depressions on peat substrates of the Rhynchosporian’ [7150].

Other habitats along the margins of the site include birch woodland (WN7) conifer woodland and wet grassland (GS4).

8.18.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Killashee Bog.

8.18.1.3 Wintering Birds

During winter bird surveys of the nearby Derryadd and Derryarogue sites, c.2km west of Killashee, over the 2014/2015 season the Annex I golden plover (also Red-listed), hen harrier, and whooper swan were recorded. Wintering flocks of golden plover will use the bare peat area of the Killashee site for roosting.

Meadow pipit (Red-listed) and snipe (Amber-listed) occur on the various areas of high bog and cutover bog along the margins of the site.

The green-listed buzzard and Amber-listed kestrel were also recorded on site.

8.18.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed in the area of high bog around the periphery of the site.

Kestrel breeds nearby and forages along the margins of the site.

8.18.1.5 Mammals

Signs of badgers and otter have been recorded along the margins of the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.18.2 Designated Sites

The Royal Canal pNHA (Site Code: 002103) runs in a north-south direction and passes approximately 430m from the north-eastern edge of the site.

Ballykenny - Fisherstown Bog SPA and Lough Forbes Complex SAC are located approximately 3.7 km from Killashee Bog.

8.18.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

The various areas of cutover bog and degraded remnant high bog associated with the site, as well as bog woodland and scrub, provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The relatively small area of remnant high bog to the west of the site supports the Annex I habitats 'Degraded raised bog still capable of natural regeneration' and 'Depressions on peat substrates of the Rhynchosporian' and is considered to be of **Local Importance (higher value)**.

Figure 81: Remnant high bog (PB1) located along the western boundary of the site which supports the Annex I habitats 'Degraded raised bog' and 'Depressions of peat substrate of the Rhynchosporian'



Source: BioSphere Environmental Services.

Figure 82: Photograph facing northwest along drain at area of high bog (PB1) along the western boundary of the site



Source: BioSphere Environmental Services

8.19 Knappogue

8.19.1 Ecological Baseline

Knappogue Bog is located approximately 1km from Cloondara in County Longford. The River Shannon forms a boundary to the west of the site while the Royal Canal pNHA forms a boundary along the eastern edge of the site.

This bog has been in production since 1963 and is within its final 4/5 years of peat production. Over the years of peat extraction, many underlying gravel ridges and hills have been exposed.

The site is largely surrounded by agricultural grassland, cutover bog, bog woodland and conifer woodland, but there are some fringing areas of remnant raised bog, scrub and wet grassland.

8.19.1.1 Habitats and Vegetation

Although the land use map indicates the predominance of peat production and peat related areas, only a relatively small proportion of the site appears to be in active peat production and comprises bare peat (ED2) and these areas are in the northern sector of the site.

The remainder of the site is at various stages of re-vegetation with habitats comprising recolonising bare ground (ED3), grassland types including dry neutral and calcareous (GS1), dry meadows and grassy verges (GS2) and wet grassland (GS4), scrub (WS1) and relatively well established birch and willow woodland (WN7).

Other former cutover habitats include poor fen (PF2) areas that comprise *Juncus effusus* and occasional *Typha latifolia* and some of these areas appear to flood throughout the winter period.

Areas of high bog (PB1) and cutover bog (PB4) occur around the fringes of the site. These tend to be small areas in a degraded state and often dominated by *Calluna vulgaris*.

An area of high bog in the southwest of the site has a somewhat more typical raised bog flora and supports the Annex I habitats Degraded raised bog still capable of natural regeneration [7120] and 'Depression on peat substrate of the *Rhynchosporion*' [7150]. Parts of this area of high bog have previously been drained. A band c.150m wide of dried *Calluna vulgaris* dominated disturbed bog (PB1), scrub (WS1) and wet grassland (GS4) separates this sector from the main production area.

8.19.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Knappogue Bog.

8.19.1.3 Wintering Birds

The Annex I listed species hen harrier, golden plover and whooper swan occur regularly on the site throughout the winter season. During November 2016, 192 whooper swans were recorded roosting on a flooded area in the west of the site. These birds appear to forage on agricultural land to the south within approximately 1 km of the site. Wigeon (Red-listed) and teal (Amber-listed) both occur in the flooded areas on the site.

Golden plover, which are widespread during the winter, use the open bare peat areas for roosting.

The Amber-listed snipe regularly use wet areas of the site and woodcock (Red-listed) occur within the re-vegetating scrub/woodland habitats on site.

The Green-listed buzzard and Amber-listed kestrel were also recorded within 1 km of the site.

8.19.1.4 Breeding Birds

The re-vegetating scrub/woodlands areas of the site provides suitable breeding habitat for common passerine species.

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed in the area of high bog around the periphery of the site.

Kestrel breeds nearby and forages along the margins of the site.

8.19.1.5 Mammals

Signs of badgers have been recorded throughout the site. The Annex II occurs along the Royal Canal and probably along the River Shannon sections of the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.19.2 Designated Sites

The Royal Canal pNHA (Site Code: 002103) runs in a north-south direction and forms the boundary of the eastern edge of the site.

Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101) are located approximately 1km northwest of the site.

8.19.3 Conservation Evaluation of Site

The relatively small area of the site that is in commercial peat production has no intrinsic conservation value.

The bare peat fields, however, are expected to provide a roost site for the wintering Annex I species, golden plover and flooded areas of the site provide a suitable roosting area for whooper swan, that occur in nationally important numbers: therefore, these areas are considered of **National importance**.

The various areas of cutover bog and degraded remnant high bog (including that in the north of the site) associated with the site, as well as developing bog woodland, scrub and poor fen provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The area of remnant high bog to the southwest of the site supports the Annex I habitats 'Degraded raised bog still capable of natural regeneration' [7120] and 'Depression on peat substrate of the *Rhynchosporion*' [7150] is considered to be of **County Importance**.

Figure 83: Flooded area in the western sector of Knappogue Bog 192 whooper swans were recorded roosting in this area during November 2016



Source: Bioshere Enviromental Services

8.20 Lough Bannow/Derryadd 3

8.20.1 Ecological Baseline

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 350 metres of eastern edge of the site. Two large mineral islands are located within the site boundaries but are not under Bord na Móna ownership. This site has been harvested for milled peat since the late 1960's and although the site is predominantly zoned for production, a considerable proportion of this area has been exhausted and is revegetating with birch/willow scrub and *Juncus effusus* poor fen. A large section of failed conifer plantation is located on the site.

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.

Lough Bawn pNHA is located within the southeastern boundary of the site. Raised bog, transition mire, and bog woodland are features of interest in this pNHA and it has been zoned by Bord na Móna as a biodiversity area.

The site is largely surrounded by agricultural grassland cutover bog (PB4) and conifer woodland (WD4) but there are some fringing areas of high bog, birch woodland, scrub and wet grassland.

8.20.1.1 Habitat and Vegetation

A considerable proportion of this site is in active peat production and comprises bare peat (ED2). Some sectors of the production area are re-generating cutaway (PB4) and gravel protrudes. In these areas *Juncus effusus* and occasionally *Phragmites australis* have become established forming recolonising bare ground (ED3) and poor fen (PF2). A significant area of scrub (WS1) has also become established throughout the site. In some areas along the railway track, and where the underlying gravel is exposed, dry calcareous and neutral grasslands (GS1) have established.

A failed conifer plantation (WD4) occurs in the western sector of the site.

Pockets of high bog (PB1) occur in small areas around the site and in general the high bog is dominated by *Calluna vulgaris* and is in a degraded state with little or no Sphagnum cover.

Some areas of bog woodland (WN7) and oak-hazel woodland (WN2) occur along the south and northeast fringes of the site.

Springs are reported to occur throughout the site.

Nationally important wetland habitats occur in the southeastern corner of the site and the area is designated Lough Bawn pNHA. Annex I habitats that occur in the pNHA comprise Active raised bog [7110] (priority habitat), Degraded raised bog still capable of natural regeneration [7120], Transition mires and quaking bogs [7140], Depressions on peat substrates of the Rhynchosporian [7150], and the rare Bog woodland [91D0] (priority habitat). This area has been classified as a biodiversity zone in the Bord na Móna landuse mapping.

8.20.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Derryard 3 / Lough Bannow Bog.

8.20.1.3 Wintering Birds

During winter bird surveys of the Lough Bannow Bog site during 2014/2015 the Annex I species whooper swan, golden plover, hen harrier and merlin were observed flying through the site. Golden plover, which are widespread during the winter, use the open bare peat areas for roosting.

The amber listed snipe regularly use high bog and woodcock (Red-listed) occur within the re-vegetating scrub/woodland habitats on site.

8.20.1.4 Breeding Birds

The commercial peat fields at this site would not support breeding birds. Curlew (Red-listed) were recorded displaying on the high bog in the southeast of the site in April 2015 but no further evidence of breeding was observed. Meadow pipit (Red-listed), skylark and snipe (Amber-listed) breed in the remnant areas of high bog and re-vegetated cutover bog around the fringes of the sites.

Breeding surveys near the site in 2015 found that the Amber-listed sparrowhawk and Green-listed Buzzard occur within the hinterland of the site.

8.20.1.5 Mammals

Evidence of badger, otter, Irish hare, and pine marten were recorded on the site. Otter, which is an Annex II species, occur in the east of the site and probably use the drainage channels that connects with the Royal Canal, approximately 350 metres east of the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.20.2 Designated Sites

Lough Bawn pNHA (Site Code: 001819) is located within the southeast corner of the site. The primary Annex I habitats that occur within this pNHA comprise: Active raised bog [7110] (priority habitat), Degraded raised bog still capable of natural regeneration [7120], Transition mires and quaking bogs [7140], Depressions on peat substrates of the Rhynchosporion [7150], and the rare Bog woodland [91D0] (priority habitat).

The Royal Canal pNHA (Site Code: 002103) runs in a north-south direction and passes approximately 350 metres from the eastern edge of the site.

8.20.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover and possibly, on occasion, whooper swan.

Pioneering poor fen and birch/willow scrub within the areas zoned for peat production along with the remnant areas of high bog adjacent to the site have a biodiversity value and are considered **Local Importance (higher value)**.

The pockets of established bog woodland (WN7 and oak-hazel woodland (WN2) in the eastern areas of the site are considered **Local Importance (higher value)**.

Lough Bawn pNHA and contiguous areas of high bog to the north is important due to the presence of five Annex I habitats, of which two are have 'priority' status. This area is considered of **National Importance**.

Figure 84: Infilling former drain dominated by Sphagnum spp. in Derry Lough pNHA with the Derryadd 3 Bog site boundary. Photograph facing east



Source: BioSphere Environmental Services

Figure 85: Re-vegetating peat field along bank face on the western edge of Derry Lough pNHA. Photograph facing north



Source: BioSphere Environmental Services

Figure 86: Active production field and bank face adjoining high bog biodiversity area in the east of the site. This area is immediately north of Derry Lough pNHA. The photograph faces east.



Source: BioSphere Environmental Services

8.21 Milkernagh

8.21.1 Ecological Baseline

Milkernagh is located in west Co. Westmeath, 8 km west of Castlepollard and 12 km east of Edgeworthstown, in Co. Longford. It is one of a series of bogs in the Mostrim group with Coolnagun Bog located to the south and Coolcraff to the north. There is a Bord na Móna railway linking Coolnagun to Milkernagh Tippler loading facility. The site is split into northern and southern sections by the R395 Road between Castlepollard and Edgeworthstown. The River Inny flows south close to the east side of the site towards Lough Derravaragh.

The majority of the northern section is in active milled peat production and is bare peat. It has a pumped drainage system. This area was formerly a sod peat production bog, before it was re-developed for milled peat in the 2000's. There are several fields that are divided by deep drainage trenches orientated north-south.

The eastern margin extends to the River Inny along one section. There is a buffer zone of vegetated cutaway/disturbed cutover bog between the riparian zone and the production bog. Two smaller units of bog are situated to the south of the road and are separated by a tributary of the Inny. One of these unit comprises remnant raised bog and has been zoned a Biodiversity Area by Bord na Móna.

The site is largely surrounded by riparian wetland habitats, conifer woodland, bog woodland and scrub and cutover bog along with fringing areas of wet grassland and agricultural grassland.

8.21.1.1 Habitats and Vegetation

The majority of Milkernagh Bog comprises bare peat (ED2).

Several areas of cutover bog and domestic and commercial sod peat areas are located along the margins of the west of the site. The cutover bog (PB4) is re-vegetating in parts with a mix of poor fen (PF2) species such as *Juncus effusus*, *Eriophorum angustifolium* along with *Trichophorum germanicum*. Deep drains and trenches are present in this area and *Calluna vulgaris* dominates in some of the peripheral drier areas.

A considerable area (c.55ha) of high bog (PB1) occurs in the north of the site of which the majority has been ditched in the past. Overall, a somewhat typical raised bog flora occurs in this area despite the deep drains throughout this sector. *Calluna vulgaris* dominates in these dryer areas.

Despite a large proportion of this area having been drained using deep ditches, by reason of the relatively large area of coverage and the somewhat circular shape of the sector, it is considered that this area supports the Annex I habitats Degraded raised bog capable of natural regeneration [7120]. The Annex I habitat Depressions on peat substrates (*Rhynchosporion*) [7150] also occurs in small pockets. Domestic sod turf cutting occurs through the entire north-eastern and south-western edges of this sector.

An area of high bog (PB1) covering c. 10 ha occurs in the north-eastern corner of the site. This high bog supports the Annex I habitats Degraded raised bog capable of natural regeneration [7120] and Depressions on peat substrates (*Rhynchosporion*) [7150]. A small amount of domestic peat cutting occurs on the northern point of this area.

The deep drainage trenches that were created during the sod-peat production period at the site have largely re-vegetated with poor fen (PF2), scrub (WS1) and reed and large sedge swamp

(FS1)-type vegetation. Some indicators of rich fen (PF1)-type vegetation occur in the north-western corner of the peat production area.

Two high bog areas adjacent to the R395 road support the Annex I habitats Degraded raised bog capable of natural regeneration [7120]. The one to the north of the road is approximately 15 ha is separated from the main production area by a small stream and agricultural grassland. The second is situated south of the road, measures approximately 9ha and is zoned a Biodiversity Area by Bord na Móna. Extensive turf-cutting activities are not a feature at either of these areas of bog.

Other habitats along the margins of the site include bog woodland (WN7), riparian woodland (WN5), wet grassland (GS4) tall herb swamp (FS2) along the River Inny (FW2) and cutover bog (PB4). Improved agricultural land (GA1) also occurs within the site boundary.

8.21.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Milkernagh Bog.

8.21.1.3 Wintering Birds

The Annex I whooper swan regularly passes over the site and will occasionally use flooded area where they occur. These birds are probably associated with Loughs Kinale, Derragh, Derrevaragh and the River Inny. Greenland white-fronted geese have been recorded overflying near the site during the autumn migration period, possibly en route to Lough Iron SPA, where the species is a Special Conservation Interest.

The Red-listed golden plover (Annex I) was recorded along with Amber-listed snipe, kestrel sparrowhawk, and the Green-listed buzzard was also recorded on site. Golden plover is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Meadow pipit (a Red list species) would occur on the various areas of high bog and cutover bog along the margins of the site.

8.21.1.4 Breeding Birds

The commercial active peat fields at this site would not support breeding birds. Meadow pipit (Red listed) and skylark (Amber listed) breed at least in the area of high bog around the periphery of the site. Snipe (Amber-listed) would be expected to breed on the remnant raised bog in the north and southwest of the site.

8.21.1.5 Mammals

Signs of badgers and otters have been recorded along the margins of the site with otters being recorded moving along drains throughout the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.21.2 Designated Sites

Lough Kinale and Derragh Lough SPA (Site Code: 004061) and NHA (Site Code: 000985) is located approximately 2.8 km north of the site.

Lough Derravaragh NHA (Site Code: 000684) is located 2km south of Milkernagh site.

- Lough Derravaragh SPA (Site Code: 004043) is located 3.1km south of the site.

8.21.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover and occasionally whooper swan.

The areas of revegetating cutover bog and fringing habitats including bog woodland, scrub, wet grassland areas along the deep drains provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

The River Inny is notable importance with a diversity of associated semi-natural habitats and species including the Annex II otter. It is rated **County Importance**.

The area of high bog in the northern part of the site has considerable conservation value and supports the Annex I habitats Degraded raised bog and Depressions on peat substrates of the *Rhynchosporion*. Although it is disturbed through past and ongoing drainage activities, this area is considered of **County Importance** due to its relatively large area of coverage.

The area of high bog in the northeast of the site measures c.10 ha and supports the Annex I habitats Degraded raised bog and Depressions on peat substrates of the *Rhynchosporion*. It is also considered of **Local Importance (higher value)**.

The two areas of high bog adjacent to the R395, including the Bord na Móna Biodiversity Area to the south, support the Annex I habitat Degraded raised bog and are considered of **Local Importance (higher value)**.

Figure 87: Photograph facing northwest of high bog (PB1) previously drained to the north of the Milkernagh site



Source: BioSphere Environmental Services

8.22 Moher

8.22.1 Ecological Baseline

Moher Bog is located approximately 2.6km to the West of Lanesborough in County Roscommon. This site is located within three main blocks. Erenagh Bog is located immediately to the north of the site. The majority of the site is in active peat production with a small area of cutover located in the southern section of the site. Moher Bog has been in full peat production since the early 1980's and contains a number of pumps. Peat depths are in excess of 2.6m of peat in most sections of the site and this peat is "red" or "Sphagnum" peat and is acidic in nature.

The site is largely surrounded by agricultural grassland, cutover bog, bog woodland and fringing areas of remnant raised bog, scrub and wet grassland.

8.22.1.1 Habitats and Vegetation

The majority of Moher Bog is in active peat production and comprises bare peat (ED2).

The remainder of the site comprise cutover bog (PB4) and is at various stages of re-vegetation with habitats comprising recolonising bare ground (ED3), scrub (WS1), developing bog woodland (WN7) and occasional areas of dry neutral and calcareous (GS1), wet grassland (GS4).

Other former cutover habitats include developing poor fen (PF2) that are dominated by *Juncus effusus* with some *Typha latifolia*.

Areas of high bog (PB1) occur around the fringes of the site. These tend to be small areas in a degraded state and often dominated by *Calluna vulgaris*. An area of high bog in the west of the mid- sector of the site has somewhat more typical raised bog flora but it is relatively small in area.

8.22.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Moher Bog.

8.22.1.3 Wintering Birds

It is expected that Moher Bog would be used by the Annex I golden plover, which are widespread during the winter and use the open bare peat areas for roosting.

The Amber-listed snipe regularly use high bog and the Red-listed woodcock occur within the revegetating scrub/woodland habitats on site.

Meadow pipit (a Red-list species) occurs on the various areas of high bog and cutover bog along the margins of the site.

The Green-listed buzzard and Amber-listed kestrel were also recorded on site.

8.22.1.4 Breeding Birds

The revegetating scrub/woodlands areas of the site provides suitable breeding habitat for common passerine species. The Green-listed buzzard was recorded foraging on the site and mallard occasionally nest in the drains around the periphery of the site.

The commercial peat fields at this site would not support breeding birds. Meadow pipit (Red-listed) and skylark (Amber-listed) breed in the areas of remnant high bog around the periphery of the site and within some of the revegetating areas.

Kestrel (Amber-listed) breeds nearby and forages throughout the site.

8.22.1.5 Mammals

Signs of badgers, otter and pine marten been recorded along the margins of the site. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.22.2 Designated Sites

Lisnarragh Bog NHA (Site Code: 002072) is located 1.6km south of the site.

Carbo Bog SAC (Site Code: 002349) is located approximately 700m southwest of the site.

Lough Ree SAC (site code 000440) and SPA (site code 004064) are located approximately 700m southeast of Moher Bog.

8.22.3 Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

The various areas of cutover bog and degraded remnant high bog associated with the site, as well as developing bog woodland and scrub, provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**.

8.23 Mountdillon

8.23.1 Ecological Baseline

Mountdillon Bog is situated approximately two kilometres north of Ballyleague in Co Roscommon. The Mountdillon works area is located just south of the small village of Cloontuskert. The R371 Ballyleague to Rooskey Road passes along the western edge of the site, while the River Shannon passes close to the eastern edge of the site. Several small secondary roads allow access to the north of the site. Derrycashel bog is located immediately to the north of the site, with a minor road separating the two sites.

This bog was originally brought into production in the early 1940's and active peat production is now mainly found around the margins of the overall site with a large area towards the western side in a spur. Most of the site is out of production and has been re-vegetating at different rates.

A series of pumps and power lines are located across the site. However large areas towards the centre of the site appear to flood significantly during the winter months. If these pumps are turned off, a significant part of the site will flood significantly on a permanent basis.

The site is bisected by the main railway that is orientated roughly north-south and is an important link between the production bogs to the north, over the River Shannon, with the rest of the Mountdillon bog group. The rail network crosses the Shannon to the east of the site via a Bord na Móna bridge. The railway lines are raised above the level of the surrounding bog.

The topography of the site is quite variable with some relatively high areas or large mounds, and frequent smaller mounds and ridges through the site that now have exposed gravel. There are also low hollows and depressions that tend to flood in the winter.

The site is largely surrounded by riparian wetland habitats, raised bog, wet grassland, bog woodland and agricultural grassland but there are some fringing areas of cutover bog.

8.23.1.1 Habitats and Vegetation

Mountdillon Bog is dominated by a band, running north-south, comprising pioneering habitats in various stages of development on cutover bog (PB4). These include scrub (WS1), establishing willow/birch woodland (WN7), and areas of poor fen (PF2) which are dominated by *Typha longifolia*, *Phragmites australis* and *Juncus effusus*. Flooding occurs in these areas throughout most winter seasons. Other revegetating areas where underlying gravel protrudes the surface have become Dry neutral and calcareous grassland (GS1) and wet grassland (GS4).

Areas of high bog (PB1) occur around the fringes of the site. Many of these areas tend to be dry and dominated by *Calluna vulgaris* and are in a degraded state.

Two of the areas, however, have more typical raised bog flora. Firstly, a relatively large area of c. 11ha in the southeast of the site supports the Annex I habitats Degraded raised bog still capable of natural regeneration [7120] and Depressions on peat substrates (Rhynchosporian) [7150].

The second notable area of high bog occurs in the northwest of the site and also supports the Annex I habitats Degraded raised bog still capable of natural regeneration [7120] and Depressions on peat substrates (Rhynchosporian) [7150].

Other habitats along southern margins of the site include willow/birch woodland (WN7), wet grassland (GS4) and cutover bog (PB4).

Much of the western sector and an area in the south east of the site are in active peat production and comprise bare peat (ED2).

8.23.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Moundillon Bog.

8.23.1.3 Wintering Birds

During winter bird surveys of the site in the 2014/2015 season the Annex I whooper swan was recorded on several occasions on the Derrycashel site to the north of Moundillon, and probably periodically use the flooded areas of the site during the winter season. Winter bird surveys in February 2011 recorded 238 whooper swans, 4 Greenland white-fronted geese (both Annex I), and numerous other waterfowl species including the Red-listed wigeon and Amber-listed teal. Wintering flocks of the Red-listed curlew have also been recorded on site. These birds target the flooded areas in the central sector of the site.

The Annex I listed golden plover was recorded along with Amber-listed snipe, sparrowhawk, and the Green-listed buzzard. Golden plover is widespread throughout the winter on open agricultural land and on bare peat fields where it roosts.

Meadow pipit (a Red list species) would occur on the various areas of high bog and cutover bog along the margins of the site.

8.23.1.4 Breeding Birds

The commercial active peat fields at this site would not support breeding birds. Meadow pipit (Red listed) and skylark (Amber listed) breed at least in the area of high bog around the periphery of the site. Snipe (Amber-listed) would be expected to breed on the remnant raised bog on the southern point of the site.

No waders or raptors were recorded during targeted breeding bird surveys of the site in 2011 and 2015.

8.23.1.5 Mammals

Signs of badgers have been recorded along the margins of the site with otters being recorded along the eastern boundary of the site near the Shannon River. The Irish hare is widespread on the site.

Surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected where birch scrub occurs on old cutover bog and where hedgerows adjoin the bog margin. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

8.23.2 Designated Sites

Lough Ree SAC (site code 000440) and SPA (site code 004064) is located approximately 2.2km south of the Moundillon site. Conservation Evaluation of Site

The area of the site that is in commercial peat production has no intrinsic conservation value. However, the bare peat fields are expected to provide a roost site for the wintering Annex I species, golden plover.

The areas of cutover bog and other re-vegetating areas provide useful habitat for wildlife and have biodiversity value – these areas are rated as **Local Importance (higher value)**. Some of the re-vegetating wetland habitats and flooded areas towards the north of the site are important for periodic use by waterfowl including occasional internationally important numbers of the Annex I whooper swan and are considered of **County Importance**.

The areas of intact high bog in the south-eastern and northern part of the site support the Annex I habitats Degraded raised bog and Depressions on peat substrates (*Rhynchosporion*). These areas each cover approximately 10-11ha and are rated of **County Importance**.

Figure 88: High Bog to the southeast of the Moundillon site that supports the Annex I habitats Degraded raised bog and Depressions on peat substrate of the *Rhynchosporion*



Source: BioSphere Environmental Services

Figure 89: Bank face along the western edge of the intact high bog in the southeast of Mounddillon site



Source: BioSphere Environmental Services

Figure 90: Photo facing south along bank face of high bog to the southeast of Moundillon bog. A small area of scrub (WS1) that fringes the high bog is also shown



Source: BioSphere Environmental Services

9 Kilberry Bog Group

9.1 Gilltown

9.1.1 Ecological Baseline

Gilltown Bog is located approximately 5 km north of Prosperous in Co. Kildare. It is part of the Kilberry Group of horticultural bogs. The site is adjacent to the Timahoe Bogs (both out of production) to the west. Gilltown bog is situated within a natural, oval-shaped basin and is mostly surrounded by farmland. A conifer plantation adjoins the south-east boundary of the site.

9.1.1.1 Habitats and Vegetation

The vast majority of Gilltown Bog is in active production and comprises bare peat (ED2).

An area of remnant high bog (PB1) and cutover bog (PB4) occurs in the northeast sector of the site. However, much of the high bog has been subject to drainage and turbarry is extensive in parts. The surface of the high bog is generally dry, with Sphagnum cover low throughout (<25%). *Calluna vulgaris*, *Molinia caerulea* and *Eriophorum vaginatum* are the principal higher plant species. The margins of the site are mostly colonised by bog woodland (WN7) and scrub (WS1). Several peat fields along the western margin have not been in production for some time and are colonised by dry bog vegetation, with *Calluna vulgaris* dominant.

A small wetland or pond (FL8) occurs in the northern part of the production bog (area classified as Peat Production related). This is a small basin which appears to be connected to the local silt pond. This comprises wetland vegetation, such as *Typha latifolia*, and birch scrub. It appears that the birch is advancing at the expense of the open wetland habitats.

Much of the site is edged by birch scrub.

9.1.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Gill Bog.

9.1.1.3 Wintering Birds

Gill Bog has not been surveyed for birds but has limited potential to support species of conservation importance (reflecting the extent of the commercial peat fields).

Snipe has been recorded on site in the past.

9.1.1.4 Breeding Birds

Meadow pipit (Red-listed) and skylark (Amber-listed) were recorded in summer 2016 on the remnant high bog and cutover bog in the northeast sector. Species such as mallard, moorhen, sedge warbler and reed bunting nest at the pond system in the north of the site

9.1.1.5 Mammals

Signs of badgers have been recorded on site. The Irish hare occurs on site.

Gill Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

9.1.2 Designated sites

The nearest designated site for conservation is Hodgestown Bog NHA, which is located just over 1 km to the south of Gilltown.

Donadea Woods pNHA occurs to the east of Gilltown, with a distance of approximately 2 km between the two sites.

Ballynafagh Lake SAC is located approximately 2.8 km from Gilltown.

9.1.3 Conservation Evaluation of Site

The area of the site that is in current commercial production has no intrinsic conservation value.

The mosaic of remnant high bog and cutover bog in the northeast sector provide useful local biodiversity and is rated **Local Importance (higher value)**. Other habitats on site including the strips of bog woodland and the wetland in the north of the site are also given this rating.

Site supports breeding meadow pipit (Red-listed).

9.2 Ummeras Bog

9.2.1 Ecological Baseline

Ummeras Bog is located along the Co. Kildare border, about 3 km north of Monasterevin. The bog is somewhat isolated from other Bord na Móna properties, with Derrylea bog located approximately 2.5 km to the west. Ummeras is a relatively young production bog. Sod peat moss was originally harvested in 1980 and then harvesting of milled peat began in 1989. Horticultural peat moss has been harvested from the site in recent times.

Ummeras bog includes an area of bog in the northeast sector that is being harvested by a private company.

The Slate River flows a little to the north of the site, and meets the Figile approximately 1 km to the west. The Figile merges with the Black River, which flows into the main channel of the River Barrow just northwest of Monasterevin.

The site is surrounded mostly by agricultural land but there are several stands of conifer plantation along or near the site boundary.

9.2.1.1 Habitats and Vegetation

The main part of Ummeras Bog is presently entirely bare peat (ED2), with industrial production in progress throughout.

There are substantial strips of remnant high bog (PB1) and cutover bog (PB4) along the northern, western and southern margins of the site (parts outside Bord na Móna property). The high bog strips are mostly narrow in width (100m or less) and are generally dry due to the effects of drainage. All of these marginal areas are affected by recent or current private peat cutting.

In the northeast, there are several peat fields that are not in production (classified as Peat Production related). This area was ditched in the past and appears to have been harvested to some extent. The surface of this area is fairly dry and is developing pioneer bog vegetation dominated by *Calluna vulgaris*. East of this area there is a complex of high bog and cutover bog that is being harvested by a private peat company.

Bog woodland (WN7) and scrub (WS1) is established in some of the marginal areas. Silt ponds occur in the north and southwest sections of the site.

9.2.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Ummeras Bog.

9.2.1.3 Wintering Birds

Ummeras Bog has low potential for supporting wintering birds of conservation importance. Golden plover (Annex I listed) have been recorded resting on the bare peat. Kingfisher, an Annex I listed species, has been observed by local staff on occasions at the silt ponds.

The marginal strips of remnant and cutover bog support species that include meadow pipit (Red-listed), woodcock (Red-listed), snipe, skylark, sparrowhawk and kestrel (latter all Amber-listed).

9.2.1.4 Breeding Birds

Ummeras Bog has low potential for supporting breeding birds of conservation importance.

Meadow pipit (Red-listed) breeds widely in the marginal bog strips around the site, along with various Amber-listed species, including snipe (one pair), skylark, mistle thrush, stonechat and linnet.

9.2.1.5 Mammals

Signs of badgers have been recorded on site, while the Irish hare is widespread in marginal bog habitats.

Ummeras Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

9.2.2 Designated sites

The Grand Canal pNHA is located within 1 km to the east of the site.

The River Barrow and River Nore SAC is located approximately 2.5 km to the southwest of Ummeras Bog (and is hydrologically linked via the Slate/Black River tributary).

9.2.3 Conservation Evaluation of Site

The area of the site that is in current commercial production has no intrinsic conservation value

The various areas of remnant high bog along the margins of the peat fields are small in area and mostly in a highly disturbed state – these strips of bog however, as well as the cutover bog and the areas of regenerating ditched bog in the northeast, provide useful biodiversity at a local level and are rated as **Local Importance (higher value)**. Also in this category are the stands of bog woodland and scrub

10 Coolnamona Bog Group

10.1 Cashel

10.1.1 Ecological Baseline

Cashel Bog is located approximately four kilometres south of Portlaoise town and just east of the N8 road. It is connected by a rail link to Coolnacartan bog to the west (other side of N8).

The greater part of Cashel Bog is in active commercial production. However, there are substantial areas of regenerating cutaway, cutover and some remnant high bog.

The site is surrounded largely by farmland but there is extensive forestry immediately to the south.

10.1.1.1 Habitats and Vegetation

The majority of Cashel Bog is in active commercial production and comprises bare peat (ED2).

There is a large area of regenerating cutaway in the north east of the site (Recolonising bare ground ED3). This area is dry in parts and dominated by *Calluna vulgaris* and in places birch scrub. Wet areas dominated by *Eriophorum angustifolium* are also present.

High bog (PB1) and cutover bog (PB4) are present in the marginal areas of the site, notably the northwest, the southwest and the south. The remnant high bog areas are limited in extent and generally dry.

Bog woodland (WN7) and scrub (WS1) is present in the cutover areas.

10.1.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Cashel Bog.

10.1.1.3 Wintering Birds

Cashel bog has limited potential for wintering birds of conservation importance. Hen harrier (Annex I listed) has been recorded on site several times. Meadow pipit is widespread in the marginal areas and woodcock has been recorded (both Red-listed).

Golden plover (Annex I listed) and lapwing have been recorded roosting on the bare peat.

Various Amber-listed species occur, notably sparrowhawk, kestrel, snipe, Jack snipe, and linnet.

10.1.1.4 Breeding Birds

Survey has shown that Cashel bog has relatively low potential to support breeding species of conservation importance.

Meadow pipit (Red-listed) and skylark (Amber-listed) are widespread, while snipe, stonechat and linnet have been recorded.

10.1.1.5 Mammals

Badger and the Irish hare occur on site.

Cashel Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

10.1.1.6 Invertebrates

The Annex II marsh fritillary butterfly has been recorded (2014) adjacent to the site in the northern cutover area.

10.1.2 Designated Sites

There are no designated sites in the vicinity of Cashel Bog.

The River Barrow and River Nore SAC is located approximately 4.9 km from Cashel Bog.

10.1.3 Conservation Evaluation of Site

The area of site that is in current commercial production for industrial peat harvesting has no intrinsic conservation value.

The regenerating cutaway, the various high bog remnants and the cutover bog areas provide useful biodiversity areas and are rated as **Local Importance (higher value)**.

The Red-listed meadow pipit breeds on the various high bog and cutover bog areas, and woodcock (also Red-listed) has been recorded in winter. Hen harrier and golden plover (both Annex I listed) occur in winter.

The Annex II marsh fritillary butterfly has been recorded adjacent to the site.

Figure 91: Cashel Bog: View of remnant high bog and cutover bog in northwest sector of site



Source: BioSphere Environmental Services

10.2 Coolnacartan Bog

10.2.1 Ecological Baseline

Coolnacartan Bog is located just two kilometres southwest of Portlaoise town. The M7 motorway lies a little to the north and the N8 road to the east. Access is through the Bord na Móna works in the northeast. There are rail links to Cashel Bog to the east and Coolnamona Bog to the northwest.

Commercial production is now limited to two main areas of the site, though there are areas classified as 'Peat Production Related' and one area in the extreme northwest as 'Re-activated/Development Bog'. There are substantial areas of regenerating cutaway and cutover bog, with several fragments of remnant high bog within the site.

The site is surrounded largely by farmland but there are forestry plantations to the north and to the southeast.

10.2.1.1 Habitats and Vegetation

A substantial part of Coolnacartan Bog is in active commercial production and comprises bare peat (ED2).

There are large areas of regenerating cutaway in the south, central and northwest areas of the site (Recolonising bare ground ED3). These areas are mostly dry and dominated by *Calluna vulgaris* and developing birch scrub. Wet areas dominated by *Eriophorum angustifolium* are also present.

High bog (PB1) and cutover bog (PB4) are present in the marginal areas of the site, notably the western and north-western sectors. The remnant high bog areas are generally dry and subject to ongoing turbary. Bog woodland (WN7) and scrub (WS1) is present in the cutover areas.

10.2.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Coolnacartan Bog.

However, the localised *Frangula alnus*, listed in the Irish Red Data Book (Curtis & McGough 1988), has been recorded just outside of the site along the margin of Colt Wood.

10.2.1.3 Wintering Birds

Coolnacartan bog has limited potential for wintering birds of conservation importance. However, the areas of remnant, cutover and regenerating cutaway bog provide good habitat for foraging hen harrier and merlin (both Annex I listed species). Golden plover (Annex I listed) have been recorded roosting on the bare peat.

The Red-listed woodcock has been recorded while meadow pipit (also Red-listed) is widespread.

Snipe occur on site, along with stonechat and linnets (all Amber-listed).

10.2.1.4 Breeding Birds

Coolnacartan bog has limited potential for breeding birds of conservation importance.

Meadow pipit (Red-listed) breeds widely within the site. Woodcock (Red-listed) also breeds though the actual breeding locations may be off-site. Various Amber-listed species breed on site, including skylark, stonechat, mistle thrush and linnet.

10.2.1.5 Mammals

Badger and the Irish hare occur on site.

Coolnacartan Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

10.2.1.6 Invertebrates

The Annex II marsh fritillary butterfly has been recorded along the railway on the eastern margin of the site.

10.2.2 Designated Sites

There are no designated sites in the vicinity of Coolnacartan Bog. The River Barrow and River Nore SAC is located approximately 3.3 kilometres from the southwest sector of the site.

10.2.3 Conservation Evaluation of Site

The area of site that is in current commercial production for industrial peat harvesting has no intrinsic conservation value.

The regenerating cutaway, the various high bog remnants and the cutover bog areas provide useful biodiversity areas and are rated as **Local Importance (higher value)**.

The Red-listed species meadow pipit and woodcock breed within the site. In winter, the Annex I species hen harrier, merlin and golden plover occur.

The Annex II marsh fritillary butterfly has been recorded on site.

Figure 92: Coolnacartan bog: view of small area of remnant high bog in south-east sector of site



Source: BioSphere Environmental Services

10.3 Coolnamona Bog

10.3.1 Ecological Baseline

Coolnamona Bog is located just west of Portlaoise town. The M7 motorway skirts the southeast sector of the site. The site is connected to Coolnacartan Bog by a rail link.

The entire central area of the site is in commercial production for horticultural peat and is surrounded by substantial areas of cutaway and cutover bog.

Coolnamona Bog is located on the watershed between the River Barrow and the Nore catchments, with the northeast half draining towards the Barrow and the southwest half draining towards the Nore.

The site is surrounded almost entirely by farmland though there is some forestry plantation to the northwest.

10.3.1.1 Habitats and Vegetation

The majority of Coolnamona Bog is in active commercial production and comprises bare peat (ED2).

There are large areas of regenerating cutaway (Recolonising bare ground ED3) around the commercial peat fields. These areas are fairly uniform, being mostly dry and dominated by *Calluna vulgaris* and developing birch scrub. Wet areas dominated by *Eriophorum angustifolium* are also present. Cutover bog (PB4), much of it active for turbarry, is frequent in the northern and southern parts of the site. Remnant high bog (PB1) is scarce at Coolnamona, with only some patches remaining. A substantial area in the northeast has recently been given over to biomass production.

Bog woodland (WN7) and scrub (WS1) is present in the cutover areas.

10.3.1.2 Rare Flora

There are no known legally protected plant species (Flora (Protection) Order 2015) or vascular plant species listed on the Irish Red List (Wyse Jackson *et al.* 2016) associated with Coolnamona Bog.

10.3.1.3 Wintering Birds

Coolnamona Bog has limited potential for wintering birds of conservation importance. The marginal bog habitats provide good hunting habitat for hen harrier. Golden plover and lapwing have been recorded roosting on the bare peat. Meadow pipit (Red-listed) is widespread in the marginal bog habitats during winter. The site provides habitats for various Amber-listed species, including sparrowhawk, snipe and linnet.

10.3.1.4 Breeding Birds

Meadow pipit (Red-listed) breeds widely within the site. Various Amber-listed species breed on site, including sparrowhawk, snipe, skylark, stonechat, mistle thrush and linnet.

10.3.1.5 Mammals

Badger and the Irish hare occur on site.

Coolnamona Bog was not included in the 2013 baseline bat survey of Bord na Móna properties. However, surveys for bat species at other cutaway bog sites have shown that the open areas of bog have low potential to support bats and most records are from linear features along the margins including hedgerows and scrub. At this site, bats could be expected to be associated with habitats along the site boundaries. The commonest species recorded in surveys of midland bog habitats are soprano pipistrelle, common pipistrelle and Leisler's bats.

10.3.2 Designated Sites

There are no designated sites in the immediate vicinity of Coolnamona Bog.

The Slieve Bloom Mountains SPA is located approximately 3.1 km from the northeast corner of the site.

The Slieve Bloom Mountains SAC is located approximately 4.5 km from the site.

The River Barrow and River Nore SAC is located approximately 4.6km from the site.

10.3.3 Conservation Evaluation of Site

The area of site that is in current commercial production for industrial peat harvesting has no intrinsic conservation value.

The regenerating cutaway, the high bog remnants and the cutover bog areas provide useful biodiversity areas and are rated as **Local Importance (higher value)**.

The Red-listed species meadow pipit breeds and winters within the site. In winter, the Annex I species hen harrier and golden plover occur.

Appendices

A. Mapping

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A. Mapping