BULRUSH HORTICULTURE LTD
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Non-Technical Summary (Separate Document)

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APPENDICES

Appendix 1: Consultee Responses
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ACKNOWLEDGEMENTS

This Environmental Impact Statement has been prepared by MARENCO Environmental Consultants in association with:
Clonaog Environmental – Ecology/Habitats/Birds
Gahan & Long Ltd – Archaeology
Hugh Morrison Chartered Architect – Landscape and Visual
Pentland MacDonald – Hydrology, Hydrogeology & Soils

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SECTION 1 - BACKGROUND INFORMATION

1.1 Introduction

1.1.1 This Environmental Impact Statement (EIS) is being prepared on behalf of Bulrush Horticulture Limited for submission to the Environmental Protection Agency (EPA) as part of an Integrated Pollution Prevention Control (IPPC) Licence application in regard to the Company’s operations at Camagh Bog, County Westmeath (National Grid Reference (NGR): E241250, N275614). Bulrush Horticulture is one of the leading growing media and bark suppliers in the UK and Ireland. The Company supply high specification substrates for both professional commercial growers and amateur hobby gardeners. Bulrush Horticulture has been trading since 1979 and continues to be at the forefront of researching and developing high specification substrates for both professional commercial growers and amateur hobby gardeners and is a fully owned subsidiary company of Pindstrup Mosebrug A/S. Pindstrup was established in Denmark in 1905 and at present is one of the largest producers of premium quality substrates in the world.

1.1.2 In 1991, Bulrush Horticulture was the first manufacturer of substrates in the world to be awarded the ISO9000 quality management standard (BS EN ISO 9001:2008). In 2003 Bulrush Horticulture attained ISO14001:2004 the International environmental management standard which covers both the factory, head office and a number of the peat harvesting sites throughout Ireland.

1.1.3 Clover Peat Products Ltd, whose registered office is c/o WhintneyMoore, Wilton Park House, Dublin 2 (Company number 130649) owns Camagh Bog, County Westmeath. The site had planning permission granted for a moss processing plant in 1989. Bulrush Horticulture Ltd has operated the site for Clover Peat Products since 2003 and in 2006 the Company purchased a shareholding in Clover Peat Products Ltd.

1.1.4 Once Bulrush Horticulture began operating the site the drainage works were altered and settlement facilities developed to attain the standards laid down in Bulrush Horticulture’s procedures. These procedures have been developed over time to meet the requirements of Government regulators, Company policy and planning conditions relating to the Company’s sites in Northern Ireland. These procedures have been further refined in order to meet the ISO14001:2004 International environmental management standard which the Company adheres to. All the management procedures which Bulrush Horticulture employs on their own sites have been implemented on the Camagh site.

1.1.5 Bulrush Horticulture is required to apply to the EPA for an Integrated Pollution Prevention Control (IPPC) Licence under Class 1.4, “The extraction of peat in the course of business which involves and area exceeding 50 hectares”, of the Environmental Protection Agency Acts, 1992 and 2003. Bulrush Horticulture submitted an IPPC Licence application to the EPA in regard to the operations at the Camagh Bog site in March 2011. The registration number for this IPPC application is 161.03/jef/0713.
1.1.6 Following submission of the IPPC Licence application the EPA determined that in accordance with the provisions of Section 87(1i)b of the EPA Acts 1992 to 2012 and the European Union (Environmental Impact Assessment) (Integrated Pollution Prevention and Control) (No. 2) Regulations 2012 that the application must be made subject to an Environmental Impact Assessment (EIA). Following further consultation with EPA the process of scoping the assessment was initiated in March 2013.

1.1.7 Bulrush Horticulture commissioned MARENCO *Environmental Consultants* to prepare this document at the request of EPA under the provisions of Section 87(1i)b of the EPA Acts 1992 to 2012 and the European Union (Environmental Impact Assessment) (Integrated Pollution Prevention and Control) (No. 2) Regulations 2012.

1.1.8 The purpose of this EIS is to establish areas of potential environmental impact in relation to Bulrush Horticultures on-going operations at Camagh Bog, County Westmeath and to determine appropriate mitigation proposals should any potential environmental impacts be identified.

1.1.9 A scoping exercise involving consultations with the appropriate Statutory Organisations and other bodies as agreed with the EPA was undertaken. This EIS assessed the aspects of the environment considered most likely to be affected by the operations at Camagh Bog. Assessment of the potential environmental impacts, together with recommendations and appropriate mitigation measures envisaged to off-set any adverse effects, are presented in succeeding sections.

1.1.10 The scoping exercise identified the following environmental aspects as most susceptible to potential impact:
   - *Archaeology*
   - *Landscape and Visual*
   - *Flora and Fauna*
   - *Hydrology and Hydrogeology*

1.1.11 The site location and main aspects of the operations are illustrated in Figure 1.1.1 Site Location and Figure 1.1.2 Site Operations.
Figure 1.1.1 - Site Location
SECTION 2 - SITE SETTING AND OPERATIONS

2.1 Site Setting

2.1.1 Camagh Bog is located approximately 2.5 km north west of Coole Village and 7 km north west of Castlepollard, County Westmeath (NGR: E241250, N275614). A part of the site boundary lies within 300 m of the River Inny due west and approximately 7 km north of Lough Derravaragh, a Special Protection Area (SPA). The site adjoins commercial forest plantations to the east, west and south and cutover bog/rough grassland to the north, across a public road.

2.1.2 There are a number of significant National and International designated conservation areas located within 5 km of the site including NHAs, proposed NHAs, SACs and SPAs. These include the following:
- Lough Derravaragh SPA (Site Code 004043); NHA (Site Code 000684)
- Lough Kinale & Derragh Lough SPA (Site Code 004061); NHA (Site Code 000985)
- Hill of Mael & The Rock of Curry pNHA (Site Code 000681)
- Lough Sheelin pNHA (Site Code 000987)
- Lough Bane pNHA (Site Code 001721)
- Moneybeg & Clareisland Bogs SAC (Site Code 002340)

2.1.3 The nearest designated site is the Hill of Mael & The Rock of Curry (pNHA) which lies over 2 km to the north east of the operational site boundary. Lough Kinale & Derragh Lough lies approximately 4 km north of the site. Whilst Lough Derravaragh to the south, Moneybeg & Clareisland Bogs and Lough Sheelin all to the north all lie over 5 km distant from the operational site boundary.

2.1.4 The site is located in a rural setting comprising a combination of agricultural land under grazing, forestry and peat extraction. In regard to the latter activity there are a number of companies involved in peat extraction locally in addition to Bulrush Horticulture including Bord Na Mona, Westland Horticulture, Harte Peat, Abbeylara Peat and Irish Midland Peat. Bord Na Mona is by far the largest operator both on a local and national scale. When compared against the total peat lands in production within a 7 km radius of the site, Camagh Bog constitutes significantly less than 5% of the total peat land in production.

2.1.5 There are only a few scattered residential dwellings in proximity to the site boundary (i.e. within 1 km). The nearest neighbour is approximately 150 m east of the site boundary along the minor road which forms the northern site boundary. This neighbour is screened from the site activities by a stand of woodland/forestry. The next nearest residential dwelling is approximately 200 m north of the site along a minor access road.

2.1.6 There are several river systems in association with the site which all form part of the River Inny catchment area (Figure 1.1.1 Site Location). The Monkstown Stream flows...
north approximately 100 m east of the eastern site boundary. The Monkstown Stream then turns north east for approximately 1 km before entering the River Glore. The River Glore flows north west from its confluence with the Monkstown Stream for approximately 1.5 km before entering the River Inny at a point approximately 1 km north of the northern site boundary. The River Inny flows south, at times within 300 m of the western site boundary, for approximately 7 km before entering Lough Derravaragh.

2.2 Bulrush Horticulture Policy and Procedure

2.2.1 In 1991, Bulrush Horticulture was the first manufacturer of substrates in the world to be awarded the ISO9000 quality management standard (BS EN ISO 9001:2008). In 2003, Bulrush Horticulture attained ISO14001:2004 the International standard for Environmental Management Systems (EMS) which covers both the factory, head office and a number of the peat harvesting sites throughout Ireland. These two International management systems are used to develop and control Bulrush Horticulture’s operational procedures and practises in use at all locations. All procedures are developed at senior management level and then implemented throughout the organisation by either internal or external training programmes. It is Bulrush Horticulture’s intention to extend the certification scope across all operational areas and all relevant procedures and practises are already embedded at Camagh.

2.2.2 Copies of the Bulrush Horticulture Environmental Policy Statement and Quality Policy Statement are available to download on the Company website www.bulrush.co.uk. Copies of the Company’s Organisational Chart, Operational Procedures and other control documents have been provided to the Environmental Protection Agency (EPA) as part of the IPPC licence application process, included either with the application itself or subsequent submissions.

2.2.3 Bulrush Horticulture stated aim is to continue to lead innovation and excellence in solutions in the growing media sector of the horticultural industry. The Company continues to plan for the future and as such has a research and development team that is working on the challenge to find viable peat alternatives. Bulrush Horticulture has a number of ongoing projects in this area but most high profile has been the development of Forest Gold Plus. Forest Gold Plus is a sustainable, timber derived alternative to peat originating from sustainably managed forests. The Company has product ranges which include peat based, reduced peat and peat free composts which will cover the spectrum of uses required by amateur and professional growers.

2.3 Site Operations

2.3.1 The Camagh site is operated to the same standards and procedures used on all of Bulrush Horticulture’s sites, which have been developed in accordance with ISO14001:2004. The day-to-day operation is controlled by the site supervisor, who in turn is supervised by Bulrush Horticulture’s Republic of Ireland Manager, who also
operates within the business as the Assistant Raw Materials Manager. This individual in turn reports directly to Bulrush Horticulture’s Raw Materials Manager, who is responsible for the management of the Company’s extraction sites across Ireland. The Raw Material Manager has a direct line of reporting to Bulrush Horticulture’s Managing Director and then the board.

2.3.2 The operations at the Camagh site can be described under the following process headings:

**Ditching Operations**
This is the process of cleaning and deepening drainage channels through the bog which is carried out annually. This operation is carried out predominantly during the winter months during low rainfall periods. It can either be carried out using excavators or tracked tractors.

**Profiling Operations**
This operation is carried out to move loose material remaining after ditching and other operations from the edge of the drains to the middle of the plots. This reduces silt run off to the drains during the winter period and ensures efficient drying of the peat in the summer.

**Milling Operations**
This is the first step in the harvesting process. This operation involves loosening the surface layer of 50 mm of material using a tractor and miller. This operation occurs during dry periods in the summer.

**Turning operations**
During this operation a tractor and 12 m turner are used to move the material which has been milled in order to aid drying of the peat.

**Ridging and harvesting operations**
The harvesting method in use requires the material to be harvested to be moved into ridges prior to being harvested. This is achieved using a 12 m ridger mounted on the front of a tractor unit. Material is then harvested using tractors and harvesters, before being tipped in stockpiles local to the area being worked. This reduces the harvester movements thus reducing dust generation and increasing harvesting efficiency. This process also allows more efficient transport usage to move the material to the main stockpiles and loading areas depending upon the operational requirements.

**Hauling off to stockpiles**
This operation is carried out mainly in the summer and autumn. It is undertaken during periods when peat harvesting is not taking place, which in turn ensures that dust caused by machine movements is minimised due to the fact that material on the ground over which they travel is not dry enough for harvesting.
Loading lorries
This operation can be carried out at any time of the year. It involves using an excavator to load harvested material into lorries for delivery to the factory/head office site at Newferry, County Derry.

Machine Fuelling
Machine fuel is stored within the factory building (Camagh) in a bunded tank located on hardstanding; whenever possible all refuelling is carried out at the factory building. Where this is not possible refuelling is confined to the concrete hardstanding yards located on the bog. To put this in perspective at least 95% of fuelling operations are carried out within the factory building.

Machine Maintenance
The site operates a variety of machinery including agricultural tractors and 360 degree excavators. Maintenance of this plant is carried out as per manufacturer’s instructions using recommended parts and lubricants. All maintenance operations are carried out internally within the factory building (Camagh), which has no internal drains and a concrete floor. Spill kits are available in the vicinity and personnel are trained in spillage and emergency response. All oil containers are provided with secondary containment and stored on concrete hardstanding within the factory building.

2.3.3 The site’s normal hours of operation are 0800hrs – 1700hrs Monday to Friday. Overtime is worked as required during summer months to harvest peat as effectively as possible, which is primarily weather dependent. However, no work is carried out after 2100hrs at any time. During the winter, on occasions, it may be necessary to work beyond 1700hrs in order to load lorries for dispatch. However, Bulrush Horticulture operate a 40 hour week policy during winter months which means that working hours will be flexible so as not to exceed this time limit. As this is an existing operation the above hours of work have been operational in force for a number of years. The site is located in a rural setting with few scattered dwelling. There have been no complaints in regard to any site operations.

2.3.4 One of the key and potentially most significant environmental issues identified by Bulrush Horticulture’s EMS occurring at all of their operational sites is the effective management of site discharges. Bulrush Horticulture take the management of site discharges seriously and invest significant time and resources in ensuring discharges are managed effectively. Substantial information has been supplied already as part of the IPPC Licence application process indicating the extent of operational controls that are applied to the management of site discharges and suspended solid emissions in particular. Section 9 Hydrology, Hydrogeology and Soils of this EIS discusses these issues in greater detail.

2.3.5 Surface run-off from Camagh Bog is strictly controlled via a series of drainage ditches fitted with flow restricting pipes, sump holes and settlement ponds. The exit point from each pond is fitted with a sample point plate with a V-notch which fixes the water level within the pond. The V-notch is used to provide a fixed sampling point for water
analysis and for flow monitoring. Fixing the water level in this way ensures the oil
boom plate at the entrance to each pond functions correctly. These plates serve to
trap both oils and floating suspended materials on the water surface prior to entry to
the pond. Low gradients within ditches and extended ditch routings within the bog are
used to further aid settlement. There are five separate surface water discharges from
Camagh Bog, SW1, SW2, SW3a, SW3b and SW4 (Figure 1.1.2 Site Operations).

2.3.6 The bog is divided into a series of internal catchment areas with rainfall discharge
estimates predicted using meteorological data. Sufficient settling capacity has been
incorporated into each area to cope with a once in twenty year rainfall extreme
through the use of flow restrictors and drainage ditches. A detailed drainage plan is
used to manage surface run-off from each bog area by retaining water within
drainage ditches. In addition, Bulrush Horticulture procedures exist relating to the
management of these settling facilities and the routine sampling of discharges. In
Northern Ireland, aspects of Bulrush Horticulture’s operations have been used by the
Northern Ireland Environmental Agency (NIEA) to help produce a best practise guide
for the industry. Following on-site treatment the water is discharged via the five
separate points into various drainage channels that form part of the River Inny and
River Glore catchments.

2.3.7 The surface water discharge points are sampled from specially designed monitoring
points on an approximately monthly basis. Samples are analysed for pH, visible
oil/grease and suspended solids at the Bulrush Horticulture Company
laboratory in Newferry.

2.3.8 The maintenance procedures for settlement facilities are critical to their effectiveness.
The following key areas are addressed by procedure:-
  • unemptied settlement facilities will deteriorate in efficiency;
  • removal of sludge can lead to re-suspension of settled material and discharge
to the receiving water (as a result of not isolating the facility during removal);
  • removed sludge can find its way back into drainage waters, if not disposed of
    securely;
  • effectiveness of settlement facilities can be unpredictable.

2.3.9 Bulrush Horticulture has a system of regularly (at least annually) emptying settlement
facilities by excavator or suction pump. Emptying is carried out during periods of low
base flow and ponds can be arranged in series or in parallel to allow the pond being
emptied to be isolated from through flow. Sludge is removed to a bunded area within
the perimeter ditch system to settle out. After drying out, the solids are spread
periodically on adjacent land for harvesting. Facilities are provided so that sampling
of discharges from settling ponds is routine. Investigation and remedy can be
triggered by readings in excess of 25 mg/l of suspended solids. This is well below the
BATNEEC limit of 35 mg/l (EPA BATNEEC Guidance Note Class 1.4 Extraction of
Peat).

2.3.10 Bulrush Horticulture employs a number of processes to abate and control surface
water emissions including:
1. Careful management and design of internal surface systems to control and manage drainage within the site. Effective treatment systems including flow limiters, sump holes, settlement ponds, low channel gradients and extended channel routings.

2. The routine monitoring of surface water emission points.


2.3.11 Bulrush Horticulture always designs site settlement systems prior to initiating preparation work. Systems are designed to minimise the amount of suspended solids reaching the receiving waters and maintain the discharges within emission limits. For the Camagh site, the drainage and surface work has been established for a number of years, and a number of settlement ponds are in operation.

2.3.12 Bulrush Horticulture refrains from milling when heavy rain is forecast. The bog surface must be dry before milling can take place and so the operation will not proceed in wet weather. All stockpiles are held within the bog boundary and within the established drainage network. Harvesting peat is also avoided during very windy conditions.

2.3.13 The risk of accidental discharge of raw or harvested peat can be affected by the competence of machine operators. Bulrush Horticulture has staff training programmes and adequate supervision in place. Emphasis on good management practice is essential. The Company operate an EMS based on ISO14001:2004 which includes procedures and management control systems.

2.3.14 The settlement pond discharges are sampled by Bulrush Horticulture from specially designed monitoring points on an approximately monthly basis. Samples are analysed at the Bulrush Horticulture Company laboratory in Newferry. This internal monitoring of site discharges consistently shows results are well within the BATNEEC Guidance Note limit of 35 mg/l for suspended solids (EPA BATNEEC Guidance Note Class 1.4 Extraction of Peat). As an element of Best Practice Bulrush Horticulture currently voluntarily imposes this BATNEEC Guidance Note limit on site operational discharges whilst the IPPC Licence application is pending. In fact the results for suspended solids reported to date as part of this application process indicate that the majority of results are consistently below 10 mg/l. Facilities are provided so that the sampling of discharges from settling ponds is routine and all results are recorded and retained. Investigation and potential remedial action is triggered by readings in excess of 25 mg/l of suspended solids. This is Bulrush Horticulture standard practice across all sites and the trigger level is well below the BATNEEC Guidance Note limit of 35 mg/l.

2.3.15 From the details provided above and the documentation previously submitted with the IPPC Licence application it can be seen that Bulrush Horticulture take the management of site discharges seriously and invest significant time and resources in...
ensuring discharges are managed effectively. The approach taken by Bulrush Horticulture is consistent with that specified in the BATNEEC Guidance Note, Class 1.4, Extraction of Peat. Section 4.6 ‘Technologies for Treating Water Emissions’ identifies ‘Sedimentation/filtration/flotation (F2)’ as appropriate treatment technologies. Bulrush Horticulture, through the Company’s management systems, has ensured that these technologies are deployed effectively; this is reflected in the discharge monitoring results. Bulrush Horticulture operates a number of mosses across Ireland and through the correct management of these technologies has achieved a high standard of site discharge water quality and compliance.

2.4 Accident Prevention and Emergency Response

2.4.1 Bulrush Horticulture manage and control site operations to ensure that no potentially polluting substance is permitted to be discharged to off-site surface water systems or groundwaters. The Company operate an EMS based on ISO14001:2004 which includes procedures and management control systems that address accident prevention and emergency response. Site personnel are also provided with appropriate training to address these issues and mitigate the environmental consequences should incidents arise. There is no knowledge of any pollution incidents having occurred in regard to site operations undertaken by Bulrush Horticulture.

2.4.2 From a review of site operations at Camagh Bog Bulrush Horticulture has identified the refuelling of plant machinery and the handling and storage of oils and fuels as the most significant source of potentially polluting activities. Several procedures have been developed to address these issues including:

1. TP 1.12 Bunds & Oil Tank Inspection Procedure
2. TP 1.13 Reducing the Risk of Oil/Chemical Contamination
3. TP 1.15 Oil and Fuel Storage
4. TP 8.9 Emergency Procedure

2.4.3 Copies of these procedures have been provided to the EPA as part of the IPPC Licence application process and were submitted with the original application documents.

2.4.4 Specifically at Camagh Bog minimal levels of oils and fuels are held in storage. All containers are provided with secondary containment in the form of sump pallets or bunds. Small volumes (predominantly 25 l containers & 2 x 205 l drums) of lubricating oils are held within the maintenance building, factory area (Camagh). The floor of the maintenance building is comprised of concrete hardstanding. Refuelling of tractor units takes place over a concrete hard standing area adjacent to the fuel tank within the maintenance building. The tank itself is located within the maintenance building and is double skinned. Spill kits are available in the event of an incident arising. Only four tractor units are in use and these are identical units to those in use for agricultural purposes in the vicinity.
2.4.5 Bulrush Horticulture have a number of elements in place as part of Company best practice to reduce the risk of spillage including secondary containment, monitoring and maintenance procedures emergency spillage response training and the availability of spill kits. The key areas where emergency situations could arise relate to spillage and fire. Several measures are in place to minimise the impact on the environment from accidental emissions or spillage. These include:

- The Procedures for Reducing Risk of Oil/Chemical Contamination (TP 1.13) and the Emergency Procedure (TP 8.9), includes emergency and out of hours contact numbers.
- All Bulrush Horticulture personnel undergo emergency response training as detailed in the Training Procedures.
- Spill kits and clean up materials are available.
- Stockpile temperatures are checked on a regular basis in accordance with the Harvesting Control Procedures and recorded on form QCF 9.6. These detail actions to be taken to prevent temperature build up and therefore minimise fire risk.
- The Bulrush Horticulture Fire Control Statement details actions to be taken both to prevent fires arising and in the event of a fire occurring. This operates in conjunction with the Emergency Procedure (TP 8.9).
- 24 hour contact details for dealing with accidental emissions and emergency situations are provided in the Procedure for Reducing Risk of Oil/Chemical Contamination and the Emergency Procedure.

2.4.6 An appropriate level of Public Liability Insurance cover is held by Bulrush Horticulture.

2.5 Decommissioning, Restoration and Aftercare

2.5.1 Section 7 Landscape & Visual of this EIS discusses these issues in further detail in the context of this assessment. Bulrush Horticulture aims to develop site specific plans relating to appropriate remediation, decommissioning, restoration and aftercare as part of the overall management process for Camagh Bog. Currently, on the basis that the site is worked to its potential significant reserves remain within the site, estimated to be in the order of 20-25 years at current extraction rates. Opportunities for rehabilitation will only begin to arise after 15 years or so, when the shallower areas are worked out. Rehabilitation offers a platform of possibilities. These include forestry, agricultural use, regeneration of heather moorland for sport and restoration of a peatland or wetland habitat through the control of the water table. Possibly a combination of all these options might be considered, to fit the site to the prevailing landscape around it. However, it would be difficult to predict the priorities which will apply in 20-25 years’ time. The following options are proposed, therefore, in this context.

2.5.2 At the end of production, 0.5 m of peat will be left in situ as a foundation for rehabilitation. If recreation of ‘natural’ wetland is the objective, then the first rehabilitation measure will be to re-profile the bog surface where necessary and back fill the field ditches. The main collecting ditches would be stopped up to promote the
raising of the water table. There should be no disturbance of the mineral layer below
the peat except where collecting drains have penetrated the subsoil to achieve the
necessary gradient. In such situations, it may be necessary to seal these with clay.
All pipe systems and relics of production activities will be removed. When the water
table is re-established, selective planting or seeding with wetland species, as a
stimulus to natural regeneration of vegetation will be undertaken.

2.5.3 If forestry is the chosen after use, then the ditch system will be left in place to provide
drainage. Planting into the shallow layer of peat should, with fertilisation, provide the
ideal growing medium for commercial forestry, or for certain species of indigenous
trees established for amenity/habitat purposes.

2.5.4 If agricultural use is the priority option then piping of the ditch system will be required
to enable regular passage of machinery and safe use by livestock, while maintaining
a good system of drainage. Major profiling of the ground to give a reasonably level
surface would also be required. Establishing grass would then be a matter of
providing sufficient lime and fertiliser, and careful management in the early years.

2.5.5 The establishment of heather moorland would probably be the least proactive form of
rehabilitation. The relatively dry residual peat would form the ideal medium for
heather to establish naturally, just as has frequently occurred on cut-over bog land
after reasonably short periods.

2.5.6 As described above, several options have been considered for potential after-use.
Bulrush Horticulture has stated that it would seek to work within best practice and the
requirements of the regulators in order to determine an appropriate after-use. Bulrush
Horticulture would seek to consult with all stakeholders and interested parties including
statutory and non-statutory agencies at the appropriate time.

2.5.7 Bulrush Horticulture has been trading for since 1979 and has a sound financial history
as such funding would be available to underwrite an appropriate Residuals
Management plan.

2.5.8 Bulrush Horticulture has since the early 1990’s investigated a large number of
materials, which could either be used as peat dilutents or as components of totally
peat free mixes. The Company is committed to agreed targets of peat reduction
wherever possible at the request of customers and in response to market drivers.
The Company continues a pro-active product development policy to develop the
background knowledge and use of all new and novel materials.

2.5.9 Bulrush Horticulture produces product ranges which include peat based, reduced peat
and peat free composts which will cover the spectrum of uses required by amateur and
professional growers. Bulrush Horticulture continues to be at the forefront of
researching and developing high specification substrates for both professional
commercial growers and amateur hobby gardeners. The Company set up its own
research and development department as long ago as 1992 and continues to tackle the
challenge to find viable peat alternatives.
2.5.10 Bulrush Horticulture’s Environmental Policy Statement requires the Company to specifically:

- Ensure peat production sites are managed in a way which minimises any potential damage to the surrounding countryside and facilitates rehabilitation of the site after extraction has ceased.
- Leave a minimum of 0.5 m of peat to facilitate rehabilitation.
- Establish appropriate aftercare arrangements in consultation with interested parties.

2.6 Development and Operational History

2.6.1 Camagh Bog has been used for fuel turf for many years prior to planning permission being granted for the factory to be set up in 1989. Around this period sod cutting commenced and the bog was extensively drained. After a number of years cutting sod peat, the site was converted to harvesting peat for the mushroom casing industry. The site was then purchased by Clover Peat Products and drainage systems aligned to produce four distinct quadrants and silt ponds added to allow for milled peat production. The site has been in milled peat production since 2000. Bulrush Horticulture has operated the site for Clover Peat Products since 2003 and in 2006 the Company purchased a shareholding in Clover Peat Products.
SECTION 3 - LEGISLATIVE POLICY & GUIDANCE DOCUMENTS

3.1 IPPC and EIA Requirements

3.1.1 Bulrush Horticulture is required to apply to the EPA for an Integrated Pollution Prevention Control (IPPC) Licence under Class 1.4, “The extraction of peat in the course of business which involves and area exceeding 50 hectares”, of the Environmental Protection Agency Acts, 1992 and 2003. Bulrush Horticulture submitted an IPPC Licence application to the EPA in regard to the operations at the Camagh Bog site in March 2011. The registration number for this IPPC Licence application is P0974-01. All documentation associated with this application is available for viewing on the EPA website www.epa.ie under the registration number.

3.1.2 Following discussions with the EPA, subsequent to the submission of the IPPC Licence application, Bulrush Horticulture received a letter from the EPA requesting additional information in connection with the application under Article 11 (2) (b) (ii) of the EPA (Licensing) Regulations 1994 to 2008. A formal response to the information requests from the EPA was provided in an Additional Information document submitted to the EPA in May 2013. This documentation is also available for viewing on the EPA website www.epa.ie under the registration number.

3.1.3 Following submission of the IPPC Licence application the EPA determined in January 2013 that in accordance with the provisions of Section 87(1i) b of the EPA Acts 1992 to 2012 and the European Union (Environmental Impact Assessment) (Integrated Pollution Prevention and Control) (No. 2) Regulations 2012 that the application must be made subject to an Environmental Impact Assessment (EIA). Following further consultation with EPA the process of scoping the assessment was initiated in March 2013.

3.1.4 Bulrush Horticulture commissioned MARENCO Environmental Consultants to prepare this document at the request of EPA under the provisions of Section 87(1i)b of the EPA Acts 1992 to 2012 and the European Union (Environmental Impact Assessment) (Integrated Pollution Prevention and Control) (No. 2) Regulations 2012.

3.1.5 During the course of producing both the IPPC Licence application and this EIS for submission to the EPA a number of guidance documents were used to assist the process. The majority of these documents are available through the EPA website and some of the key guidance documents are identified below.

3.2 IPPC Guidance Documents

IPPC Licensing Application Guidance Notes (EPA)

3.2.1 These guidance notes are designed to assist applicants in the preparation of an application for an Integrated Pollution Prevention Control (IPPC) Licence to the EPA. They provide guidance on the licence application procedures, completion of the
application form itself and the provision of supporting information and documentation to accompany the application form.

**IPPC Licensing Application Form (EPA)**

3.2.2 The form was developed by the EPA to facilitate the making of an application for an Integrated Pollution Prevention Control (IPPC) Licence under the Environmental Protection Agency Acts, 1992 and 2003. The Application Form must be used in the process of making an application and must be completed in accordance with the instructions provided in the *IPPC Licensing Application Guidance Notes*. A valid application for an IPPC Licence must contain the information prescribed in the Environmental Protection Agency (Licensing) Regulations. Article 10 of these Regulations sets out the statutory requirements for information to accompany a licence application. The application form is designed in such a way as to set out these questions in a structured manner and not necessarily in the order presented in Article 10.

**BATNEEC Guidance Note Class 1.4 Extraction of Peat (EPA)**

3.2.3 This guidance note is one of a series issued by the EPA and is designed to provide guidance to those applying for Integrated Pollution Prevention Control (IPPC) Licences under the Environmental Protection Agency Acts, 1992 and 2003. It is developed to be read in conjunction with the *IPPC Licensing Application Guidance Notes*. The guidance note gives advice on the technologies to control emissions; specific emission limit values (ELVs) and provides comments on compliance monitoring requirements. The appendix to the guidance note identifies the main sources of emissions and the principal releases from such sources.

**Guidance Note for Noise in Relation to Scheduled Activities (EPA)**

3.2.4 The objective of this guidance note is to provide practical information, advice and guidance on noise from activities licensable by the EPA under the Integrated Pollution Prevention Control (IPPC) and waste licensing systems. The guidance note sets out some of the basic concepts of noise, vibration and best available techniques (BAT).

### 3.3 EIA Guidance Documents

**Guidelines on the Information to be Contained in Environmental Impact Statements (EPA – March 2002)**

3.3.1 The 1992 Environmental Protection Agency Act (Section 72) provided for the preparation of these guidelines. The Act further provides that those preparing and evaluating Environmental Impact Statements shall have regard to the guidelines. The primary objective of the guidelines is to improve the quality of Environmental Impact Statements. They aim to achieve this through better scoping and a closer integration of the EIA into both the design and development control processes. The guidelines address a wide range of project types and potential environmental issues. They stress that all the issues identified are unlikely to apply to every project and that each Environmental Impact Statement is a unique result of specific site issues interacting with the effects of the proposed development.

3.3.2 The Advice Notes are published by the EPA and are designed to accompany the Guidelines on the Information to be Contained in Environmental Impact Statements. They contain greater detail on many of the topics covered by the Guidelines and offer guidance on current practice for the structure and content of Environmental Impact Statements. The Advice Notes are divided into five sections, each providing detailed guidance on specific aspects to be considered in the preparation of Environmental Impact Statements. The issues covered include; information to be included in an EIS; existing environment, impacts and mitigation measures; topics relating to a particular class of development; consultation with Government agencies, NGOs and other bodies, and common problems relating to the preparation of Environmental Impact Statements.

3.4 Topic Specific Guidance Documents

3.4.1 The scoping exercise identified the following environmental aspects as most susceptible to potential impact:

- Archaeology
- Landscape and Visual
- Flora and Fauna
- Hydrology and Hydrogeology

3.4.2 For each of these environmental aspects a specific study and site assessment was commissioned to investigate the potential environmental impacts and identify, where necessary, appropriate mitigation measures. Each of these issues is addressed within separate sections of this Environmental Impact Statement (EIS) as follows:

- Section 6 - Archaeology
- Section 7 - Landscape & Visual
- Section 8 - Flora & Fauna
- Section 9 – Hydrology, Hydrogeology & Soils

3.4.3 Each of these separate disciplines has guidance documents and established practises that are specific to these subjects. A description of the methods used is provided within each section which also identifies any appropriate guidance or standards employed that are specific to the individual discipline. All surveyors used are from established practises, experts in their individual field and are suitably qualified within the discipline.
SECTION 4 - NEEDS & OPTIONS

4.1 Needs & Options

4.1.1 The exploitation of peatlands has been occurring in Ireland for over 400 years predominantly as a fuel resource. This still remains by far the greatest use of harvested peat from Irish peatlands today. Over 3 million tonnes of milled peat are used annually for power generation at a series of power plants across Ireland. In addition to the peat used in power generation a further 1.2 to 1.5 million tonnes is burned in either sod or briquette form, virtually all for domestic consumption. Bord na Mona is the dominant peat producer in Ireland harvesting approximately 4 million tonnes per year.

4.1.2 The annual average production of horticultural peat from Irish peat bogs is estimated to be approximately 2.5 million cubic metres. Bord na Mona is by far the largest producer of horticultural peat dominating the market, with a number of medium sized companies (<10), around 30 smaller producers and estimated to be a few hundred small semi-agricultural producers. (Data for the above was sourced from the Irish Peatland Conservation Council and Bord na Mona websites).

4.1.3 Horticultural peat production forms an important component of the Irish economy with estimates of several thousand people employed within the sector and supporting sectors. Many of these are within the rural economy providing access to jobs in the rural, often isolated, areas of the country. Bulrush Horticulture themselves employ over 100 people within the business, approximately 20-30% of these are in the Republic of Ireland. In addition there is a significant uptake of seasonal workers through the harvesting season, generally May to September.

4.1.4 Camagh Bog has been used for fuel turf for many years prior to planning permission being granted for the factory to be set up in 1989. Around this period sod cutting commenced and the bog was extensively drained. After a number of years cutting sod peat, the site was converted to harvesting peat for the mushroom casing industry. The site was then purchased by Clover Peat Products and drainage systems aligned to produce four distinct quadrants and silt ponds added to allow for milled peat production. The site has been in milled peat production since 2000.

4.1.5 Unlike with a new project, consideration of alternative options is limited. Bulrush Horticulture has operated the site for Clover Peat Products since 2003 and in 2006 the Company purchased a shareholding in Clover Peat Products. Bulrush Horticulture has made significant investment into operations at Camagh Bog over the intervening 10 years both in terms of the site, the operational practices employed and the operational equipment. The site itself has been extensively worked for many years and the operational area is fully exposed. The availability of suitable sites within Ireland is extremely limited. Bulrush Horticulture’s own Environmental Policy Statement places restrictions upon the business regarding site selection and sourcing of materials, policies which are fully integrated into the Company’s management practices and philosophy. The issues discussed above mean that alternative options...
are restricted and not as applicable as would be the case if the operations were still in
the design and site selection phase.

4.1.6 Many of Bulrush Horticulture’s customers, consisting of both professional commercial
growers and amateur hobby gardeners, still consider peat as an essential component
in modern horticulture, whilst recognising the need to develop alternative substrates.
The peat free substrate market has continued to expand over recent years. Bulrush
Horticulture has since the early 1990’s investigated a large number of materials,
which could either be used as peat dilutents or as components of totally peat free
mixes. The Company is committed to agreed targets of peat reduction wherever
possible at the request of customers and in response to market drivers. The
Company continues a pro-active product development policy to develop the
background knowledge and use of all new and novel materials.

4.1.7 Bulrush Horticulture’s stated aim is to continue to lead innovation and excellence in
solutions in the growing media sector of the horticultural industry. The Company
continues to plan for the future and as such has a research and development team
that is working on the challenge to find viable peat alternatives.

4.1.8 Bulrush Horticulture has a number of ongoing projects in this area but most high
profile has been the development of Forest Gold Plus. Forest Gold Plus is a
sustainable, timber derived alternative to peat originating from sustainably managed
forests. The Company has product ranges which include peat based, reduced peat
and peat free composts which will cover the spectrum of uses required by amateur
and professional growers. Today approximately 30% of Bulrush Horticultures raw
materials are from non-peat sources, an area which has seen significant growth over
the last 10 years. This growth is expected to continue into the future with the further
development of peat reduced and peat free mixes. However, in the short to medium
term there will remain a need for peat derived products as the alternative market
continues to develop.

4.1.9 Bulrush Horticulture continues to be at the forefront of researching and developing high
specification substrates for both professional, commercial growers and amateur hobby
growers. The Company set up its own research and development department as long
ago as 1992 and continues to tackle the challenge to find viable peat alternatives.

4.1.10 Bulrush Horticultures Environmental Policy Statement requires the Company too
specifically:

- Ensure peat production sites are managed in a way which minimises any
  potential damage to the surrounding countryside and facilitates rehabilitation of
  the site after extraction has ceased.
- Leave a minimum of 0.5 m of peat to facilitate rehabilitation.
- Establish appropriate aftercare arrangements in consultation with interested
  parties.
SECTION 5 - ASSESSMENT OF ENVIRONMENTAL IMPACT

5.1 Purpose of Environmental Impact Statement

5.1.1 Environmental Impact Assessment (EIA) requirements derive from the European Communities Directive 85/337/EEC (as amended by Directive 97/11/EC; Directive 2003/35/EC and Directive 2009/31/EC, now codified in Directive 2011/92/EU) on the assessment of the effects of certain public and private projects on the environment. The primary objective of the EIA Directive is to ensure that projects which are likely to have significant effects on the environment are subject to assessment of their likely impacts.

5.1.2 The approach adopted in the Directive is that EIA is mandatory for all Annex I projects on the basis that these project classes will always have significant environmental effects. Thresholds are specified in respect of most project types in the Annex. In the case of Annex II projects, Member States must determine on a case-by-case basis or on the basis of thresholds or other criteria (such as sensitivity), or a combination of both approaches, whether or not a project should be subject to EIA.

5.1.3 In addition to transposing the mandatory requirements which apply to Annex I projects, Ireland choose to set thresholds for each of the project classes in Annex II. In setting these thresholds, account was taken of the relevant circumstances in Ireland, including the general nature, size and location of projects and the condition of the receiving environment. In addition, Irish implementing legislation addresses the possible need for EIA below the specified thresholds. In summary, these require the carrying out of EIA where the competent authority considers that a development would be likely to have significant effects on the environment.

5.1.4 Irish legislation implements the EU Directive through the integration of its requirements into the land-use planning consent system and several other development consenting systems. Part 2 of Schedule 5 of the Planning and Development Regulations 2001 transposes Annex II of the EIA Directive and with regard to peat extraction, an EIA is mandatory in the context of a planning application, in the following circumstances:

“2. Extractive Industry
(a) Peat Extraction which would involve a new or extended area of 30 hectares or more”

5.1.5 Pursuant to section 87 (1I)(b) of the Environmental Protection Agency Act 1992, as inserted by the European Union (Environmental Impact Assessment) (Integrated Pollution Prevention and Control) (No. 2) Regulations 2012, the EPA, where it is considering an application for an IPPC Licence, can decide that an EIA is required in relation to the activity concerned and can request the Applicant to submit an environmental impact statement (EIS).
5.1.6 The Agency in its screening exercise, considered that an EIA was required in respect of the extraction of peat at Camagh Bog on the basis that the activity was of a type which exceeds the thresholds stipulated in paragraph 2(a) of Part 2 of Schedule 5 of the Planning and Development Regulations 2001. Bulrush Horticulture Limited has received legal advice to the effect that the Agency was wrong in concluding that peat extraction on the subject lands was of a type which exceeds the thresholds stipulated in paragraph 2(a) of part 2 of Schedule 5 of the Planning and Development Regulations 2001.

5.1.7 Without prejudice to our client's legal position as set out above an EIS has been prepared to assess any current, or potential future environmental implications of the operations of Bulrush Horticulture Limited at Camagh Bog and offers suitable mitigation recommendations where appropriate. The foregoing sections provide a synopsis of the site operations, the legislative aspects of the development and assess the social and economic context. This EIS was prepared in accordance with the relevant EPA EIA Guidance documents, as detailed in Section 3 of this EIS. The succeeding sections of this EIS present the assessment of potential impacts in relation to individual environmental aspects and where necessary provides relevant recommendations and mitigation measures. The applicant accepts that the Agency may wish to incorporate any mitigation measures that have been specified in the EIS in any grant of a licence that may be made by the Agency.

5.2 Scoping Study

5.2.1 Following the submission of the IPPC Licence application to the EPA in March 2011, the EPA made a request for additional information in connection with the application under Article 11 (2) (b) (ii) of the EPA (Licensing) Regulations 1994 to 2008. During discussions with the EPA, in regard to the supply of the additional information requested, it was indicated that following a review of Irish legislation it was likely that an EIS would be required to accompany the IPPC Licence application. It was believed, at this time, that this amended EIA legislation would be enacted in the autumn of 2011. In the event, it was a further year before the new legislation was enacted in late 2012. During this intervening period MARENCO, as Bulrush Horticulture Limited's environmental consultants, remained in constant contact with the EPA to ensure the project continued to progress whilst awaiting the implementation of the amended EIA legislation.

5.2.2 Following the enactment of the legislation Bulrush Horticulture Limited received a letter in late January 2013 notifying it that it had three months to submit an Environmental Impact Statement.

5.2.3 Following further discussions on the scoping process (see below) and a meeting with the EPA Inspectors in Dublin; a letter was forwarded to the EPA in March 2013 requesting an additional nine months to allow for the completion of a thorough scoping process, the commissioning and undertaking of appropriate surveys and...
assessments before final review, report production and compilation of the EIS for submission. The EPA responded by letter on the 10th April 2013 requiring the submission of the EIS on or before the 16th July 2013.

5.2.4 During February 2013 a series of discussions where held with the EPA regarding the scoping process. Following a review of the relevant guidance documents (Section 3) guidance was sought from the EPA to ensure a suitable methodology was adopted. Under Section 1.4 of the Guidelines on the Information to be Contained in Environmental Impacts Statements it is stated that; “The scoping process identifies the issues and emphasis that are likely to be important during the EIA and eliminates those that are not.” The section continues with; “The information can be compiled by a formal process, whereby the competent authority is asked to consult with relevant agencies to draw up an opinion about the scope of the coverage required”.

5.2.5 A scoping letter and supporting document was sent to 21 proposed consultees on the 22nd March 2013. Prior to sending the letters each proposed consultee was contacted by telephone to ensure the correct details were used. Consultees were also contacted approximately two weeks after posting to ensure the documents had been received. On occasion electronic versions were also forwarded upon request.

5.2.6 In April 2013, MARENCO commenced the planning, commissioning and undertaking of surveys before entering the review and reporting phase. MARENCO used past experience, the EPA EIA Guidance documents (Section 3), the outcomes of discussions with the EPA and the results of the consultation process to date, along with the time period provided to focus the effort into key issue areas and immediately commission appropriate investigations.

5.2.7 The matters to be considered for inclusion in an EIS are specified according to the issue headings set out in Schedule 6 of the Planning and Development Regulations 2001:

- Human Beings
- Flora and Fauna
- Soils
- Water
- Air
- Climate
- Landscape
- Material Assets
- Cultural Heritage
- and the inter-relationship between the foregoing

5.2.8 The standard approach in such a project includes consultation with the necessary statutory consultees, as agreed with the EPA and discussed above.
5.2.9 The relevant statutory consultees for each aspect of the EIS have been consulted. Full responses are included in Appendix 1 and a detail list of all consultees and contact information is provided below:

1. Gavin McGuire, Health Service Executive, (Dublin Mid Leinster), Oak House, Millennium Park, Naas, County Kildare.
2. County Secretary, Westmeath County Council, County Buildings, Mullingar, County Westmeath.
4. Simon Coveney T.D., Minister, Department for Agriculture, Food & the Marine, Kildare Street, Dublin 2.
5. Mr Dunning, Secretary General, Department of Communications, Energy & Natural Resources, 29-31 Adelaide Street, Dublin 2.
6. The Manager, Development Applications Unit, Department of Environment, Heritage & Local Government, Newtown Road, Wexford.
7. Paddy Matthews, Manager of Environment & Planning, Failte Ireland, Environment Unit, 88-95 Amiens Street, Dublin 1.
8. Dr P.J. Claffey, Programme Manager, Health & Safety Authority, Metropolitan Buildings, James Joyce Street, Dublin 1.
9. Dr Forde, River Basin District Director, Inland Fisheries Ireland, Teach Breac, Earl's Island, Galway, County Galway.
10. Paddy Browne, Head of CELUP, Teagasc, Head Office, Oak Park, Carlow.
11. Cliona O’Brien, Wildlife Officer, the Heritage Council, Church Lane, Kilkenny.
12. Grainne Oglesby, Office of Climate, Licensing & Resource Use, Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, County Wexford.
13. The Secretary, An Bord Pleanala, 64 Marlborough Street, Dublin 1.
14. Minister’s Office, Department of Transport, Tourism & Sport, 44 Kildare Street, Dublin 2.
15. Minister’s Office, Department of Jobs, Enterprise & Innovation, 23 Kildare Street, Dublin 2.
16. Minister’s Office, Department of Arts, Heritage & the Gaeltacht, 23 Kildare Street, Dublin 2.
17. Minister’s Office, Office of Public Works, 52 St. Stephens Green, Dublin 2.
21. Liam Gilsan, Derravaragh Anglers Association, Multyfarnham, County Westmeath.

5.2.10 To determine the environmental aspects that should be addressed, each of the main activities within the development were examined and potential impacts arising from those activities were identified, together with receptors of any such impacts.
5.2.11 From the identification of potential impacts and receptors, a scoping matrix was developed, which drew on past experience, the EPA EIA Guidance documents (Section 3), the outcomes of discussions with the EPA and the consultation process to highlight the main impacts to be assessed. The scoping exercise identified the following environmental aspects as most susceptible to potential impact:

- Archaeology
- Landscape & Visual
- Flora & Fauna
- Hydrology, Hydrogeology & Soils

5.2.12 For each of these environmental aspects a specific study and site assessment was commissioned to investigate the potential environmental impacts and identify, where necessary, appropriate mitigation measures. Each of these issues is addressed within separate sections of this EIS as follows:

- Section 6 - Archaeology
- Section 7 - Landscape & Visual
- Section 8 - Flora & Fauna
- Section 9 – Hydrology, Hydrogeology & Soils

5.2.13 This assessment considers the potential significant effects and consequences of the development on the environment and assesses whether such effects are:

- Direct or Indirect
- Short, Medium or Long-term
- Reversible or Irreversible
- Beneficial or Adverse

5.3 Approach to Preparation of Environmental Impact Statement

5.3.1 The preparation of the EIS was undertaken between March and June 2013 and represents a balanced, comprehensive consideration of the potential implications of the proposed development.

5.3.2 All aspects identified in the EIA Regulations and EPA EIA Guidance documents (Section 3) were considered in undertaking the assessment which involved the following key aspects:

- Discussions undertaken with relevant statutory and non-statutory consultees,
- Baseline studies and specific impact assessment of environmental aspects have been carried out by competent and experienced professionals
• Positive social, economic and environmental benefits have been clearly identified

• Where potential adverse impacts have been identified, appropriate mitigation measures are presented
SECTION 6 - ARCHAEOLOGY

6.1 Introduction

6.1.1 This Section presents the findings of an archaeological and cultural heritage impact assessment requested as part of an Environmental Impact Statement in support of an IPPC Licence application for Bulrush Horticulture in regard to their operations at Camagh Bog, County Westmeath (NGR: E241250, N275614, IPPC Licence application no. P0974-01) (Figures 6.1.1 and 6.1.2). The impact assessment seeks to determine the potential impact any further peat extraction in this area could have on surviving archaeological remains.

6.1.2 The area of development comprises approximately 108 Ha with the area of peat harvesting representing 94 Ha. It is proposed to extract approximately 3 – 5 m of peat across the site, over the next 20 - 25 years at current extraction rates.

6.2 Methodology

6.2.1 This archaeological impact assessment has been compiled by Audrey Gahan of Gahan and Long, Archaeological Consultants.

6.2.2 Audrey Gahan has an honours degree from Trinity College, Dublin and has been a professional archaeologist since 1985, working on projects throughout Ireland. In 2000 she successfully completed a course in Archaeological Project Management at Oxford University. She is an expert in medieval ceramics and has published extensively on this subject. She has particular expertise in the renewable energy sector and has considerable experience in liaising with both developers and the statutory bodies. Audrey was made a Fellow of the Society of Antiquaries of London in 2006.

6.2.3 An initial desk top survey was undertaken which included a review of the Records of Monuments and Places (RMP) which is compiled and updated by the National Monuments Service. The RMP is comprised of manuals, which list all known archaeological sites and monuments in a county with accompanying maps (based on Ordnance Survey six-inch maps) locating these sites. All sites included in the RMP are protected under the National Monuments Acts (1930–94).

6.2.4 Historical maps and satellite imagery were examined which sought to identify previous land use and to locate any features of archaeological potential or items of cultural heritage interest within and immediately adjacent to the site of operations at Camagh Bog, County Westmeath. Finally an inspection of the site was also conducted by a fully qualified archaeologist on the 31st May 2013.
6.3 Results & Impact Assessment

Archaeological Baseline and Site Inspection

6.3.1 An archaeological desk top survey was undertaken to identify known archaeological monuments both within the area of development and extending to a radius of 2 km. No known sites of archaeological significance are identified within the RMP for the area of the proposed development, although eight sites were identified within the wider study area (Figure 6.3.1).

6.3.2 Scant information is currently available on most of the identified sites, which are: WM 002-003, a motte; WM 003-001, a tower house; WM 003-002, a rath; WM 003-004, an earthwork; WM 003-052, a rath and WM 003-053, a windmill.

6.3.3 The site WM002-035 is identified as a lithic scatter of prehistoric date discovered after peat extraction, by another operator, in 1999. It is described as being characterised by a lithic assemblage (282 pieces) comprised almost exclusively of chert (270 pieces), two axes, some coarse stone tools and a small range of organic finds including uncarbonised hazelnut shells. The assemblage focused on the production of blades and flakes with a slight dominance of blade cores being present. Three radiocarbon dates from hazelnut shells were obtained though these are not demonstrably associated with the lithics. Combining the three provides a date of 5470-5400 cal. BC (19.7%) or 5390-5300 cal. BC (75.7%), dates which are in keeping with late Mesolithic stone tool technology. Although the assemblage is derived from a surface collection and suffers from some of the problems associated with this; the site, which is in the townland of Corralanna, offers a significant contribution to our understanding of Mesolithic settlement in the Midlands, an area rich in Mesolithic archaeology.

6.3.4 The final site identified is LF 016-009 a rath. This is described as being located on a south west facing slope in pasture. It is comprised as a raised circular area, 42 m in diameter, enclosed by a wide low bank of earth and stone. This is 7.75 m - 9.5 m wide and 0.5 m - 1.05 m high, with a poorly defined external fosse, 4.2 m – 8 m wide and 0.2 m - 0.3 m deep, which is identifiable only from the north east – east – south east. The original entrance is not recognisable.

6.3.5 In addition to the RMP, the first edition Ordnance Survey map of the area was inspected. This map, which dates from 1837 showed no previous development on the site. No pre-Ordnance survey maps were identified for the development area.

6.3.6 Satellite imagery from the Ordnance Survey Ireland web site was also examined, which showed the area of development under peat extraction.

6.3.7 Camagh Bog was visited by a fully qualified archaeologist on 31st May 2013. The site, which has been subject to peat extraction since the mid-1980s is located within an area of relatively intensive peat extraction with a number of bogs being worked to the north, north east and west. The site is bounded to the east and west by woodland...
and also to a lesser extent to the south. The northern boundary of the site is defined by a minor roadway. Nothing of archaeological significance was noted during the visit.

Archaeological Impact Assessment

Types of impacts

6.3.8 The types of impacts of the proposed development on archaeological features may be divided into the following categories:

6.3.9 Direct: where there may be a physical effect on a site caused by the proposed development. Direct effects may be caused by a range of activities associated with the construction and operation of proposed development features. In addition, above-ground disturbance, such as that caused by vehicle movement, and soil and overburden storage, may produce irreversible effects upon archaeological features. Direct effects on archaeological features are normally adverse, permanent and irreversible.

6.3.10 The second category of direct impact relates to the visual impact that may exist from or to the monument from the proposed development. This may adversely affect the setting of a monument within the wider archaeological / historical landscape. A direct impact of this nature relates only to those monuments categorised as of National Importance.

6.3.11 Indirect: where the setting of a site or monument may be affected. Setting in this assessment is understood in functional terms only. Indirect effects may relate to new development causing a visual impact, such as reducing views to or from cultural heritage features with important landscape settings, or may cause increased fragmentation of a monument’s setting.

6.3.12 Uncertain: where there is a risk that the works may impinge on a site, for example, where it is not clear where the location or boundaries of a site lie. Potential effects, direct and indirect, have been assessed in terms of their scale, longevity, reversibility and nature (beneficial / neutral / adverse). The importance of both direct and indirect impacts can vary depending on the nature of the archaeological site under consideration.

Definitions of Assessment of Importance

6.3.13 The main thresholds of archaeological importance are National Importance and Local/Regional Importance.

6.3.14 Sites of National Importance comprise National Monuments, which are in State Care, and other important sites and monuments, which would merit State Care protection. Sites of Local/Regional Importance are those that are not in State Care, but have significance within a regional or local context. This may, for example, apply to their importance to regional or local history, or they may be the only local example of a monument type.
Figure 6.3.1

Area showing known archaeological sites and monuments within the study area.

Key

- Site
- Archeological sites and monuments
6.3.15 Sites of Lesser Importance include other archaeological sites; findspots, sites identified from aerial photographs, sites identified from OS Memoirs whose locations are unknown, and sites of now destroyed monuments. Such sites may comprise component parts of a landscape rich in archaeological monuments, and thereby gain greater significance.

6.3.16 Table 6.3.1 indicates the status and level of importance of archaeological sites.

**Table 6.3.1 Status & Level of Importance of Archaeological Sites**

<table>
<thead>
<tr>
<th>RMP No.</th>
<th>Site Type</th>
<th>Status</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 02-03</td>
<td>Motte</td>
<td>None</td>
<td>Local/Regional</td>
</tr>
<tr>
<td>WM 03-01</td>
<td>Tower House</td>
<td>None</td>
<td>Local/Regional</td>
</tr>
<tr>
<td>WM 03-02</td>
<td>Rath</td>
<td>None</td>
<td>Local/Regional</td>
</tr>
<tr>
<td>WM 03-04</td>
<td>Earthwork</td>
<td>None</td>
<td>Local/Regional</td>
</tr>
<tr>
<td>WM 02-35</td>
<td>Lithic scatter</td>
<td>None</td>
<td>Local/Regional</td>
</tr>
<tr>
<td>WM 03-52</td>
<td>Rath</td>
<td>None</td>
<td>Local/Regional</td>
</tr>
<tr>
<td>WM 03-53</td>
<td>Windmill</td>
<td>None</td>
<td>Local/Regional</td>
</tr>
<tr>
<td>LF 16-09</td>
<td>Rath</td>
<td>None</td>
<td>Local/Regional</td>
</tr>
</tbody>
</table>

*Definitions for the Assessment of Magnitude of Change*

6.3.17 Consideration of the scale, extent of change, nature and duration of effect are important in determining the magnitude of change (Table 6.3.2).

**Table 6.3.2 Magnitude of Change Criteria**

<table>
<thead>
<tr>
<th>Level of Magnitude</th>
<th>Definition of Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Total loss or major alteration to key elements/features/characteristics of the baseline conditions such that post development character/composition/attributes will be fundamentally changed.</td>
</tr>
<tr>
<td>Medium</td>
<td>Partial loss or alteration to one or more key elements/features/characteristics of the baseline conditions such that post development character/composition/attributes will be partially changed.</td>
</tr>
<tr>
<td>Low</td>
<td>Minor loss of or alteration to one or more key elements/features/characteristics of the baseline conditions. Change arising from the loss/alteration will be discernible but underlying character/composition/attributes will be similar to pre development circumstances/patterns</td>
</tr>
<tr>
<td>Negligible</td>
<td>Very minor loss or alteration to one or more key elements/features/characteristics of the baseline conditions. Change barely distinguishable, approximating to the &quot;no change&quot; situation.</td>
</tr>
</tbody>
</table>

*Definitions for the Assessment of Significance*

6.3.18 An assessment of importance and magnitude can then be undertaken to determine how significant an impact is (Table 6.3.3).
Table 6.3.3 Definitions for Assessment of Significance

<table>
<thead>
<tr>
<th>IMPORTANCE</th>
<th>LESSER</th>
<th>LOCAL/REGIONAL</th>
<th>NATIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAGNITUDE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negligible</td>
<td>No Change</td>
<td>No Change</td>
<td>No Change</td>
</tr>
<tr>
<td>Low</td>
<td>Slight</td>
<td>Slight</td>
<td>Moderate</td>
</tr>
<tr>
<td>Medium</td>
<td>Slight</td>
<td>Moderate</td>
<td>Substantial</td>
</tr>
<tr>
<td>High</td>
<td>Moderate</td>
<td>Substantial</td>
<td>Substantial</td>
</tr>
</tbody>
</table>

Assessment of Impact upon Known Archaeological Monuments within the 2 km

6.3.19 Table 6.3.4 combines the predicted effect type and magnitude with site importance to determine the significance of the predicted impact.

Table 6.3.4 Assessment of the Effect and Magnitude of Change on identified archaeological monuments of within the 2 km study area.

<table>
<thead>
<tr>
<th>RMP No</th>
<th>Effect Type</th>
<th>Site Importance</th>
<th>Effect Magnitude</th>
<th>Significance of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 02-03</td>
<td>n</td>
<td>Local/Regional</td>
<td>Low / Negligible</td>
<td>Slight / No Change</td>
</tr>
<tr>
<td>WM 02-35</td>
<td>n</td>
<td>Local/Regional</td>
<td>Low / Negligible</td>
<td>Slight / No Change</td>
</tr>
<tr>
<td>WM 03-01</td>
<td>n</td>
<td>Local/Regional</td>
<td>Low / Negligible</td>
<td>Slight / No Change</td>
</tr>
<tr>
<td>WM 03-02</td>
<td>n</td>
<td>Local/Regional</td>
<td>Low / Negligible</td>
<td>Slight / No Change</td>
</tr>
<tr>
<td>WM 03-04</td>
<td>n</td>
<td>Local/Regional</td>
<td>Low / Negligible</td>
<td>Slight / No Change</td>
</tr>
<tr>
<td>WM 03-52</td>
<td>n</td>
<td>Local/Regional</td>
<td>Low / Negligible</td>
<td>Slight / No Change</td>
</tr>
<tr>
<td>WM 03-53</td>
<td>n</td>
<td>Local/Regional</td>
<td>Low / Negligible</td>
<td>Slight / No Change</td>
</tr>
<tr>
<td>LF 16-09</td>
<td>n</td>
<td>Local/Regional</td>
<td>Low / Negligible</td>
<td>Slight / No Change</td>
</tr>
</tbody>
</table>

KEY: d-direct, i-indirect, u-uncertain, b-beneficial, n-neutral, a-adverse, p-permanent, t-temporary, ir-irreversible, r-reversible

6.3.20 The archaeological impact assessment indicates that no physical impact will be placed upon the known archaeological sites within the 2 km study area.

6.3.21 There is the potential however, for previously unknown archaeological sites or remains to be identified within Irish peatlands. Artefacts can be preserved in the unique anaerobic conditions offered by peat ecosystems, which may be impacted upon by the proposed extraction. Many distinct monument types can be associated with peatlands. The most common type of site which could be encountered are toghers or trackways, which can be made of planks, posts, brushwood, gravel or flagstones, which were constructed to traverse, as well as utilise the resources of the wetland environment. Brushwood platforms, along with rows of wooden posts and possibly traces of timber huts could all be uncovered. These structures frequently date to the prehistoric period. Another monument type common in this environment, are fulachta fiadha or ancient cooking places which are often found along the bog margins and are characterised by large quantities of burnt stone. Along with these structures objects of wood, stone and metal are frequently found in bogs, which have been lost or ritually deposited over time. Should any of these monument types exist within the bog then they would be adversely impacted upon by the peat extraction. To this end a mitigation strategy has been provided below.
6.4 Mitigation

6.4.1 No known archaeological sites or monuments were identified within the area of the proposed peat extraction, and no impact will be placed on those sites, which were identified in the wider study area. However, given the possibility of previously unknown archaeological sites and/or artefacts existing within the bog the following mitigation strategy has been provided.

6.4.2 It is recommended that all staff involved with the peat extraction process be made aware of the potential for archaeological remains to exist within the bog and what the most common or frequent types of monuments and artefacts could be. This will be achieved through the amendment to established personnel training programmes on the environment already in existence within Bulrush Horticulture’s environmental management system.

6.4.3 Should any remains of archaeological importance be identified no further work will be undertaken in the appropriate area until such time that a fully qualified archaeologist has been able to assess the remains.

6.4.4 Should the remains prove to be of importance further excavation of the area may be required. This work would be carried out in full consultation and agreement with the developer and the relevant statutory bodies. Such works will be undertaken by a licenced archaeologist and time will be afforded to allow receipt of the licence from the Department of Arts, Heritage and the Gaeltacht (licensing section).

6.4.5 This mitigation strategy will be adopted by procedure into the existing environmental management system operated by Bulrush Horticulture at Camagh Bog, County Westmeath.

6.5 Conclusion

6.5.1 It is proposed to continue extracting peat from Camagh Bog, County Westmeath, for which an application for an Integrated Pollution Prevention Control (IPPC) Licence has been made (application no. P0974-01). An archaeological impact assessment is required as a key component part of an Environmental Impact Statement requested by the EPA to accompany the IPPC Licence application. The area of development comprises approximately 108 Ha with the area of peat harvesting representing 94 Ha. It is proposed to extract approximately 3 – 5 m of peat across the site, over the next 20 - 25 years at the current rates of extraction.

6.5.2 A desk top survey was undertaken to identify any known archaeological sites or monuments within the proposed development area. No sites were identified, although a number of monuments were located within the wider study area, indicating that there has been human activity in this area in antiquity. A site inspection did not reveal anything of archaeological significance. However, given the wetland environment and the frequency of archaeological discoveries in other bogs, the
potential for surviving, previously unknown archaeological material exists. Should such remains survive these would be adversely impacted upon by the proposed extraction and a mitigation strategy has therefore been provided. This mitigation strategy will be adopted by procedure into the existing environmental management system operated by Bulrush Horticulture at Camagh Bog, County Westmeath.
SECTION 7 - LANDSCAPE & VISUAL

7.1 Introduction

7.1.1 This study has been undertaken to assess the landscape and visual impact of the proposal to continue extracting peat from a bog at Camagh Bog, Doon, County Westmeath (Figure 7.1) for inclusion in an Environmental Impact Statement to accompany an application for an Integrated Pollution Prevention and Control (IPPC) Licence under the Environmental Protection Agency Acts, 1992 and 2003. This study, describes the existing landscape character, and the impact of the development on that character and on views of it. Methods of reducing the impact of the proposal and post production rehabilitation measures are also described.

7.2 Methodology

7.2.1 The assessment uses a methodology developed and refined through practice by Hugh Morrison Chartered Architect, drawing on guidance provided by the Environmental Protection Agency (EPA) (Appendix 2).

7.2.2 The EPA Guidelines note that the study of the landscape is a combination of two separate, but closely related aspects: ‘The first is visual impacts, that is the extent to which new developments can be seen. The second is impacts on the character of the landscape, that is responses that are felt towards the combined effects of the new developments.’

7.2.3 The Guidelines recommend the following to be included in any assessment:

(i) Context
Areas from which the existing site can be seen are generally noted with particular attention to views from roads, residences and designated tourism routes and viewpoints. Areas from beyond the site boundary from which the site can be seen should be noted.

(ii) Character
A description of the landscape character differentiates between subjective assessments and objective description. A description of the character of the site as perceived both within the site and wider landscape is important, as is the description of the intensity and character of land use.

(iii) Significance
This entails the level of visual intrusion upon designated views, designated landscape and designated landscape amenity areas.
(iv) Sensitivity
The extent to which the existing landscape or views are capable of being changed before altering the perceived character.

7.2.4 There are five main parts to this assessment:

(i) Existing landscape context and character
A description of the character and visual quality of the site and surrounding Visual Envelope including an analysis of the field and photographic survey data is included in this section assessing the existing landscape in terms of land form, land use and vegetation along with historical and cultural associations and features which are characteristic of the locality. The assessment identifies the value of the elements in the landscape and its sensitivity, in order to assess the impact significance of the proposed development. Similarly, the visual characteristics of the landscape are identified, along with receptor groups and sensitive viewpoints.

(ii) Development proposals and landscape treatment
The proposals for the site are described in this section, including the changes to the landscape and the mitigation measures and techniques to reduce landscape and visual impact.

(iii) Landscape impacts - proposed conditions.
This section examines the scope of impacts and includes an evaluation of changes in the landform, land use and vegetation, being elements of the site landscape. Also included is an assessment of the impact of the progressive extraction of peat moss on the landscape character of the Visual Envelope. The long term impacts along with mitigating landscaping techniques are also assessed.

(iv) Visual impacts
This section assesses the visual impact of the proposed progressive extraction of peat moss in terms of both local and long distance views, and any long term impacts after the completion of the development are described in this section. It also assesses how landscape and other mitigation techniques will minimise visual impact.

(v) Mitigation
This section assesses mitigating elements of the scheme in terms of compensation, impact avoidance, impact reduction and remediation.

7.2.5 The impact of the progressive extraction of peat moss along with the screening proposal on sensitive viewpoints are then analysed.
7.3 Results

Proposed Development Baseline Study

7.3.1 The local landscape character of the area where the development is proposed is described and assessed providing a baseline for measuring the potential impacts arising from the proposed development.

7.3.2 To provide a measurement from which to evaluate the quality of the landscape, a scale of descriptive criteria taking account of the local context of the appraisal (Appendix 2).

7.3.3 This study considers the current site operation to be the baseline for appraisal. All aspects of production will remain largely at their current magnitudes with the exception of a modest reduction in the levels of the current extraction footprint of around 3-5 m over the next 20-25 years.

Study Area

7.3.4 The Study Area was deduced from a desktop study of OSI mapping and a drive-over survey and is shown in Figure 7.1.1.

7.3.5 The site is located at the north west edge of Westmeath (NGR 241250, 275614), approximately 500 m from the County Longford border.

7.3.6 In a SEA Environmental Report for Westmeath County Development Plan 2008-2014, the Environmental Baseline, Trends, and 'Do Nothing Scenario' for the county are described.

7.3.7 This section of the report is shown below, edited where it does not relate to the proposal.

Landscape and Topography

General landscape/ topographical features

Westmeath has a variety of landscapes but the most prominent one can be described as a "undulating pattern of low hills, patches of woodland and bog, with many lakes nestling in shallow valleys".

Mountains are almost absent; the highest point is at 280 metres on the Hill of Mullagmeen in the extreme north of the County. The hills both conceal parts of the landscape and provide more commanding views of it, providing more variety and interest in the views available. In general, the areas of greatest scenic merit, such as Westmeath's lakelands are also the areas of greatest nature value and are also the areas that attract visitors in numbers.
Figure 7.1.1 Study Area & Visual Envelope
In Westmeath, we see predominantly a post-glacial landscape, with lakes and bogland, tree-covered eskers and drumlins. The drier ground topography west of Mullingar is formed by Carboniferous Limestone. The vegetation derives from the growth of peat bogs after glaciation and the development of enclosed pasturelands across the County. It is possible to characterise the extraordinary local quality of much of the landscape.

In the North of the County, centred on Castlepollard, the lakes combine with a hilly landscape, reaching into the drumlins of the northern counties.

The Lakeside areas of Westmeath are among the most scenic landscapes in Ireland, with a remarkable diversity between them.

Low-lying areas alternate between raised boglands and gently undulating landscapes which create short horizons and enclosed, intimate-scaled countryside.

To the east, the plain is relatively flat and relies on its vegetation of hedgerows and groups of trees to create a local environment.

The Royal Canal provides a remarkable passage through undisturbed landscape. It should be seen as a corridor where any development should be treated with great care to maintain the undisturbed quality of the land through which it runs.

**Landscape Character Assessment**

A Landscape Character Assessment has been carried out for inclusion in the County Development Plan 2008-2014, which informs policy for wind energy development, and other development.

**Protected views/landscapes**

Specific places from which views of exceptional importance may be enjoyed have been identified in the previous County Development Plan and these include views across Lough Ree, at Uisneach, from Knockastia, Coolatore, around each of the lakeland areas and from the N6 towards the Eskers near Tyrellspass. These views are enjoyed by local people and tourists alike and are very important in terms of the overall character and setting of valued amenity and heritage areas. In this regard, objectives are contained in the County Development Plan 2008-2014 to preserve and improve these views and one such objective is that “no structure shall be so sited as to hinder the preservation of such views or prospects”. It is also an objective to develop in an appropriate and sensitive manner car parking facilities and viewing places at points where views and prospects of special importance are obtained and where appropriate and in a sensitive manner to have lowered or removed any walls, fences, hedges or other obstruction views. The protected views are listed in the County Development Plan 2008-2014.
High Amenity Areas

Having regard to their amenity and recreational potential, the following areas are designated as Areas of High Amenity:

- Lough Ree Area
- Lough Lene Area
- Lough Owel Area
- Lough Ennell Area
- Lough Derravaragh Area
- Lough Sheelin Area

Do-Nothing Scenario

Continuation of existing policy will restrict development in High Amenity Areas and buffer zones to protect these sensitive areas from unsuitable development. However unsuitable developments such as quarrying and the extractive industries are not specifically mentioned as restricted in all of these areas. The visual impact of such development could be potentially significant in sensitive areas. The lack of a full landscape character assessment to guide future policy formulation for quarrying and wind energy for example may result in inadequate consideration being given to cumulative effects on landscape from development. A landscape character assessment would help to strengthen policy for landscape protection as appropriate and would guide comprehensive strategies for development.

7.3.8 Landscape features of the study area are:

- common pastureland
- Rock of Curry and the Hill of Mael to the east
- extensive conifer plantations bounding the site and throughout the study area
- extensive areas of peat extraction bounding the site and throughout the study area
- Lough Kinale and Derragh Lough to the north
- waymarked walk in the western edge of the study area at Mullaghmeen
- towns of Castlepollard to the southeast and Abbeylara to the north west
- road networks
- Inny River close to the western boundary of the site and the River Glore to the north east
- plains of the greater landscape- a well managed, gently undulating pasture land with hedgerow grid and stands of native species and conifer trees
- existing Camagh Bog extraction site

7.3.9 The landscape of the study area is described in terms of topography, vegetation and land use (specifically towns & settlements, and the road network).
**Towns and Settlements**

7.3.10 The site lies 8 km north west of Castlepollard and 6 km south east of Abbeylara. The smaller village of Coole is 3 km south of the site.

7.3.11 Small settlements, farmsteads, single dwellings and industrial units are scattered throughout the study area (Figure 7.1.1), some prominent due to colour and scale. Only one occupied dwelling was identified in the Visual Envelope.

**Roads**

7.3.12 The existing peat moss extraction area is separated from the R396 road by a 200 m deep woodland strip along its south west boundary. It is bounded to the north by a minor road.

**Site Description**

7.3.13 The above information includes a description of the existing landscape of the site and surrounding area. Elements of the site which contribute to the landscape; landform, land use and vegetation are now considered. The site in its current condition, where progressive extraction has taken place over a period in excess of ten years, is deemed to be the existing site, for the purposes of the baseline study.

7.3.14 The extraction site lies at NGR 241250 275614 in County Westmeath at its border with County Longford. A small ‘Factory Site’, ancillary to the main extraction site, lies 400 m north and 200 m east of the north eastern corner of the main extraction site. It is accessed by a 350 m lane of the minor road 80 m from the north west corner of the main extraction site. Production vehicles and plant are stored and maintained at this location.

7.3.15 The extraction site comprises approximately 108 Ha made up of 94 Ha of existing operational area, two concrete hard-standings for loading and refuelling and a non-productive heathland area of 14 Ha with woodland perimeter. Settlement ponds are located at the four main corners of the site.

7.3.16 The main access to the extraction site is by a lane through a 185 m deep woodland screen belt off the R396 road.

**Landform**

7.3.17 The study area is at the north west extent of Westmeath.

'Westmeath has a variety of landscapes but the most prominent one can be described as an 'undulating pattern of low hills, patches of woodland and bog, with many lakes nestling in shallow valleys'. Mountains are almost absent; the highest point is at 280 metres on the Hill of Mullaghmeen in the extreme north of the County.'
7.3.18 Mullaghmeen lies 8 km north east of the site. With the exception of Mullaghmeen and the Hill of Mael (241 m OD) the study area is a gently undulating landscape lying predominantly between 60-120 m OD.

‘In Westmeath, we see predominantly a post-glacial landscape, with lakes and bog-land, tree-covered eskers and drumlins. In the North of the County, centred on Castletown, the lakes combine with a hilly landscape, reaching into the drumlins of the northern counties.’

**Vegetation**

7.3.19 The vegetation in the site locality, combines with the topography to cause intermittent enclosure and opening of the landscape reducing the extent of the Visual Envelope. Woodland blocks of bog-land species and other native species along with conifer plantations with distinct edges and dark green colouring are common amongst the pastureland hedgerow grid, and areas of peat extraction which are a characteristic of north Westmeath. Marshy grassland, gorse lands mires and fens were also noted. The site locality is characterised by areas of peat extraction and conifer plantation set in a well-managed pastureland with hedgerow grid and stands of mature trees. The conifer plantations have harvested areas characterised by broken uneven ground, uprooted stumps and dead timber giving rise to low sensitivity and landscape value.

**Land Use**

7.3.20 The study area is largely in agricultural use, however significant areas of peat extraction and forestry were identified. Minor industrial and commercial uses are also present. Within the Visual Envelope, uses are largely agricultural and peat extraction.

**Designated Areas & Planning Context**

7.3.21 The SEA Environmental Report for Westmeath County Development Plan 2008-2014 summarises the planning context as:

*The subject site is within the Westmeath County area. The Westmeath County Development Plan (2008-14) is the current statutory Development Plans for the area. The proposed continuation of peat extraction has regard to and is in accordance with the policies and objectives of the County and Town Development Plans.*

**Sites of Environmental Interest**

7.3.22 There are a number of significant National and International designated conservation areas located within 5 km of the site including NHAs, proposed NHAs, SACs and SPAs. These include the following:

- Lough Derravaragh NHA (Site Code 000684)
- Lough Kinale & Derragh Lough NHA (Site Code 000985)
• Hill of Mael & The Rock of Curry pNHA (Site Code 000681)
• Lough Sheelin pNHA (Site Code 000987)
• Lough Bane pNHA (Site Code 001721)
• Moneybeg & Clareisland Bogs SAC (Site Code 002340)
• Lough Derravaragh SPA (Site Code 004043)
• Lough Kinale & Derragh Lough SPA (Site Code 004061)

7.3.23 The closest designated site is the Hill of Mael & The Rock of Curry which lies over 2 km to the north east of the operational site boundary. Lough Kinale & Derragh Lough lies approximately 4 km north of the site. Whilst Lough Derravaragh to the south, Moneybeg & Clareisland Bogs and Lough Sheelin all to the north all lie over 5 km distant from the operational site boundary. No impact is considered likely on these designated sites due to the nature of Bulrush Horticulture operations, the mitigation detailed later in this chapter and the distance to these designated sites. A ruined castle is located 800 m east of the site but is screened from it by a 200 m deep woodland block on the eastern site boundary and also by stands of mature native species trees. No impacts upon it are expected.

Surveyors Subjective Impressions of the Landscape.

7.3.24 Eleven components of the landscape are described by underlining the most appropriate word.

<table>
<thead>
<tr>
<th>SCALE:</th>
<th>intimate</th>
<th>small</th>
<th>large</th>
<th>vast</th>
</tr>
</thead>
<tbody>
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<td>interesting</td>
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<td>PLEASURE</td>
<td>offensive</td>
<td>unpleasant</td>
<td>pleasant</td>
<td>very pleasant</td>
</tr>
</tbody>
</table>

Landscape and Visual Impacts - Existing Conditions

Visual Context

7.3.25 The gently undulating nature of the drumlin topography along with significant levels of conifer plantations greatly reduces the overall visibility of the development. Views are of a gently undulating agricultural landscape containing shallow drumlins, pasture, hedgerow grid and woodland areas, both mature and recently harvested and with peat extraction areas visible from minor roads. In the immediate site locality farmsteads are present but not in significant density.
**Visual Character**

7.3.26 Existing views of the site for the main receptor groups include the following elements:
- existing brown coloured extraction plain and standing water (settlement ponds)
- flat heathland of non-productive area
- stands of conifers and bog species trees on the site boundaries
- site plant and traffic during operations

7.3.27 The relatively flat nature of the extraction plain gives rise to a sense of openness.

**Visibility of the Site**

7.3.28 The gently undulating topography in combination with hedgerows and to a greater extent, woodlands effect the extent of visibility of the site. A 185 m deep conifer belt separates the site from the R396 screening it except for a glimpse through a harvested portion. As a consequence of the thickening of this belt at the southern boundary of the site along with intermediate vegetation, there are no views from the south and the settlement of Coole. Similarly, a 200 m deep belt of conifers on the eastern boundary of the site obscures it from this orientation. The site is bounded to the north by a minor road. The separating hedgerow is gappy and there are several service accesses to the site. Panoramic glimpse views of the site arise along the length of this frontage. North of this road are further peat extraction sites. There is a single occupied dwelling, 500 m from the junction of the minor road with the R396, which has view of the site albeit almost obscured by intermediate vegetation in the summer, though more substantial in winter. This dwelling has been designated 'Dwelling A'. The extent of the Visual Envelope is very modest (Figure 7.1.1).

**Receptor Groups & Representative Viewpoints**

7.3.29 The desk top study suggested the following main receptors of visual impacts which were investigated on site:

(i) residents of Dwelling A
(ii) travellers on the R396
(iii) travellers on the minor road north of the site
(iv) agricultural, forestry and peat extraction operatives on adjacent sites

7.3.30 Consideration is also given to the numbers of people in receptor groups and the duration of view.

**Landscape value assessment**

7.3.31 Landscape elements were identified and assessed for sensitivity and value (Table 7.3.1).
### Table 7.3.1 Landscape Value Assessment

<table>
<thead>
<tr>
<th>Landscape Element</th>
<th>Sensitivity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>common pastureland</td>
<td>moderate</td>
<td>medium</td>
</tr>
<tr>
<td>Rock of Curry and the Hill of Mael to the east</td>
<td>moderate</td>
<td>high</td>
</tr>
<tr>
<td>conifer plantations</td>
<td>low</td>
<td>low</td>
</tr>
<tr>
<td>areas of peat extraction</td>
<td>low</td>
<td>low</td>
</tr>
<tr>
<td>Lough Kinale and Derragh Lough to the north</td>
<td>high</td>
<td>high</td>
</tr>
<tr>
<td>Mullaghmeen waymarked walk</td>
<td>high</td>
<td>high</td>
</tr>
<tr>
<td>Inny River close to the western site boundary</td>
<td>moderate</td>
<td>medium</td>
</tr>
<tr>
<td>existing Camagh Bog extraction site</td>
<td>low</td>
<td>low</td>
</tr>
<tr>
<td>settlements of Castlepollard, Abbeylara &amp; Coole</td>
<td>moderate</td>
<td>medium</td>
</tr>
<tr>
<td>plains of the local landscape</td>
<td>moderate</td>
<td>medium</td>
</tr>
<tr>
<td>road network</td>
<td>low</td>
<td>low</td>
</tr>
</tbody>
</table>

### Conclusions of the Baseline Study of the Receiving Environment

7.3.32 The site in its current condition, where progressive extraction has taken place over a period in excess of ten years, is deemed to be the existing site, for the purposes of the baseline study.

7.3.33 The high value landscape elements are sufficiently distant from the development so as to be largely unaffected. The remaining landscape elements have either moderate or low sensitivities and medium to low values.

### Development Proposals & Landscape Treatment

### Existing and Proposed Site

7.3.34 The existing site is 108 Ha in extent, and the site had planning permission granted for a moss processing plant in 1989. Most of this area is a shallow domed plain of exposed peat ribbed with parallel drainage ditches. An area amounting to 14 Ha adjacent to the site entrance is a heathland with a woodland perimeter strip. There are settlement lagoons at the four corners of the site and concrete hardstandings both at the end of the main entrance access lane of the R396 road and a secondary access off the minor road at the north east corner of the site. No alterations to this layout are anticipated other than the progressive reduction in levels of the exposed peat plain as extraction proceeds, along with consequential alterations to the drainage ditch layout. Existing ground levels vary across the site by less than 2.5 m and rise and fall seasonally as the peat expands and contracts depending on its moisture content. Expected final levels after 20-25 years of extraction will be affected by a variance in quality and depth of material across the site but it is expected that the levels in the current operational area will be reduced by approximately 3-5 m.

### Project Description

7.3.35 This Environmental Impact Statement (EIS) accompanies the application for an Integrated Pollution Prevention and Control (IPPC) Licence to the Environmental Protection Agency which will allow the continuation of peat extraction operations at
Camagh Bog. The reserve will continue to provide an important source of milled peat for the next 20-25 years. A detailed process description is provided in Section 2.

**Duration**

7.3.36 It is estimated that the reserve could last a further 20-25 years at current extraction rates.

**Restoration**

7.3.37 Bulrush Horticulture will develop site specific plans relating to appropriate remediation, decommissioning, restoration and aftercare as part of the overall management process for Camagh Bog. Currently, on the basis that it is worked to its maximum potential, significant reserves remain within the Camagh Bog site, estimated to be in excess of 20-25 years at current extraction rates. Opportunities for rehabilitation will only begin to arise after approximately 15 years, when the shallower areas are worked out. Rehabilitation offers a platform of possibilities. These include forestry, agricultural use, regeneration of heather moorland for sport and restoration of a peatland or wetland habitat through the control of the water table. Possibly a combination of all these options might be considered, to fit the site to the prevailing landscape around it. However, it would be rash to predict the priorities which will apply in 20-25 years, when decisions will have to be taken. The following options are proposed, therefore, in this context.

7.3.38 At the end of production, 0.5 m of peat will be left *in-situ* as a foundation for rehabilitation. If recreation of a natural wetland is the objective, then the first rehabilitation measure will be to re-profile the bog surface where necessary and back fill the field ditches. Main collecting ditches will be stopped up to promote the raising of the water table. There should be no disturbance of the mineral layer below the peat except where collecting drains have penetrated the subsoil to achieve necessary gradient. In such situations it may be necessary to seal these with clay. All pipe systems and relics of production activities will be removed. Once the water table is re-established, selective planting or seeding with wetland species as a stimulus to natural regeneration of vegetation will be undertaken.

7.3.39 If forestry is the chosen after use, then the ditch system will be left in place to provide drainage. Planting into the shallow layer of peat should, with fertilisation, provide the ideal growing medium for commercial forestry, or for certain species of indigenous trees established for amenity/habitat purposes.

7.3.40 If agricultural use is the priority option then piping of the ditch system will be required to enable regular passage of machinery and safe use by livestock, while maintaining a good system of drainage. Major profiling to give a reasonably level surface would also be desirable. Establishing grass would then be a matter of providing sufficient lime and fertiliser, and careful management in the early years. The establishment of heather moorland would probably be the least proactive form of rehabilitation. The relatively dry residual peat would form the ideal medium for heather to establish
naturally, just as has frequently occurred on cut-over bog land after quite short periods.

7.3.41 As described above, several options have been considered for potential after-use. Bulrush Horticulture has stated that it would seek to work within best practice and the requirements of the regulators in order to determine an appropriate after-use. Bulrush Horticulture would seek to consult with all stakeholders and interested parties including statutory and non-statutory agencies at the appropriate time.

7.3.42 Topographically, the restoration aim, after peat extraction has ceased and all plant and machinery removed from the site, is to grade gently back from the site perimeter levels to the worked out floor of the extraction plain free from any standing water bodies and with a suitable floor profile for the establishment of the preferred environment.

7.3.43 The Restoration Concept plan has not been provided at this stage as an agreed concept has yet to be developed. However, the restoration concepts outlined above demonstrate how the peat extraction site can be restored to a woodland or heathland habitat ensuring no long term adverse impacts will arise. A sectional representation of the restoration proposal was found to be ineffective due to the incompatibility of the vertical scale, where changes were in the order of 3-5 m, and the horizontal scale which extends in excess of 1200 m across the site.

Landscape Impacts – Proposed Conditions

7.3.44 Under the EPA Guidelines, this includes an assessment of the 'do nothing' approach alongside the predicted impacts of changes in character and visibility in terms of land form, land use and vegetation. The predicted impacts may be indirect, secondary or cumulative. Visual impacts may occur by means of intrusion and/or obstruction. Assessment criteria and terminology are set out in Appendix 2.

'Do Nothing' Outcome

7.3.45 If the licensing application is unsuccessful, excavation will cease giving rise to negative impacts on employment levels in the local economy.

Source, Significance, Timing & Duration of Effects on the Landscape from the Progressive Peat Extraction

7.3.46 The continuing peat extraction will affect the landscape of the site giving rise to impacts on the landscape character of the Visual Envelope and visual impacts to viewers in this area. Potential effects on the landscape character and visual amenity could arise from:

(i) traffic on and off site associated with peat extraction
(ii) pollution of adjacent roads due to run off from lorries
(iii) site plant, access, turning areas and service tracks
7.3.47 The extraction process has been on-going in excess of 10 years giving rise to all the effects identified above bar restoration. It is anticipated that these effects will continue at the same magnitudes throughout the remaining extraction phase of site operations with the restoration impacts towards the end of the extraction phase and increasing in magnitude in the intermediate term until maturity is reached.

7.3.48 Effects (i)–(iii) are and will be Adverse and constant in magnitude throughout the extraction phase (Medium Term) and restoration implementation phase (Temporary) but ceasing thereafter.

7.3.49 Effect (iv) will increase in magnitude throughout the extraction period (Medium Term), reduce slightly during the restoration implementation phase (Temporary) and remain unchanged in the Long Term.

7.3.50 Effect (v) will be beneficial and increase in magnitude in the Medium term and remain unchanged upon maturity in the Long term.

**Potential Impact of Development on Landscape Character of the Visual Envelope**

7.3.51 The impact on landscape character depends on the vulnerability and sensitivity of the affected landscape. The effects of the progressive reduction in land levels during the extraction phase, restoration contour formation and progressively maturing restoration planting on the identified landscape elements are considered in turn.

**The Common Pastureland**

7.3.52 This landscape characteristic relates to the entire study area. The magnitude of change is *Slight* in terms of the study area with the cumulative aspect being more significant. It is adverse during the extraction phase and benign after the restoration works are established. Using the assessment criteria set out in Appendix 2, a *Slight* magnitude of change to a landscape element of *Medium* sensitivity gives rise to *Moderate/minor* adverse effects on the landscape. *Moderate/minor* effects are not deemed *significant* and the effect of the development on the landscape is considered acceptable.

**The Rock of Curry and the Hill of Mael to the East.**

7.3.53 The magnitude of change of perception of these hill features is *Slight* due to their distance from the extraction site. It is adverse during the extraction phase and benign after the restoration works are established. Using the assessment criteria set out in Appendix 2, a *Slight* magnitude of change within a landscape of *Moderate* sensitivity and *High* value gives rise to *Moderate* adverse effects on this aspect of the landscape. *Moderate* effects are not deemed *significant* and the effect of the development on the landscape is considered acceptable.
Conifer Plantations

7.3.54 The magnitude of change is *Slight*. The conifer plantations in the site locality have harvested areas characterised by broken uneven ground, uprooted stumps and dead timber giving rise to low sensitivity and landscape value. A neutral cumulative effect however arises with the possibility of the post extraction use as a permanent woodland or conifer plantation subject to harvest. Using the assessment criteria set out in Appendix 2, a *Slight* magnitude of change to a landscape element of *Low* sensitivity gives rise to *Low* adverse effects on the landscape. *Low* effects are not deemed *significant* and the effect of the development on the landscape is considered acceptable.

Areas of Peat Extraction

7.3.55 These are low sensitivity elements and of low value in the landscape and are negligibly affected by the continuing extraction on the site and subsequent restoration.

Lough Kinale & Derragh Lough to the North

7.3.56 These are sufficiently distant from the extraction site at Camagh to ensure that any perception of change to these High Value and Sensitive landscape elements will be negligible during the extraction period and when restoration planting matures. Using the assessment criteria set out in Appendix 2, a *negligible* magnitude of change to a landscape element of *High* sensitivity gives rise to *negligible* adverse effects on the landscape. *Negligible* effects are not deemed *significant* and the effect of the development on the landscape is considered acceptable.

Mullaghmeen Way Marked Walk

7.3.57 The effects of distance from the extraction site at Camagh and intermediate vegetation ensure that any perception of change to this High Value and Sensitive landscape element will be negligible during the extraction period and when restoration planting matures. Using the assessment criteria set out in Appendix 2, a *negligible* magnitude of change to a landscape element of *High* sensitivity gives rise to *negligible* adverse effects on the landscape. *Negligible* effects are not deemed *significant* and the effect of the development on the landscape is considered acceptable.

Inny River Close to Western Site Boundary

7.3.58 The Inny River is screened from the site to the west by conifer plantations and to the north by gentle drumlins densely capped with gorse. In this light, the magnitude of change in perception of the river is assessed as *Slight*. Using the assessment criteria set out in Appendix 2, a *Slight* magnitude of change to a landscape element of *Moderate* sensitivity gives rise to *Slight* adverse effects on the landscape. *Slight*
effects are not deemed significant and the effect of the development on the landscape is considered acceptable.

**Settlements of Castlepollard, Abbeylara & Coole**

7.3.59 These are sufficiently distant from the extraction site at Camagh to ensure that any perception of change to these landscape elements will be negligible during the extraction period and when restoration planting matures. Using the assessment criteria set out in Appendix 2, a negligible magnitude of change to a landscape element of Medium sensitivity gives rise to negligible adverse effects on the landscape. Negligible effects are not deemed significant and the effect of the development on the landscape is considered acceptable.

**The Plains of the Local Landscape**

7.3.60 This element of the landscape has been significantly degraded by peat extraction and conifer harvesting and consequently has a low sensitivity to changes arising from continuing extraction. The magnitude of change is deemed to be negligible during the extraction period as the extraction footprint will not increase and the change of levels is not significant. Changes arising from either a heath moorland or woodland restoration options will give rise to Neutral/Beneficial effects in the Long Term. Using the assessment criteria set out in Appendix 2, a negligible magnitude of change to a landscape element of Low sensitivity gives rise to negligible adverse effects on the landscape. Negligible effects are not deemed significant and the effect of the development on the landscape is considered acceptable.

**Road Network**

7.3.61 The two roads of the study area road network effected by the proposal are the R396 regional route off which the site is accessed, and the minor road which forms the site’s northern boundary. They are both identified as being of low landscape value and low sensitivity to change. A conifer plantation largely screens the site from the R396. The operational traffic and site colouring will remain at current levels throughout the extraction period with the minor alterations to the land form giving rise to negligible effects on the perception of the R396 in the landscape. If the restoration comprises a woodland landscape then upon maturity in the Medium and Long Term, there will be a slight neutral effect arising from increased enclosure of the road within the landscape.

7.3.62 The minor road on the northern boundary has panoramic views of the site through the roadside hedgerow at several locations. The ground level changes during the extraction phase will be more noticeable from this road and again colouring and operational traffic will remain at current levels. A woodland restoration solution will close down the current panoramic long distance view giving rise to a substantial effect on the perception of the road in the landscape in the Medium to Long Term. This effect is considered to be neutral as the resulting interplay of road and woodland will be similar to that of the R396 currently and a common occurrence in the study area. A
heath moorland restoration would retain the panoramic nature of the view from the minor road. In the cases of both roads, using the assessment criteria set out in Appendix 2, a **negligible** magnitude of change to a landscape element of *High* sensitivity gives rise to **negligible** adverse effects on the landscape. **Negligible** effects are not deemed **significant** and the effect of the development on the landscape is considered acceptable.

**Cumulative Effects**

7.3.63 Two cumulative effects were identified:

- the proposal contributes to an on-going reduction of the agricultural character of the landscape.

- extraction of peat and harvesting of conifers are two common activities in the study area which are degrading the greater landscape. The continued extraction at the site adds in a very small measure to this cumulative outcome.

**Secondary Effects**

7.3.64 One secondary effect was identified:

- the proposal will continue to contribute to the local economy of Castlepollard and Abbeylara.

**Conclusions**

7.3.65 No significant primary effects on the landscape were found to arise from the proposed development.

7.3.66 One secondary effect was identified, which was not significant.

7.3.67 Two cumulative effects were identified, which were not significant.

**Impact on Visual Character**

**The Visual Envelope**

7.3.68 The Visual Envelope of the proposed development was deduced by desk top analysis and walk over survey visiting local roads and residential properties (Figure 7.1.1 & 7.3.1). In addition, relevant viewpoints were identified which relate to receptor groups.

7.3.69 The existing site is substantially screened by conifer plantations and woodland blocks around much of its perimeter, the exception being to the north where the site is bounded by a minor road. The resulting Visual Envelope is very modest. Views of the site were identified as follows:
Camagh Bog
County Westmeath
Environmental Impact Statement

Bulrush Horticulture

- Glimpse views from the R396 road, at gaps in the conifer plantation. The site is a narrow brown strip on the skyline (View 02).

- Panoramic views from the minor road on the northern site boundary (Views 10-12 & 15).

- From Dwelling A on minor road at the north west corner of the site (View 17).

Viewpoint Assessment

7.3.70 The effect of the development is predicted through the analysis of viewpoints selected to represent views seen by identified receptor groups (Table 7.3.2).

Table 7.3.2 Viewpoints Analysis

<table>
<thead>
<tr>
<th>Receptor Group</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents of dwelling A</td>
<td>medium</td>
</tr>
<tr>
<td>Travellers on the R396 road and minor road</td>
<td>low</td>
</tr>
<tr>
<td>Travellers on the minor road</td>
<td>low</td>
</tr>
<tr>
<td>Forestry, peat extraction &amp; agricultural workers on adjacent lands.</td>
<td>low</td>
</tr>
</tbody>
</table>

7.3.71 From all viewpoints, visual intrusion effects arise. Visual obstruction is largely absent.

Residents of Dwelling A

7.3.72 View 17 portrays a typical view from the garden of dwelling A. The existing view is a level managed pasture in the foreground, a strip of bog-land and trees in the middle ground and a glimpse of the north west corner of the site through intermediate vegetation, in the background. In the predicted view, no change is anticipated during the extraction phase as the proposed changes to the topography are too modest to be discerned through the intermediate vegetation. In the Long Term, should a woodland restoration landscape be provided then a modest change in the expansiveness of the view and the sense of enclosure would arise.

7.3.73 The magnitude of change is predicted as Neutral. No significant impacts arise and the effect of the development on visual amenity is considered acceptable.
Figure 7.3.1 Existing Site & View Locations
Travellers on R396 Road

7.3.74 View 03 is a typical view of the R396 road in the vicinity of the site. A conifer plantation separates the road from the site and views are restricted to glimpses only, where gaps in the plantation arise due to harvesting. View 02 is such a glimpse. The site can be seen as a thin brown strip on the skyline, partially obscured by the roadside hedgerow and by the degraded landscape arising from conifer harvesting. In the predicted view, no change is anticipated during the extraction phase as the proposed changes to the topography are too modest to be discerned through the intermediate vegetation. In the Long Term, should a woodland restoration landscape be provided then a modest change in the expansiveness of the view and the sense of enclosure would arise.

7.3.75 The magnitude of change is predicted as Neutral. No significant impacts arise and the effect of the development on visual amenity is considered acceptable.

Travellers on Minor Road on the Northern Site Boundary

7.3.76 The nature of the view will be a series of glimpses of the brown extraction plain through gaps in the hedge over a distance of 1.3 km along the site’s northern boundary (Views 10-13 & 15). This is a small receptor group, mostly either connected to local extraction and forestry uses or to the farmsteads in the locality and familiar with the Medium Term cycle of extraction and restoration, or plantation and harvesting that is common in the study area. The magnitude of change is predicted as Moderate/Slight Adverse during the Medium Term extraction phase and Moderate/Neutral or Beneficial in the Long Term as the restoration provision matures.

7.3.77 Using the assessment criteria set out in Appendix 2, this is a Low sensitivity viewpoint perceived by a small receptor group over a short duration, which in combination with a Moderate/Slight Adverse magnitude of change amounts to a Moderate effect on visual amenity. Moderate effects are not deemed significant and the effect of the development on visual amenity is considered acceptable.

Forestry, Peat Extraction & Agricultural Workers on Adjacent Lands

7.3.78 This receptor group working in the peat extraction and forestry sectors along with a lesser number involved in sheep and dairy farming are deemed to have a low sensitivity to change in the landscape in which they work. The proposal represents an element of the Medium Term cycle of extraction and restoration, or plantation and harvesting that is common in the study area. The magnitude of change is predicted
as Moderate/Slight Adverse during the Medium Term extraction phase and Moderate/Neutral or Beneficial in the Long Term as the restoration provision matures.

7.3.79 Using the assessment criteria set out in Appendix 2, this is a Low sensitivity viewpoint perceived by a small receptor group over an extended duration, which in combination with a Moderate/Slight Adverse magnitude of change amounts to a Moderate effect on visual amenity. Moderate effects are not deemed significant and the effect of the development on visual amenity is considered acceptable.

**Long-Term Landscape & Visual Impacts**

7.3.80 Adverse landscape and visual impacts will increase Slightly during the proposed 20-25 year extraction period (Medium Term). Subsequently, as restoration planting matures, adverse impacts will diminish to Negligible. The proposed restoration of the site will be the subject of further consideration over the extraction period but each of the probable outcomes, namely, heathland, woodland or pastureland, give rise to Neutral or Beneficial Long Term effects on the landscape.

**Conclusions**

- effects on the visual amenity arise through intrusion rather than obstruction.
- the Visual Envelope is modest.
- the site is only visible to any extent from the minor road along its northern boundary.
- adverse visual impacts will increase Slightly during the proposed 20-25 year extraction period (Medium Term) arising from the changing site levels. Colouring and form will remain unchanged. After restoration planting has matured, this colour contrast of the site with the greater agricultural landscape arising from the red/brown hues of the peat will diminish, along with the adverse effects, to Slight levels.
- applying criteria set out in Appendix 2 there are no significant visual effects, therefore rendering the development acceptable.
View 03: The R396 road adjacent to the site entrance.

View 04: Concrete hardstanding at the main site entrance.
View 05 Bog drainage trench.

View 06: Unextracted, heathland portion of the site with drainage ditch.
View 07: Settlement pond becoming integrated into the heathland landscape.

View 08: The landscape after conifer harvest.
View 17 The north west corner of the site viewed from Dwelling A.
View 18: Woodland at southern access provision.
View 21 Typical peat extraction plant.

View 22: Typical peat extraction plant.
View 23: Typical peat extraction plant.
7.4 Mitigation

7.4.1 A range of improvements and mitigation measures are either a consequence of development or specifically included in order to offset the landscape and visual impact of the proposals. These proposals can be considered under the four main areas of mitigation:

- compensation;
- avoidance of impact
- reduction of impact
- remediation

Compensation

7.4.2 Compensation arises during the restoration period. This study considers the current operation to be the baseline for appraisal. All aspects will remain largely at their current magnitudes with the exception of a modest reduction in the levels of the current extraction footprint of around 3-5 m. Compensation arises after restoration in that the resulting landscape will be of higher quality and value than that surveyed in the baseline study.

Avoidance of Impact

7.4.3 The continuation of the existing operation is a more sustainable use of land than developing a green field site.

Reduction of Impact

7.4.4 Bulrush Horticulture will undertake the provision of perimeter screen planting as necessary to maintain the sites low level of visibility in the local landscape. The main components of this perimeter screening will be two fold.

7.4.5 Firstly, increased maintenance of the roadside hedgerow along the minor road at the sites northern boundary where views of the site are of the greatest magnitude. This will include the thickening of the existing growth by pruning and fertilizing and ‘gapping up’ thin areas of hedge with native species whips.

7.4.6 Secondly, on-going communication with adjoining conifer plantation controllers, to ensure that perimeter tree planting can be provided to mitigate any increasing views of the site that may arise due to harvesting of parts of the conifer belts on the east and west boundaries of the site.
Remediation, Decommissioning, Restoration & Aftercare

7.4.7 Bulrush Horticulture will develop site specific plans relating to appropriate remediation, decommissioning, restoration and aftercare as part of the overall management process for Camagh Bog. Currently, on the basis that it is worked to its maximum potential, significant reserves remain within the Camagh Bog site, estimated to be in excess of 20-25 years at current extraction rates. Opportunities for rehabilitation will only begin to arise after approximately 15 years, when the shallower areas are worked out. Rehabilitation offers a platform of possibilities. These include forestry, agricultural use, regeneration of heather moorland for sport and restoration of a peatland or wetland habitat through the control of the water table. Possibly a combination of all these options might be considered, to fit the site to the prevailing landscape around it. However, it would be rash to predict the priorities which will apply in 20-25 years, when decisions will have to be taken. The following options are proposed, therefore, in this context.

7.4.8 At the end of production, 0.5 m of peat will be left in-situ as a foundation for rehabilitation. If recreation of ‘natural’ wetland is the objective, then the first rehabilitation measure will be to re-profile the bog surface where necessary and back fill the field ditches. Main collecting ditches will be stopped up to promote the raising of the water table. There should be no disturbance of the mineral layer below the peat except where collecting drains have penetrated the subsoil to achieve necessary gradient. In such situations it may be necessary to seal these with clay. All pipe systems and relics of production activities will be removed. Once the water table is re-established, selective planting or seeding with wetland species as a stimulus to natural regeneration of vegetation will be undertaken.

7.4.9 If forestry is the chosen after use, then the ditch system will be left in place to provide drainage. Planting into the shallow layer of peat should, with fertilisation, provide the ideal growing medium for commercial forestry, or for certain species of indigenous trees established for amenity/habitat purposes.

7.4.10 If agricultural use is the priority option then piping of the ditch system will be required to enable regular passage of machinery and safe use by livestock, while maintaining a good system of drainage. Major profiling to give a reasonably level surface would also be desirable. Establishing grass would then be a matter of providing sufficient lime and fertiliser, and careful management in the early years. The establishment of heather moorland would probably be the least proactive form of rehabilitation. The relatively dry residual peat would form the ideal medium for heather to establish naturally, just as has frequently occurred on cut-over bog land after quite short periods.

7.4.11 As described above, several options have been considered for potential after-use. Bulrush Horticulture has stated that it would seek to work within best practice and the requirements of the regulators in order to determine an appropriate after-use. Bulrush Horticulture would seek to consult with all stakeholders and interested parties including statutory and non-statutory agencies at the appropriate time.
7.4.12 Topographically, the restoration aim, after peat extraction has ceased and all plant and machinery removed from the site, is to grade gently back from the site perimeter levels to the worked out floor of the extraction plain free from any standing water bodies and with a suitable floor profile for the establishment of the preferred environment.

7.4.13 The Restoration Concept plan has not been provided at this stage as an agreed concept has yet to be developed. However, the restoration concepts outlined above demonstrate how the peat extraction site can be restored to a woodland or heathland habitat ensuring no long term adverse impacts will arise. A sectional representation of the restoration proposal was found to be ineffective due to the incompatibility of the vertical scale, where changes were in the order of 3-5 m, and the horizontal scale which extends in excess of 1200 m across the site.
SECTION 8 - FLORA & FAUNA

8.1 Introduction

8.1.1 The objective of this section is to describe and evaluate the existing flora and fauna of the site within the ownership boundary, to provide an assessment of the impact of peat extraction works on flora and fauna and, where possible, put forward mitigation measures to reduce their impact.

8.1.2 The study area is land within the ownership boundary of Bulrush Horticulture at Camagh Bog – a raised bog being worked for extraction of peat. Camagh Bog is located approximately 2.5 km north west of Coole Village and 7 km north west of Castlepollard, County Westmeath (NGR: 241250, 275614). A part of the site boundary lies within 300 metres of the River Inny due west and approximately 7 km north of Lough Derravaragh, a Special Protection Area (SPA). The site adjoins commercial forest plantations to the east, west and south and cutover bog/rough grassland to the north, across a public road.

8.1.3 Bulrush Horticulture is required to apply to the Environmental Protection Agency (EPA) for an Integrated Pollution Prevention Control (IPPC) License under the Environmental Protection Agency Acts, 1992 and 2003 due to ‘the extraction of peat in the course of business which involves an area exceeding 50 hectares’. The principal environmental considerations undertaken by the operator Bulrush Horticulture involve fugitive air emissions and surface water discharges arising from the sites operational activities. At present, the potential impacts are minimised through the implementation and deployment of Best Available Techniques (BAT) including the use of modern mechanical harvesting machinery, drainage ditches fitted with flow restricting pipes, sump holes, oil boom plates and settlement ponds.

8.1.4 In addition, as part of the IPPC License application, there is a requirement to provide information on existing habitats (with their flora and fauna), and an assessment of the impact of current work practices.

8.2 Methodology

Desk-top Study

8.2.1 A desk top study was carried out to examine whether any records of protected species or designated areas exist, on or adjacent to the application site. Consultee responses are presented at the end of this section, with the following organisations contacted:

- NPWS Applications Unit and database of Protected Areas e.g. SAC, SPA.
- BirdWatch Ireland.
**Field Survey**

8.2.2 A Habitat Survey and Breeding Bird Survey of Camagh Bog was undertaken on 22nd April 2013. Habitats were classified according to the Heritage Council’s ‘A Guide to Habitats in Ireland’ (Fossitt 2000) and plant and bird species lists were prepared (Tables 8.3.1 and 8.3.2).

8.2.3 Bird survey methods were based on a modified Brown and Shepherd methodology for birds of moorland/peatland (Brown and Shepherd 1993) and Common Bird Census Methodology techniques (Marchant 1983) using visual sightings and auditory identification of songs and calls. The survey was designed to record all breeding birds but specifically focused on Species of Conservation Concern i.e. Annex 1 Bird Directive 79/409/EEC and Red-Listed species in Birds of Conservation Concern in Ireland (BOCCI). Therefore, birds such as Raptors, Red Grouse and Waders were of special interest. A route was walked, which enabled all parts of the site to be adequately viewed. Poor weather (wind above force 5 and continuous heavy rain) was avoided. Birds seen or heard were recorded on aerial photo/maps using British Trust for Ornithology (BTO) species code and activity registrations as specified in the Common Bird Census Methodology Instructions. Sightings/signs of all bird species were later transferred to summary maps and tables.

8.2.4 Mammal species were also noted and were identified by observations of tracks and droppings or through direct sightings. Suitable habitat was searched for evidence of badger activity.

8.2.5 A photographic record of the site was made and a representative selection is presented in this EIS.

**Impact Assessment**

8.2.6 This Impact Assessment was undertaken using advice and guidelines set out in:


8.2.7 The European Union regulations are transposed into Irish law by the European Union (Natural Habitats) Regulations, 1997 (S.I. No 94 of 1997).

8.2.8 A search for protected plant and animal species was undertaken as part of this assessment. Statutory site designations and other sites of local nature conservation importance were taken into account.
8.3 Results

Existing habitats within the application area

8.3.1 Habitats recorded are listed below and mapped as shown in Figure 8.3.1. A larger scale version of this habitat map is presented in Appendix 3. A plant species list is presented in Table 8.3.1. A list of bird species and their current status is presented in Table 8.3.2 and any mammals recorded during the survey are recorded in Table 8.3.3.

Figure 8.3.1. Habitat Map

Habitats (Fossitt 2000):

FL8 – Other Artificial Lakes and Ponds.

8.3.2 These are represented by silt trap ponds, which are located at the four corners of the site. What appear to be older ponds that have partly re-vegetated are located at the southern part of the bog and close to the southern access road and loading area. No other areas of open water are present on site. The older ponds contain shallow water with Reedmace and Rushes as emergent plant species.
PB4 – Cutover Bog.

8.3.3 Cutover bog covers most of the site. Approximately 80% has been stripped of its surface or milled. The remainder has been prepared for extraction by drainage and partial stripping but has re-vegetated with Ling Heather and other plants typical of raised bog. Small strips (2-10 m wide) of modified bog remain along the site boundary, edge of woodland or the road edge. They are generally poor in quality due to machine compaction (travel routes) or other modifications (drainage).

8.3.4 The re-vegetated area is the most diverse part of this habitat and supports mainly Ling Heather, Cross-leaved Heath, Bog Asphodel and Deergrass but very little Sphagnum moss (*Sphagnum capillifolium* and *S. papillosum*), although some is re-colonising.

8.3.5 The modified strips along the road, woodland and bog edges contain patchy Ling Heather and Purple Moor Grass and occasional Bog Myrtle with a few patches of Sphagnum – mainly *Sphagnum capillifolium*. 
Plate 8.3.2 Peat bog prepared for milling.

Plate 8.3.3 Re-vegetated peat bog (drained).

WN7 – Bog Woodland

8.3.6 All of the woodland within the site boundary can be described as bog woodland i.e. woodland that has developed over cutover peat (not Annex 1 Bog Woodland over growing Sphagnum). It is located as a small fragment in the north east corner and as a larger component close to the southern access road. The latter follows the edge of the bog into the south east corner and adjoins the area of re-vegetated bog described above.
8.3.7 Canopy trees consist mainly of Downy Birch, occasional Willow and regenerating Lodgepole Pine, with a shrub layer of patchy Gorse, Ling Heather and Bilberry. The field layer is largely Bramble and Purple Moor Grass with ferns such as Hard Fern and Broad Buckler Fern. The north east corner contains some invading Rhododendron and a few Scot’s Pine.

Plate 8.3.4 Bog woodland.

Plate 8.3.5 Vegetation at the edge of the milled peat and forested area.

WS1 – Scrub

8.3.8 Patches of Scrub were recorded along the northern roadside edge as a narrow strip and around the factory sheds to the north east of the bog (within an old quarry) as part of a separate parcel of land.
8.3.9 Trees and shrub species are mainly Willow, Blackthorn, Hawthorn and Gorse. The field layer contained Bramble, Cock’s Foot Grass and Sedges such as Carnation Sedge. Scrub habitat within the factory/quarry area is rapidly developing into Broad-leaved Woodland. The roadside strip contained plants typical of Cutover Bog habitat. These included Bog Myrtle, Purple Moor Grass and Ling Heather in the shrub and ground layer, and Willow and Blackthorn as the main tree/shrub species.
BL3 – Buildings and other Artificial Surfaces

8.3.10 Built land includes two concrete bases for peat loading, the access road in the southern part of the site and factory buildings with their hard areas for machinery and parking. Also included are small bare patches of ground within the quarry.

Plate 8.3.8 Factory buildings and adjacent scrub

Plant Species

8.3.11 Plants listed in Table 8.3.1 are typical of each type of habitat but not a complete list of all species likely to be present due to the timing of the site visit (late spring rather than mid-summer). Milled peat was obviously devoid of plant life and the fragment of re-vegetated raised bog was impoverished on account of drainage and past operations. No rare or protected plant species was recorded in any of the habitats mapped (Flora Protection Order 1999, Webb 1977).

Table 8.3.1 Plant species recorded within the study area during field survey

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Abundance (DAFOR)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agrostis stolonifera</td>
<td>Creeping Bent</td>
<td>LR</td>
<td>FQ, SC, B</td>
</tr>
<tr>
<td>Alchemilla vulgaris</td>
<td>Lady’s Mantle</td>
<td>LF</td>
<td>FQ</td>
</tr>
<tr>
<td>Andromeda polifolia</td>
<td>Bog Rosemary</td>
<td>R</td>
<td>B</td>
</tr>
<tr>
<td>Betula pubescens</td>
<td>Downy Birch</td>
<td>A</td>
<td>BW, SC</td>
</tr>
<tr>
<td>Bellis perennis</td>
<td>Daisy</td>
<td>O</td>
<td>FQ</td>
</tr>
<tr>
<td>Blechnum spicant</td>
<td>Hard Fern</td>
<td>O</td>
<td>BW</td>
</tr>
<tr>
<td>Calluna vulgaris</td>
<td>Ling Heather</td>
<td>LA</td>
<td>B, SC</td>
</tr>
<tr>
<td>Carex flacca</td>
<td>Glaucous Sedge</td>
<td>LF</td>
<td>FQ</td>
</tr>
<tr>
<td>Crateagus monogyna</td>
<td>Hawthorn</td>
<td>LO</td>
<td>SC, BW, FQ</td>
</tr>
<tr>
<td>Dactylis glomerata</td>
<td>Cock’s-foot Grass</td>
<td>LF</td>
<td>FQ</td>
</tr>
<tr>
<td>Scientific Name</td>
<td>Common Name</td>
<td>Location</td>
<td>Abundance</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------------------------</td>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>Dryopteris dilatata</td>
<td>Broad Buckler Fern</td>
<td>LO</td>
<td>BW</td>
</tr>
<tr>
<td>Epilobium angustifolium</td>
<td>Rosebay Willowherb</td>
<td>LR</td>
<td>BW</td>
</tr>
<tr>
<td>Eriophorum angustifolium</td>
<td>Common Cotton Grass</td>
<td>LF</td>
<td>B</td>
</tr>
<tr>
<td>Eriophorum vaginatum</td>
<td>Hare’s tail Cotton Grass</td>
<td>LF</td>
<td>B</td>
</tr>
<tr>
<td>Erica tetralix</td>
<td>Cross-leaved Heath</td>
<td>LF</td>
<td>B</td>
</tr>
<tr>
<td>Festuca rubra</td>
<td>Red Fescue</td>
<td>LF</td>
<td>FQ</td>
</tr>
<tr>
<td>Hedera helix</td>
<td>Ivy</td>
<td>LF</td>
<td>BW, SC</td>
</tr>
<tr>
<td>Holcus lanatus</td>
<td>Yorkshire-fog</td>
<td>LO</td>
<td>BW, SC</td>
</tr>
<tr>
<td>Juncus butonius</td>
<td>Toad Rush</td>
<td>LO</td>
<td>B</td>
</tr>
<tr>
<td>Juncus effusus</td>
<td>Soft Rush</td>
<td>LF</td>
<td>SC, P</td>
</tr>
<tr>
<td>Juncus inflexus</td>
<td>Hard Rush</td>
<td>LR</td>
<td>FQ</td>
</tr>
<tr>
<td>Molinia caerulea</td>
<td>Purple Moor Grass</td>
<td>LA</td>
<td>B, BW</td>
</tr>
<tr>
<td>Narthecium ossifragum</td>
<td>Bog Asphodel</td>
<td>LF</td>
<td>B</td>
</tr>
<tr>
<td>Plantago major</td>
<td>Greater Plantain</td>
<td>LO</td>
<td>FQ</td>
</tr>
<tr>
<td>Pinus contorta</td>
<td>Lodgepole Pine</td>
<td>LR</td>
<td>BW</td>
</tr>
<tr>
<td>Pinus sylvestris</td>
<td>Scot’s Pine</td>
<td>LR</td>
<td>BW</td>
</tr>
<tr>
<td>Prunus spinosa</td>
<td>Blackthorn</td>
<td>LO</td>
<td>SC</td>
</tr>
<tr>
<td>Pteridium aquilinum</td>
<td>Bracken</td>
<td>LA</td>
<td>BW</td>
</tr>
<tr>
<td>Ranunculus repens</td>
<td>Creeping Buttercup</td>
<td>LO</td>
<td>FQ</td>
</tr>
<tr>
<td>Rhododendron ponticum</td>
<td>Rhododendron</td>
<td>LR</td>
<td>BW</td>
</tr>
<tr>
<td>Rubus sect. Glandulosus</td>
<td>Bramble</td>
<td>LA</td>
<td>BW, FQ</td>
</tr>
<tr>
<td>Salix cinerea</td>
<td>Grey Willow</td>
<td>LO</td>
<td>SC, BW</td>
</tr>
<tr>
<td>Scirpus cespitosus</td>
<td>Deergrass</td>
<td>LF</td>
<td>B</td>
</tr>
<tr>
<td>Sphagnum capillifolium</td>
<td>Bog Moss</td>
<td>LR</td>
<td>B</td>
</tr>
<tr>
<td>Sphagnum papillosum</td>
<td>Bog Moss</td>
<td>LR</td>
<td>B</td>
</tr>
<tr>
<td>Taraxacum agg.</td>
<td>Dandelion</td>
<td>LO</td>
<td>FQ, SC</td>
</tr>
<tr>
<td>Typha latifolia</td>
<td>Reed Mace</td>
<td>LF</td>
<td>P</td>
</tr>
<tr>
<td>Ulex europaeus</td>
<td>Gorse</td>
<td>LO</td>
<td>BW, SC</td>
</tr>
<tr>
<td>Vaccinium myrtillus</td>
<td>Bilberry</td>
<td>LO</td>
<td>BW</td>
</tr>
</tbody>
</table>

**Abbreviations:**

- **Location:**
  - FQ = Factory quarry area
  - B = Bog
  - BW = Bog woodland
  - P = Ponds
  - SC = Scrub
- **Abundance:**
  - W = Widespread
  - L = Localised
  - D = Dominant
  - A = Abundant
  - F = Frequent
  - O = Occasional
  - R = Rare
Birds

8.3.12 Bird species were typical of the habitat types recorded (Figure 8.3.2 & Table 8.3.2). With the exception of Golden Plover all are regarded as common and widespread within Ireland. Along with Wheatear, Golden Plover can be considered as a migrant species passing through on the way to their breeding grounds. Golden Plover are red listed* as a Bird of Conservation Concern in Ireland (BoCCI) and appear on Annex I of the EU Birds Directive 2009/147/EC. Their main conservation concern is as a breeding species. Golden Plover are not breeding on site. They are widespread in the midlands of Ireland during the winter period where they form large flocks and feed on short-sward grassland and roost/rest on bogs and other open ground with good visibility, to avoid predators. Most birds originate from Scandinavia or the Arctic and return there to breed in late spring and early summer. The activity of peat extraction provides no threat to these birds.

8.3.13 Swallows are summer visitors and require buildings for nest sites. They are associated with the factory buildings for this reason. The removal of buildings/sheds will result in loss of nest sites. At present, there are no plans to demolish buildings. The Swallow is amber listed ** – a bird of medium conservation concern in Ireland.

8.3.14 All wild birds are protected under The Wildlife (Amendment) Act, 2000. It is an offence to cut, grub, burn or otherwise destroy semi-natural vegetation such as trees, shrubs and, in certain cases, ground level vegetation, between 1st March and 31st August. This is to prevent disturbance to any birds that may be nesting in such vegetation. The area being milled is not regarded as a breeding habitat for any of the bird species recorded. However, removal of scrub, woodland or modification of older ponds and waterways containing vegetation will likely disturb breeding birds or remove breeding habitat.

* Red listed species are those that are Globally Threatened according to IUCN criteria; those whose population declined rapidly in recent years; and those that have declined historically and not shown a substantial recent recovery.

** Amber-list species are those with an unfavourable conservation status in Europe; those whose population or range has declined moderately in recent years; those whose population has declined historically but made a substantial recent recovery; rare breeders; those with internationally important or localised populations.
### Figure 8.3.2. Bird Registrations – April 22nd 2013 (species codes in Table 8.3.2)

### Table 8.3.2 Birds recorded within the study area during field survey

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>BTO Code</th>
<th>Main Location/Habitat and Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fringilla coelebs</td>
<td>Chaffinch</td>
<td>CH</td>
<td>BW, FQ - common resident</td>
</tr>
<tr>
<td>Turdus merula</td>
<td>Blackbird</td>
<td>B.</td>
<td>BW, FQ - common resident</td>
</tr>
<tr>
<td>Phylloscopus trochilus</td>
<td>Willow Warbler</td>
<td>WW</td>
<td>BW, FQ - Common summer visitor breeding in woodland/scrub</td>
</tr>
<tr>
<td>Phylloscopus collibita</td>
<td>Chiffchaff</td>
<td>CC</td>
<td>FQ – Common summer visitor breeding in woodland/scrub</td>
</tr>
<tr>
<td>Hirundo rustica</td>
<td>Swallow</td>
<td>SL</td>
<td>FQ – FQ (breeding in buildings)</td>
</tr>
<tr>
<td>Parus ater</td>
<td>Coal Tit</td>
<td>CT</td>
<td>BW - common resident</td>
</tr>
<tr>
<td>Parus caeruleus</td>
<td>Blue Tit</td>
<td>BT</td>
<td>FQ - common resident</td>
</tr>
<tr>
<td>Parus major</td>
<td>Great Tit</td>
<td>GT</td>
<td>FQ - common resident</td>
</tr>
<tr>
<td>Sylvia atricapilla</td>
<td>Blackcap</td>
<td>BC</td>
<td>BW, FQ - Common summer visitor breeding in woodland/scrub</td>
</tr>
<tr>
<td>Anthus pratensis</td>
<td>Meadow Pipit</td>
<td>MP</td>
<td>B - common resident, breeding on bog/soil</td>
</tr>
<tr>
<td>Oenanthe oenanthe</td>
<td>Wheatear</td>
<td>W.</td>
<td>B (migrant to area)</td>
</tr>
<tr>
<td>Carduelis flammea</td>
<td>Redpoll</td>
<td>LR</td>
<td>B (flying over)</td>
</tr>
<tr>
<td>Pluvialis apricaria</td>
<td>Golden Plover *</td>
<td>GP</td>
<td>B (migrant)</td>
</tr>
<tr>
<td>Corvus cornix</td>
<td>Hooded Crow</td>
<td>HC</td>
<td>B - common resident (flying over)</td>
</tr>
<tr>
<td>Erithacus rubecula</td>
<td>Robin</td>
<td>R.</td>
<td>BW, FQ, SC - common resident</td>
</tr>
</tbody>
</table>
Mammals

8.3.15 Mammals recorded during the survey are listed in Table 8.3.3 All of these are common and widespread within the region although the Irish Hare has declined in recent years. The re-vegetated raised bog and bog woodland habitats are of high value to Irish Hare.

Table 8.3.3 Mammals recorded within the project area during field survey.

<table>
<thead>
<tr>
<th>Latin Name</th>
<th>Common Name</th>
<th>Main Location / Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Lepus timidus hibernica</em></td>
<td>Irish Hare</td>
<td>B</td>
</tr>
<tr>
<td><em>Oryctolagus cuniculus</em></td>
<td>Rabbit</td>
<td>FQ</td>
</tr>
<tr>
<td><em>Vulpes vulpes</em></td>
<td>Fox</td>
<td>BW, FQ</td>
</tr>
</tbody>
</table>

Designated Areas for Conservation (SAC, SPA)

8.3.16 No designated areas for nature conservation are located within 2 km of the project area. The nearest sites of conservation interest are:

1. Derravaragh Lough SPA (site code 4043) located approximately 7 km to the south, which has been designated for its internationally important wintering wildfowl, notably Whooper Swan *Cygnus Cygnus*, Pochard *Aythya farina*, Tufted Duck *Aythya fuligula*, Coot *Fulica atra* and Wetlands & Waterbirds.

2. Garriskill Bog Special Area of Conservation (SAC - site code 6979) located approximately 10 km to the south west, is a Raised Bog with three Annex I Habitats - Active Raised Bogs, Degraded Raised Bogs still capable of natural regeneration and Depressions on Peat Substrates of the *Rhynchosporion*.

3. Lough Lene SAC (site code 2121), White Loughs, Ben Loughs, Lough Bane & Lough Glass (site code 2120) and Lough Doo (site code 1810) – all approximately 10 km to the south east have been designated for their White-clawed crayfish *Austropotamobius pallipes* and Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.*
8.3.17 None of the activities associated with peat harvesting at Camagh Bog are likely to impact Garriskil, Lough Lene, White Loughs, Lough Bane & Lough Glass and Lough Doo. Lough Derravaragh connects to the River Inny, which receives drainage from Camagh Bog and could potentially be affected by peat silt entering the waterway. Camagh Bog is situated approximately 7 km north of Lough Derravaragh.

8.3.18 None of the cited species referred to above use or rely on habitats recorded at Camagh Bog. However, The European Communities (Natural Habitats) Regulations, 1997, require competent authorities, when considering a plan or project not directly connected with the management of a European site e.g. an SAC or SPA, to undertake an Article 6 Assessment. This assessment will determine if the plan or project, either alone or in combination with other plans or projects, is likely to have a significant impact on the site. Under the terms of the Habitat Regulations, an Article 6 assessment by the competent authority is required for plans or projects e.g. land reclamation, which are outside European sites but may still have an impact on the site. A distance of 15 km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et al., 2006) and applies to Natura 2000 sites within the likely zone of impact of the plan or project.

8.3.19 Camagh Bog is within 15 km of the above SAC and SPA sites. Therefore, consideration of other Natura 2000 sites potentially affected by the peat extraction process should be undertaken in accordance with Article 6 of the Habitats Directive and best practice guidance. The obligation to undertake appropriate assessment derives from Article 6(3) and 6(4) of the Habitats Directive, and both involve a number of steps and tests that need to be applied in sequential order. Article 6 (3) is concerned with the strict protection of sites, while Article 6(4) is the procedure for allowing derogation from this strict protection in certain restricted circumstances.

8.4 Potential Impacts and Mitigation

8.4.1 The elements of the peat extraction process that have potential to impact on flora and fauna have been identified as:

- Any potential loss of existing habitat supporting peatland, scrub and woodland flora/fauna at the site itself.
- Impact on nearby watercourses, notably the River Inny, which runs into Lough Derravaragh SPA.

8.4.2 Existing habitats at Camagh Bog are fragmented and small in size due to peat extraction. Loss of almost all of the raised bog surface vegetation and modification of the bog’s hydrological capacity has already occurred and the flora and fauna of the site is considered to be impoverished, although still having a value for existing wildlife. Species recorded in this survey are present despite ongoing works and have survived the changes to date.
8.4.3 It was also noted that many of the bird species are associated with adjoining habitats (forestry) and move between the two. Within the site, areas of re-vegetated bog and intact bog woodland support the greatest diversity of plant and animal life. The scrub surrounding the factory buildings, some of which are derelict also supports a variety of wildlife, particularly birds (Figure 8.3.2). Bulrush Horticulture currently has no plans to remove or modify these areas.

8.4.4 Mitigation will involve enhancing existing habitat by eradicating the small number of Rhododendron shrubs in the north west corner of the site. Left alone, it is likely that these plants will spread to other areas and become a greater and more expensive problem in future years.

8.4.5 Old silt trap ponds (apparently unused) exist close to the southern access road and loading area. Very little water was present at the time of survey and an active silt pond was operating nearby. These areas support Mallard duck (likely breeding) as well as emergent water plants. Consideration should be given to managing water levels (stabilising and raising slightly) in order to conserve existing flora and fauna and allow colonisation by new species.

8.4.6 Maintaining the narrow strip of vegetation along the roadside will provide a ‘wildlife corridor’ and link to other habitats outside of Bulrush Horticulture’s ownership.

8.4.7 It is unlikely that many wintering birds such as Whooper Swan or wildfowl use this site, as no large areas of open water are present. The wintering Golden Plover (the only Annex I bird species recorded during field survey) use the bare wide-open space of the milled bog for roosting and will not be affected by extraction, which takes place during summer months.

8.4.8 Ground nesting birds such as Meadow Pipit will be using the re-vegetated bog during spring and summer and will not be disturbed by peat milling activities, as this area is to be left alone. Development works will not affect woodland and scrub nesting species, as machinery and staff members do not enter these areas. However, if a small amount of trimming/management of trees and shrubs e.g. Rhododendron removal, is envisaged it will be essential that this is not undertaken between 1st March and 31st August to avoid contravening the Wildlife Act, 2000, which requires protection of ‘wild birds and their nests and eggs, other than wild birds of the species mentioned in the Third Schedule to this Act’ (pest species).

8.4.9 As stated, there is potential for the generation and run-off of silt from exposed peat into the nearby River Inny. The River Inny runs through Lough Derravaragh approximately 7 km south of the site boundary, which has been designated a SPA on account of its wintering waterbird communities. Three of the bird species cited for this SPA rely on diving to exploit benthic organisms. Good water quality and a silt free habitat will be essential in maintaining a favourable habitat status in this SPA. Best Practices are in operation at present with water discharges managed accordingly and under constant review. Hydrological impacts and pollution prevention measures are being addressed in separate sections of this Environmental Impact Statement (EIS).
Bulrush Horticulture take the management of site discharges seriously and invest significant time and resources in ensuring discharges are managed effectively. Substantial information has been supplied already as part of the IPPC Licence application process indicating the extent of operational controls that are applied to the management of site discharges and suspended solid emissions in particular. Section 9 Hydrology, Hydrogeology & Soils discusses these issues in greater detail in the context of this EIS.

8.5 Conclusion

8.5.1 Peat extraction at Camagh Bog is unlikely to impact on flora and fauna recorded during the field survey. Mitigation suggested above will enhance existing habitat. Current operations will maintain the ‘status quo’ and, therefore, not result in any loss of either habitat or species. There are no plans to extend peat extraction into new areas.

8.5.2 Peat extraction will not have an impact on designated sites (SAC, SPA) in the wider area provided water discharge operations comply with current legislation.

Consultation Response

BirdWatch Ireland (e-mail from Dr Olivia Crowe) - No known bird issues other than potential impact on water quality for diving ducks using Lough Derravaragh SPA. This should be addressed by best practice water discharge regimes.


BTO Breeding and Wintering Bird Atlas for Britain and Ireland 2007-2011 – No species of conservation concern in addition to those recorded in this survey have been recorded for the area. Tetrads N47X, which falls over part of the site, was covered by this breeding bird survey. However, coverage of all tetrads within 10km square N47 was recorded as incomplete.

References and Consultation Reading


SECTION 9 - HYDROLOGY, HYDROGEOLOGY & SOILS

9.1 Introduction

9.1.1 This section assesses the proposed continued peat extraction at Camagh Bog with regard to its impact upon soils, geology, surface water bodies and groundwater. The aim of this assessment is to provide detail on three main aspects:

1. The current site condition with respect to the soil, geology and water environments.
2. An evaluation of the potential impacts upon the soil, geology and water environments as a result of the continued peat extraction.
3. Possible mitigation measures which may be employed to prevent, or minimise, any predicted impacts.

9.1.2 With respect to potential impacts on the soils, geology and water conditions at the Camagh Bog site, particularly pertinent aspects of the proposal have been identified as follows:

- It is proposed to continue the abstraction of peat;
- Continued abstraction requires the drainage / dewatering of the peat strata being harvested; and
- An extensive system of drainage channels diverts water to an elaborate and comprehensive system of settlement ponds before water is discharged to the local surface water network.

9.2 Methodology

9.2.1 In order to complete this assessment, the following work facets were undertaken:

- Desk study review of documentary information;
- Site reconnaissance; and
- On-site and laboratory analysis of water quality.

Desk Study

9.2.2 The initial desk study process involved review of extensive environmental information collated as part of an IPPC Licence application (prepared by MARENCO Environmental Consultants); inspection of information supplied by relevant statutory bodies; review of available maps and records; and discussion with Camagh Bog operators. In detail this included:

- Review of the IPPC Licence application documentation including supporting information pertaining to the original application (2011) and additional information prepared in May 2013.
- Review of information held by the Environmental Protection Agency (EPA).
- Inspection of monitoring records provided by Bulrush Horticulture.
- Review of geological, hydrogeological and groundwater vulnerability information, maps and records held by the Geological Survey of Ireland.
- Review of current and historical Ordnance Survey Ireland maps.

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Site Reconnaissance

9.2.3 The Camagh Bog site was visited on several occasions during May 2013 in order to identify all pertinent surface water features (rivers, streams, ponds and drainage channels) within the site and surrounding area and to make notes on their characteristics. During site reconnaissance, observations were also made of the general geological setting of the site. Observations of any groundwater occurrences were also noted. Particular attention was paid to:

- the drainage network within the site
- the location and arrangement of settlement ponds
- surface water discharges from the site
- receiving watercourses of any discharges
- cuttings / excavations which provided geological exposures.

9.2.4 The general hydrological setting of the site and surrounding area is illustrated on Figure 9.2.1; and the arrangement of site drainage ditches and settlement ponds is indicated on Figure 9.2.2.

On-site and Laboratory Analysis of Water Quality

9.2.5 In order to aid in determining current water quality conditions, both on-site hydrochemical testing and laboratory analysis were undertaken. During on-site testing, measurements were taken for the following physico-chemical parameters: pH, electrical conductivity, oxidation reduction potential and visible oils.

9.2.6 On-site testing was carried out at a total of 20 points, ensuring that data was collected from representative drainage ditches, surface water discharge points and receiving watercourses. In addition, water samples were recovered from 8 of the 20 points (specifically targeting the discharge points and receiving watercourses) for subsequent laboratory analysis. These samples were submitted to an accredited laboratory for additional physico-chemical analysis for a range of common contaminants / indicators which could conceivably be associated with the continued abstraction of peat including: total suspended solids, Biochemical Oxygen Demand (BOD), ammonia and phosphate (orthophosphate as P).

9.2.7 The locations of all testing and sampling points are indicated on Figure 9.2.2.

9.3 Results

Bedrock Geology and Hydrogeology

9.3.1 Consultation information provided by the Geological Survey of Ireland (GSI) indicates that the underlying solid geology comprises Carboniferous bedrock. These Carboniferous rocks comprise Visean Age rocks (approximately 330-345 million years old) of the Lucan Formation which is composed of dark grey to black argillaceous and cherty limestone and shale (known as ‘Calp’). An extract of the geological map obtained from GSI is included as Figure 9.3.1.
9.3.2 The nearest available deep exploratory borehole record held by GSI provides bedrock information for a site located approximately 5 km to the south of the Camagh Bog site. The record confirms the presence of ‘Calp’ limestone to a depth of at least 102 m below ground level with a depth to rockhead of 3.7 m (although it is noted that overburden thickness is likely to vary substantially across the 5 km between the borehole and the site).

9.3.3 GSI information indicates that the Carboniferous bedrock beneath the site would be categorised as a ‘Locally Important Aquifer’ with the Lucan Formation being considered to be ‘generally moderately productive’.

Soils / Drift Geology and Hydrogeology

9.3.4 As expected, given the use of the site, continuous peat deposits occupy the entire Camagh Bog site. An extract of the soils map produced by the EPA is included as Figure 9.3.2.

9.3.5 There is a close relationship between the hydrological and hydrogeological aspects of peat bogs. In order for peat to form, waterlogged conditions need to prevail - consequently the accumulated peat is essentially saturated throughout and hence has a very shallow water table. A thin, unsaturated upper layer is periodically present during drier periods when a slight lowering of the water table is observed. Despite being a saturated stratum, peat has an inherently low permeability and acts as an aquitard preventing the infiltration of water to deeper geological strata and therefore affords considerable protection to underlying groundwater resources from surface released contaminants.

9.3.6 In order to dry any bog surface for development / harvesting etc. a series of drains are typically excavated which extend beyond the water table and transmit the shallow groundwater to discharge points, thereby dewatering the adjacent peat. The low permeability of the peat means that in order to achieve effective dewatering of the bog, narrowly spaced drainage ditches are necessary. Although the water contained within the drainage ditches is generally considered to be ‘surface water’ (discussed further in Section 9.3.11) the water is often composed entirely of discharging shallow groundwater. During periods of rainfall, direct precipitation into the channels and surface runoff also contribute to the flow in the drainage ditches.

Groundwater Vulnerability

9.3.7 GSI considers the groundwater vulnerability across the entire Camagh Bog site to be ‘Low’. This reflects the peat’s capacity to minimise infiltration to underlying groundwater resources. The minor amounts of groundwater contained within the peat stratum would not be considered a resource.

9.3.8 With regard to potential groundwater contamination, the site and surrounding area would not be considered to present any significant groundwater contamination sources. Foul drainage from a single toilet and wash hand basin located at the factory site to the north east of the peat extraction area is managed through an installed waste water treatment system and would not be expected to impact upon
groundwater quality. Minor quantities of oils are stored in the factory building for the purposes of refuelling and maintaining four tractor units. All oil storage is within the storage shed in the factory area to the north east of the peat extraction area. The shed has no internal drains and a concrete floor. Furthermore, all oil storage is provided with secondary containment. Lubricating oils in drums of 25l and 205l are stored in the shed on sump pallets and the vehicle fuel storage tank (also within the storage shed) is double skinned. Bulrush Horticulture has procedures in place to manage and control oil storage and handling in order to ensure that no releases occur (or that any accidental releases are appropriately managed). These include:

1. Bunds & Oil Tank Inspection Procedure
2. Reducing the Risk of Oil/Chemical Contamination Procedure
3. Oil and Fuel Storage Procedure
4. Emergency Procedure

All storage and handling of oils will be subject to the conditions of the pending IPPC Licence.

**General Hydrological Setting**

9.3.9 Camagh Bog is situated within the catchment of the River Inny which flows in a broadly north to south direction to the west of the site. At its nearest point, the River Inny lies approximately 300 m from the site boundary (Figures 9.2.1 and 9.2.2). The River Inny flows from Lough Kinale (approximately 5 km north of the site) to Lough Derravaragh (approximately 7 km south of the site). The latter is designated as a Special Protection Area (SPA) for its internationally important wintering wildfowl and is discussed further in Section 8 Flora & Fauna. The River Inny ultimately flows into the River Shannon at Lough Ree. In the vicinity of the site, the River Inny is perhaps 10 to 20 m in width and often exhibits a rather sluggish flow velocity due to the low gradients and this section of the river's position between the two lakes. The EPA reported an estimated long term 95th percentile flow rate of 1.27m³/sec for the River Inny.

![River Inny, South of Camagh Bridge](image)
9.3.10 Although generally flat lying, Camagh Bog would have originally possessed a slightly domed topography, in common with most areas of raised bog. Consequently, a radial pattern of drainage exists at the site. The north west portion of the site drains towards the west / north west towards the River Inny via a narrow drainage channel. The south west portion of the site drains towards the west / south west via heavily channelized land drains and ultimately into the River Inny approximately 0.5 km to the south west. The north east and south east parts of the site drain towards the east and discharge via drainage channels into a small watercourse known as the Monkstown Stream (Figures 9.2.1 and 9.2.2). The Monkstown Stream flows in a northerly direction close to the eastern side of the site before turning north east and discharging to the River Glore (Figure 9.2.1). From the point at which the Monkstown Stream discharges, the River Glore flows in a broadly north west direction and discharges to the River Inny approximately 1.5 km to the north of the site boundary. The EPA reported an estimated long term 95th percentile flow rate of 0.26 m$^3$/sec for the River Glore and a long term dry weather flow of 0.12 m$^3$/sec.

**Site Drainage Regime**

9.3.11 In order to facilitate a dry working surface for harvesting, Bulrush Horticulture implements an extensive dewatering / drainage regime at the site. The drainage network transmits shallow groundwater from the upper layers of the peat (as well as incident rainfall and surface runoff during precipitation events) towards five discharge points (SW1, SW2, SW3a and SW3b, SW4 on Figure 9.2.2 and 9.3.3). More than 80 broadly north-south / north east-south west orientated drains traverse the site in addition to several drainage channels which lie parallel to the site boundaries. Across the main body of the site, drainage channels are typically parallel with a spacing of approximately 15 to 20 m. Every fourth drain is deeper / more substantial than the intervening drains.
9.3.12 Drainage is directed towards four settlement pond systems (Ponds 1 to 4) which immediately precede the discharge points. Ponds 1, 2 and 4 have a single discharge point (SW1, SW2 and SW4) while Pond 3 has two discharge points (SW3a and SW3b) as shown on Figures 9.2.2 and 9.3.3. Pond 1 receives drainage from the north west portion of the site (approximately 14 Ha); Pond 2 receives drainage from the north east portion of the site (approximately 26 Ha); Pond 3 receives drainage from the south east part of the site (approximately 17.5 Ha); and Pond 4 receives drainage from the south west portion of the site (approximately 37 Ha). The approximate catchment areas of each of the ponds are illustrated on Figure 9.3.3.
Settlement Pond 1

Settlement Pond 2
9.3.13 The settlement ponds were designed to accommodate all run-off from the entire site on the basis of a once-in-5-year 24-hour rainfall event and each of the four ponds is sized to accommodate the proportion of run-off expected from each of the areas drained by that pond (based upon a 1 hour retention time, a maximum surface load of 1 m$^3$/m$^2$/hour, a maximum flow velocity of 0.01 m/s and a sludge space of 4 m$^3$/Ha). Pond 1 has a capacity of approximately 470 m$^3$, Pond 2 has a capacity of 4500 m$^3$, Pond 3 has a capacity of 1825 m$^3$ and Pond 4 has a capacity of 3000 m$^3$. Each pond is designed to promote sediment settling through the following design criteria:

- by ensuring the ponds are elongated in the direction of flow;
- by encouraging slow velocities along the length of the pond;
by division of the pond into sections with an overflow pipe placed at a high level between each section to allow continued passage of water but promote settlement

9.3.14 All ponds have been designed with sections in parallel or series which allows sections of pond to be isolated and desludged.

9.3.15 The drainage system (including the receiving settlement ponds described in Section 9.3.12 and 9.3.13) is strictly controlled to minimise the generation of sediment and to maximise the removal of suspended solids and other contaminants prior to discharge to surrounding surface waters. In the first instance, all drainage ditches possess very low gradients to maintain a slow flow velocity (to reduce erosion of the base and sides of the ditches and promote settlement). Settlement sumps are periodically located within the drainage networks to further facilitate settlement during flow along the drainage system, prior to discharge to the settlement ponds. Furthermore, an extended ditch routing with a circuitous flow path is promoted to increase travel time towards the settlement ponds. Within the ditches, frequent flow limiting pipes are installed to restrict flow during precipitation events. Prior to discharge to the settlement ponds, a boom / plate is installed at a level coincident with the water surface which traps floating particles and any oils (for subsequent manual removal) but allows flow to pass beneath the plate. Figure 9.3.4 illustrates a cross section of an in-channel sump and flow limiting pipe. Figure 9.3.5 illustrates a boom / plate in plan and cross section views.

Flow Limiting Pipe
300mm Diamater P.V.C. Pipe

Main Field Ditch

Sump to be width of ditching bucket for ease of cleaning.
The boom plate is fitted to trap any oil or floating particles. It is ideally fitted just before the inlet to the settlement pond. Disposable oil booms should be used on the outlet of the pond during cleaning operations.

The sample plate should be fitted close to the outlet of the pond. This plate not only allows for representative samples to be taken but fixes the water depth for the boom plate which is positioned approximately 150mm below water level.
9.3.16 The extensive drainage network provides a very large capacity of water storage which (in combination with the settlement pond system) can accommodate the incident rainfall from a once-in-20-year 2-hour rainfall event.

9.3.17 The outflow from each of the ponds passes over a 90° V-notch weir. The weir serves several functions including: maintenance of water levels to a minimum level to ensure the efficacy of the floating sediment and oil separating boom / plate; provision of a consistent and identifiable sampling point for compliance monitoring; and measurement of discharge rates. Figure 9.3.5 illustrates the V-notch weir design in plan and cross section views.
Surface Water Quality – Surrounding Watercourses

9.3.18 The water quality of the main arterial river network of Ireland is monitored regularly by the EPA. Chemical data for the River Glore was provided by the EPA for a station located more than 4 km to the east of the site (Bridge NNW of Millcastle). Analytical data was available for the period January 2001 to October 2003 for ammonia, pH, BOD, dissolved oxygen, temperature and orthophosphate. Chemical data for the River Inny was provided for a station located at Camagh Bridge less than 500 m to the north west of the site. Analytical data for this station was available for the period January 1995 to June 2011 for ammonia, pH, BOD, dissolved oxygen, temperature, orthophosphate, alkalinity / hardness, chloride, conductivity, nitrate, nitrite and total oxidised nitrogen. The EPA currently classifies the river quality of the River Inny as Category Q3-4 – ‘Moderate Status’.

9.3.19 The tables below summarise the most recent available data (January 2002 to October 2003 for the River Glore and January 2010 to June 2011 for the River Inny) for several selected parameters. For each parameter, the range of recorded values is presented and the average value over the relevant period.


<table>
<thead>
<tr>
<th>Parameter</th>
<th>Number of samples</th>
<th>Range of recorded values</th>
<th>Average value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
<td>17</td>
<td>0.6 – 6.0mg/l</td>
<td>2.28mg/l</td>
</tr>
<tr>
<td>pH</td>
<td>16</td>
<td>7.22 – 8.45</td>
<td>7.81</td>
</tr>
<tr>
<td>Ammonia (total as N)</td>
<td>17</td>
<td>0.003 – 0.252mg/l</td>
<td>0.054mg/l</td>
</tr>
<tr>
<td>Orthophosphate</td>
<td>17</td>
<td>0.001 – 0.28mg/l</td>
<td>0.038mg/l</td>
</tr>
</tbody>
</table>
9.3.20 The results above indicate that the River Inny possesses a slightly better water quality than the River Glore, most likely reflecting the much greater volumetric flow rate.

9.3.21 Sampling undertaken as part of the works for this EIS (as described in Section 9.2) included laboratory and on-site analysis of three water samples retrieved from outside the site including: the River Inny at Camagh Bridge; Monkstown Stream 200 m west of the site boundary; and the drainage channel which transmits the discharged water from Pond 4 (SW4) to the River Inny, at a location 400 m south west of the discharge. The locations are illustrated on Figure 9.2.2. The table below summarises the data.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Inny River at Camagh Bridge</th>
<th>Monkstown Stream</th>
<th>Drainage channel between Pond 4 &amp; River Inny</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
<td>mg/l</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>pH</td>
<td>-</td>
<td>7.5</td>
<td>7.78</td>
<td>6.46</td>
</tr>
<tr>
<td>Ammonia (total as N)</td>
<td>mg/l</td>
<td>0.2</td>
<td>0.296</td>
<td>1</td>
</tr>
<tr>
<td>Orthophosphate</td>
<td>mg/l</td>
<td>&lt;0.02</td>
<td>&lt;0.02</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>Electrical conductivity</td>
<td>µS/cm</td>
<td>430</td>
<td>730</td>
<td>160</td>
</tr>
<tr>
<td>Oxidation / reduction potential</td>
<td>mv</td>
<td>143</td>
<td>150</td>
<td>119</td>
</tr>
<tr>
<td>Suspended solids</td>
<td>mg/l</td>
<td>11</td>
<td>&lt;2</td>
<td>9</td>
</tr>
</tbody>
</table>

9.3.22 The recorded values in the River Inny are consistent with the EPA dataset. The Monkstown Stream and the drainage channel between Pond 4 and the River Inny have higher ammonia concentrations reflecting the greater influence of bog water in these channels (ammonia being inherently elevated in peaty waters). The low flow volumes in these smaller channels would be more susceptible to the ingress of ammonia within baseflow from the surrounding peaty soils.

Surface Water Quality – Site Drainage

9.3.23 Three sources of water quality information were available for the on-site drainage including:

1. Bulrush Horticulture in-house monitoring of all five discharge points for pH and suspended solids dating from May 2011 to April 2013 (summarised in Table 9.3.1);
2. Laboratory analysis carried out by Eurofins in January and March 2012 of samples submitted from all five discharge points for various parameters including ammonia, BOD, suspended solids, pH and orthophosphate (summarised in Table 9.3.2);
3. On-site testing and laboratory analysis undertaken as part of the assessment works in May 2013 including field testing of several points within the drainage network as well as field and laboratory testing of the five discharge points (as per the methodology described in Section 9.2) (summarised in Table 9.3.3).

9.3.24 The tabulated results indicate that the water within the drainage channels across the bog are acidic, owing to the high proportion of acidic bog water (i.e. very little dilution with rainwater, surface run-off etc.). The electrical conductivity values are very low, as expected reflecting that very little mineral dissolution occurs within the bog water.

9.3.25 The five discharge points from the four ponds (SW1, SW2, SW3a, SW3b and SW4) consistently exhibit similarly low electrical conductivities, however, the pH values are slightly less acidic than the drainage ditches due to the incorporation of more surface water run-off and rainwater by the time the waters enter, move through and ultimately discharge from the settlement ponds. Compared to the concentrations in the receiving watercourses (Sections 9.3.18 and 9.3.19) the ammonia results of the discharges are relatively high (ranging from 0.437 mg/l to 2.66 mg/l across all datasets). This is indicative of the high proportion of bog water in the discharges (ammonia is an inherently elevated natural constituent of water from peat bogs). With very few exceptions, the suspended solids concentrations fell below the recommended conservative target emission BATNEEC limit of 35 mg/l (EPA BATNEEC Guidance Note Class 1.4 Extraction of Peat). BOD across all datasets was consistent with the concentrations in the receiving water courses. Phosphate was typically either not detected or present at very low concentrations.

9.4 Impact Assessment and Mitigation

Soils and Geology

9.4.1 The only geological exposures at Camagh Bog comprise the continuous peat cover that occupies the site. The Geological Survey of Ireland confirms that no sites of geological or geomorphological interest (which could subsequently be designated as Natural Heritage Areas) have been identified within 2 km of the site. The nearest sites of geological interest would not be impacted by the site operations.

9.4.2 The continued excavation of peat from Camagh Bog will remove further quantities of the bog soil profile across the active extraction areas (an inevitable consequence of any natural resource extraction). However, in order to ensure the continued geological context of the site, a peat layer of at least 0.5 m in thickness will be retained at completion of the extraction operations.

Groundwater

9.4.3 The only identified potential impact upon groundwater at the site is the release of contaminants during site operations and subsequent infiltration to the underlying bedrock aquifer (the moderately productive, locally important Carboniferous Lucan Formation) - potential contaminants include foul sewage and oils / fuels. However, it
<table>
<thead>
<tr>
<th>Date</th>
<th>SW1</th>
<th>SW2</th>
<th>SW3a</th>
<th>SW3b</th>
<th>SW4</th>
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Table 9.3.1 - Bulrush Horticulture Ltd In-house pH and Suspended Solids Analysis Results
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Table 9.3.2. January and March 2012 Laboratory Analysis
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Table 9.3.3. On-site testing and laboratory analysis - May 2013
is noted that due to the considerable coverage of low permeability drift deposits, the aquifer vulnerability is considered to be ‘low’ across the site. Although the peat coverage will be progressively thinned as extraction continues, a layer of at least 0.5 m will be retained and upon cessation of extraction, the potential contamination sources will be removed fully mitigating any future risk.

9.4.4 Minor quantities of foul sewage, from a single toilet and wash hand basin, are managed through the installation of a waste water treatment unit.

9.4.5 In order to further mitigate the risk to groundwater resources from any on-site oil and fuel storage, Bulrush Horticulture operates a strict environmental management system (EMS) based upon ISO14001 at all its sites. The EMS identifies the refuelling of plant machinery and the handling and storage of oils and fuels as potentially polluting activities. Consequently, several procedures have been developed to address these issues including:

1. Bunds & Oil Tank Inspection Procedure
2. Reducing the Risk of Oil/Chemical Contamination Procedure
3. Oil and Fuel Storage Procedure
4. Emergency Procedure

9.4.6 At the Camagh Bog site, minimal levels of oils and fuels are held in storage. The EMS makes provision for all containers to be provided with secondary containment in the form of sump pallets or bunds. Small volumes (predominantly 25 l containers & 2 x 205 l drums) of lubricating oils are held within the on-site storage shed. The floor of the storage shed is concrete hardstanding. Refuelling of four tractor units takes place over a concrete hard standing area adjacent to the fuel tank. The tank itself is located within the storage shed and is double skinned.

9.4.7 The EMS also ensures that all Bulrush Horticulture personnel undergo emergency response training and that spill kits and clean up materials are available.

9.4.8 Continued adherence to the EMS procedures will ensure that any negligible risk to groundwater quality is fully mitigated throughout the duration of on-site activities.

**Surface Water Quality**

9.4.9 The most significant risk to surface water in the vicinity of the Camagh Bog site is the release of contaminants via the five surface water discharges to the surrounding rivers and stream. The discharged water constitutes the dewatered bog water (associated with drying of the bog surface to allow harvesting) in combination with incident rainfall / surface run-off of precipitation. The main contaminants associated with the extraction of peat are: suspended solids - fine peat particles which can become entrained in the drainage; and ammonia which is present at naturally elevated concentrations in bog waters relative to background surface water concentrations. Other chemical parameters / indicators of contamination were typically found to be comparable between the on-site surface waters and background river / stream water.
9.4.10 Bulrush Horticulture operates numerous measures to mitigate the risk posed by suspended solids and prevent their release to the surface water environment. In the first instance, a stringent Company imposed discharge limit of 35 mg/l (in accordance with the EPA BATNEEC Guidance Note Class 1.4 Extraction of Peat) is applied to all five discharges. As an element of Best Practice Bulrush Horticulture currently voluntarily imposes this BATNEEC Guidance Note limit on site operational discharges whilst the IPPC Licence application is pending. In order to achieve this standard the following measures are implemented:

1. All five discharges are preceded by fully designed and engineered settlement ponds which can accommodate a once-in-5-year 24-hour rainfall event and each pond is sized to accommodate the particular run-off from the area of the site that drains to that pond. The ponds are longitudinally aligned to maximise settlement and are divided into sections with high level overflows to allow flow between sections and promote settlement in each section. A V-notch weir at the outflow of each pond controls levels and flow rates to encourage settlement. Each pond / section of pond can be isolated from the drainage system to allow desludging operations.

2. All drainage ditches across the site (which ultimately deliver water to the settlement ponds) possess very low gradients to maintain a slow flow velocity (to reduce erosion of the base and sides of the ditches and promote settlement).

3. Settlement sumps are periodically located within the drainage network to further facilitate settlement within the drains during flow along the drainage system.

4. An extended ditch routing with a circuitous flow path is promoted to increase travel time towards the settlement ponds and reduce flow velocity.

5. Within the ditches, frequent flow limiting pipes are installed to restrict flow during precipitation events.

6. Prior to discharge to the settlement ponds, a boom / plate is installed at a level coincident with the water surface which traps floating particles and any oils (for subsequent manual removal) but allows flow to pass beneath the plate.

7. The extensive drainage network provides a very large capacity of water storage which (in combination with the settlement pond system) can accommodate the incident rainfall from a once-in-20-year 2-hour rainfall event.

8. The Company’s environmental management system makes provision for maintenance procedures for the settlement facilities. The settlement facilities are emptied at least once a year by excavator or suction pump (during periods of low flow and upon isolation of the section being emptied). Sludge is stored in a bunded area and after drying is spread on adjacent land for harvesting.

9. Regular sampling to ensure the continued efficacy of the settlement system is carried out and a suspended solids concentration of 25 mg/l triggers investigation and remediation in order to ensure the Company imposed BATNEEC limit of 35 mg/l is not exceeded.
9.4.11 The monitoring of the discharges indicates that the vast majority of samples fall well below the Company imposed BATNEEC limit of 35 mg/l demonstrating the continued efficacy of the measures put in place to manage suspended solids. It is considered that continued adherence to the current measures that are in place to manage suspended solids will mitigate the risk to surface water quality from this contaminant.

9.4.12 The elevated levels of ammonia within the discharges from the site represent a naturally occurring contaminant that would arguably drain to the surrounding watercourses irrespective of the presence or otherwise of the peat abstraction at Camagh Bog (via baseflow or natural drainage of the peat bog). Nonetheless, in order to ascertain the extent of impact specifically from the engineered discharges, Waste Assimilation Calculations were completed by MARENCO Environmental Consultants in support of the pending IPPC Licence application.

9.4.13 SW1 and SW4 discharge to the River Inny. On the basis of volumetric flow rates and background ammonia concentrations provided by the EPA, the ammonia loading in the River Inny was calculated at 4.72 kg/day. Based upon representative ammonia concentrations and flow readings from SW1 and SW4, the loadings from each discharge were calculated as 0.054 kg/day and 0.125 kg/day respectively. These values represent only 1.14% and 2.6% of the loading in the River Inny.

9.4.14 Similar calculations were completed for discharges SW2, SW3a and SW3b which ultimately discharge to the River Glore (via the Monkstown Stream which is not monitored by the EPA). The contributions to the total loading in the River Glore from the three discharges were calculated to be 1.07%, 4.2% and 0.08% respectively.

9.4.15 As these are existing discharges which have been occurring for many years they actually form a component of the existing load in the river systems and the waste assimilation capacity available in the Rivers Inny and Glore will not be impacted by these pre-existing discharges. No increase in discharge flows or loadings are proposed by Bulrush Horticulture.

9.4.16 In summary the contributions to the ammonia loading to the River Inny and River Glore from Camagh Bog are low. Furthermore, given the historic abstraction of peat from Camagh Bog it is noted that background concentrations in the rivers already include the contribution from Camagh Bog and consequently, the continued extraction of peat is unlikely to result in any further deterioration of water quality with respect to the ingress of ammonia.

9.5 Conclusion

9.5.1 It is considered that if the continued abstraction of peat from the Camagh Bog site progresses in strict adherence to the Bulrush Horticulture environmental management system; and continues to apply the currently adopted stringent controls on site drainage; the proposed operations should have a negligible impact upon the wider soil, groundwater and surface water environments.
SECTION 10 - AIR & NOISE

10.1 Introduction

10.1.1 As a component of the IPPC Licence application process an assessment was made of the atmospheric emissions (air) and noise impacts from the existing activities. These assessments were incorporated into the supporting documentation supplied with the IPPC Licence application and are available for viewing on the EPA website www.epa.ie under the registration number P0974-01. For completeness and convenience they have also been reproduced below.

10.2 Atmospheric Emissions

10.2.1 The main area of concern in regard to atmospheric emissions is from fugitive dust emissions. These arise from various activities associated with harvesting and extraction of peat. Maximum emissions occur during harvesting, loading and transport operations on the bog and during unloading/loading operations at the despatch area.

10.2.2 Milled peat harvesting methods can produce material capable of being picked up and transported by wind in dry conditions. The main risks arise with finely milled, highly decomposed peats such as is produced for fuel in Ireland. Horticultural peats are milled to a coarser standard from younger less decomposed fibrous material with a higher moisture content tolerance. Observations have shown that this material remains relatively stable in high wind conditions when left undisturbed. Dust problems arise only when the material is moved. Stockpiles of loose peat are limited to restrict the risk of high winds blowing material off the stockpiles. A natural aid to this is the tendency for stored peat to form a crust.

10.2.3 In the field, material is moved on the surface of the bog to promote drying. This rarely creates a dust problem because the material is not dry enough at this stage. When it does dry, it is generally ready for harvesting, and it is during this operation that dust could be an issue. Bulrush Horticulture has moved away from vacuum harvesting on this site to the use of mechanical harvesting machinery. This has significantly reduced the amount of machinery in use, which has in turn reduced the environmental impact of the operation. This has been achieved through significant reductions in fuel consumption and reduced impact from noise and dust emissions by reducing these plant movements. Any dust created during harvesting operations tends to settle in close proximity to the harvester due to the coarse nature of the material. Discharging the harvester load at the stockpile is another potential opportunity for dust release. Although this has been also been significantly reduced due to the change in operational plant usage, both type and numbers of machines. Bulrush Horticulture also desist from harvesting or otherwise moving very dry material in wind conditions above force 5 (21 knots at a height of 10 m, about 11 knots at ground level).
10.2.4 Known environmental damage from wind-blown dust is restricted to circumstances when significant amounts have reached water courses. Due to the proximity of internal drainage ditches to production operations, contamination of water with airborne materials could be a problem. However, mitigation measures to remove wind-blown material from discharge water are dealt with in Attachment No. E.2 and I.2 of the IPPC Application Attachment document and within Section 9 Hydrology, Hydrogeology & Soils of this Environmental Impact Statement. The site is some 300 m east of the River Inny at the nearest point and windblown dust deposition directly to this watercourse is not considered to be an issue. The issue is further mitigated by a stand of Coillte managed forest sited between the site and the River Inny. This forest runs parallel to the course of the river for a substantial distance with only parts of the northern boundary along the minor road not buffered by forestry planting.

10.2.5 Dust is also a hazard for operators of harvesting equipment. This has been fully addressed under the prevailing health and safety legislation, and appropriate protective measures are in place to safeguard employees.

10.2.6 The creation of dust does not automatically lead to other than a very local issue. High winds are required to carry dust beyond the boundaries of the production area and create a nuisance for neighbours. No complaints have been received by Bulrush Horticulture or other bodies regarding atmospheric emissions. However, any reported incidents of air pollution would be fully investigated and recorded within the existing site management processes.

10.2.7 Bulrush Horticulture also operates a policy of identifying potentially sensitive areas for dust generation in order to effectively control emissions. The nearest neighbour is approximately 150 m east of the site boundary along the minor road which forms the northern site boundary. This neighbour is screened from the site activities by a stand of woodland. The next nearest residential dwelling is approximately 200 m north of the site along a minor access road. The nearest village is Coole approximately 2.5 km south of the site and the nearest town is Castlepollard around 5 km south east of the site boundary.

10.2.8 From the EPA database the Air Quality for the site and its environs is designated as Zone D (there are four categories; Zones A - D). Zone D constitutes ‘Rural Ireland – Remainder of the State excluding Zones A, B and C’. The two nearest routine air quality monitoring stations at Longford Town, County Longford and Mullingar, County Westmeath both report the air quality as ‘Very Good’. Given the rural setting of the site and distance from any industrial sources it is assumed that the local air quality is also ‘Very Good’. The site is located within an ‘Unrestricted Area’ in regard to Coal Restricted Areas (EPA). However, given the low population density within the vicinity of the site this is not anticipated to have an adverse impact on local air quality.

10.2.9 There are a number of significant National and International designated conservation areas located within 5 km of the site including NHAs, proposed NHAs, SACs and SPAs. These include the following:
- Lough Derravaragh SPA (Site Code 004043); NHA (Site Code 000684)
10.2.10 The nearest designated site is the Hill of Mael & The Rock of Curry (pNHA) which lies over 2 km to the north-east of the operational site boundary. Lough Kinale & Derragh Lough lies approximately 4 km north of the site. Whilst Lough Derravaragh to the south, Moneybeg & Clareisland Bogs and Lough Sheelin all to the north all lie over 5 km distant from the operational site boundary. No impact from atmospheric emissions is considered likely on these designated sites due to the nature of Bulrush Horticultures operations, the mitigation detailed above and the distance to these designated sites.

10.2.11 An atmospheric monitoring survey was conducted in support of a similar IPPC Licence application (Licence Register No. 503) by Bord na Mona for the Allen and Boora Groups. The monitoring survey (Report No. K960-DG) required the installation of directional dust gauges at selected locations to provide a representation of emissions. In the main, the fugitive dust results from the Allen and Boora Groups and various perimeter locations and also at the four locations adjacent to the railway track demonstrate compliance with the recommended EPA guideline. As had been anticipated elevated levels were recorded in the immediate vicinity of the tippler (offloading point for the railway). The levels here were in excess of the recommended guidelines. However, it was contended that particulate fall out would occur over a short distance and migration from the site would be negligible. This point was supported by the results of the downwind samples both of which were below the guideline level. Due to the significantly reduced scale of Bulrush Horticulture’s operations in comparison to Bord na Mona and the difference in purpose i.e. horticultural use as opposed to fuel peat, it is anticipated that any likely impacts would be significantly less than those encountered at the Allen and Boora Groups.

10.2.12 Fugitive atmospheric emissions can also arise from the mobile plant and vehicles operating within the site. However, the numbers operating are low and the site is remote and open allowing for good dispersion. The tractor units in use at Camagh are identical to agricultural plant units; a number of which are employed in the district for agricultural purposes. The nearest residential neighbour is 150 m from the operational area and screened by a stand of woodland. In addition, Bulrush Horticulture has a formal servicing and maintenance regime in place for all plant to ensure operating efficiency is maintained. This system includes daily checks on all plant.
10.2.13 In summary, it is concluded that the dust and other fugitive emissions from the Bulrush Horticulture operations at Camagh Bog has and will continue to have a negligible impact on the receiving environment.

10.3 Noise

10.3.1 The main sources of noise generation are from the harvesting machinery and ancillary plant i.e. agricultural tractor units, etc. activities which primarily occur out on the bog. No static plant is in use only mobile operational plant units. Noise levels generated tend to be similar to that produced during agricultural field operations. The tractor units in use at Camagh are identical to agricultural plant units; a number of which are employed in the district for agricultural purposes. Production activities are generally confined to the summer period due to weather restrictions, which will also further limit the number of days worked during that summer period. Bulrush Horticulture restricts field operations to the hours between 0700hrs and 2100hrs during the production period described above. Machinery maintenance procedures also include noise limitation measures where practicable.

10.3.2 The rural location also aids in the reduction of noise as an issue. There are no Noise Sensitive Locations located within 150 m of any noise source associated with the activity.

10.3.3 The nearest neighbour is approximately 150 m from the operational area of the site. The next residential dwelling is approximately 200 m away. The nearest village is Coole approximately 2.5 km south of the site and the nearest town is Castlepollard around 5 km south east of the site boundary.

10.3.4 No complaints have been received by Bulrush Horticulture or other bodies regarding noise. However, any reported incidents of noise arising's would be fully investigated and recorded within the existing site management processes.

10.3.5 A noise survey was conducted in support of a similar IPPC Licence application (Licence Register No. 503) by Bord na Mona for the Allen and Boora Groups. Based on the results of the assessment it was considered that noise levels resulting from activities at the sites would not have any significant impact on the local environment. Due to the significantly reduced scale of Bulrush Horticulture's operations it is anticipated that no significant impacts from noise would arise from the operations at Camagh Bog.
SECTION 11 – ENVIRONMENTAL IMPACTS AND MITIGATION SUMMARY

11.1 The assessment and preparation of this Environmental Impact Statement represents one stage in the overall process of identifying and mitigating potential environmental impacts inherent throughout the duration of this project.

11.2 Long established measures already exist within the Bulrush Horticulture management system in regard to the management and control of potential environmental impacts during site operations. In 1991, Bulrush Horticulture was the first manufacturer of substrates in the world to be awarded the ISO9000 quality management standard (BS EN ISO 9001:2008). In 2003 Bulrush Horticulture attained ISO14001:2004 the International environmental management standard (EMS) which covers both the factory, head office and a number of the peat harvesting sites throughout Ireland. The Bulrush Horticulture established EMS requires all personnel to work to stringent operational control procedures and practices.

11.3 These operational procedures and practices have been developed over time to meet the requirements of Government regulators, Company policy and planning conditions relating to the Company's sites in Northern Ireland. These procedures have been further refined in order to meet the requirements of ISO14001:2004 to which the Company adheres. All the relevant management procedures which Bulrush Horticulture employs have been implemented on the Camagh site.

11.4 A summary of the potential environmental impacts established through this assessment, together with proposed mitigation and or precautionary measures is presented in Table 11.1.

Table 11.1 Summary of Potential Environmental Impacts & Mitigation

<table>
<thead>
<tr>
<th>Environmental Aspect</th>
<th>Potential Impact</th>
<th>Evaluation/Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archaeology</td>
<td>Destruction/ loss of known archaeological sites</td>
<td>• No recorded sites will be affected.</td>
</tr>
<tr>
<td></td>
<td>Destruction/ loss of undiscovered remains</td>
<td>• An archaeological mitigation strategy will be formally adopted into the existing Bulrush Horticulture EMS.</td>
</tr>
<tr>
<td></td>
<td>Potential to disturb un-recorded remains during site operations</td>
<td>• All site personnel will be provided with archaeological awareness training as a component part of the EMS training programme.</td>
</tr>
<tr>
<td>Environmental Aspect</td>
<td>Potential Impact</td>
<td>Evaluation/Mitigation Measures</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Landscape &amp; Visual</td>
<td>Loss of local valuable landscapes and visual amenity</td>
<td>• The project does not give rise to significant adverse effects on the landscape or visual amenity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The Visual Envelope is modest.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Overall landscape mitigation measures have been proposed to minimise the visibility of the development during its operational phase and integrate the resulting landform into the existing landscape following restoration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Mitigation proposals include perimeter screen planting, which will be undertaken as necessary to maintain the low level of visibility in the landscape.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Communication will be maintained with adjoining plantation controllers to mitigate, by planting, any increasing views due to harvesting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• At the end of production a 0.5 m layer of peat will be left in-situ as a foundation for restoration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A series of restoration options have been considered and methodologies outlined.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A Restoration Concept plan will be developed following appropriate consultation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Restoration concepts demonstrate no long term adverse impacts will arise.</td>
</tr>
<tr>
<td>Environmental Aspect</td>
<td>Potential Impact</td>
<td>Evaluation/Mitigation Measures</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Flora &amp; Fauna</td>
<td>Loss of habitat and biodiversity</td>
<td>• The ecological survey revealed no rare or protected plant species recorded in any of the habitats mapped.</td>
</tr>
<tr>
<td></td>
<td>Disturbance to protected species</td>
<td>• With the exception of Golden Plover all bird species recorded are regarded as common and widespread in Ireland.</td>
</tr>
<tr>
<td></td>
<td>Disturbance to wintering and breeding birds</td>
<td>• Golden Plover use the site to roost/rest and not for breeding. It was determined that the site activities provide no threat to the birds.</td>
</tr>
<tr>
<td></td>
<td>Impacts on designated Areas for Conservation</td>
<td>• Swallows use the factory buildings to nest. There are no plans to remove or modify these buildings.</td>
</tr>
</tbody>
</table>

- All mammals recorded are common and widespread within the region although the Irish Hare has declined in recent years.
- There are no plans to extend the peat extraction into new areas.
- Site operations are unlikely to impact on the flora and fauna recorded during the field survey.
- Mitigation measures are proposed to enhance the existing habitat. These include eradicating Rhododendron shrubs; managing water levels within the old ponds to conserve existing species and allow colonisation of new species and maintaining the vegetation strips to provide a 'wildlife corridor'.
- Continue to apply best practise and the established stringent water management controls.
- Peat extraction will not have an impact on designated sites in the wider area provided water discharge operations comply with current legislation.
<table>
<thead>
<tr>
<th>Environmental Aspect</th>
<th>Potential Impact</th>
<th>Evaluation/Mitigation Measures</th>
</tr>
</thead>
</table>
| Hydrology, Hydrogeology & Soils | Impact on local hydrological and hydrogeological regime Surface water and groundwater contamination | • No sites of geological or geomorphological interest were identified within 2 km of the site. The nearest such sites will not be impacted by site operations.  
• In order to maintain the geological context of the site a 0.5 m layer of peat will be retained.  
• The aquifer vulnerability is considered ‘low’ across the site.  
• The established EMS has several procedures in place to manage the handling and storage of oil and fuel.  
• The EMS also ensures that secondary containment, emergency response training and spill kits are in place.  
• There are five surface water discharge points.  
• A wide variety of measures are in operation to control water discharges.  
• As an element of best practice the BATNEEC Guidance Note limit of 35 mg/l suspended solids is voluntarily imposed whilst the IPPC Licence application is pending.  
• A trigger level of 25 mg/l suspended solids initiates investigation and corrective action as necessary.  
• Ammonia is an inherently elevated natural constituent of water from peat bogs. The contribution from the site discharges to the ammonia loading in the local river systems is low.  
• Provided there is strict adherence to the EMS and continued application of the stringent controls on site drainage the operations should have a negligible impact upon the wider soil, groundwater and surface water environments. |
<table>
<thead>
<tr>
<th>Environmental Aspect</th>
<th>Potential Impact</th>
<th>Evaluation/Mitigation Measures</th>
</tr>
</thead>
</table>
| Air & Noise          | Atmospheric emissions & local nuisance issues | • Policy in place to identify sensitive receptors.  
• Established EMS procedures exist to address air and noise emissions.  
• Dust and other fugitive emissions will have a negligible impact on the receiving environment.  
• Main sources of noise generation arise from the harvesting machinery and ancillary plant. These are similar to agricultural tractors in use in the vicinity.  
• No significant noise impacts will arise. |

11.5 Bulrush Horticulture has sought to adopt best practice throughout all aspects of the design of the site and site operations. Bulrush Horticulture will conduct and control their activities and operations in such a manner so as to minimise, or eliminate where possible, the environmental impacts associated with the development. It is Bulrush Horticulture’s intention to act upon and implement the recommendations and mitigation measures presented in this Environmental Impact Statement from the outset.
APPENDICES

Appendix 1: Consultee Responses
Appendix 2: Landscape & Visual Assessment; Method of Assessment
Appendix 3 Habitat Map (Figure 8.3.1)

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Appendix 1: Consultee Responses
19/04/2013

Marenco Environmental Consultants,
Adelaide Business Centre,
Apollo Road,
Belfast,
BT12 6HP

Re: Environmental Impact Assessment Scoping Information Request for
Builrush Horticulture, Camagh Moss, County Westmeath.

Dear Sir / Madam,

Further to recent correspondence received from your office, the Environmental Health Department request that this Environmental Impact Assessment considers the following issue which may be of Public Health significance during the construction and operational phases of this development.

The potential effects of the development on hydrology due to changes in hydrogeology or possible pollution of groundwater should be considered.

Further to this, it is requested that a local survey of residences / commercial premises using wells is conducted and potential effects of this development on groundwater are considered.
It is requested that you outline all environmental impacts (significant or otherwise) in your EIA for this project. You are also requested to detail all methodology used to quantify and assess the environmental impacts identified.

Yours Sincerely,

[Signature]

Enda Coffey
Environmental Health Officer
28th March 2013

Our Ref: BK/BD

EPA Reg No. P0974-01

Dear Mr Francis,

I wish to acknowledge receipt of your letter dated 22nd March 2013 in the above regard and confirm that I have referred your correspondence to Mr Terence McCague, Senior Planner for direct response.

Yours sincerely,

Barry Kehoe,
Director of Services
044-93-32068
22nd May, 2013

Mr. James Francis CEnv, MIEMA
Director/Principal Consultant
Marenco Environmental Consultants
Adelaide Business Centre
Apollo Road
Belfast
BT12 6HP

Ref: EPA Reg. No. P0974-01


Dear Mr. Francis,

I refer to your recent correspondence concerning the above.

At this time, the Department of Agriculture, Food and the Marine has no submissions or observations to make in regard to same.

Yours sincerely,

[Signature]

Noel O’Connor

Climate Change Section
Department of Agriculture, Food and the Marine
Johnstown Castle Estate
Wexford
(053) 91 63467
Dear Mr Francis,

I wish to acknowledge receipt of your recent letter to Fáilte Ireland in relation to carrying out an Environment Impact Statement for the operations of Camagh Moss, Co Westmeath.

I attach a copy of the Fáilte Ireland Guidelines for the treatment of tourism in an EIS, which we recommend should be taken into account in preparing the EIS.

Yours sincerely,

Eoin McDonnell
Projects Officer | Fáilte Ireland | Áras Fáilte | 88-95 Amiens Street | Dublin 1 | Ireland
T: +353 (01) 884 7203 | M: 086 825 4413
W: www.failteireland.ie

The Gathering 2013 - be part of it
Dear Mr. Francis

I refer to your letter dated 22\textsuperscript{nd} March 2013 on the above site. As we do not have any regulatory role on this matter, we will not be commenting on what should go into the EIA for Bulrush Holdings. Our remit only covers where new developments are in proximity to major accident hazard facilities, which is not the case here. Any work undertaken when the facility is in operation must comply with normal health and safety laws which are the responsibility of the employer.

Yours Sincerely

Peter Claffey

Dr. Peter J. Claffey | Programme Manager | Chemical Business Services Division | Health and Safety Authority, The Metropolitan Building, James Joyce Street, Dublin 1
Tel: 353 1 6147093 | Mobile: 353 86 8560734 | Fax: 353 1 6147020
Email: pj_claffey@hsa.ie | Web: www.hsa.ie

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*******************************************************************************
Dear Jim

Thanks for sending this through but I am afraid I am not in a position to respond to this at the moment. This should not be taken as support for, or opposition to the application.

Best wishes
Cliona

---

From: Jim Francis [mailto:Jim.Francis@marenco.co.uk]
Sent: 11 April 2013 10:04
To: Cliona O'Brien
Subject: RE: Bulrush Horticulture EIA Scoping

Dear Cliona

Further to our recent telephone conversation please find attached an electronic version of the documents posted on 22nd March 2013. As we discussed I was seeking to confirm the documents had been received following the Easter period.

Thanks again for your assistance and I look forward to hearing from you.

Kind regards

Jim

James Francis CEng, MIEMA
Director, Principal Consultant

---

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James Francis
Director / Principal Consultant
Marencro
Adelaide Business Centre
Apollo Road
Belfast
BT12 6HP
Northern Ireland

05th April, 2013


Dear Sir,

I have been asked by An Bord Pleanála to refer to your letter dated 22nd March, 2013 in which you invite the Board to submit any comments it may have in relation to the environmental impact assessment process for the operations at Camagh Moss.

Please be advised that the Board will not be making any comments / observations in relation to the matter.

Yours faithfully,

Kieran Doherty
Executive Officer
Direct Line: 01 - 8737248
28 March, 2013

Mr James Francis CEnv, MIEMA
Director/Principal Consultant
Marenco Environmental Consultants
Apollo Road
Belfast BT12 6HP
Northern Ireland

Dear Mr Francis,

I wish to acknowledge receipt of your recent letter to the Minister for Jobs, Enterprise and Innovation, Mr Richard Bruton T.D., regarding Bulrush Horticulture.

I will bring your correspondence to the Minister’s attention at the earliest opportunity.

Yours sincerely,

JOHN MAHER
PRIVATE SECRETARY
April, 2013

Our Ref: 130604/AHG
Your Ref:

Dear Mr. Francis

I wish to acknowledge receipt of your recent correspondence to Jimmy Deenihan T.D., Minister for Arts, Heritage and the Gaeltacht, regarding Bulrush Horticulture.

I will bring your correspondence to the Minister's attention as soon as possible.

Yours sincerely

Sarah Doyle
Private Secretary
EPA Reg No: P0974-01

Our Ref.: 13/53

Re: Bulrush Horticulture – Camagh Moss, County Westmeath – Environmental Impact Assessment Scoping Information Request

Dear Mr Francis,

I wish to acknowledge receipt of your letter of the 22nd March 2013 concerning Bulrush Horticulture and the EIA scoping information request.

Scoping for EIA and GSI datasets

To assist you with the scoping for EIA, and future ones you might deal with, especially the "Soils & Geology" and "Surface Water & Groundwater" chapters, please note that datasets for Soils, Bedrock, Groundwater and Geotechnical data are available for download on the GSI website at [www.gsi.ie/Mapping](http://www.gsi.ie/Mapping).

Specific project mapviewers are also available for groundwater, geotechnical, landslides, aggregate potential (to inform the "material assets" chapter of the EIS) and accessible from the same link.

Karst database

In relation to the groundwater data, please note that the Karst database is far from exhaustive. The display of no karst features for the study area and wider perimeter doesn’t mean that no karst feature exits. In areas prone to karstification, a site walkover would inform on possible features previously unmapped. See also “other comments" paragraph below.

Geological heritage

The GSI is in partnership with the National Parks and Wildlife Service of the Department of Arts, Heritage and the Gaeltacht (DOAHS) to identify and select important geological and geomorphological sites throughout the country for designation as Natural Heritage Areas (NHAs). This is being addressed under 16 different geological themes. For each theme, a larger number of sites from which to make the NHA selection are being examined, in order to identify the most significant scientifically.

---

Department of Communications, Energy, and Natural Resources

Roinn Cumarsáide, Fuinnimh agus Acmhainn Nádairtha

Sophie Préteselle
Heritage and Planning Section
Email: sophie.preteselle@gsi.ie
Tel: 01-678 2741
http://www.gsi.ie

28th May 2013
Our criterion of designating the minimum number of sites to exemplify the theme means that many sites of national importance are not selected as the very best examples. However, a second tier of County Geological Sites (CGS) (as per the National Heritage Plan) means that many of these can be included in County Development Plans and receive a measure of recognition and protection through inclusion in the planning system. Please note that we are still in the process of finalising these proposed sites.

As geological heritage data is not yet available online as a national coverage dataset, consultation with Sarah Gatley (sarah.gatley@gsi.ie) is encouraged at scoping stage.

Completed audits of CGS to date and associated shapefiles can be downloaded at: http://www.gsi.ie/Programmes/Heritage+and+Planning/County+Geological+Sites+Audits/ However, County Westmeath hasn't been audited yet.

In relation to Bulrush Horticulture, from GSI database, no site of geological interest has been identified within the study area. The closest site of interest lies at about 2km to the east of the study area and is unlikely to be impacted by the development.

Other comments

At a later stage, GSI would much appreciate a copy of reports detailing any site investigations carried out. The data would be added to GSI's national database of site investigation boreholes, implemented to provide a better service to the civil engineering sector. Data can be sent to Beatriz Mozo (beatriz.mozo@gsi.ie, 01-678 2795).

If any new karst features are mapped, GSI would welcome any data collected to add to the national karst database and data can be sent to Caomh Hickey (caoimhe.hickey@gsi.ie, 01-678 2811).

I hope that these comments are of assistance, and if the GSI can be of any further help, please contact me.

Yours sincerely,

Sophie Prété selle, Geologist
Heritage and Planning Programme
Mr James Francis,
Adelaide Business Centre,
Apollo Road,
Belfast,
BT12 6HP.

Re: Bulrush Horticulture – Camagh Moss, County Westmeath – Environmental Impact Assessment Scoping Information Request

Dear Mr Francis,

Thank you for your letter of 22nd April regarding the above matter. I am the secretary of Lough Derravaragh Angling Association and your letter was passed to me for my attention on 17th May 2013.

For many years Lough Derravaragh Angling Association have been expressing grave concerns at the impact that peat harvesting is having on the River Inny Catchment and on Lough Derravaragh. These concerns have resulted from the current peat harvesting operation adjacent to the Float Bridge at Coole in County Westmeath. We have worked closely with Inland Fisheries Ireland and the River Inny Catchment Management Group to attempt to have our concerns addressed. We are completely dissatisfied with peat harvesting operations at this site and having read your non-technical summary we must state that we are opposed to any further peat harvesting operations within the Inny Catchment. The Coolnagun stretch of the River Inny once provided some of the best angling in the world and hosted the World Coarse Fishing Championship, however the pollution that has resulted from current peat harvesting operations has devastated the River Inny and has destroyed the coarse fishing amenity. This in turn has also severely impacted on the revenue generated within Westmeath as a result of angling tourism. Over the years we have experienced severe problems with dust deposition into the River Inny. On occasions the river became impassable by boat due to peat deposition which resulted from harvesting operations. On several occasions the Inland Fishery Authorities had to intervene and this can be confirmed with local Inland Fisheries Ireland staff. Experience has shown that peat deposition, as a direct result of peat harvesting within the Inny Catchment, has adversely affected aquatic life and has encouraged weed growth.

We are firmly opposed to any proposals to commence peat harvesting operations at Camagh, and on the basis of the content of your non-technical summary we will be objecting to the granting of any Integrated Pollution Prevention License.
• The harvesting process will require peat to be stockpiled and limiting the stockpiles will not eliminate the risk of dust deposition, as you state yourself it "restricts the risk".

• You state that the movement of peat on the surface of the bog "rarely creates a dust problem". The reality is that it does create a dust problem and this is borne through in the statement "rarely". This is unacceptable to our association.

• We are unhappy that the risk of dust deposition into the Inny is "not considered likely" as any possibility of dust deposition is unacceptable.

• We do not accept that peat will not be moved during wind conditions above force 5 as you have not demonstrated any verifiable independent external control that will ensure that this will not take place. Even if we were to accept this we are of the opinion that a wind strength force 5 is too great and this would have to be significantly reduced.

• We do not accept that the Coillte managed forest mitigates against dust deposition as this forest could be harvested at any time thus removing the mitigating effect that you cite.

• We do not accept that surface water run-off from the bog will be adequately controlled through drainage ditches, sump holes and settlement ponds. Experience at Coole has demonstrated that these have been ineffective at preventing siltation within the River Inny. These control measures are often poorly maintained and you have not demonstrated any verifiable independent external control that will ensure that these control measures will be 100% effective 100% of the time. Even if we were to accept that these controls would function as they should they will not completely eliminate adverse discharges and at best will reduce the risk. You state yourself that they can cope with a "once in twenty year rainfall". What will be the consequence when we do get that once in twenty year rainfall?

• Your non-technical summary states that "systems are designed to minimise the amount of suspended solids reaching the receiving waters". Lough Derravaragh Angling Association will not accept the possibility of any suspended solids entering the River Inny catchment.

I would like to take this opportunity to thank you for the opportunity to contribute, and if you have any questions please do not hesitate to contact me.

Yours Respectfully,

Joe Keena,
Secretary,
Lough Derravaragh Angling Association.
Appendix 2: Landscape & Visual Assessment; Method of Assessment
1.0 General Approach

The general approach to this assessment has been to:

- Establish the existing baseline conditions in terms of the landscape and visual amenity of the site and surrounding area, including the identification of potentially sensitive visual receptors;
- Identify the likely sources of visual effects arising from the proposed development;
- Predict the magnitude of the changes to the existing conditions; and
- Assess the significance and acceptability of these changes.

The method of assessment has been based on guidelines provided in the following publications:

- The Landscape Institute, and the Institute of Environmental Assessment (1995) Guidelines for Landscape and Visual Assessment, E & FN Spon, London. (updated in 2002);

The assessment is based upon fieldwork observations undertaken in August 2009 and analysis of photographic records, Ordnance Survey Northern Ireland maps, and details of the proposed development.

2.0 Assessment criteria

The aim of environmental assessment is to quantify potential effects and present these in an objective and unbiased manner. The nature of landscape and visual assessment, however, requires a certain amount of reasoned professional judgement. To provide the necessary level of consistency the assessment of effects on the landscape and visual amenity has been based on a set of pre-defined criteria. Where there is an effect on landscape character and/or visual amenity there will be both positive and negative aspects.

3.0 Landscape character assessment

A landscape character assessment has been undertaken for the study area, which is illustrated by Figure 01. The study area has been defined based on the predicted visibility of the development and the analysis of viewpoints. The purpose of the landscape assessment is to identify broadly different areas of landscape character within the study area, assess the sensitivity of these landscape character areas and predict the effect that the development will have on these areas.

Effects on landscape have been examined as part of the total assessment, because, in order for there to be changes to the landscape these changes need to be experienced.
As landscape is primarily experienced visually, it is considered that potential effects on landscape can primarily be assessed through the viewpoint analysis.

4.0 Direct effects on landscape fabric

Consideration has been given to the direct effects that the development will have on the landscape fabric. This includes the following:

- Consideration of landscape features and elements that will be lost as a result of the proposals;
- Analysis of the proposed restoration contours and discussion of how this fits with the immediate surrounding topography; and
- Assessment of the proposed restoration scheme and discussion of how this fits with the surrounding landscape character.

The significance of these effects will be considered in this report.

5.0 Landscape sensitivity

The sensitivity of the landscape character has been assessed to determine the effect that the proposed development will have on a given landscape character area. For each landscape character area the sensitivity to change has been assessed based on the following factors:

- Landscape designation;
- The quality of the landscape; and
- The nature of views.

6.0 Magnitude of change

The magnitude of change has been defined to three levels - substantial, moderate and slight. These are based on a combination of quantifiable factors, including:

- The distance to the development;
- The extent of the development that will visible;
- The duration of the operations.
- The context of the view;
- The nature of intervening landscape; and
- The background to the development.

7.0 Assessment of effect on landscape character

The assessment of effect uses the terminology major, moderate and minor. These categories are based on the interpretation of the combination of the sensitivity of the landscape and the magnitude of the change, as shown in the table below.
Table A7.1: Assessment of effect on landscape character

<table>
<thead>
<tr>
<th>Sensitivity Of Viewpoint</th>
<th>Magnitude of change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Substantial</td>
</tr>
<tr>
<td>High</td>
<td>Major</td>
</tr>
<tr>
<td>Medium</td>
<td>Maj/Moderate</td>
</tr>
<tr>
<td>Low</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Where the assessment of the effect has been classified as Major or Major/Moderate they are considered to be significant. Where no significant effects are identified the effect of the development on the landscape is considered acceptable. For each viewpoint consideration is given both the positive and negative effects of the development.

8.0 Visual assessment

The visual assessment analyses the effect that the development will have on the visual amenity of local residents and visitors to the area. It takes account of the effect that the development will have on views from residential properties and roads in close proximity to the site.

A visual envelope has been defined for the development. This identifies the main areas where the development will be visible. The baseline visual assessment identifies the receptor location both by viewpoint name and OS grid co-ordinates, receptor type, the proximity and direction of the receptor from the edge and the centre of the development. A description of the existing view is given, together with an assessment of the visibility of the site.

The assessment is supported by viewpoint photographs (panoramas). The site location is identified on these photographs, and in some cases they have been annotated to identify the elements of the development that will be visible. An assessment of the significance of the residual visual effects has been undertaken to assess the effect of the proposals after mitigation measures are in place.

9.0 Sensitivity of viewpoint

The sensitivity of each of the viewpoints has been categorised and described as high, medium or low, on the basis of a combination of factors, including:

• Receptor type;
• Land use/activity at the viewpoint;
• The frequency of use of the viewpoint;
• Designation at the viewpoint;
• Speed at which view will be gained;
• Quality of the intervening landscape; and
• The scale and context of the view.

Receptor type is the key factor in determining the sensitivity of the viewpoint. Other factors such as the context of the view have an effect on changing the sensitivity of the receptor. Examples of receptor sensitivities are shown in Table A7.2.

Table A7.2 : Sensitivity of viewpoint

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sensitivity of viewpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Land use, receptor type/activity at viewpoint</td>
<td>Residential</td>
</tr>
<tr>
<td></td>
<td>Recreation e.g. national trails</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10.0 Magnitude of Change to Visual Amenity

The magnitude of change to visual amenity has been defined to four levels - substantial, moderate, slight and negligible. These are based on a combination of tangible and quantifiable factors, including:
• The distance of the viewpoint from the development;
• The extent of the development visible from the viewpoint;
• The nature of intervening landscape; and
• The background to the development in the view.

The changes in view, which result from the development of the landfill, are characterised as positive and negative.

11.0 Assessment of effect on visual amenity

The assessment of effect uses the terminology major, moderate, minor and negligible. These categories are based on the interpretation of the combination of the sensitivity of the viewpoint and the magnitude of the predicted effect, as shown in Table A7.3.
Table A7.3: Assessment of effect on visual amenity for the receptor at the viewpoint

<table>
<thead>
<tr>
<th>Sensitivity Of Viewpoint</th>
<th>Magnitude of change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Substantial</td>
</tr>
<tr>
<td>High</td>
<td>Major</td>
</tr>
<tr>
<td>Medium</td>
<td>Maj/Moderate</td>
</tr>
<tr>
<td>Low</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Where the assessment has been classified as Major or Major/Moderate this is considered to be equivalent to **significant** effects. Where no significant effects are identified the development is considered acceptable in visual terms. For each viewpoint consideration is given both the positive and negative effects of the development.
Appendix 3 Habitat Map (Figure 8.3.1)
Figure 8.3.1. Habitat Map