White Hill Wind Farm Electricity Substation & Electricity Line

Environmental Impact Assessment Report

Annex 5.5: Site Synopses

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SITE SYNOPSIS

Site Name: Blackstairs Mountains SAC

Site Code: 000770

The Blackstairs Mountains are located along the border of the Counties Wexford and Carlow, forming a mountain chain that runs in a north-east/south-west direction for approximately 22 km, and includes six peaks over 520 m. The range has a core of granite, and on the Carlow side, erosion has cut deeply into the dome exposing successive layers of granite, giving a steeply stepped slope. On the east side some overlying Ordovician slates and sandstones are evident.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[4010] Wet Heath
[4030] Dry Heath

The site is important for extensive areas of dry heath. The higher, steeper slopes are covered with a dense, tall carpet dominated by Heather (*Calluna vulgaris*) and Bilberry (*Vaccinium myrtillus*), with small amounts of Crowberry (*Empetrum nigrum*), Bell Heather (*Erica cinerea*) and Cross-leaved Heath (*E. tetralix*). Occasionally Common Bent (*Agrostis capillaris*) and Mat-grass (*Nardus stricta*) are also found. Abundant moss cover is present, particularly in those areas which have escaped burning – species include *Racomitrium lanuginosum, Hypnum cupressiforme, Polytrichum commune, Hylocomnium splendens* and *Rhytidiadelphus squarrosus*. Stiff Sedge (*Carex bigelowii*) occurs on the stony ground on the west side of the range.

Lower down the slopes the heath is dominated by Gorse (*Ulex europaeus*), with some of the species listed above, along with Heath Bedstraw (*Galium saxatile*) and Tormentil (*Potentilla erecta*). Bracken (*Pteridium aquilinum*) is also abundant on the lower slopes, particularly on the western flanks.

Upland grassland is found on those slopes which have been heavily grazed. Grassland species include Mat-grass and Common Bent. Heath Bedstraw and the mosses *H. splendens* and *R. squarrosus* are also found.

Wet heath occurs in mosaic with dry heath towards the base of some of the steeper slopes and is also found outside the western edge of the commonage. Typical species include Purple Moor-grass (*Molinia caerulea*), bog mosses such as *Sphagnum capillifolium* and *S. palustre,* and sometimes Bog Asphodel (*Narthecium ossifragum*). There are relatively extensive tracts of a peat/heath mosaic on the gentle slopes at the east of the southern section of the site and within the commonage. Cottongrasses

(*Eriophorum* spp.) are dominant here, with small amounts of Purple Moor-grass and over 90% cover of bog mosses. Some very wet patches with Soft Rush (*Juncus effusus*) occur.

A series of lowland bogs north of Mount Leinster and around Black Rock Mountain have recently been identified which have considerable local importance. These occur around Ballycrystal, south-west of Black Rock Mountain, where the highest feeders of the Urrin River rise, and around Crann on the north of the Black Rock ridge, where feeders of the Clody River rise just south of the Wexford/Carlow border. In these bogs considerable populations of Cranberry (*Vaccinium oxycoccos*) occur. The Crann bogs also have abundant Bog-myrtle (*Myrica gale*), uncommon in the county. Other species of interest that occur in the Urrin and Clody bogs include Marsh St. John's-wort (*Hypericum elodes*), Pale Butterwort (*Pinguicula lusitanica*) and Lesser Skullcap (*Scutellaria minor*). The Crann bogs include quite extensive stands of Purple Moor-grass, and Water Horsetail (*Equisetum fluviatile*) is widespread. The bogs are reduced to fragments bordering improved grassland or forestry.

Mount Leinster is the highest mountain of the range (795 m). On the east side of the summit a few plants with arctic or alpine affinities occur such as the scarce Starry Saxifrage (*Saxifraga stellaris*) and the Stag's-horn Clubmoss (*Lycopodium clavatum*).

The headwaters of the Urrin River are included within the site. Habitats along it include patches of deciduous woodland dominated by Downy Birch (*Betula pubescens*). Further south the woodland becomes more dense and consists of Alder (*Alnus glutinosa*), willows (*Salix* spp.), Hazel (*Corylus avellana*) and Holly (*Ilex aquifolium*). The woodland in the south of the area is comprised of Sessile Oak (*Quercus petraea*). There are also patches of peaty marsh, with species similar to those listed for the lowland bog.

The scarce species Ivy-leaved Bellflower (*Wahlenbergia hederacea*) and Mountain Fern (*Thelypteris limbosperma*) occur along the Urrin River, while Cowberry (*Vaccinium vitis-idaea*), also a scarce species, is found in heath in a number areas of the site. Small Cudweed (*Logfia minima*), a Red Data Book species that is protected under the Flora (Protection) Order, 1999), has been recorded in heathy grassland on the site. The rare, Red Data Book species Bird's-foot (*Ornithopus perpusillus*) is found in dry, sandy places at Knockroe in Co. Carlow.

Small numbers of Red Grouse use the site – their numbers have declined here in recent years.

Land use within the site is centred on grazing. Overall, sheep numbers are low, though there are some pockets where high numbers are found. In these areas there are patches of bare ground, an abundance of Mat-grass and in some places upland grassland replaces the heath. Burning of the Heather is carried out on what appears to be a rotational basis. Heather is regenerating in the burnt areas. From a distance the age structure is evident in the different hues of brown to be seen. Cattle are out-wintered on the slopes just inside the boundary of the commonage. Severe poaching

is associated with this, especially where supplementary feeding is carried out. Coniferous forestry is present over much of the slopes of the mountain (outside of the site), extending to a height of 640 m north of Mount Leinster.

The Blackstairs Mountains SAC is the only example of moorland above 300 m in Counties Wexford and Carlow. It includes good examples of dry heath, a habitat listed on Annex I of the E.U. Habitats Directive. The plant and animal communities are typical of upland habitats, and the growth of Heather is particularly profuse, rivalling some of the larger areas of Heather cover in Co. Wicklow. The presence of rare and scarce species adds significantly to the conservation value of the site.

SITE SYNOPSIS

Site Name: River Barrow and River Nore SAC

Site Code: 002162

This site consists of the freshwater stretches of the Barrow and Nore River catchments as far upstream as the Slieve Bloom Mountains, and it also includes the tidal elements and estuary as far downstream as Creadun Head in Waterford. The site passes through eight counties – Offaly, Kildare, Laois, Carlow, Kilkenny, Tipperary, Wexford and Waterford. Major towns along the edge of the site include Mountmellick, Portarlington, Monasterevin, Stradbally, Athy, Carlow, Leighlinbridge, Graiguenamanagh, New Ross, Inistioge, Thomastown, Callan, Bennettsbridge, Kilkenny and Durrow. The larger of the many tributaries include the Lerr, Fushoge, Mountain, Aughavaud, Owenass, Boherbaun and Stradbally Rivers of the Barrow, and the Delour, Dinin, Erkina, Owveg, Munster, Arrigle and King's Rivers on the Nore.

Both rivers rise in the Old Red Sandstone of the Slieve Bloom Mountains before passing through a band of Carboniferous shales and sandstones. The Nore, for a large part of its course, traverses limestone plains and then Old Red Sandstone for a short stretch below Thomastown. Before joining the Barrow it runs over intrusive rocks poor in silica. The upper reaches of the Barrow also run through limestone. The middle reaches and many of the eastern tributaries, sourced in the Blackstairs Mountains, run through Leinster Granite. The southern end, like the Nore runs over intrusive rocks poor in silica. Waterford Harbour is a deep valley excavated by glacial floodwaters when the sea level was lower than today. The coast shelves quite rapidly along much of the shore.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1130] Estuaries
[1140] Tidal Mudflats and Sandflats
[1170] Reefs
[1310] *Salicornia* Mud
[1330] Atlantic Salt Meadows
[1410] Mediterranean Salt Meadows
[3260] Floating River Vegetation
[4030] Dry Heath
[6430] Hydrophilous Tall Herb Communities
[7220] Petrifying Springs*

[91A0] Old Oak Woodlands
[91E0] Alluvial Forests*

[1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)
[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)
[1092] White-clawed Crayfish (*Austropotamobius pallipes*)
[1095] Sea Lamprey (*Petromyzon marinus*)
[1096] Brook Lamprey (*Lampetra planeri*)
[1099] River Lamprey (*Lampetra fluviatilis*)
[1103] Twaite Shad (*Alosa fallax*)
[1106] Atlantic Salmon (*Salmo salar*)
[1355] Otter (*Lutra lutra*)
[1421] Killarney Fern (*Trichomanes speciosum*)

Good examples of alluvial forest (a priority habitat on Annex I of the E.U. Habitats Directive) are seen at Rathsnagadan, Murphy's of the River, in Abbeyleix estate and along other shorter stretches of both the tidal and freshwater elements of the site. Typical species seen include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea* subsp. *oleifolia*), Crack Willow (*S. fragilis*) and Osier (*S. viminalis*), along with Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Thin-spiked Wood-sedge (*Carex strigosa*), Pendulous Sedge (*C. pendula*), Meadowsweet (*Filipendula ulmaria*), Common Valerian (*Valeriana officinalis*) and the Red Data Book species Nettle-leaved Bellflower (*Campanula trachelium*).

A good example of petrifying springs with tufa formations occurs at Dysart Wood along the Nore. This is a rare habitat in Ireland and one listed with priority status on Annex I of the E.U. Habitats Directive. These hard water springs are characterised by lime encrustations, often associated with small waterfalls. A rich bryophyte flora is typical of the habitat and two diagnostic species, *Palustriella commutata* and *Eucladium verticillatum*, have been recorded.

The best examples of old oak woodlands are seen in the ancient Park Hill woodland in the estate at Abbeyleix; at Kyleadohir, on the Delour, Forest Wood House, Kylecorragh and Brownstown Woods on the Nore; and at Cloghristic Wood, Drummond Wood and Borris Demesne on the Barrow, though other patches occur throughout the site. Abbeyleix Woods is a large tract of mixed deciduous woodland which is one of the only remaining true ancient woodlands in Ireland. Historical records show that Park Hill has been continuously wooded since the 16th century and has the most complete written record of any woodland in the country. It supports a variety of woodland habitats and an exceptional diversity of species including 22 native trees, 44 bryophytes and 92 lichens. It also contains eight indicator species of ancient woodlands. Park Hill is also the site of two rare plants, Nettle-leaved

Bellflower and the moss *Leucodon sciuroides.* The rare Myxomycete fungus, *Licea minima* has been recorded from woodland at Abbeyleix.

Oak woodland covers parts of the valley side south of Woodstock and is well developed at Brownsford where the Nore takes several sharp bends. The steep valley side is covered by oak (*Quercus* spp.), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*) and Downy Birch (*Betula pubescens*), with some Beech (*Fagus sylvatica*) and Ash (*Fraxinus excelsior*). All the trees are regenerating through a cover of Bramble (*Rubus fruticosus* agg.), Foxglove (*Digitalis purpurea*), Great Wood-rush (*Luzula sylvatica*) and Broad Buckler-fern (*Dryopteris dilatata*).

On the steeply sloping banks of the River Nore, about 5 km west of New Ross, in Co. Kilkenny, Kylecorragh Woods form a prominent feature in the landscape. This is an excellent example of relatively undisturbed, relict oak woodland with a very good tree canopy. The wood is quite damp and there is a rich and varied ground flora. At Brownstown, a small, mature oak dominated woodland occurs on a steep slope. There is younger woodland to the north and east of it. Regeneration throughout is evident. The understorey is similar to the woods at Brownsford. The ground flora of this woodland is developed on acidic, brown earth type soil and comprises a thick carpet of Bilberry (*Vaccinium myrtillus*), Heather (*Calluna vulgaris*), Hard Fern (*Blechnum spicant*), Common Cow-wheat (*Melampyrum pratense*) and Bracken (*Pteridium aquilinum*).

Borris Demesne contains a very good example of a semi-natural broadleaved woodland in very good condition. There is quite a high degree of natural re-generation of oak and Ash through the woodland. At the northern end of the estate oak species predominate. Drummond Wood, also on the Barrow, consists of three blocks of deciduous woods situated on steep slopes above the river. The deciduous trees are mostly oak species. The woods have a well-established understorey of Holly, and the herb layer is varied, with Bramble abundant. The whitebeam *Sorbus devoniensis* has also been recorded here.

Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the floodplain of the river is intact. Characteristic species of the habitat include Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), Marsh Ragwort (*Senecio aquaticus*), Ground Ivy (*Glechoma hederacea*) and Hedge Bindweed (*Calystegia sepium*). Indian Balsam (*Impatiens glandulifera*), an introduced and invasive species, is abundant in places.

Floating river vegetation is well represented in the Barrow and in the many tributaries of the site. In the Barrow the species found include water-starworts (*Callitriche* spp.), Canadian Pondweed (*Elodea canadensis*), Bulbous Rush (*Juncus bulbosus*), water-milfoils (*Myriophyllum* spp.), the pondweed *Potamogeton* x *nitens*, Broad-leaved Pondweed (*P. natans*), Fennel Pondweed (*P. pectinatus*), Perfoliated Pondweed (*P. perfoliatus*) and crowfoots (*Ranunculus* spp.). The water quality of the Barrow has improved since the vegetation survey was carried out (EPA, 1996).

Dry heath at the site occurs in pockets along the steep valley sides of the rivers especially in the Barrow Valley and along the Barrow tributaries where they occur in the foothills of the Blackstairs Mountains. The dry heath vegetation along the slopes of the river bank consists of Bracken and Gorse (*Ulex europaeus*) with patches of acidic grassland vegetation. Additional typical species include Heath Bedstraw (*Galium saxatile*), Foxglove, Common Sorrel (*Rumex acetosa*) and Creeping Bent (*Agrostis stolonifera*). On the steep slopes above New Ross the Red Data Book species Greater Broomrape (*Orobanche rapum-genistae*) has been recorded. Where rocky outcrops are shown on the maps Bilberry and Great Wood-rush are present. At Ballyhack a small area of dry heath is interspersed with patches of lowland dry grassland. These support a number of clover species, including the legally protected Clustered Clover (*Trifolium glomeratum*) - a species known from only one other site in Ireland. This grassland community is especially well developed on the west side of the mud-capped walls by the road. On the east of the cliffs a group of rock-dwelling species occur, i.e. English Stonecrop (*Sedum anglicum*), Sheep's-bit (*Jasione montana*) and Wild Madder (*Rubia peregrina*). These rocks also support good lichen and moss assemblages with *Ramalina subfarinacea* and *Hedwigia ciliata*.

Dry heath at the site generally grades into wet woodland or wet swamp vegetation lower down the slopes on the river bank. Close to the Blackstairs Mountains, in the foothills associated with the Aughnabrisky, Aughavaud and Mountain Rivers there are small patches of wet heath dominated by Purple Moor-grass (*Molinia caerulea*) with Heather, Tormentil (*Potentilla erecta*), Carnation Sedge (*Carex panicea*) and Bell Heather (*Erica cinerea*).

Salt meadows occur at the southern section of the site in old meadows where the embankment has been breached, along the tidal stretches of in-flowing rivers below Stokestown House, in a narrow band on the channel side of Common Reed (*Phragmites australis*) beds and in narrow fragmented strips along the open shoreline. In the larger areas of salt meadow, notably at Carrickcloney, Ballinlaw Ferry and Rochestown on the west bank; Fisherstown, Alderton and Great Island to Dunbrody on the east bank, the Atlantic and Mediterranean sub types are generally intermixed. At the upper edge of the salt meadow in the narrow ecotonal areas bordering the grasslands where there is significant percolation of salt water, the legally protected species Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley (*Hordeum secalinum*) are found. The very rare and also legally protected Divided Sedge (*Carex divisa*) is also found. Sea Rush (*Juncus maritimus*) is also present. Other plants recorded and associated with salt meadows include Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Couch (*Elymus pycnanthus*), Spear-leaved Orache (*Atriplex prostrata*), Lesser Sea-spurrey (*Spergularia marina*), Sea Arrowgrass (*Triglochin maritima*) and Sea Plantain (*Plantago maritima*).

Glassworts (*Salicornia* spp.) and other annuals colonising mud and sand are found in the creeks of the saltmarshes and at the seaward edges of them. The habitat also occurs in small amounts on some stretches of the shore free of stones.

The estuary and the other E.U. Habitats Directive Annex I habitats within it form a large component of the site. Extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. Good quality intertidal sand and mudflats have developed on a linear shelf on the western side of Waterford Harbour, extending for over 6 km from north to south between Passage East and Creadaun Head, and in places are over 1 km wide. The sediments are mostly firm sands, though grade into muddy sands towards the upper shore. They have a typical macro-invertebrate fauna, characterised by polychaetes and bivalves. Common species include *Arenicola marina*, *Nephtys hombergii*, *Scoloplos armiger*, *Lanice conchilega* and *Cerastoderma edule*. An extensive area of honey-comb worm biogenic reef occurs adjacent to Duncannon, Co. Wexford on the eastern shore of the estuary. It is formed by the polychaete worm *Sabellaria alveolata.* This intertidal *Sabellaria alveolata* reef is formed as a sheet of interlocking tubes over a considerable area of exposed bedrock. This polychaete species constructs tubes, composed of aggregated sand grains, in tightly packed masses with a distinctive honeycomb-like appearance. These can be up to 25cm proud of the substrate and form hummocks, sheets or more massive formations. A range of species are reported from these reefs including: *Enteromorpha* sp.; *Ulva* sp.; *Fucus vesiculosus*; *Fucus serratus*; *Polysiphonia* sp.; *Chondrus crispus*; *Palmaria palmate*; *Coralinus officialis*; *Nemertea* sp.; *Actinia equine*; *Patella vulgate*; *Littorina littorea*; *Littorina obtusata* and *Mytilus edulis*.

The western shore of the harbour is generally stony and backed by low cliffs of glacial drift. At Woodstown there is a sandy beach, now much influenced by recreation pressure and erosion. Behind it a lagoonal marsh has been impounded which runs westwards from Gaultiere Lodge along the course of a slow stream. An extensive reedbed occurs here. At the edges is a tall fen dominated by sedges (*Carex* spp.), Meadowsweet, willowherbs (*Epilobium* spp.) and rushes (*Juncus* spp.). Wet woodland also occurs.

The dunes which fringe the strand at Duncannon are dominated by Marram (*Ammophila arenaria*) towards the sea. Other species present include Wild Clary/Sage (*Salvia verbenaca*), a rare Red Data Book species. The rocks around Duncannon ford have a rich flora of seaweeds typical of a moderately exposed shore and the cliffs themselves support a number of coastal species on ledges, including Thrift, Rock Samphire (*Crithmum maritimum*) and Buck's-horn Plantain (*Plantago coronopus*).

Other habitats which occur throughout the site include wet grassland, marsh, reedswamp, improved grassland, arable land, quarries, coniferous plantations, deciduous woodland, scrub and ponds.

Seventeen Red Data Book plant species have been recorded within the site, most in the recent past. These are Killarney Fern (*Trichomanes speciosum*), Divided Sedge, Clustered Clover, Basil Thyme (*Acinos arvensis*), Red Hemp-nettle (*Galeopsis angustifolia*), Borrer's Saltmarsh-grass, Meadow Barley, Opposite-leaved Pondweed (*Groenlandia densa*), Meadow Saffron/Autumn Crocus (*Colchicum autumnale*), Wild Clary/Sage, Nettle-leaved Bellflower, Saw-wort (*Serratula tinctoria*), Bird Cherry

(*Prunus padus*), Blue Fleabane (*Erigeron acer*), Fly Orchid (*Ophrys insectifera*), Ivy Broomrape (*Orobanche hederae*) and Greater Broomrape. Of these, the first nine are protected under the Flora (Protection) Order, 2015. Divided Sedge was thought to be extinct but has been found in a few locations in the site since 1990. In addition plants which do not have a very wide distribution in the country are found in the site including Thin-spiked Wood-sedge, Field Garlic (*Allium oleraceum*) and Summer Snowflake. Six rare lichens, indicators of ancient woodland, are found including *Lobaria laetevirens* and *L. pulmonaria.* The rare moss *Leucodon sciuroides* also occurs.

The site is very important for the presence of a number of E.U. Habitats Directive Annex II animal species including Freshwater Pearl Mussel (*Margaritifera margaritifera*), White-clawed Crayfish, Salmon, Twaite Shad, three lamprey species – Sea Lamprey, Brook Lamprey and River Lamprey, the tiny whorl snail *Vertigo moulinsiana* and Otter. This is one of only a handful of spawning grounds in the country for Twaite Shad. The freshwater stretches of the River Nore main channel is a designated salmonid river. The Barrow/Nore is mainly a grilse fishery though spring salmon fishing is good in the vicinity of Thomastown and Inistioge on the Nore. The upper stretches of the Barrow and Nore, particularly the Owenass River, are very important for spawning.

The site supports many other important animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Badger, Irish Hare and Common Frog. The rare Red Data Book fish species Smelt (*Osmerus eperlanus*) occurs in estuarine stretches of the site. In addition to the Freshwater Pearl Mussel, the site also supports two other freshwater mussel species, *Anodonta anatina* and *A. cygnea*.

Three rare invertebrates have been recorded in alluvial woodland at Murphy's of the River. These are: *Neoascia obliqua* (Order Diptera: Syrphidae), *Tetanocera freyi* (Order Diptera: Sciomyzidae) and *Dictya umbrarum* (Order Diptera: Sciomyzidae). The rare invertebrate, *Mitostoma chrysomelas* (Order Arachnida), occurs in the old oak woodland at Abbeyleix and only two other sites in the country. Two flies (Order Diptera) *Chrysogaster virescens* and *Hybomitra muhlfeldi* also occur at this woodland.

The site is of ornithological importance for a number of E.U. Birds Directive Annex I species, including Greenland White-fronted Goose, Whooper Swan, Bewick's Swan, Bar-tailed Godwit, Peregrine and Kingfisher. Nationally important numbers of Golden Plover and Bar-tailed Godwit are found during the winter. Wintering flocks of migratory birds are seen in Shanahoe Marsh and the Curragh and Goul Marsh, both in Co. Laois, and also along the Barrow Estuary in Waterford Harbour. There is also an extensive autumnal roosting site in the reedbeds of the Barrow Estuary used by Swallows before they leave the country. The old oak woodland at Abbeyleix has a typical bird fauna including Jay, Long-eared Owl and Raven. The reedbed at Woodstown supports populations of typical waterbirds including Mallard, Snipe, Sedge Warbler and Water Rail.

Land use at the site consists mainly of agricultural activities – mostly intensive in nature and principally grazing and silage production. Slurry is spread over much of

the area. Arable crops are also grown. The spreading of slurry and fertiliser poses a threat to the water quality of the salmonid river and to the populations of E.U. Habitats Directive Annex II animal species within the site. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the main rivers and their tributaries and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. There is net fishing in the estuary and a mussel bed also. Other recreational activities such as boating, golfing and walking, particularly along the Barrow towpath, are also popular. There is a golf course on the banks of the Nore at Mount Juliet and GAA pitches on the banks at Inistioge and Thomastown. There are active and disused sand and gravel pits throughout the site. Several industrial developments, which discharge into the river, border the site. New Ross is an important shipping port. Shipping to and from Waterford and Belview ports also passes through the estuary.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, over-grazing within the woodland areas, and invasion by non-native species, for example Cherry Laurel (*Prunus laurocerasus*) and Rhododendron (*Rhododendron ponticum*). The water quality of the site remains vulnerable. Good quality water is necessary to maintain the populations of the Annex II animal species listed above. Good quality is dependent on controlling fertilisation of the grasslands, particularly along the Nore. It also requires that sewage be properly treated before discharge. Drainage activities in the catchment can lead to flash floods which can damage the many Annex II species present. Capital and maintenance dredging within the lower reaches of the system pose a threat to migrating fish species such as lamprey and shad. Land reclamation also poses a threat to the salt meadows and the populations of legally protected species therein.

Overall, the site is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive. Furthermore it is of high conservation value for the populations of bird species that use it. The occurrence of several Red Data Book plant species including three rare plants in the salt meadows add further interest to this site.

SITE SYNOPSIS

SITE NAME: COAN BOGS NHA

SITE CODE: 002382

Coan Bogs NHA consists of two small areas of upland blanket bog located to the east of Castlecomer, Co. Kilkenny. The first bog lies in the townland of Coan East, 2.5 km to the north-east of Coan village at the altitude 270 m to 281 m. The second bog is situated 3 km to the north-west of Coan village in the townland of Smithstown. It lies at an altitude of 240 m. Bedrock geology for both areas is shale overlain locally by glacial till. Blanket bog vegetation is well developed in central areas of both bogs although cutover surrounds them. Plantation forestry also surrounds the sites.

Vegetation on the eastern bog is characterised by tall Ling Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Hare's-tail Cottongrass (*Eriophorum vaginatum*) and lichen *Cladonia portentosa*. Round-leaved Sundew (*Drosera rotundifolia*) is also common. There are large hummocks of bog mosses *Sphagnum capillifolium* and *S subnitens.* Hollows containing some *S. papillosum* are dominated by Bog Asphodel (*Narthecium ossifragum*). Cranberry (*Vaccinium oxycoccos*), a species more characteristic of raised bogs, is also present and Bilberry (*V. myrtillus*) occurs on larger hummocks along with the moss *Hypnum jutlandicum*. Further east the bog becomes wetter with up to 60% bog moss cover. In this wet area Cranberry is abundant and another characteristic raised bog species, Bog-rosemary (*Andromeda polifolia*) occurs.

The western bog is also dominated by Ling Heather, Crossed-leaved Heath and Hare's-tail Cottongrass with some Bog Asphodel. Bog moss cover reaches 80% and moss *Hypnum jutlandicum* and Lichens (*Cladonia* spp.) also occur. Bog-rosemary and Round-leaved Sundew are also present. This bog becomes drier in the south with Deergrass (*Scirpus cespitosus*) more prevalent. Bog Asphodel occurs on bare peat by the southern cutover.

The cutover around the eastern bog is dominated by Purple Moor-grass *(Molinia caerulea*) with clear-felled plantations at the margins. Cutover on the northern side is planted with new conifer forest. Wet cutover on the eastern side is dominated by Purple Moor-grass with Ling Heather, Bilberry, the moss *Polytrichum commune* and scattered Willow (*Salix* spp.).

The western bog has cutover dominated by Birch (*Betula* spp.) scrub to the east and south and new plantation forest to the west.

Current landuse on the margins of the western bog consists of mechanical peat-cutting and planting of conifer forest. There is some encroachment of conifer seedlings onto both bogs from surrounding forestry. These activities that have resulted in loss of habitat and damage to the hydrological condition of both areas, pose a continuing threat to their conservation.

Coan Bogs NHA is a site of considerable conservation significance consisting of upland blanket bog. This site, although small, is undisturbed and shows good characteristics of blanket bog with some raised bog indicator species. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions at temperate latitudes with cool, wet, oceanic climates. North-west Europe contains some of the best-developed areas of blanket bog in the world. The most extensive areas are found in Ireland and Britain. Upland blanket bogs, due to their exposure to severe climatic conditions at high elevations, are particularly vulnerable to erosion by human activities and extensive areas are currently undergoing active erosion due mainly to overgrazing. The current area of intact upland blanket bog in Ireland represents only a fraction of the original resource, due to the combined impacts of afforestation and overgrazing, and intact examples are therefore extremely valuable for nature conservation. Their long-term survival requires sensitive management.

27.1.2004

SITE SYNOPSIS

SITE NAME: DUNMORE CAVE

SITE CODE: 000401

Dunmore Cave is a tourist cave owned by the Office of Public Works which is used by at least 50 Natterer's Bats (*Myotis nattereri*) during the summer months. It is a fossil cave located in an isolated limestone outcrop on the Castlecomer plateau, overlooking the Dinin River Valley, approximately seven miles north of Kilkenny City. It is possible that more bats roosted in the cave before it was developed and opened to the public in the late 1960s. It is possible that this bat also hibernates in the cave during the winter. However, it is not easy to count Natterer's Bats in hibernation as they hide in small cracks and crevices.

The Natterer's Bat is an uncommon bat in Ireland, only several thousand are known from throughout the island. Body measurements include forearm 36-43mm, head and body 45mm, wingspan 270mm and weight 5-12g. It is distinguished from other species by the presence of a still fringe of hairs along the tail membrane, fairly long pink ears and bright white fur on its underside. Few nursery colonies are known and these are in a variety of buildings, including church and house roofs, stone barns and caves. Single bats or small numbers are found under bridges during the summer. During winter, a few Natterer's Bats have been found in underground sites. This species forages in woodland where it catches insects in the air, or off foliage or the ground.

As only a few thousand Natterer's Bats have been recorded throughout Ireland in the past ten years, this site is definitely of national importance and possibly of international importance.

6.11.2009

SITE SYNOPSIS

SITE NAME: MOTHEL CHURCH, COOLCULLEN

SITE CODE: 000408

This bat site is located in the loft of the Church of Ireland, Mothel, Coolcullen, Co. Kilkenny. A nursery colony of Natterer's Bat (*Myotis nattereri*) uses the loft and bell tower of the church. Over 100 bats were counted at the site in 1993 making it one of the biggest in the country.

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As the national population of Natterer's Bats is estimated to be only several thousand, this nursery roost is of national importance and also of international importance. There are no immediate threats facing this roost.

The woodland to the east of the church is probably the preferred foraging area for this colony so any changes to this could adversely affect the colony.

6.11.2009

SITE SYNOPSIS

SITE NAME: BALLYMOON ESKER

SITE CODE: 000797

Ballymoon is located about 3km east of Bagenalstown, Co. Carlow. The site is an esker, a long hill of sand and gravel, which stretches from just south of Dunlecky Cross Roads to Ballymoon Castle. The area included within the site boundary is based on a desk review and only a portion of this site has been the subject of a field survey. The hill's sand deposits show some water-sorting where they are exposed. Sand has been quarried at frequent intervals along the structure of the esker and only the northernmost section, which supports pine trees, is intact.

Calcareous grassland covers much of the esker and at the southern end contains several rare plant species, two of which are legally protected under the Flora Protection Order (1987), namely Green-winged Orchid (*Orchis morio*) and Basil Thyme (*Acinos arvensis*).

Basil Thyme is typically associated with eskers and calcareous soils. Since 1970 the species has only been seen at four sites and is apparently declining as a result of modern methods of weed control and exploitation of its esker habitat for gravel extraction.

Green-winged Orchid is typical of unimproved meadow pasture and sandhills. This species has suffered a dramatic decline in numbers and only seven sites have been reported since 1970. The reasons for this decline are apparently due to land reclamation and especially fertilising of the old pasture sites in which it occurred.

In addition, the scarce Bee Orchid (*Ophrys apifera*) occurs. Other species included in the grassland are Yarrow (*Achillea millefolium*), Lady's Bedstraw (*Galium verum*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Smooth Meadow-grass (*Poa pratensis*), Quaking-grass (*Briza media*), Glaucous Sedge (*Carex flacca*) and Spring-sedge (*C. caryophyllea*).

This site is also of geomorphological interest as part of an esker well separated from the larger esker systems of the midlands, a rare phenomenon in the county.

12.11.2009

SITE SYNOPSIS

SITE NAME: ESKER PITS

SITE CODE: 000832

Esker Pits proposed Natural Heritage Area, near Gragara, County Kilkenny, is a lightly worked gravel quarry supporting a range of vegetation types, most notably areas of species-rich calcareous grassland. Of particular significance is the presence of a large population of a rare Red Data Book plant species.

The site comprises a mosaic of different habitats including patches of species-rich calcareous grassland, dry gravel banks, small ponds, scrub woodland and marsh areas which are flooded in the winter.

The grassland areas contain an excellent diversity of species including a substantial population of the rare, Red Data Book species, Blue Fleabane (*Erigeron acer*). Other characteristic calcareous grassland species which occur here include Oxeye Daisy (*Leucanthemum vulgare*), Black Medick (*Medicago lupulina*), Common Knapweed (*Centaurea nigra*), Greater Knapweed (*Centaurea scabiosa*), Carline Thistle (*Carlina vulgaris*), Common Centaury (*Centaurum erythraea*), Wild Carrot (*Daucus carota*), Fairy Flax (*Linum catharticum*), Field Scabious (*Knautia arvensis*) and Lady's Bedstraw (*Galium verum*), amongst others. The site supports a good range of ruderal plant species of interest.

12.11.2009

SITE SYNOPSIS

SITE NAME: RED BOG, DUNGARVAN

SITE CODE: 000846

The Red Bog Natural Heritage Area, located 2km north of Dungarvan in County Kilkenny, is an interesting wetland area surrounded by wet grassland and scrub. Afforestation has reduced the size of this site considerably and it is now bounded on the east and west sides by conifer plantations.

The main habitat is floating fen comprised of emergent vegetation with several small areas of open water. The vegetation is dominated by Bulrush (*Typha latifolia*) and Great Fen-sedge (*Cladium mariscus*), a plant which is much more common in the west of Ireland.

The flora is of local interest and the site supports several species of waterfowl in the winter.

12.11.2009

SITE SYNOPSIS

SITE NAME: WHITEHALL QUARRIES

SITE CODE: 000855

Whitehall Quarries consists of two disused shale/slate quarries and are situated 5km west of Bagnelstown, in Co. Kilkenny. The quarry tips and the floors of the old working areas now provide a rich variety of dry acidic habitats, the substrate varying in stability and particle size. These have been colonised to a greater or lesser extent by a variety of plants typical of such dry habitats such as Bilberry (*Vaccinium myrtillus*). Although degraded by recent management, the vegetation has the potential to recover.

The flora of this area presents a sharp contrast to the flora of the surrounding region and as such is of ecological interest. Raptors nest in the quarry cliffs.

12.11.2009

SITE SYNOPSIS

SITE NAME: LOUGH MACASK

SITE CODE: 001914

Lough Macask is a small pond north-west of Kilkenny that fluctuates in size over the year. It is isolated from the underlying limestone by glacial till with a shale content from the Slieve Ardagh Hills. The substrate is generally mineral without much content of peat, except, perhaps in the centre.

The permanently flooded part contains plant species such as Broad-leaved Pondweed (*Potamogeton natans*), Water-plantain (*Alisma plantago-aquatica*) and Common Water-crowfoot (*Ranunculus aquatilis*) with the floating duckweeds, *Lemna minor*, *L. trisulca* and *Spirodela polyrhiza*. Towards the edge, Branched Bur-reed (*Sparganium erectum*) is important, leading into a zone of Floating Sweet-grass (*Glyceria fluitans*), Lesser Spearwort (*Ranunculus flammula*), Pink Water-speedwell (*Veronica catenata*), mints (*Mentha aquatica* and *M. arvensis*) and forget-me-nots (*Myostis scorpioides* and *M. laxa*). The surroundings of the pond are grazed and poached when the water levels are high. Silverweed (*Potentilla anserina*), Amphibious Bistort (*Persicaria amphibia*), Marsh Foxtail (*Alopecurus geniculatus*) and Marsh Ragwort (*Senecio aquaticus*) characterise this area.

The vegetation shows that the site is similar in some ways to a turlough. It therefore differs from most other wetlands around Kilkenny and has a certain interest for this reason. In addition it contains Greater Duckweed (*Spirodela polyrhiza*) which is not found elsewhere in the county.

27.11.2009