

APPENDIX 11.1 HUGGINSTOWN FEN ECOLOGICAL REPORT**A11.1.1 INTRODUCTION**

A vegetation survey of Hugginstown Fen was carried out in order to assess the potential impacts of the proposed N9 road scheme on the fen. The route alignment runs adjacent to the eastern edge of Hugginstown Fen.

The fen was visited in April 2003 and the main habitats were described and mapped. This survey focused on the eastern side of the fen, which is the part most likely to be impacted by the road scheme.

A11.1.2 GENERAL SITE DESCRIPTION

Hugginstown fen is a candidate Special Area of Conservation (cSAC Site Code 0404), situated approximately 4km south-west of Ballyhale in County Kilkenny. It was selected for designation on the basis of its alkaline fen habitat, which is listed in Annex I of the EU Habitats Directive. The site encompasses an area of swamp and floating fen occurring in a small valley and as the catchment area is small, iron-rich springs are an important component of the hydrology. The fen, and the limestone glacial till on which it rests, are underlain and surrounded by acid Old Red Sandstone. Past management of the site has included some drainage channels, peat cutting and grazing.

A11.1.3 HABITATS

The main habitats, which comprise Hugginstown Fen, are classified according to Fossitt (2000). They are described below and shown on EIS Figure 11.13 in Volume 2.

Calcareous springs (FP1)

Hugginstown fen is fed by a number of calcareous springs. A notable spring/seepage area occurs at the northern end of the site. This flows out of the fen in a north-easterly direction. The presence of water-cress (*Nasturtium officinale*) and fool's water-cress (*Apium nodiflorum*) frequently along the stream channel suggest nutrient rich water. Although no other springs were observed during the survey, there is a flow of water out of the fen in a southerly direction. This watercourse is a tributary of the Derrylackey River, which flows into the Blackwater River.

Reed and large sedge swamp (FS1)

There are extensive areas of swamp on Hugginstown fen growing in standing water of more than 25cms deep. The swamp habitat within can be divided into three distinct categories on the basis of the dominant plant species. The swamp vegetation is dominated either by common reed (*Phragmites australis*), bulrush (*Typha latifolia*) or water horsetail (*Equisetum fluviatile*) and these categories are described separately below.

1/ Phragmites-dominated swamp

This is the most widespread of the swamp vegetation types and covers a large area of the site to the North of the fen. It is characterised by dense stands of common reed. This grades into fen vegetation (PF) in the centre and at the margins of the site.

2/ Bulrush/Sparganium-dominated swamp

The vegetation of this swamp category is dominated by bulrush and bur-reed (*Sparganium sp.*) with other species such as greater bird's-foot-trefoil (*Lotus uliginosus*) also occurring. There is one main extensive area of this habitat that encompasses an area of standing water with a floating mat of creeping bent (*Agrostis stolonifera*) and bogbean (*Menyanthes trifoliata*). Other species occurring occasionally in the bulrush and bur-reed swamp areas include bottle sedge (*Carex rostrata*), water horsetail and marsh marigold (*Caltha palustris*). Hawthorn (*Crataegus monogyna*) saplings are encroaching into one of the regions.

3/ Horsetail-dominated swamp

Swamp dominated by water horsetail is the least extensive of the swamp habitats present and occurs at two locations at the central-northern end of the fen. It contains areas of open water with dense stands of water horsetail and a localised patch of bogbean is also present.

Fen (PF)

The main area of fen vegetation is located in the central part of the site. At the northern end it is confined to the margins of the site adjacent to swamp vegetation or transitional to open water. Although it is predominantly alkaline type fen, which is classified as Rich fen (PF1) by Fossitt, it contains plant species that are indicative of a slightly more acidic type fen. There is an absence of black bog rush (*Schoenus nigricans*) on the eastern side of the fen (the western side was not surveyed in detail), which is typical of the more alkaline fen. The main fen habitats are described below:

Rich fen (PF1)

The main area of alkaline fen vegetation is located in the centre of the site. The vegetation is underlain with a carpet of moss dominated by *Calliergon cuspidatum* with a good diversity of sedges. Bottle sedge (*Carex rostrata*) is frequent and other sedges occurring occasionally are carnation sedge (*Carex panicea*), lesser tussock-sedge (*Carex diandra*) and more rarely yellow sedge (*Carex viridula*). In wetter areas common cottongrass (*Eriophorum angustifolium*) and marsh marigold is locally frequent. Other species occurring include, cuckoo-flower (*Cardamine pratensis*), willow saplings (*Salix sp.*), marsh pennywort (*Hydrocotyle vulgaris*), marsh bedstraw (*Galium palustre*), wild angelica (*Angelica sylvestris*), marsh cinquefoil (*Potentilla palustris*), jointed/sharp-flowered rush (*Juncus articulatis/acutiflorus*) and creeping bent grass. Devil's-bit scabious (*Succisa pratensis*) occurs occasionally. The area was formerly cut for peat.

At the margins of the site other species in the fen include; occasional clumps of tussock sedge (*Carex paniculata*), creeping bent, mint (*Mentha aquatica*), lesser spearwort (*Ranunculus flammula*), great willowherb (*Epilobium hirsuta*), meadowsweet (*Filipendula ulmaria*), common marsh-bedstraw (*Galium palustre*), water horsetail (*Equisetum fluviatile*) and horsetail (*Equisetum palustre*).

This habitat has links with the Annex I habitat 'Alkaline fens (7230)' under the EU Habitats Directive

Transition mire and quaking bog (PF3)

The transition mire is an extremely wet peat-forming system. It is located in a few small areas of the site at the margins of open water. It consists of a mosaic of quaking hummocks of alkaline fen vegetation, interspersed with areas of open water (20-30cm in depth). The hummocks range from small clumps with an area of 50cm² to large floating mats raised 20-40 cm above the water level. These mats are carpeted with mosses dominated by *Calliergon cuspidatum* with *Plagiomnium undulatum* and also present are the mosses *Drepanocladus sp.*, occurring at the base of hummocks, and *Aulacomium sp.* Other species include lesser-tussock sedge, marsh cinquefoil, marsh bedstraw, marsh pennywort, cuckoo-flower, devil's-bit scabious, water mint, lesser spearwort, marsh marigold and marsh lousewort (*Pedicularis palustris*). The areas of open water support bladderworts (*Utricularia spp.*) and stoneworts (*Chara spp.*). Common cottongrass and bottle sedge also occur.

This habitat has links with the Annex I habitat 'Transition mires and quaking bogs (7140)' under the EU Habitats Directive.

Wet grassland (GS4)

Several areas of wet grassland occur within the site at the margins of the fen. These areas are typically grazed or previously grazed and are dominated by soft rush (*Juncus effusus*) and Yorkshire fog (*Holcus lanatus*). Other species include meadow buttercup (*Ranunculus acris*), ribwort plantain (*Plantago lanceolata*) and jointed/sharp-flowered rush. At the southern end of the site there is also a large area of wet grassland-fen transition (GS4/PF), which occurs on peat and is more species-rich than the other areas of wet grassland. The vegetation includes abundant soft rush and hard rush (*Juncus inflexus*). Other species present include jointed/sharp-flowered rush, carnation sedge (*Carex panicea*), glaucous sedge (*Carex flacca*), creeping bent, cuckoo-flower, meadowsweet, creeping buttercup (*Carex flacca*), white clover (*Trifolium repens*), marsh thistle (*Cirsium palustre*), mint (*Mentha sp.*), marsh pennywort (*Hydrocotyle vulgaris*) and lesser spearwort. At the northern end of the site purple moor-grass (*Molinia caerulea*) is common in the grassland.

Dry calcareous and neutral grassland (GS1)

In the southern region of the site, there is a slightly elevated knoll of mineral soil with species rich grassland. It contains a number of grass species including fescues (*Festuca spp.*) and bents (*Agrostis spp.*) and a number of other species including glaucous sedge, field wood-rush (*Luzula campestris*),

dandelion (*Taraxacum agg.*) common bird's-foot trefoil (*Lotus corniculatus*), yarrow (*Achillea millefolium*) and moss (*Rhytidiadelphus sp.*).

Improved agricultural grassland (GA1)

Areas of improved agricultural grassland occur around the perimeter of the fen. These are heavily modified habitats with low species diversity and low ecological value. The majority of fields are dominated by perennial rye-grass (*Lolium perenne*) and contain only a few broadleaved herbaceous species such as clovers (*Trifolium spp.*), daisy (*Bellis perennis*), buttercups (*Ranunculus spp.*) and chickweed (*Stellaria media*). There are some rush species (*Juncus spp.*) in the wetter fields.

Mixed broadleaved / conifer woodland (WD2)

This habitat is found at the eastern edge of the fen and rises up to the road at a slight gradient. The woodland is largely comprised of Scot's-pine (*Pinus sylvestris*) with larch (*Larix sp.*) and occasional sitka spruce (*Picea sitchensis*). Adjacent to the fen, where the ground is flatter and wetter, willows (*Salix spp.*) are the dominant species.

Conifer plantation (WD4)

A mixed conifer plantation dominated by sitka spruce and Scot's pine occurs at the eastern edge of the fen. Other species include larch, and rarely beech (*Fagus sylvatica*) and ash (*Fraxinus excelsior*) with some hawthorn in the understorey. The ground is poached and the ground flora is dominated by ivy (*Hedera helix*) and bramble (*Rubus fruticosus*) with some violet (*Viola sp.*) and vetch (*Vicia sp.*).

Wet willow-alder-ash woodland (WN6)

There are a number of patches of willow scrub/woodland at the margin of the fen. Willow (*Salix cinerea*) is the main species becoming quite dense and up to 8m high. There are occasional alder trees (*Alnus glutinosa*) along the landward side of the fen.

Scrub (WS1)

The scrub habitat at the site is dominated mainly by willow and gorse (*Ulex europeus*). The large island of dense scrub on the north-western edge of the fen is dominated by these species but also contains hawthorn, blackthorn (*Prunus spinosa*), holly (*Ilex aquifolium*) and some ash. Where scrub is encroaching into grassland habitats it is dominated by gorse with heather (*Calluna vulgaris*) and hawthorn.

Open water

The extensive area of open water at the southern end of the fen is 20-30cm deep occurring on a peat substrate. There is a very sparse sward of bottle sedge and other species include cottongrass and bogbean. There are some submerged bladderworts and stoneworts and some spike-rush (*Eleocharis sp.*). Other patches of open water habitat occur throughout the site and these have been described under the habitats in which they occur.

A11.1.4 EVALUATION

Hugginstown fen is a candidate Special Area of Conservation. It was selected for designation on the basis of its alkaline fen habitat, which is listed in Annex I of the EU Habitats Directive. The fen vegetation is a complex of rich fen (alkaline) and transition quaking mire (PF3). It contains a good diversity of other wetland habitats and species and is an internationally important fen site.

A11.1.5 IMPACTS

There will be no impact by the proposed road scheme on the hydrology of the fen, as established by the Minerex hydrogeology report, 2004.

A11.1.6 REFERENCES

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