

Arup Consulting Engineers

ATTACHMENT I.1

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ATTACHMENT I.1

Site Synopsis for the designated sites in the vicinity of the Whitegate Independent Power Plant.

DESIGNATED SITES WITHIN 5 KMS OF THE WHITEGATE INDEPENDENT POWER PLANT

There are a number of designated areas of conservation interest within five kilometres of the development site. These include those outlined in the following table, Table I.1 (refer to Diagram 11).

Table I.1: Designated Sites within 5km of the Whitegate Independent Power Plant Site

Designated Site	Location	Distance
Whitegate Bay proposed Natural Heritage Area 001084	east of Corkbeg Island, to north east of site	Approx 1km
Rostellan Lough, Aghada Shore and Poul nabibe Inlet proposed Natural Heritage Area 001076	north east of Aghada, to the northeast of the site	Approx 2.5km at nearest point
Lough Beg proposed Natural Heritage Area 001066	western side of the Harbour to the west of the site.	Approx 3km
Cuskinny Marsh proposed Natural Heritage Area 001987	north of the site	Approx 4.5km
Cork Harbour SPA 004030 (includes Whitegate Bay, Rostellan Inlet and Lough Beg	North, east, and west of site	Approx 1km at nearest point

Synopses of the designated sites included in the above table are as follows (Source: National Parks and Wildlife Office 2007)

SITE NAME: WHITEGATE BAY pNHA

SITE CODE: 001084

This site is situated in the south-east corner of Cork Harbour, immediately to the west of Whitegate in County Cork. Geologically, Cork Harbour consists of several limestone basins separated from each other and from the sea by ridges of Old Red Sandstone. Recent muddy and silty deposits obscure much of the solid geology, however.

Most of the Whitegate Bay NHA comprises open marine water, with extensive mudflats exposed at low tide and is a haunt of a wide range of waterfowl, in particular Grebes, Diving Ducks and Waders. Many of these used to roost on Long Point, but this area is now occupied by the Aghada Power Station and so many of the birds spend the night in the vicinity of Corkbeg Island.

In the 1986 Report on the important conservation areas of County Cork, a number of figures were given as 'typical' for some bird species on a daily basis. They are as follows: Shelduck (15), Wigeon (220), Dunlin (500), Knob (200), Curlew (80), Redshank (30), Bar-tailed Godwit (75), Ternstone (25), Oystercatcher (120) and Ringed Plover (50).

The figures quoted above give the site a status of local conservation importance. However, Whitegate Bay is an integral part of Cork Harbour which is a wetland of international importance for its wintering populations of Black-tailed Godwit, Curlew and Redshank and its spring migration numbers of Whimbrel. Twelve species occur at nationally important levels, and Cork Harbour is one of only a few Irish wetlands to regularly hold over 20,000 waterfowl. Whitegate Bay usually holds about 10% of the winter waterfowl community of Cork Harbour.

The whole Harbour area is under pressure from industrial and urban development, pollution and from recreational usage. Run-off from the surrounding rich agricultural land poses a further pollution threat. Sewage is discharged directly into Whitegate Bay from the town of Whitegate. Excessive growth of Cord-grass (*Spartina* sp.) threatens to obscure parts of the mudflats.

Whitegate Bay is an NHA of local significance for its waterfowl. This status is enhanced, though, as the whole of Cork Harbour is of international importance and as such is a proposed Special Protection Area. Sections of the Harbour, such as Whitegate Bay, should not be considered in isolation as the bird populations are very mobile throughout the area.

SITE NAME: ROSTELLAN LOUGH, AGHADA SHORE AND POULNABIBE INLET, pNHA

SITE CODE: 001076

This site occupies the north-east corner of Cork Harbour, west of Saleen and Rostellan. Geologically, Cork Harbour consists of several limestone basins, separated from the sea and from each other by ridges of Old Red Sandstone. According to a description provided for this site in the 1986 County Report, Rostellan Lough differs from the rest of Cork Harbour in that it is impounded and so is no longer tidal. As a result its bird community is distinct, with diving ducks and grebes most noticeable, Little Grebe (50), Pochard (100), and Tufted Duck (60) are frequent species, some of which breed here along with Mallard. Snipe are the most obvious waders present.

Vegetation on the lake margins is mostly Club-rushes (*Scirpus lacustris* and *S. maritimus* especially), with a Little Bulrush (*Typha latifolia*). A little wet woodland of Alder (*Alnus glutinosa*) occurs on some of the shore and wet grassland is frequent, with plants such as Bearded Couch (*Elymus caninus*), Creeping Bent (*Agrostis stolonifera*) and Water Mint (*Mentha aquatica*). Algae are very common in the lough itself, but the brackish nature of the water apparently inhibits the growth of many higher plants.

Mudflats occur westwards of Aghada, and these are utilised by many feeding waders, while the sea offshore is used by species such as Scamp, Goldeneye and Great Crested Grebe. Although the site itself is seen to support only moderate numbers of waterfowl, the area forms an integral part of Cork Harbour, which is a wetland of international importance for its wintering populations of Black-tailed Godwit, Curlew and Redshank and its spring migration numbers of Whimbrel. Twelve species occur at nationally important levels and Cork Harbour is one of only a few Irish wetlands to regularly hold over 20,000 waterfowl. The birdlife in this part of the harbour offers an interacting contrast with the rest of the area and this feature could be used for educational purposes.

The whole Cork Harbour area is under pressure from industrial and urban development, from pollution and from recreational usage. Drainage or reclamation would be particular threats to this sector of the Harbour, and the level of shooting could usefully be controlled to protect bird populations. Cord-grass (*Spartina* sp.) occurs at Poul nabibe, possibly posing a threat to the quality of the mudflats there for feeding birds.

The Rostellan Lough, Aghada Shore and Poul nabibe Inlet, NHA is of local significance for its waterfowl. This status is enhanced, though, as the whole of Cork Harbour is of international importance, and as such is a proposed Special Protection Area. Sections such as this NHA should not be considered in isolation as the bird populations are very mobile throughout the area.

SITE NAME: LOUGH BEG (CORK) pNHA

SITE Code: 001066

Lough Beg is a constituent part of Cork Harbour, occurring south of Ringaskiddy in the lower harbour. It occupies low ground between two small ridges, one behind Ringaskiddy and the other running through Coolmore and Currabinny. Limestone outcrops on part of the shore show that it is in the syncline or valley between the two main sandstone ridges on which Cork Airport and Ballymartle are sited. In the outer parts of Lough Beg the shore line is generally rocky with bedrock or boulder beaches. Around Lough More however a more sandy beach full of shells occurs where Sea Sandwort (*Honkenya peploides*), Orach (*Atriplex hastata*) and Wild Carrot (*Daucus carota*) are common above the tideline along with Mugwort (*Artemisia vulgaris*) and the introduced Hoary Cress (*Cardaria draba*). The Yellow Horned Poppy (*Glaucium flavum*) is close by.

Patches of saltmarsh are also found in which Red Fescue (*Festuca rubra*) is dominant with Sea Blite (*Suaeda maritima*) and Perennial Sow Thistle (*Sonchus arvensis*).

The inner section of the bay consists of mudflats which are partly colonised by *Spartina* grass. The corners have been reclaimed behind embankments but much of this ground remains brackish and ill-drained with marsh and wet grassland vegetation. Rush species (*Juncus acutiflorus*, *J. effusus* and locally *J. gerardii*) are frequent here with Creeping Bent (*Agrostis stolonifera*), Glaucous (*Carex flacca*) and Fox Sedges (*C. otrubae*), Fleabane (*Pulicaria dysenterica*), Greater Birdfoot Trefoil (*Lotus uliginosus*) and willowherbs (*Epilobium parviflorum*, *E. palustre* and *E. hirsutum*). Clubrushes (*Bolboschoenus maritimus* & *Schoenoplectus tabernaemontani*) grow in many of the drains and there are small areas of Reed (*Phragmites australis*) also.

As part of the Harbour complex, Lough Beg plays a part in supporting internationally important numbers of waders (over 20,000) and of two particular species, the Black-tailed Godwit (peak in 1991/92: 2,077) and Redshank (1,859). There are also nationally important flocks of nineteen others.

Wildfowl are relatively numerous as compared to other parts of the Harbour and Wigeon, Teal and Shelduck each occur in numbers up to 350 (counts pre-1979). There are also up to 3,000 waders present, mostly Golden Plover, Lapwing and Dunlin. But the area is perhaps more valuable as a secure roosting site for flocks of all shorebirds when their feeding areas on the mudflats are covered by the tide.

Current developments around Lough Beg seem not to have had a major impact on the bird numbers using the site and while the mudflats and open fields remain, this should continue to be the case. It is a significant area for wintering shorebirds and an attractive local amenity for this part of Cork. Some of the land near the Smith Kline Beecham plant is an Irish Wildbird Conservancy reserve.

SITE NAME: CUSKINNY MARSH pNHA

SITE CODE: 001987

This site is located 2.5km east of the centre of Cobh on the shores of Cork Harbour.

It is a small site with the dominant habitat being a brackish lake, joined to the sea through a sluice gate, and fed by streams flowing from the west and north. The lake is fringed with Common Reed (*Phragmites australis*) with wet deciduous woodland, composed of Alder (*Alnus glutinosa*) and Willow (*Salix sp.*), occurring to the north and west. A small area has been planted with Sitka Spruce (*Picea sitchensis*).

The main interest of the site is ornithological, with the lake supporting locally important numbers of dabbling ducks and mute swans.

The main land use is management for conservation purposes, with the site being an Irish Wildbird Conservancy reserve. No obvious damaging operations occur within the site.

Cuskinny Marsh is of interest because it contains a nice mix of habitats, within a small area, and supports locally important numbers of wildfowl.

SITE NAME: Cork Harbour SPA

SITE CODE: 004030

Cork Harbour is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas and Owenacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas Estuary, inner Lough Mahon, Lough Beg, Whitegate Bay and the Rostellan inlet.

Owing to the sheltered conditions, the intertidal flats are often muddy in character. These muds support a range of macro-invertebrates, notably *Macoma balthica*, *Scrobicularia plana*, *Hydrobia ulvae*, *Nephtys hombergi*, *Nereis diversicolor* and *Corophium volutator*. Green algae species occur on the flats,

especially *Ulva lactuca* and *Enteromorpha* spp. Cordgrass (*Spartina* spp.) has colonised the intertidal flats in places, especially where good shelter exists, such as at Rossleague and Belvelly in the North Channel. Salt marshes are scattered through the site and these provide high tide roosts for the birds. Salt marsh species present include Sea Purslane (*Halimione portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Lax-flowered Sea-lavender (*Limonium humile*) and Sea Arrowgrass (*Triglochin maritima*). Some shallow bay water is included in the site. Cork Harbour is adjacent to a major urban centre and a major industrial centre. Rostellan lake is a small brackish lake that is used by swans throughout the winter. The site also includes some marginal wet grassland areas used by feeding and roosting birds.

Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top five sites in the country. The five-year average annual core count for the entire harbour complex was 34,661 for the period 1996/97-2000/01. Of particular note is that the site supports an internationally important population of Redshank (1,614) - all figures given are average winter means for the 5 winters 1995/96-1999/00. A further 15 species have populations of national importance, as follows: Great Crested Grebe (218), Cormorant (620), Shelduck (1,426), Wigeon (1,750), Gadwall (15), Teal (807), Pintail (84), Shoveler (135), Red-breasted Merganser (90), Oystercatcher (791), Lapwing (3,614), Dunlin (4,936), Black-tailed Godwit (412), Curlew (1,345) and Greenshank (36). The Shelduck population is the largest in the country (9.6% of national total), while those of Shoveler (4.5% of total) and Pintail (4.2% of total) are also very substantial. The site has regionally or locally important populations of a range of other species, including Whooper Swan (10), Pochard (145), Golden Plover (805), Grey Plover (66) and Turnstone (99). Other species using the site include Bat-tailed Godwit (45), Mallard (456), Tufted Duck (97), Goldeneye (15), Coot (77), Mute Swan (39), Ringed Plover (54), Knot (31), Little Grebe (68) and Grey Heron (47). Cork Harbour is an important site for gulls in winter and autumn, especially Common Gull (2,630) and Lesser Black-backed Gull (261); Black-headed Gull (948) also occurs.

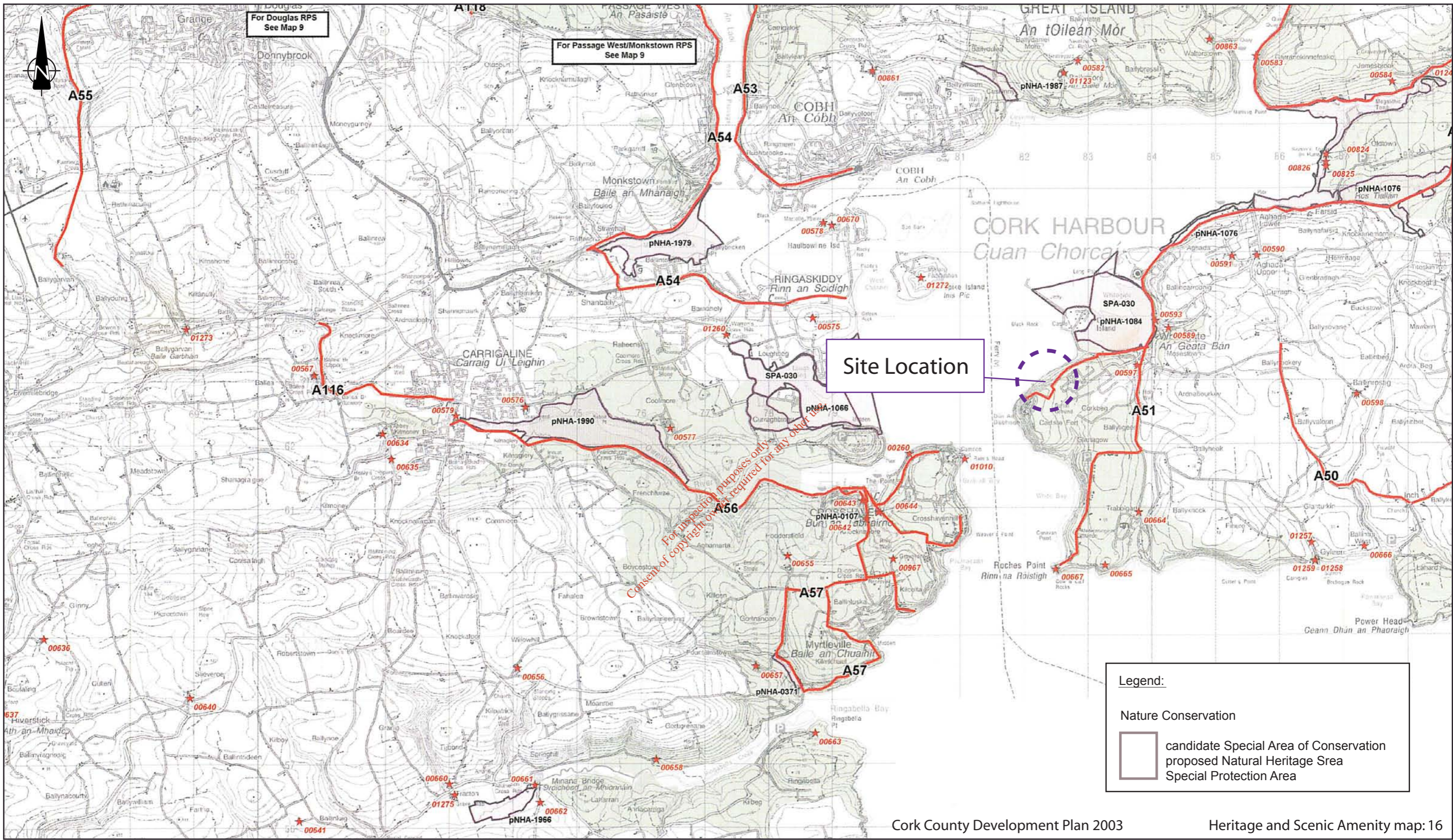
A range of passage waders occur regularly in autumn, including Ruff (5-10), Spotted Redshank (1-5) and Green Sandpiper (1-5). Numbers vary between years and usually a few of each of these species over-winter.

The wintering birds in Cork Harbour have been monitored since the 1970s and are counted annually as part of the I-WeBS scheme.

Cork Harbour has a nationally important breeding colony of Common Tern (3-year mean of 69 pairs for the period 1998-2000, with a maximum of 102 pairs in 1995). The birds have nested in Cork Harbour since about 1970, and since 1983 on various artificial structures, notably derelict steel barges and the roof of a Martello Tower. The birds are monitored annually and the chicks are ringed.

Extensive areas of estuarine habitat have been reclaimed since about the 1950s for industrial, port-related and road projects, and further reclamation remains a threat. As Cork Harbour is adjacent to a major urban centre and a major industrial centre, water quality is variable, with the estuary of the River Lee and parts of the Inner Harbour being somewhat eutrophic. However, the polluted conditions may not be having significant impacts on the bird populations. Oil pollution from shipping in Cork Harbour is a general threat. Recreational activities are high in some areas of the harbour, including jet skiing, which causes disturbance to roosting birds.

Cork Harbour is of major ornithological significance, being of international importance both for the total numbers of wintering birds (i.e. > 20,000) and also for its population of Redshank. In addition, there are at least 15 wintering species that have populations of national importance, as well as a nationally important breeding colony of Common Tern. Several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Golden Plover, Bar-tailed Godwit, Ruff and Common Tern. The site provides both feeding and roosting sites for the various bird species that use it.



Note: This graphic is for diagrammatic purposes.
No measurements to be taken.

ARUP

Designated Conservation Areas

Whitegate Independent Power Plant - IPPC Licence Application

C1662.40

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Diagram 11

Arup Consulting Engineers

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ATTACHMENT I.2

I.2.1 Baseline Description of the Area through which the Effluent Pipe will Cross

The proposal to discharge the effluent through a dedicated outfall was not described in the EIS. The following baseline descriptions, which relate to the construction of a dedicated effluent outfall for WIPP, should be read in conjunction with the EIS chapter 10.

I.2.1.1 (Mixed) Broadleaved Woodland WD1

The habitat through which the effluent pipeline will cross, to the north of the road to Fort Davis, is classified as (Mixed) Broadleaved Woodland WD1, following the classification scheme and methodology described in the EIS in section 10.2.

Located between the Fort Davis road and the foreshore is a bank of mixed broadleaved woodland which has developed on the steep slope. Trees noted include sycamore and ash with smaller numbers of conifers including pine. The trees are generally closely spaced and thin stemmed with few older trees and many of the trees are unstable. The understorey vegetation consists primarily of common species such as bramble and bracken. Other species, more typical of wooded areas, such as male fern and hartstongue also occur where shade levels are higher. The wooded area is separated from the upper shore by a steep earthen bank, which supports species such as polypody, navelwort and wood sage.

I.2.1.2 Shoreline Habitat – Birds

Bird surveys were carried out along the shoreline on two dates in December 2006 at high and mid tide. Generally the shoreline is quite uniform and consists of mixed sediments with rocky outcrops. The shoreline is relatively sheltered with a limited splash zone. Furoid algae occur along the shore. There is a discharge of heated water to the east of the proposed pipeline. To the west there is a small jetty which does not have road access. It is used as a roosting point by cormorants and mixed gull species.

Bird counts indicate that the shoreline lacks the mudflats which would attract high numbers of wading birds. Birds noted along the shoreline included oystercatcher which was the most numerous species, ringed plover, grey heron, grey rock and common gull. Cormorants are common swimming within the channel and roost on the small quay to the west. Mixed gull species were observed flying over the channel, including great black backed gull and herring gull.

I.2.1.3 Bats

It is unlikely that bat colonies occur within the broadleaved woodland, however as a precautionary measure it is recommended that a bat survey be carried out, prior to removal of mature trees within this habitat.

I.2.1.4 Otters

Otter spraints were noted along the upper shore to the east and west of the proposed pipeline route. A path was also visible in grassland along the upper shore. It is probable that otters move along the upper shore, including the area which will be crossed by the proposed pipeline

I.2.1.5 Badgers

No badgers were noted within the wet woodland habitat, although some possible signs of badger activity were noted in woodland close to the shoreline. However, no setts were detected in proximity to the proposed route.

I.2.1.6 Other Mammals

One fox was noted hunting adjacent to the woodland area (probably for field mice) and hares were noted on two occasions during the survey. Some rodent species are ubiquitous in the Irish countryside

and both brown rat and field mouse are almost certainly present within hedges and scrub. Hedgehog and stoat are other species which may be present on occasions.

I.2.1.7 Other Fauna

It is possible that the common frog may breed in the wet grassland or watercourse. A variety of invertebrate species will be present within the site, however no specialised survey was considered necessary, as the habitats to be removed are common within the locality.

I.2.1.8 Habitat Value

The relative values of each habitat type are detailed in Table I.2.1. It should be noted that the value of a habitat is site specific, and will be partially related to the amount of that habitat in the surrounding landscape. The classification scheme used in Table I.2.1 for the value of habitats and the impacts on them is detailed in the NRA publication Guidelines for assessment of ecological impacts of National Road Schemes. This classification scheme is outlined in Appendix 10.2 of the EIS.

Table I.2.1 Habitat and Species Values

Habitat Type/Species	Relative Habitat Value	Comments	Impacts
(Mixed) Broadleaved woodland WD1	Low to Moderate value (Category D to E).	Mixture of native and non-native species. Trees generally young.	A small proportion of this habitat will be removed and the impact is considered minor negative
Birds (Terrestrial)	-	No rare species present. The loss of hedgerow and woodland habitat will result in the loss of some breeding habitat. Feeding habitat will also be lost.	Some impact on bird populations will occur due to hedge and woodland removal. However overall the ecological impact can be reduced by appropriate planting. The impact is considered local and minor.
Birds (Marine habitats)	-	Lacks the mudflats which would support high numbers of wading birds.	Some common shoreline species were noted, however the section of the shoreline and channel to be affected do not appear to be of particular value. It is expected that there will be short-term displacement of birds during the construction phase. Overall the impact is likely to be short-term and localised.
Otters	-	Otters do occur along the shoreline and almost certainly move along the upper shore in the area where the pipeline crosses the upper shore	There may be some short term displacement of otters during the construction phase, however this effect will be localised and short in duration. The design will allow otters to move freely along this area of shoreline.
Badgers	-	No badger setts were found within the area to be affected	However, it is possible they utilise the wooded area along the foreshore, and further surveys are recommended prior to commencement of works
Bats	-	May be present within the wooded area close to the foreshore	Further surveys are recommended prior to commencement of works
Other Mammals	-	Hares and foxes were noted and there may be some limited bat feeding available	Foxes and hares are mobile animals without complicated burrow systems and will be able to move off site. At worst only a small area of bat feeding area will be removed. The impact is considered local and minor.