8.0 FLORA AND FAUNA

8.1 Methodology

An ecological survey was undertaken to assess the flora and fauna at the proposed Waste Recovery/Transfer and Sludge Drying Facility at Foxhole, Youghal, Co. Cork on 7th March 2004, while an ornithological survey was conducted on 7th May 2004. The purpose of the surveys was to determine the potential environmental impacts the proposed development would have on the local environment and assess their significance.

The scope of the survey encompassed the following elements:

- Initial site survey to identify habitat types,
- Assessment of terrestrial flora for description of habitat and vegetation types,
- Assessment of terrestrial fauna,
- Ornithological assessment.

The survey report is included in full in the Appendix 7 Ecology Avian Report and Data.

Survey Limitations

Seasonality and the variability in flora and fauna as seasons change always imposes a certain degree of limitation on any ecological assessment that is not a full twelve months in duration. Field surveying for this site was conducted during early spring, a factor that may impact on the results of the terrestrial flora surveys; however, based on the poor habitat quality at the site, this is considered unlikely.

The assessment for resident birds present on the site was made in early summer. Due to the time of year at which the study was conducted, a survey of over-wintering species visiting the site was not possible. In addition, conducting the assessment at this time might not include bird species that have already departed for cooler climates, or those to arrive later in the Irish summer.

Habitat and Floral Survey

A Phase One-type habitat survey of the site was carried out to identify the habitats and floral species present at the site. Habitats were classified according to the habitat classification system of Fossitt (2000). Figure 8.1 illustrates these habitats.

Faunal Survey (excluding birds)

Incidental observations of mammals and amphibians at the site were noted during the site visit. Particular attention was focused on detection of mammalian tracks and traces, burrows/setts/dens, and the presence of suitable waterbodies for amphibians.

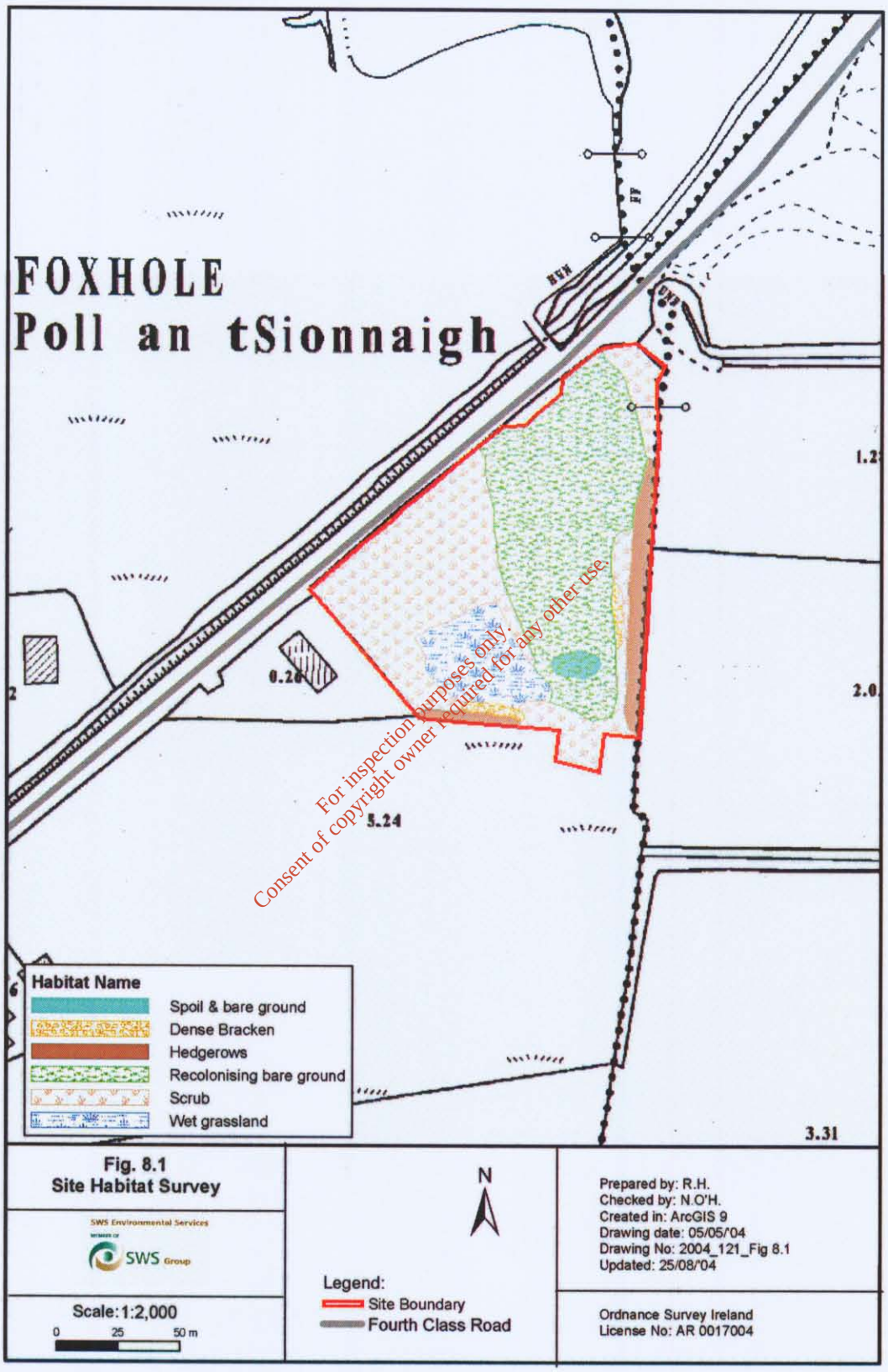

Figure 8.1 Site Habitat Survey

Ornithological Survey

Limosa Environmental was commissioned by SWS Environmental Services to undertake an avian survey of the proposed development site at Foxhole, Youghal. The avian survey was carried out on 7th May 2004 between the hours of 06.30 and 10.00am.

8.2 Existing Environment

The site is located 2km north of Youghal town, in the townland of Foxhole, and is accessed by a road from the N25, leading to the Youghal landfill site. It is bordered on two sides by industrial sites and is close to Youghal landfill site. The site occupies approximately 1.4ha and has a generally flat topographical profile. The site is bounded by a wire fence on the north, west and [part of] east edges and by hedgerows on its southern and eastern extents. Two tall wire and steel gates act as the only entrance to the site (Photo. 8.1).

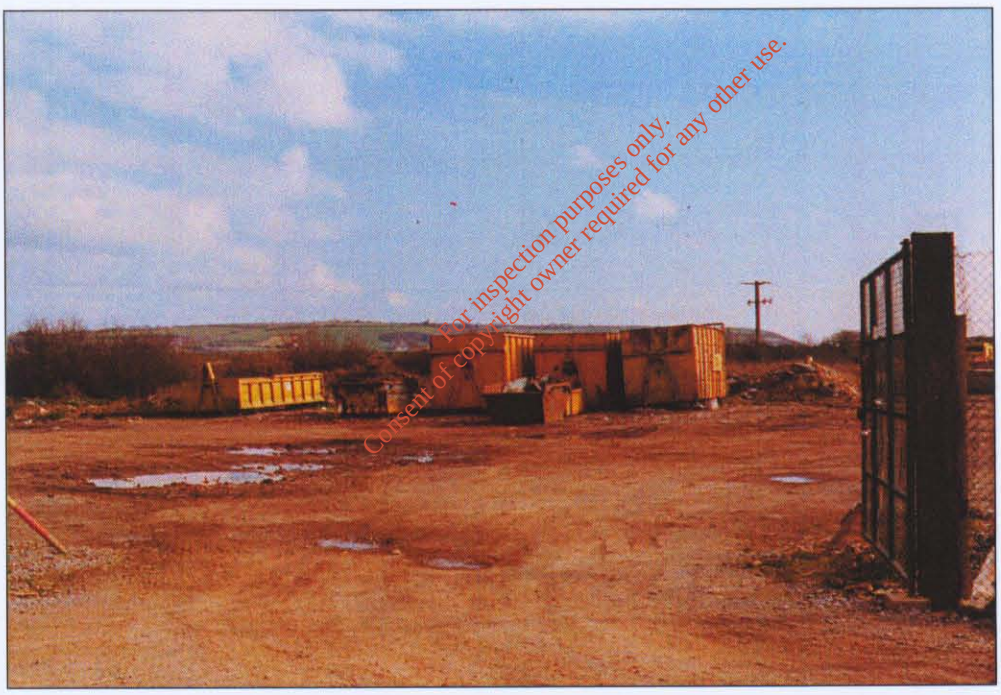

Photo 8.1 Entrance to Proposed Development Site

Due to the small site area, there are no major habitat types represented. The part of the site facing the road is bare ground with no vegetation. The remainder of the site is generally overgrown and abandoned land.

The western edge near the main entrance is dominated by bramble – this area is separated from a stretch of open wet grassland by a gorse belt. Three overgrown mounds are located adjacent to the wet grassland habitat.

Unmaintained hedges, comprised of Whitethorn, act as the southern boundary. Bramble-dominated scrub and large gorse bushes provide the understorey vegetation. A whitethorn hedgerow extends for the majority of the eastern boundary, changing to a wire fence as it nears the roadside. A small area of recolonising bare ground (< 10% of total site area) contains pioneer species.

The site is located in Landscape Character Area no. 35 Youghal Bay (Composite Mosaic and Marsh Estuary), as mapped in the 2003 Cork County Development Plan. The landscape character is Type 2: Broad Bay Coast.

Designated Areas

There are no National Heritage Areas (NHAs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs), wildfowl sanctuaries, Ramsar sites, Nature reserves or National Parks within the site boundary.

The site is located adjacent to the Blackwater River cSAC no. 002170, Blackwater River and Estuary pNHA no. 000072, Blackwater Estuary SPA no. 4028, and within 300m of a Ramsar site (Blackwater Estuary, Ireland 7IE028).

The distances and locations of the nearest designated areas are outlined in Table 8.1 and Figure 8.2 Designated Areas Plan.

The Blackwater River cSAC 002170 is a candidate SAC for associated alluvial wet woodlands, floating river vegetation, estuaries, tidal mudflats, *Salicornia* mudflats, Atlantic salt meadows, Mediterranean salt meadows, perennial vegetation of stony banks and old oak woodlands (priority habitats in Annex 1 of the EU Directive 92/43/EEC, also known as the Habitats Directive). None of these habitats occur on the proposed development site.

The Blackwater River and Estuary pNHA 000072 is notable for its riparian vegetation, marshes and reedbeds and dry woodlands. The area also hosts nationally important wintering bird populations.

The Blackwater Estuary SPA 4028 is of national and European importance for its populations of Annex 1 bird species (Directive 79/409/EEC, also known as the Birds Directive) including Golden Plover, Bar-Tailed Godwit, Sandwich Tern, Roseate Tern and Common Tern (discussed later). The Blackwater Estuary is also a Ramsar site (7IE028). Nationally important bird species are Wigeon, Grey Plover, Lapwing, Dunlin, Black-tailed Godwit, and Common Redshank. In winter, many more birds are present than in summer and most are based in the lower estuary, near Kinsalebeg, in the Tourig Estuary and near Youghal.

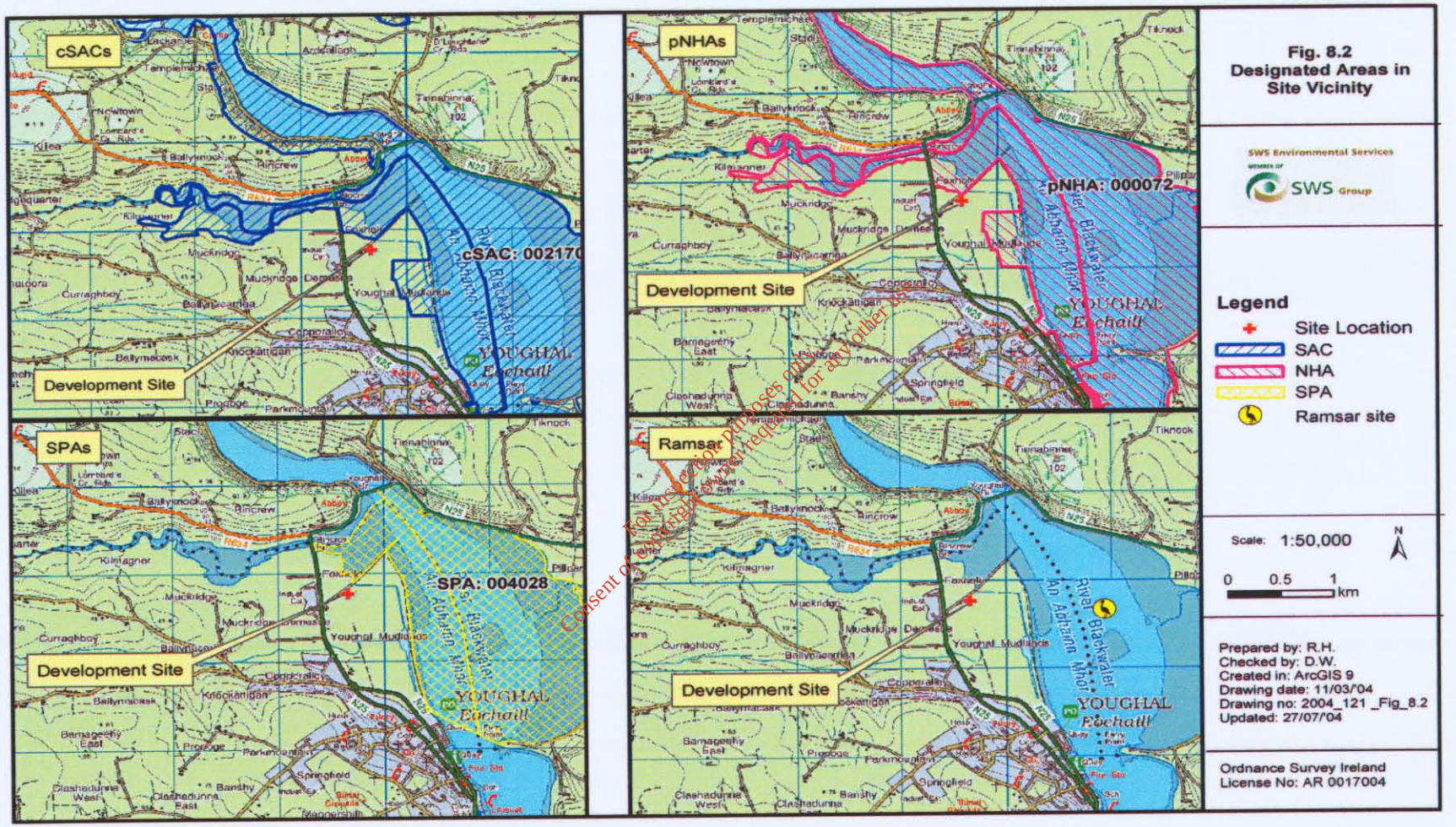

Figure 8.2 Designated Areas in the Site Vicinity

Habitats

The extent of each habitat within the site is illustrated in the Habitat Map, Figure 8.1. In each habitat type, a qualitative description of terrestrial flora was compiled from field investigations. No rare or protected species were recorded at the site during the survey.

Description	Area (m^2)	Area (Acres)	Area (Ha)	% Total Area
Hedgerows	825.14	0.204	0.083	5.9
Scrub	5390.99	1.332	0.539	38.0
Wet Grassland	1440.04	0.356	0.144	10.2
Dense Bracken	183.504	0.045	0.018	1.3
Recolonising bare ground	6153.52	1.521	0.615	43.4
Spoil and Bare Ground	175.69	0.043	0.018	1.3
		Total Area (Ha)	**1.417**	

Table 8.2 Habitat Divisions at the Site

Due to the small site area, the habitat types present at the site are relatively restricted in size as well as being of poor ecological quality.

Anthropogenic features on the site include:

- Stored empty skips,
- Hardcore surface material,
- Boundary wire fence,
- Abandoned wooden planks, steel frames and galvanised sheeting.

Habitat and Floral Survey

i) Hedgerows

Hedgerows line the southern and eastern boundaries of the site. The hedgerows are relatively species-poor, with Bramble (*Rubus fruticosus* agg) providing the main understorey cover. The dominant tree species is Whitethorn (*Crataegus monogyna*).

ii) Scrub

This habitat type occurs around the edges of the site, close to hedgerows, but also extends to the roadside boundary. It is characterised by dense (and often impenetrable) belts of Bramble and Gorse (*Ulex europaeus*).

iii) Wet Grassland

An area of wet grassland occurs to the west of the site on flat terrain. At the time of surveying the ground was dry (following prolonged spells of dry weather) but is probably subject to waterlogging following heavy rain. This area contains a few scattered clumps of Soft Rush (*Juncus effusus*), some emergent Bramble, but is dominated with grass species, in particular Common Couch (*Agropyron repens*).

iv) Dense Bracken

Dense Bracken (*Pteridium aquilinum*) occurs in parts of the site, in open areas. At the time of surveying, the bracken was dead or decaying but cover was continuous. This habitat type is in general bordered by scrub.

v) Recolonising Bare Ground

Recolonising bare ground is the main habitat type present near the site entrance. It is covered in parts, with recently laid hardcore material and in the remainder with older gravel. This area holds the anthropogenic features on-site e.g. skips, prefab buildings, disused machinery parts. Vegetation here is sparse and confined to pioneer species e.g. Red and White Clover (*Trifolium pratense, T. repens*), Soft Rush, Sharp-Flowered Rush (*Juncus acutiflorus*), Bulbous Rush (*Juncus bulbosus*), Ribwort Plantain (*Plantago lanceolata*), Coltsfoot (*Tussilago farfara*), Creeping Buttercup (*Ranunculus repens*), Common Nettle (*Urtica diocia*), Perennial Sow-Thistle (*Sonchus arvensis*), Pineappleweed (*Matricaria matricarioides*), Common Ragwort (*Senecio jacobea*), Bramble and Gorse.

vi) Spoil and Bare Ground

Three overgrown mounds occur at the site. These mounds contain mixed rubble. There was no evidence of recently disposed material. A few pioneer species grow on the sides and edges of the heaps e.g. Common Ragwort, Coltsfoot and Ribwort Plantain.

There is no surface water evident at the site and there are no drains at the site. A list of the plant species recorded onsite is outlined in Table 8.3.

Latin Name	Common Name
Crataegus monogyna	Whitethorn
Ulex europaeus	Common Gorse
Pteridium aquilinum	Bracken
Rubus fruticosus agg.	Bramble
Juncus effusus	Soft Rush
Rumex obtusifolius	Broad-leaved Dock
Plantago lanceolata	Ribwort Plantain
Urtica diocia	Common Nettle
Agropyron repens	Common Couch
Dactylis glomerata	Cock's-foot
Holcus lanatus	Yorkshire Fog
Dipsacus fullonum	Teasel
Hedera helix	Ivy
Digitalis purpurea	Foxglove
Epilobium hirsutum	Great Willowherb
Galium aparine	Cleavers
Trifolium pratense	Red Clover
Cirsium vulgare	Spear Thistle
Tussilago farfara	Coltsfoot
Potentilla anserine	Silverweed
Senecio jacobea	Common Ragwort
Vicia sativa	Common Vetch
Prunella vulgaris	Self-heal
Conium maculatum	Hemlock
Taraxacum officinale agg.	Dandelion
Lotus corniculatus	Common Bird's-foot-trefoil
Matricaria matricariodes	Pineappleweed
Sonchus arvensis	Perennial Sow-thistle
Ranunculus repens	Creeping Buttercup

Table 8.3 Plant Species Recorded at the Site

Faunal Survey

The faunal assessment of the site examined the site for mammals and amphibians.

Mammals

The site was examined for mammal species and signs and was evaluated for habitat suitability for mammals. No tracks, traces or other signs of mammalian activity were observed at the site. Species that are likely to inhabit the site include the Brown Rat (*Rattus norvegicus*), Pygmy Shrew (*Sorex minutus*) and Field Mouse (*Apodemus sylvaticus*). It is probable that foxes (*Vulpes vulpes*) and rabbits (*Oryctolagus cunniculus*) also occur in the area. The site does not provide potential roosts for bat species.

Amphibians

The common frog (*Rana temporaria*) was not observed at the site. Due to current vehicular movements at the site, it is unlikely that frogs reside here.

Birds Recorded within the Site

During the site survey transect, a total of 44 birds of 14 species were recorded (Table 8.4). 27 birds of 8 species were observed within the site itself. A further 17 birds of 10 species were observed within the vegetated site boundaries (Table 8.4). Of these, 5 species were observed within the vegetated site boundaries only (i.e. not within the site itself).

Bird Species	Number within the site (Transect)	Number within the vegetated boundaries of the site (Transect)	Total birds observed during (Transect)	Number observed during (Vantage Point Count)
Wood Pigeon	1	2	3	
Meadow Pipit	3		3	
Wren	2	3	5	3
Song Thrush		1*	1	
Blackbird	4	2	6	5
Sedge Warbler		1	1	1
Great Tit		2*	2	
Coal Tit		1*	1	
Blue Tit		1*	1	
Magpie	1		1	
Rook		1*	1	
Chaffinch	1		1	1
Linnet	11		11	
Greenfinch	4	3	7	
Total no. species	8	10	14	4
Total no. birds	27	17	44	10

Table 8.4 Bird Species and their Numbers Recorded within the Site

NOTES: Numbers are presented as the numbers of birds observed within the site during the transect and the numbers of birds observed within the site boundaries (i.e. the hedgerow down the eastern boundary and gorse thicket across the southern boundary) during the site transect. * indicates bird species only recorded from the vegetated site boundary. Further, the birds observed during the vantage point scan are given.

Birds Recorded in the Vicinity of the Site

32 bird species were observed within the vicinity of the site, outside the site boundary. These included one red-listed species (Curlew) that is considered of high conservation concern and 12 amber-listed species (medium conservation concern) from the 'Birds of Conservation Concern within Ireland (Newton *et al.*, 1999). Two Little Egrets were also observed, an Annex I species under the Birds Directive.

During the survey it was noted that relatively few corvid species were present in the vicinity of the landfill. Notable absentees were Jackdaw *Corvus monedula* and Hooded Crow *Corvus corone cornix*.

8.3 Impact Assessment

The potential for impacts will arise both in the construction and operation phases of the proposed Waste Recovery/Transfer and Sludge Drying Facility. The impacts are treated together since they represent industrial/enterprise developments which will have similar/identical impacts on ecology at the site. The construction phase, in particular, will have the greatest potential impact on ecology through habitat loss and fragmentation and disturbance, since it includes preparatory civil works e.g. clearing of vegetation, erection of boundary fencing, earthworks etc.

Assessment of the Conservation Value of the Proposed Development Site for Birds

Criteria used, are for example, those set out in Annex III of the Habitats Directive and the widely used NCR criteria (Nature Conservation Review, Ratcliffe, 1977). A preliminary site evaluation is given in Appendix 7. This is based on knowledge of the site gained during the avian survey, and with consideration of the surrounding area. The evaluation is based on criteria used in both the Habitats Directive and the Nature Conservation Review.

Finally consultation with the local National Parks and Wildlife Ranger corroborates that the site is not of great importance for birds, in regard to that of the surrounding habitats (P. Smiddy, pers comm.). It is therefore considered unlikely that the loss of habitat within the proposed development site will have a negative impact on bird populations or habitat diversity of the surrounding areas.

Potential Impacts on Flora

The entire site will be cleared of existing vegetation. This will lead to the permanent and complete loss of existing habitats at the site. As outlined in Section 8.2, the habitats present at the site are not considered to be of high ecological value and are not listed as priority habitats in the Habitats Directive.

Potential Impacts on Fauna

The main potential impacts for mammals occurring at the site will be the loss and fragmentation of habitat, and disturbance. Currently the habitats may provide feeding and residence opportunities for mammals (although no evidence of mammal setts or burrows was found). Loss of habitat will permanently remove these opportunities. Increased human activity at the site will deter mammals from using the site.

These impacts are not considered to be a significant negative impact because they will be localised and minimal. It is predicted that the local animal species will adapt to the change in their local environment, through either avoidance of the development site or restriction of their usage of the site. Mammals can move to another location which has similar habitat types.

Habitat Loss and Habitat Degradation

Habitat loss will occur through the clearing of the site and physical removal of vegetation. The extent of loss will depend on how much of the boundary vegetation and hedgerows are removed. It is considered unlikely that the loss of existing habitat within the proposed site will have a significant impact on local bird populations.

Disturbance

Within the site itself, disturbance (e.g. noise, human presence, vehicle movement) will occur during both the construction and operational phases. Disturbance can frighten passerine birds away from a particular area for a period of time or exclude them breeding from an area permanently. This indirect loss of habitat however, is considered unlikely to have significant impact on local bird populations.

Disturbance to wading birds and wildfowl is considered most likely to arise during the construction phase of the proposed development. However, once constructed, the proposed development site is perhaps unlikely to cause significant levels of disturbance itself but may cause moderate disturbance that is not on-going or prolonged over time.

8.4 Mitigation Measures

Flora

The developer intends to remove all existing vegetation from the site. The cutting or destruction of hedgerows is prohibited between 1st March and 31st April, under the Wildlife (Amendment) Act 2000 but exemptions exist for "*the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided*" (Section 46 of Act).

It is recommended that specified areas be used to dispose of excavated material and that all waste and unused building materials be removed from site. Vegetation from the surface should be stockpiled and used to resurface bare ground along road edges and disturbed areas.

Any landscaping programme for the developed site should use native tree and shrub species, both to maintain the ecological integrity of site within the wider environment and to provide potential habitat for local fauna.

Mammals

Limited or no opportunities will exist for mammals within the proposed development site, since the site will be fenced and there will be no direct access to it. Mammals will continue to exploit opportunities in the surrounding environment.

Amphibians

The lack of opportunities for amphibians will be similar to those for mammals but this impact is localised and will not affect populations in the surrounding environment.

Birds

While the existing habitat within the site itself is considered of low conservation value, the developer should take into account where possible, the Wildlife (Amendment) Act 2000 Section 46, amending Section 40 of the Wildlife Act, 1976 with regards to the timing of vegetation removal and habitat destruction.

To reconcile for the destruction and removal of existing habitats, it is recommended that the landscape design includes hedgerow planting and management that involve the use of native species that are in line with those species present in the surrounding area. Hedgerow planting will also act as a buffer zone, (e.g. to reduce disturbance) between the development and the surrounding areas.

As the construction phase is considered to cause potential disturbance to birds in the surrounding area, it is recommended that all construction activities should be restricted to within the site boundaries only and not encroach into surrounding habitats, so as not to impact, alter or cause deterioration to the surrounding habitats or fauna. The development of the site should be managed (e.g. Environmental Management System) in such a way so as to minimise all potential impacts on the surrounding habitats and species.

In order to minimise the potential impact of aqueous emissions to the estuarine environment, it is recommended that a waste water treatment plant be constructed on site to treat all aqueous wastes/emissions from the proposed development. The treatment plant should ensure that any direct/indirect discharges from the site to the sewer infrastructure does not impair on the quality of the receiving environment.

All potential emissions from the plant including fugitive, aqueous or noise will be managed and monitored under licence by the Environmental Protection Agency so as to not impair the quality of the receiving environment over time.