APPENDIX 7

SITE ECOLOGICAL INVESTIGATION

A. BIRD SPECIES RECORDED WITHIN THE SITE

B. BIRD SPECIES OBSERVED WITHIN THE VICINITY OF THE SITE

C. BLACKWATER ESTUARY – I-WeBS DATA

D. REFERENCES

E. LIMOSA ENVIRONMENTAL AVIAN SURVEY REPORT

7A. BIRD SPECIES RECORDED WITHIN THE SITE

Wood Pigeon	Columba palumbus
Meadow Pipit	Anthus pratensis
Wren	Troglodytes troglodytes
Song Thrush	Turdus philomelos
Blackbird	Turdus merula
Sedge Warbler	Acrocephalus schoenobaenus
Great Tit	*Parus major*
Coal Tit	*Parus ater*
Blue Tit	Parus caeruleus
Magpie	*Pica pica*
Rook	Corvus frugilegus
Chaffinch	Fringilla coelebs
Linnet	Carduelis cannabina
Greenfinch	*Carduelis chl*oris

7B. BIRD SPECIES OBSERVED WITHIN THE VICINITY OF THE SITE

SPECIES	Listed on Birds Of Conservation Concern (Newton et al., 1999)	Transect 1 (hedgerow adjacent to site and along causeway to NW tip of landfill).	Transect 2 (down eastern side of landfill, western edge of Blackwater Estuary).
Cormorant Phalacrocorax carbo	Amber List	*	
Little Egret Egretta garzetta	Amber List		*
Grey Heron Ardea cinerea			*
Shelduck Tadorna tadorna	Amber List		*
Mallard Anas platyrhynchos			*
Oystercatcher Haematopus ostralegus			*
Knot Calidris canutus	Amber List		*
Dunlin Calidris alpina	Amber List		*
Redshank Tringa totanus	Amber List		*
Black-tailed godwit Limosa limosa	Amber List		*
Curlew Numenius arquata	Red List		*
Whimbrel Numenius phaeopus			*
Black-Headed Gull Larus ridibundus	Amber List		*
Common Gull Larus canus	Amber List		*
Wood Pigeon Columba palumbus		*	*
Skylark Alauda arvensis	Amber List		*
Swallow Hirundo rustica	Amber List		*
House Martin Delichon urbica			*
Meadow Pipit Anthus pratensis		*	*
Wren Troglodytes troglodytes		*	*
Robin Erithacus rubecula		*	*
Stonechat Saxicola torquata	Amber List		*
Song Thrush Turdus philomelos			*
Blackbird Turdus merula		*	*
Sedge Warbler Acrocephalus schoenobaenus			*
Great Tit Parus major			*
Blue Tit Parus caeruleus		*	
Magpie Pica pica		*	
Rook Corvus frugilegus		*	*
Chaffinch Fringilla coelebs		*	
Linnet Carduelis cannabina		*	
Greenfinch Carduelis chloris		*	

7C. BLACKWATER ESTUARY – I-WeBS DATA

Blackwater Estuary: Results from the Irish Wetland Bird Survey (I-WeBS).

Peak counts and mean counts per species for the previous five I-WeBS seasons (spanning 1997 – 2002). Species listed within Birds of Conservation Concern (Newton *et al.*, 1999), under Annex I of the Birds Directive (79/409/EEC) and that are of national importance in terms of abundance are also highlighted.

Irish Wetland Bird Survey (I-WeBS) is organised by BirdWatch Ireland, National Parks and Wildlife Service and The Wildfowl and Wetlands Trust.

SPECIES	Peak Nos.	Mean Nos. over 5 I-WeBS seasons.	Listed on Birds Of Conservation Concern (Newton et al., 1999)	Annex I Species under Council Directive 79/409/EEC 'Birds Directive'.	National Importance
Great Northern Diver	2	1		*	
Little Grebe	1	0			
Great Crested Grebe	1	0	Amber List		
Slavonian Grebe	1	0		*	
Cormorant	165	67	Amber List		
Grey Heron	21	15			
Little Egret	24	15	Amber List	*	
Spoonbill	1	0			
Mute Swan	6	3			
Light-bellied Brent Goose	68	39			
Shelduck	130	110	Amber List		
Wigeon	862	698	Amber List		
Teal	348	311	Amber List		
Green-winged Teal	1	0			
Mallard	293	107			
Pintail	2	0	Amber List		
Shoveler	6	2			
Eider	4	1	Amber List		
Goldeneye	1	0	Amber List		
Red-Breasted Merganser	13	6	Amber List		
Oystercatcher	608	390			
Ringed Plover	78	37			
Golden Plover	5700	2844	Amber List	*	*
Grey Plover	76	43	Amber List		*
Lapwing	2962	2200	Red List		*
Knot	118	39	Amber List		
Sanderling	8	2			
Little Stint	4	1			
Curlew Sandpiper	4	2			
Dunlin	2420	1422	Amber List		*
Ruff	7	2		*	
Snipe	106	63	Amber List		
Black-tailed godwit	982	682	Amber List		*
Bar-tailed godwit	322	202	Amber List	*	*
Whimbrel	4	1			
Curlew	1513	1089	Red List		*
Spotted Redshank	6	3			
Redshank	658	503	Amber List		*
Greenshank	34	24			*
Green Sandpiper	2	1			

SPECIES	Peak Nos.	Mean Nos. over 5 I-WeBS seasons.	Listed on Birds Of Conservation Concern (Newton et al., 1999)	Annex I Species under Council Directive 79/409/EEC 'Birds Directive'.	National Importance
Common Sandpiper	1	1			
Turnstone	54	34			
Mediterranean Gull	1	1	Amber List	*	
Black-headed Gull	1171	593	Amber List		
Common Gull	912	400	Amber List		
Lesser Black-Backed Gull	941	492			
Herring Gull	134	76			
Glaucous Gull	1	0			
Great-Black-Backed Gull	428	240			
Sandwich Tern	109	27	Amber List	*	
Roseate Tern	1	0	Red List	*	
Kingfisher	2	1	Amber List		
TOTAL WATERFOWL	14907	10961			

7D. REFERENCES

Aquatic Services Unit (2002) *Youghal Landfill Annual Water, Sediment and Ecology Report.* A report prepared for Cork County Council in support of the waste licence for Youghal landfill site (Environmental Protection Agency – Reference 68-1).

Bickmore, C. J. (2002) *Hedgerow Survey Handbook – a standard procedure for local surveys in the UK.* Prepared on behalf of the Steering Group for the UK Biodiversity Action Plan for Ancient and/or Species-rich hedgerows. Countryside Council For Wales, Cardiff, UK.

Burton, N. H. K., Armitage, M. J. S., Musgrove, A. J. & Rehfisch, M. M. (2002 a) Impacts of man-made landscape features on numbers of estuarine birds at low tide. *Environmental Management* **30**, 857-864.

Burton, N. H. K., Rehfisch, M. M. & Clark, N. A. (2002 b) Impacts of disturbance from construction works on the densities and feeding behaviour of waterbirds using the intertidal mudflats of Cardiff Bay, UK. *Environmental Management* **30**, 865-871.

Colhoun, K. (2001) *The Irish Wetland Bird Survey 1998-99: Results from the fifth winter of the Irish Wetland Bird Survey.* BirdWatch Ireland, National Parks and Wildlife Service and the Wildfowl and Wetlands Trust. Dublin.

Colhoun, K. (2002) Waterbird monitoring in Ireland 2000/01: Results of the seventh year of the Irish Wetland Bird Survey. *Irish Birds* **7**, 43-52.

Davidson, N. C. & Rothwell, P. I. (1993) (eds) Disturbance to waterfowl on estuaries. *Wader Study Group Bulletin* **68**, 1-106.

Fehily, Timoney and Company (2004) *Youghal Landfill Annual Water, Sediment and Ecology Report.* A report prepared for Cork County Council in support of the waste licence for Youghal landfill site (Environmental Protection Agency – Reference 68-1).

Fossitt, J. (2000) *A Guide to Habitats In Ireland.* The Heritage Council, Kilkenny, Ireland.

Heritage Council (2003) *Conserving Hedgerows.* The Heritage Council, Kilkenny, Ireland.

Hill, D., Hockin, D., Price, D., Tucker, G., Morris, R. & Trewwek, J. (1997) Bird disturbance: improving the quality and utility of disturbance research. *Journal of Applied Ecology* **34**, 275-288.

Marsden, S. J. (2000) Impact of disturbance on waterfowl wintering in a UK dockland redevelopment area. *Environmental Management* **26**, 207-213.

Newton, S., Donaghy, A., Allen, D. & Gibbons, D. (1999) Birds of Conservation Concern in Ireland. *Irish Birds* **6**, 333-344.

Ratcliffe, D. A. (1977) (ed) *A Nature Conservation Review.* Cambridge University Press, Cambridge, UK.

Scottish Natural Heritage, English Nature, Department Of the Environment (NI), Countryside Council for Wales and Joint Nature Conservation Committee. (1997) *Nature 2000: European Marine Sites: an introduction to management.* Scottish Natural Heritage, Perth, Scotland.

Sheppard, R. (1993) Ireland's Wetland Wealth: the birdlife of the estuaries, lakes, coasts, rivers, bogs and turloughs of Ireland. Report of the Winter Wetlands Survey 1984/85 to 1986/87. Irish Wildbird Conservancy.

Smiddy, P. (2001) *The Wildlife Wonders of Youghal.* Carraig Print Ltd, Co. Cork.

Smiddy, P. & Duffy, B. (1997) Little Egret *Egretta garzetta*: a new breeding bird for Ireland. *Irish Birds* **6**, 55-56.

7E. LIMOSA ENVIRONMENTAL AVIAN SURVEY REPORT

Limosa Environmental

Report Reference: RP04-GW029-02- 0.
Draft: Final Report Issued to Client.
Prepared by: Lesley J. Lewis.

Date: 31st July 2004

Signature: .....

CLIENT

SWS Environmental Services
Shinagh House
Bandon
County Cork.

CONTENTS

1. INTRODUCTION.

Limosa Environmental were retained by SWS Environmental Services to undertake an avian survey as part of an Environmental Impact Statement for the proposed development of a materials recovery and sludge drying facility at Foxhole, Youghal, Co. Cork. The site is currently used by 'Yellow Bins' as a waste skip storage area.

The proposed materials recovery facility will include the development of an enclosed building that will process recyclable waste materials. The sludge drying facility will treat non-hazardous biological sludge from waste water treatment plants. This will involve the reduction of the water content of sludge via a drying process. The final products of this process will be dry solids and an effluent that will be treated in an on-site treatment plant, prior discharge into the Blackwater estuary.

The site is located approximately 200m east of the N25 at the northern reaches of the Youghal Mudlands (Figure 1.2 Site Location Map). The site comprises a small triangle of land covering an area of approximately 0.025 Km^2, with the predominant habitats being scrub and recolonising bare ground. There is also a small area of wet grassland in the south west of the site (Figure 8.1 Habitat Map). The site is bordered on two sides by industrial sites and is close to Youghal landfill site, lying to the north-east. Site access is via a roadway that leads to the landfill site.

The site is also in close proximity to the Blackwater and Tourig estuaries that are to the east and north of the site respectively. The expanses of intertidal mudflats and associated wetland areas provided by these estuaries are important feeding and roosting areas for migratory wintering wading birds and wildfowl. These estuaries form part of the Blackwater River Special Area of Conservation (Council Directive 92/43/EEC 'Habitats Directive'), Blackwater Estuary Special Protection Area (Council Directive 79/409/EEC 'Birds Directive') and the Blackwater River Natural Heritage Area (NHA). The Blackwater Estuary is also a designated Ramsar Site and is listed as an Important Bird Area (IBA Site Code 091) (Heath & Evans, 2000) (Figure 8.2 Designated Areas in the Vicinity of the Site).

The main aims of the avian survey were to:

1. Assess the bird species using the site and surrounding environs, with particular attention being given to any birds breeding within the proposed development site.
2. Identify important habitats and birds of conservation importance using the site and surrounding environs.
3. Evaluate the site with regard to its overall importance for birds.
4. Identify any potential impacts of the proposed development on bird species using the site and the surrounding environs.
5. Recommend mitigating measures that may remove, reduce or compensate for any predicted impact of the proposed development.

2. METHODOLOGY.

The avian survey was carried out on 7th May 2004 between the hours of 0630 and 10.00am. The survey consisted of three components:

1. A line transect was undertaken through the site (from grid reference E 109663, N 79839 to grid reference E 109671, N 79716). The transect consisted of walking through the site and recording all birds either observed or heard (i.e. bird songs or calls). At regular intervals along the transect, a 360^0 scan was made using binoculars. Birds were recorded as either present within the site or present within the site boundaries (e.g. hedgerow).
2. A 30-minute scan was undertaken at a selected vantage-point that overlooked an area of wet grassland and dense belts of gorse (*Ulex europaeus*). The survey was undertaken using binoculars and telescope to determine any use of these habitats by breeding birds.
3. Two transects were undertaken outside of the site boundaries to establish the bird species that were present in the surrounding environment. Transect 1 extended along the hedgerow immediately adjacent to the site (the road leading to Youghal landfill) and along the causeway to the north-east tip of Youghal landfill site. Transect 2 extended down the eastern side of Youghal landfill site and onwards for about 300m along the sea wall of the western side of the Blackwater Estuary.

Equipment used included binoculars (7 x 50x), telescope (15 – 60x zoom), a 12 channel hand-held Global Positioning System (Garmin GPS 72) and a dictaphone.

Weather conditions were noted at the start of the survey:
Cloud cover 3/8, Temperature 12 degrees Celsius, Wind approximately 3.4 m/s (Beaufort Scale 3), humidity approximately 58%, dry and sunny.

3. EXISTING ENVIRONMENT – BIRDS.

3.1 Birds Recorded within the Site.

During the site survey transect, a total of 44 birds of 14 species were recorded (Table 3.1). 27 birds of 8 species were observed within the site itself. A further 17 birds of 10 species were observed within the site boundaries (Table 3.1). Of these, 5 species were observed within the site boundaries only (i.e. not within the site itself).

Appendix 1 lists all bird species observed during the site surveys.

None of the birds recorded within the site are listed under Annex I of the Birds Directive (Council Directive 79/409/EEC). Similarly, none of the bird species recorded within the site survey are listed on 'Birds of Conservation Concern in Ireland', a list of bird species of high, medium and low conservation concern within Ireland (Newton *et al.,* 1999).

In addition to the site survey transect, a 30-minute vantage scan over the wet grassland and gorse habitat was undertaken. This survey recorded 10 birds from 4 species (Wren, Blackbird, Sedge Warbler and Chaffinch).

Linnets were the most numerous birds within the site. Together with Greenfinch and Wren, they occurred predominantly within areas of gorse scrub and were using the site for foraging (feeding).

One Sedge Warbler was observed both within the wet grassland habitat and perched within site boundary vegetation. There were no conclusive signs (e.g. provisioning of young) of breeding Sedge Warblers or other bird species breeding within the site. However, there is a potential for several species (e.g. Wren, Blackbird) to breed within patches of gorse and scrub and within the boundary hedgerow and vegetation.

Table 3.1. Bird species and numbers recorded.

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 number of species	**8**	**10**	**14**		**4**
Total number of birds	**27**	**17**	**44**		**10**

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.

3.2 Other Wildlife Recorded During the Survey.

Two rabbits *Oryctolagus cuniculus* were observed within the scrub habitat during the survey.

3.3 Birds Recorded in the Vicinity of the Site.

The two transects in the vicinity of the site produced a species list for the surrounding area (Appendix 2). 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.

Several passerine species were observed within the hedgerows adjacent to the proposed site (Transect 1) and within areas of scrub and gorse running down the

eastern side of the landfill site (Transect 2). The latter included the amber-listed Stonechat (Appendix 2). Sedge Warblers were present within the reed and sedge swamp habitat to the east of the landfill site. Sedge Warblers and Skylark were particularly dominant within the wet grassland/marsh area to the south of the landfill site and are likely to be breeding within this area.

To the south-east of the landfill site and at the western edge of the Blackwater Estuary, wading bird species and several gull species were utilising exposed mud of a small tidal channel for feeding and roosting. High water on the day of the survey was at 0800 hours and the majority of intertidal mudflat areas were therefore not exposed at the time of the survey to provide a foraging habitat for waders or wildfowl. It is important to note that bird surveys taken at this time of year are not representative of the species and numbers of waterfowl using the estuarine area during the winter months.

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*.

4. THE SURROUNDING ENVIRONMENT.

4.1 Designated Areas Adjacent to the Site.

The proposed site does not form part of, or is located in, any designated conservation area.

The site is located in an area zoned for industrial use. To the NE of the site is the existing civic amenity landfill, the eastern boundary of the site forms part of the boundary of the Youghal Shipping facility. To the SW of the site, the boundary connects with the National Car Testing Centre site boundary. The civic amenity area boundary connects with and forms part of the boundary of an area that has several conservation designations including Natural Heritage Area, Special Area of Conservation, Special Protection Area and Ramsar Site (Figure 1.3 Site Context, Development Zoning and Environmental Designated areas).

Natural Heritage Areas (NHAs) are designated under the Wildlife (Amendment) Act of 2000. The River Blackwater Natural Heritage Area (Site Code 000072) includes the lower Blackwater Estuary and Tourig Estuary that are in close proximity to the site and an area of the Youghal Mudlands to the south-east of the site.

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora was transposed into Irish law by the Natural Habitats Regulations of 1997. This directive lists habitats and species that must be given protection within designated Special Areas of Conservation (SAC). The Blackwater River candidate SAC (Site Code 002170) is a large SAC that has approximately the same boundaries as the Natural Heritage Area.

Under Council Directive 79/409/EEC on the conservation of wild birds (Bird's Directive), member states are legally obliged to designate Special Protection Areas (SPA), which are sites identified as being internationally important for birds. The Blackwater Estuary SPA (Site Code 28) covers 468 hectares of estuary and intertidal mudflats and is important for Annex I bird species such as Little Egret *Egretta garzatta*, Golden Plover *Pluvialis apricaria*, Sandwich Tern *Sterna sandvicensis*, Arctic Tern *Sterna paradisaea* and Roseate Tern *Sterna dougallii*. Special Areas of Conservation and Special Protection Areas collectively form 'Natura 2000', a network of protected areas throughout Europe which aim 'to conserve natural habitats and species of wildlife which are rare, endangered or vulnerable in the European Community.'

The Ramsar Convention (Convention on Wetlands of International Importance, especially as Waterfowl Habitat) was adopted in 1971 and ratified in Ireland in 1985. The Blackwater Estuary (Site Code 71E028) is one of only 45 Ramsar sites within Ireland. The Ramsar Site encompasses the Blackwater Estuary and is the same land area as the SPA.

The Blackwater Estuary is also listed as an Important Bird Area (IBA Site Code 091) (Heath & Evans, 2000). This covers an area of 500 ha and notable species listed include Curlew *Numenius arquata* and Black-tailed godwit *Limosa limosa*.

Figure XX illustrates the location of the aforementioned designated areas.

4.2 The importance of the surrounding environment for birds.

Habitats in the surrounding environment of the proposed site (classifed under Fossitt, 2000) include estuaries, tidal rivers, lagoons and saline lakes, upper and lower saltmarsh, reed and large sedge swamps, wet grassland (Fehily, Timoney & Company, 2004) and an expanse of wet grassland and unclassified marsh area to the south of the landfill site. The surrounding environment therefore provides a good diversity of habitats for terrestrial, coastal and aquatic birds.

A previous ecological survey of the landfill and environs (Aquatic Services Unit, 2002) noted Snipe *Gallinago gallinago* and Reed Bunting *Emberiza schoeniclus* within the wetland habitat to the south of the landfill (to the south-east of the proposed site). As noted in the current survey, this area also appears important for Skylark and Sedge Warbler. Kestrel *Falco tinnunculus* and Sparrowhawk *Accipiter nisus* are also frequently observed in the vicinity of the landfill. The first known breeding record of the Annex I species, Little Egret *Egretta garzetta* was in the Blackwater River SAC in 1997 (Smiddy & Duffy, 1997).

To the north of the proposed site is an area of reclaimed land called Foxhole. A tidal breach allows the area to partly flood and as a consequence the habitat now has a saltmarsh plant community. Foxhole is particularly noted as being a high tide roost area for many wintering wader and wildfowl species such as Black-tailed godwits, Dunlin and Shelduck. Smiddy (2001) notes that Foxhole is the best place within Youghal Harbour to observe scarce wading birds such as Little Stint *Calidris minuta*, Ruff *Philomachus pugnax* and rare migrants such as Lesser Yellowlegs *Tringa flavipes*.

Wading birds and wildfowl of the Blackwater Estuary are counted monthly during winter as part of the Irish Wetland Bird survey (I-WeBS). Data from the previous five I-WeBS seasons (spanning 1997 – 2002) are shown in Appendix 3. Peak counts and five-year means for each species are presented.

The most recent data available, shows that the Blackwater Estuary is important for holding nationally important numbers of nine wader species during the winter months. The criteria used to define a site of national importance is that it holds 1% of the estimated national population of a species (Colhoun, 2001). Appendix 3 also shows that the numbers of Black-tailed godwit regularly observed during winter (mean 682) are very close to the threshold for international importance (700) (i.e. 1% of the individuals within the global population of the species). With regard to total waterbird numbers, (including gulls), the Blackwater Estuary is noted for holding greater than 10,000 waterbirds each winter and the site is listed as the 24th most important wetland in the country (Colhoun, 2002).

Given the conservation designations protecting the Blackwater and Tourig Estuaries, the area can be viewed as having high ecological and conservation value.

5. ASSESSMENT OF THE CONSERVATION VALUE OF THE PROPOSED DEVELOPMENT SITE FOR BIRDS.

5.1 Conservation Evaluation of the site.

In order to identify potential impacts of a development upon a site and species therein, it is important to assess the conservation importance of the area in question. Several criteria have been developed that may be used to evaluate the conservation value of a site. 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 below. 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.

Criteria 1: Size of site.

Habitats Directive	NCR (Ratcliffe, 1977)	Assessment of proposed development site
'Area of the site covered by the natural habitat type in relation to the total area covered by that natural habitat type within national territory'.	Large size generally enhances site value.. There is some value of edge habitats within small sites.	The proposed development site is small and contains a relatively small amount of natural habitat type (i.e. scrub and wet grassland) in relation to the amount of these habitats present in the surrounding environment.

Criteria 2: Diversity

Habitats Directive	NCR (Ratcliffe, 1977)	Assessment of proposed development site
'Size and density of the population of the species present on the site in relation to the populations present within national territory'.	Assessed in terms of habitat diversity (variety of habitats present) and species richness (number of species present).	The natural habitat types within the proposed development site cannot be considered diverse in relation to the amount of these habitats and many others in the surrounding environment. The site held 14 species, none of which were considered rare or unusual. It is unlikely that the loss of habitat within the proposed development site will have a negative impact on habitat or species diversity in the surrounding area.

Criteria 3: Rarity, Naturalness, typicality and intactness of the site.

Habitats Directive	NCR (Ratcliffe, 1977)	Assessment of proposed development site
'Degree of representativity of the natural habitat type on the site'. Degree of conservation of the structure and functions of the natural habitat type.'	The rarity of habitats and species within the site. The degree to which a habitat or community approximates a natural state. The degree to which the site is a good example of the habitat types.	The proposed development site has been previously modified by human development. The site is already in use as a waste skip storage facility. The natural habitats (e.g. wet grassland) are therefore already degraded and are not good examples of the natural habitat type. The habitats are not considered rare in relation to the amount of these habitats present within the surrounding area and wider geographic area. The bird communities present were characterised by common and ubiquitous species typically found within gorse and scrub habitats.

Criteria 4: Sensitivity/Fragility.

Habitats Directive	NCR (Ratcliffe, 1977)	Assessment of proposed development site
	The degree of sensitivity of the habitats, communities and species to environmental change.	Within the proposed development site, the only habitat that could be termed sensitive with respect to its recovery is the small area of wet grassland. As this habitat covers such a small area, and is present to a larger extent in the surrounding area, it's loss is not considered a significant impact to the area.

5.2 Summary of the conservation value of the site.

The proposed development site is considered to have an overall low conservation value, being situated within an industrial development zone, located alongside a number of other existing developments including a landfill and civic amenity site, a NCT Centre and an import/export facility.

The surrounding land where development has occurred is not considered to be of ecological value in the context of the habitats that comprise the surrounding designated conservation areas.

The site and its neighbouring lands have already undergone modification and degradation by human development. The site is small in area and is considered to be of low ecological value.

There are relatively few natural habitat types within the site and these are not good examples (e.g. wet grassland) of their type. The majority of the birds observed within the site were common, ubiquitous species that are also found within the surrounding environment. Avian species richness (number of species) was higher in the site boundary compared to within the site itself. The hedgerow and gorse/scrub marking the southern boundary of the site are potentially the most significant habitats present. Areas of gorse, scrub and weeds were observed to provide good feeding grounds for finches such as Linnet and Greenfinch. Hedgerows provide important corridors for species between habitats (Bickmore, 2002).

Bird species (e.g. Wren, Blackbird) observed within the site may be potentially breeding there, for example, within the gorse/scrub habitat or within boundary hedgerows and vegetation. However, no obvious signs of breeding birds (e.g. provisioning of young) were observed during the site survey.

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.

6. POTENTIAL IMPACTS OF THE DEVELOPMENT ON BIRDS.

The development of a materials recovery facility and a sludge drying facility at the proposed Foxhole site may potentially impact bird populations within the site and the surrounding area in the following ways :

- Habitat loss and habitat degradation.
- Disturbance.

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.

Atmospheric or aqueous emissions from the plant may potentially impact on both air or water quality in the surrounding environment. This may subsequently impact on the quality of surrounding habitats and fauna. For example, impacts on estuarine water and sediment quality may lead to effects on benthic invertebrates that may ultimately lead to knock-on effects on higher trophic levels within the estuarine food chain such as birds and fish.

Disturbance.

Disturbance to bird communities must be considered with regard to birds using the proposed site and those using the area adjacent to the site (i.e. Youghal Mudlands to the south of the site and the Blackwater Estuary SAC).

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

There is the potential for the development and operation of the site to cause disturbance to wading birds and wildfowl using areas within the Blackwater estuary SAC during the winter months. However this must be considered in the context of the cumulative disturbance already existing from sources such as the Landfill, Civic Amenity Centre and Youghal Bypass. Sensitive areas in close proximity to the site include the Tourig River Estuary and Foxhole, an area of reclaimed land to the north of the site that is an important high tide roost area for wintering wading birds.

Disturbance may affect wading birds and wildfowl in two ways. A short-term disturbance event may cause birds to fly to an alternative habitat. When the disturbance event has ended, the birds can return to their previous habitat and resume normal behaviour. However, if the disturbance is on-going, it may act as to prevent

birds foraging or roosting in a particular habitat. Consequently it amounts to a form of habitat loss, albeit that the habitat itself may remain intact.

Although some bird species can habituate to levels of disturbance, some species can be negatively affected and avoid areas with disturbance completely. Several previous studies have shown disturbance to effect wading birds and wildfowl, both while they are feeding on intertidal mudflats, and while they are roosting at high tide. Although human recreational disturbance is considered the major threat to coastal birds (Davidson & Rothwell, 1993), studies have found some wading bird and wildfowl species to be negatively impacted by roads, railroads, towns and coastal construction (e.g. Burton *et al.,* 2002 a & b; Marsden, 2000).

The impact of disturbance on bird populations depends on the availability of alternative habitat. For example, if wading birds feeding upon estuarine mudflats are disturbed and fly off, they need to have an alternative disturbance-free mudflat to go to. If this alternative habitat is lacking, then over time the population as a whole will suffer, leading to lower densities of birds. This trend has been found in UK estuaries with high levels of disturbance (e.g. Burton *et al.*, 2002b).

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.

7. RECOMMENDED MITIGATION MEASURES.

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.

8. REFERENCES.

Aquatic Services Unit (2002) *Youghal Landfill Annual Water, Sediment and Ecology Report.* A report prepared for Cork County Council in support of the waste licence for Youghal landfill site (Environmental Protection Agency – Reference 68-1).

Bickmore, C. J. (2002) *Hedgerow Survey Handbook – a standard procedure for local surveys in the UK.* Prepared on behalf of the Steering Group for the UK Biodiversity Action Plan for Ancient and/or Species-rich hedgerows. Countryside Council For Wales, Cardiff, UK. 79 pp.

Burton, N. H. K., Armitage, M. J. S., Musgrove, A. J. & Rehfisch, M. M. (2002 a) Impacts of man-made landscape features on numbers of estuarine birds at low tide. *Environmental Management* **30**, 857-864.

Burton, N. H. K., Rehfisch, M. M. & Clark, N. A. (2002 b) Impacts of disturbance from construction works on the densities and feeding behaviour of waterbirds using the intertidal mudflats of Cardiff Bay, UK. *Environmental Management* **30**, 865-871.

Colhoun, K. (2001) *The Irish Wetland Bird Survey 1998-99: Results from the fifth winter of the Irish Wetland Bird Survey.* BirdWatch Ireland, National Parks and Wildlife Service and the Wildfowl and Wetlands Trust. Dublin.

Colhoun, K. (2002) Waterbird monitoring in Ireland 2000/01: Results of the seventh year of the Irish Wetland Bird Survey. *Irish Birds* **7**, 43-52.

Davidson, N. C. & Rothwell, P. I. (1993) (eds) Disturbance to waterfowl on estuaries. *Wader Study Group Bulletin* **68**, 1-106.

Fehily, Timoney and Company (2004) *Youghal Landfill Annual Water, Sediment and Ecology Report.* A report prepared for Cork County Council in support of the waste licence for Youghal Landfill Site (Environmental Protection Agency – Reference 68-1).

Fossitt, J. (2000) *A Guide to Habitats In Ireland.* The Heritage Council, Kilkenny, Ireland.

Heath, M. F. & Evans, M. I. (2000) *Important Bird Area In Europe: Priority sites for Conservation.* Volume 1: Northern Europe. Birdlife Conservation Series No. 8. Birdlife International. 879 pp.

Heritage Council (2003) *Conserving Hedgerows.* The Heritage Council, Kilkenny, Ireland.

Hill, D., Hockin, D., Price, D., Tucker, G., Morris, R. & Trewwek, J. (1997) Bird disturbance: improving the quality and utility of disturbance research. *Journal of Applied Ecology* **34**, 275-288.

Marine Institute (1999) *Ireland's Marine and Coastal Areas: An Environmental Assessment.* Prepared for the Department of the Environment and Local Government and The Department of Marine & Natural Resources. 388 pp.

Marsden, S. J. (2000) Impact of disturbance on waterfowl wintering in a UK dockland redevelopment area. *Environmental Management* **26**, 207-213.

Newton, S., Donaghy, A., Allen, D. & Gibbons, D. (1999) Birds of Conservation Concern in Ireland. *Irish Birds* **6**, 333-344.

Ratcliffe, D. A. (1977) (ed) *A Nature Conservation Review*. Cambridge University Press, Cambridge, UK.

Scottish Natural Heritage, English Nature, Department Of the Environment (NI), Countryside Council for Wales and Joint Nature Conservation Committee. (1997) *Nature 2000: European Marine Sites: an introduction to management.* Scottish Natural Heritage, Perth, Scotland.

Sheppard, R. (1993) *Ireland's Wetland Wealth: the birdlife of the estuaries, lakes, coasts, rivers, bogs and turloughs of Ireland.* Report of the Winter Wetlands Survey 1984/85 to 1986/87. Irish Wildbird Conservancy.

Smiddy, P. (2001) *The Wildlife Wonders of Youghal*. Carraig Print Ltd, Co. Cork.

Smiddy, P. & Duffy, B. (1997) Little Egret *Egretta garzetta*: a new breeding bird for Ireland. *Irish Birds* **6**, 55-56.

APPENDIX 1

Bird Species recorded within the site.

Wood Pigeon	*Columba palumbus*
Meadow Pipit	*Anthus pratensis*
Wren	*Troglodytes troglodytes*
Song Thrush	*Turdus philomelos*
Blackbird	*Turdus merula*
Sedge Warbler	*Acrocephalus schoenobaenus*
Great Tit	*Parus major*
Coal Tit	*Parus ater*
Blue Tit	*Parus caeruleus*
Magpie	*Pica pica*
Rook	*Corvus frugilegus*
Chaffinch	*Fringilla coelebs*
Linnet	*Carduelis cannabina*
Greenfinch	*Carduelis chloris*

APPENDIX 2

Bird species observed in the vicinity of the site.

SPECIES	Listed on Birds Of Conservation Concern (Newton et al., 1999)	Transect 1 (hedgerow adjacent to site and along causeway to nw tip of landfill).	Transect 2 (down eastern side of landfill, western edge of Blackwater Estuary).
Cormorant *Phalacrocorax carbo*	Amber List	*	
Little Egret *Egretta garzetta*	Amber List		*
Grey Heron *Ardea cinerea*			*
Shelduck *Tadorna tadorna*	Amber List		*
Mallard *Anas platyrhynchos*			*
Oystercatcher *Haematopus ostralegus*			*
Knot *Calidris canutus*	Amber List		*
Dunlin *Calidris alpina*	Amber List		*
Redshank *Tringa totanus*	Amber List		*
Black-tailed godwit *Limosa limosa*	Amber List		*
Curlew *Numenius arquata*	Red List		*
Whimbrel *Numenius phaeopus*			*
Black-Headed Gull *Larus ridibundus*	Amber List		*
Common Gull *Larus canus*	Amber List		*
Wood Pigeon *Columba palumbus*		*	*
Skylark *Alauda arvensis*	Amber List		*
Swallow *Hirundo rustica*	Amber List		*
House Martin *Delichon urbica*			*
Meadow Pipit *Anthus pratensis*		*	*
Wren *Troglodytes troglodytes*		*	*
Robin *Erithacus rubecula*		*	*
Stonechat *Saxicola torquata*	Amber List		*
Song Thrush *Turdus philomelos*			*
Blackbird *Turdus merula*		*	*
Sedge Warbler *Acrocephalus schoenobaenus*			*
Great Tit *Parus major*			*
Blue Tit *Parus caeruleus*		*	
Magpie *Pica pica*		*	
Rook *Corvus frugilegus*		*	*
Chaffinch *Fringilla coelebs*		*	
Linnet *Carduelis cannabina*		*	
Greenfinch *Carduelis chloris*		*	

APPENDIX 3.

Blackwater Estuary: Results from the Irish Wetland Bird Survey (I-WeBS).

Peak counts and mean counts per species for the previous five I-WeBS seasons (spanning 1997 – 2002). Species listed within Birds of Conservation Concern (Newton *et al.*, 1999), under Annex I of the Birds Directive (79/409/EEC) and that are of national importance in terms of abundance are also highlighted.

SPECIES	Peak Numbers	Mean Numbers over 5 I-WeBS seasons.	Listed on Birds Of Conservation Concern (Newton *et al.*, 1999)	Annex I Species under Council Directive 79/409/EEC 'Birds Directive'.	National Importance
Great Northern Diver	2	1		*	
Little Grebe	1	0			
Great Crested Grebe	1	0	Amber List		
Slavonian Grebe	1	0		*	
Cormorant	165	67	Amber List		
Grey Heron	21	15			
Little Egret	24	15	Amber List	*	
Spoonbill	1	0			
Mute Swan	6	3			
Light-bellied Brent Goose	68	39			
Shelduck	130	110	Amber List		
Wigeon	862	698	Amber List		
Teal	348	311	Amber List		
Green-winged Teal	1	0			
Mallard	293	107			
Pintail	2	0	Amber List		
Shoveler	6	2			
Eider	4	1	Amber List		
Goldeneye	1	0	Amber List		
Red-Breasted Merganser	13	6	Amber List		
Oystercatcher	608	390			
Ringed Plover	78	37			
Golden Plover	5700	2844	Amber List	*	*
Grey Plover	76	43	Amber List		*
Lapwing	2962	2200	Red List		*
Knot	118	39	Amber List		
Sanderling	8	2			
Little Stint	4	1			
Curlew Sandpiper	4	2			
Dunlin	2420	1422	Amber List		*
Ruff	7	2		*	
Snipe	106	63	Amber List		
Black-tailed godwit	982	682	Amber List		*
Bar-tailed godwit	322	202	Amber List	*	*
Whimbrel	4	1			
Curlew	1513	1089	Red List		*
Spotted Redshank	6	3			
Redshank	658	503	Amber List		*
Greenshank	34	24			*
Green Sandpiper	2	1			

SPECIES	Peak Numbers	Mean Numbers over 5 I-WeBS seasons.	Listed on Birds Of Conservation Concern (Newton *et al.*, 1999)	Annex I Species under Council Directive 79/409/EEC 'Birds Directive'.	National Importance
Common Sandpiper	1	1			
Turnstone	54	34			
Mediterranean Gull	1	1	Amber List	*	
Black-headed Gull	1171	593	Amber List		
Common Gull	912	400	Amber List		
Lesser Black-Backed Gull	941	492			
Herring Gull	134	76			
Glaucous Gull	1	0			
Great-Black-Backed Gull	428	240			
Sandwich Tern	109	27	Amber List	*	
Roseate Tern	1	0	Red List	*	
Kingfisher	2	1	Amber List		
TOTAL WATERFOWL	14907	10961			

Irish Wetland Bird Survey (I-WeBS) is organised by BirdWatch Ireland, National Parks and Wildlife Service and The Wildfowl and Wetlands Trust.