SECTION 4: FLORA AND FAUNA

4.1 INTRODUCTION

This chapter of the Environmental Impact Statement has been prepared by Sinead McDonnell B.Sc. AMIEMA, an Environmental Scientist,with SLR Consulting (formerly John Barnett and Associates) and Dr Patrick Ashe, B.Sc., Ph.D., F.R.E.S., an Environmental Consultant specialising in ecological studies. This chapter, which has been prepared at the request of Roadstone Dublin Ltd., assesses the ecological impact of a proposed inert soil recovery facility at Milverton, Skerries, Co. Dublin.

The application site is located approximately 1.5km south-west of the town of Skerries, Co. Dublin and 5 kilometres north-east of Lusk along the R127 Regional Road.

4.1.1 Baseline Study Methodology

The objective of this ecological study is to identify and assess the significance of the flora and fauna occurring on or in the immediate vicinity of the application site in order to determine the potential ecological impact of the proposed waste recovery facility at the site.

A field survey of the flora and fauna at the site was originally undertaken on 15th May 2008 as part of the compliance requirement for the quarry registration under Section 261 of the Planning and Development Act of 2000. The application area was inspected systematically by walking along existing boundaries and access tracks, as well as criss-crossing the site, where possible to do so. During this time, a record was made of all flora and fauna and habitat types.

All vascular plants observed during the survey were identified to species level. Identification and naming of vascular plants used Stace (2001). Bird species were noted whenever encountered or clearly identifiably through calls or song. Signs of mammal activity including tracks and footprints, scats and burrows or other resting places were searched for, as well as looking out for the mammals themselves. Invertebrates (e.g. bees and butterflies) were recorded from flowers or under stones etc. and any unusual species were noted. Information on sites of conservation importance for North County Dublin / Fingal (National Parks and Wildlife Service) was obtained during the report writing stage.

4.1.2 Relevant Legislation

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the EU Habitats Directive) and Council Directive 79/409/EEC on the conservation of wild birds (the EU Birds Directive) oblige member states to protect habitats and species that are of importance on a Europe-wide scale. Annex I and II of the Habitats Directive and Annex I of the Birds Directive list species and habitats that are of greatest conservation importance on an EU-wide scale and for which conservation areas must be designated. These designations are:

- Special Areas of Conservation (SAC) for habitats listed in Annex I of the Habitats Directive and species listed in Annex II. Some of these habitats or species are prioritised for conservation measures (* Priority Species or Habitats) and
- Special Protection Areas (SPA) for Birds listed in Annex I of the Birds Directive

A number of other Annexes in both Directives list species that require strict protection but not necessarily require designation of conservation areas. Ireland is also a signatory to a number of conservation-related agreements and conventions such as the Bern and Bonn Conventions.

The EU Directives have been transposed into Irish law through a number of legal instruments including the European Communities (Natural Habitats) Regulations 1997-2005 (the 'Habitat Regulations'), the Wildlife Acts, 1976-2000, the Planning and Development Act, 2000, and the Foreshore Acts, 1932-1992.

Other legal instruments such as the Wildlife Acts (1976 and 2000) and the Flora Protection Order (1999) also provide protection for species of national conservation importance. Proposed Natural Heritage Areas (pNHA) are conservation designated areas that protect species and habitats of regional and national importance. At a more local level, there may be objectives set out in County Biodiversity Action Plans in respect of uncommon or rare species and habitats within the County.

4.2 RECEIVING ENVIRONMENT

4.2.1 Overview of Baseline Study

Roadstone Dublin operated the application site as a limestone quarry and produced construction materials there up to August 2008. Existing limestone reserves at the site are almost exhausted and extraction activities have resulted in the creation of a large quarry void.

Practically all of the application area has been disturbed by quarrying and rock extraction activities and the only natural habitat that remains are sections of perimeter hedgerow along the site boundary. The area was surveyed on the 15th May 2008 and due to its disturbed nature (from quarrying activities), only moderate floral and faunal diversity was recorded, with 65 plant species, 19 vertebrate species (16 bird species and 3 mammal species) and 4 Butterfly species recorded.

4.2.2 Habitats

The application site under investigation includes several different habitats, principally

- a section of perimeter hedgerow which defines much of the site boundary;
- areas of scrub;
- exposed calcareous rock (including cliff faces);
- recolonising waste ground and
- the active quarry area.

The location and extent of these habitats within the application site is illustrated in Figure 4.1.

Most of the application area has been affected by quarrying activity. The quarry site includes an entrance area; site office and other buildings; weighbridge; internal access roads; parking area and a concrete manufacturing facility. The adjoining areas to the east, west and south of the application area comprise arable farmland while to the north is a section of public road.

(a) Hedgerows
Hedgerows form an almost continuous boundary around the perimeter of the application site. The majority of the hedgerow is mature and unmanaged. The predominant canopy species are a mix of both native and introduced species such as Willow (*Salix spp.*), Ash (*Fraxinus excelsior*), Hazel (*Corylus avelllana*) and Elder (*Sambucus nigra*), with non-native species including Sycamore (*Acer pseudoplatanus*), amongst others.

The understorey vegetation supports a high proportion of spinose species such as Hawthorn (*Crataegus monogyna),* Holly (*Ilex aquifolium),* Bramble (*Rubus fruticosus* agg.) and Blackthorn (Prunus spinosa) in addition to ground flora species such as Cleavers (*Galium aparine*), Scarlet Pimpernell (*Anagallis arvensis*), White Clover (*Trifolium repens*) and Herb Robert (*Geranium robertianum*).

(b) Scrub
Areas adjacent to the internal roads leading to the quarry floor have progressed from recolonising bare ground to scrub habitat. This is due to the high proportion of shrub like vegetation such as the introduced Butterfly Bush (*Buddleja davidii),* which dominates this habitat and other species such as Sycamore (*Acer pseudoplatanus*) and Willow (*Salix* sp. agg.*).*

(c) Exposed Calcareous Rock
The extraction of limestone at this site up to relatively recently means that areas of calcareous rock have been artificially exposed, forming steep cliff faces. Many of the older, residual quarry faces have patchy vegetation cover, as they have been left undisturbed for several years. A range of species have colonised these areas, including Willow (*Salix sp.agg*), Gorse (*Ulex europaeus*), Bramble (*Rubus fruticosus*) and Bracken (*Pteridium aquilinum*) to more ruderal weed species such as Coltsfoot (*Tussilago farfara*), Ragwort (*Senecio jacobaea*) and Nettle (*Urtica dioica*).

(d) Recolonising Bare Ground
This describes areas where bare or disturbed ground and artificial surfaces have been invaded by herbaceous plants. Areas along the internal roads and previously worked areas which have remained undisturbed for some time fit into this classification. The flora present is predominately ruderals and weed species. Common examples include Ribwort Plantain (*Plantago lanceolata*), Groundsel (*Senecio vulgaris*), Dandelion (*Taraxacum sp. agg*) and Hogweed (*Heracleum sphondylium*).

(e) Recently Quarried Areas
Up to relatively recently, Milverton Quarry was a fully operating limestone quarry and as a result, much of the site is classified as an active quarry. The colonization of flora and fauna has been almost completely prevented around these areas due to the extraction, processing and product storage operations. It is likely that with the passage of time, this area will start to be colonised by herbaceous plants such as those identified above.

4.2.4 Evaluation

Flora
Although habitats such as active quarry and recolonising ground constitute a large portion of the site, these habitats support little flora of interest and are of low significance. The scrub habitat found on site consists of a variety of species, but is dominated by introduced flora such as the Butterfly Bush (*Buddleja davidii)*. During the summer months, this habitat will support several species of butterfly. Although it lacks floral diversity, this habitat's ability to support certain invertebrates, increases the species diversity of the site.

Extraction of limestone rock at the site up to relatively recent times has created artificial exposures of calcareous rock and resulted in formation of cliff-like faces at the site. Although the vegetation cover of this habitat is patchy, areas that were left undisturbed have been colonised by a variety of floral species. If post-extraction habitat restoration of some areas of the quarry (in particular some sections of the residual quarry faces, is left to natural processes (rather than formal landscape restoration over the whole site), the quarry has potential to increase the biodiversity of the local area.

The final habitat found at the application site was mature hedgerow, which occurs around, and defines, most of the site boundary. It is the most biologically diverse habitat found at this site and is of highest conservation value. The hedgerow supports a large range of both native and introduced floral species. Hedgerows serve several different functions for fauna. These include song posts, nesting sites, roosting site, feeding sites, cover from predators and corridors for movement. They are also likely to prove a good source of seeds during the decommissioning of the site. As external hedgerows have a high ecological significance for this site, they will be retained as part of the final restoration scheme for the quarry.

Fauna
No mammals, amphibians or invertebrates of conservation value were recorded during the ecological survey of this area, with the exception of the Irish Hare (*Lepus timidus)* which was recorded in an adjacent agricultural field. The majority of birds recorded are common and widespread throughout Ireland. All song birds are protected under the Wildlife Act of 1976 (as amended in 2000). The swallow (*Hirundo rustica)* is also on the Amber list as it has an unfavourable conservation status in Europe.

The Peregrine Falcon (*Falco peregrinus)* was found to be nesting at the site. It was only able to colonise this area as a result of quarrying activities which provided it with a suitable nesting area on residual quarry faces, thereby enabling it to hatch and rear its young.

4.2.5 Designations

There are no designated or proposed Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or proposed Natural Heritage Areas (NHA's) within or contiguous to Roadstone Dublin's landholding, nor in the area immediately surrounding it. The nearest nature conservation sites to the application site are the offshore SPA's at the Skerries Islands and the proposed Natural Heritage Areas (pNHAs) at Knock Lake, Bog of the Ring and Loughshinny Coast

approximately 5.5km west northwest, 6km west and 2.5km east southeast of the site respectively. The location of these designated sites is shown in Figure 4.2.

The Skerries islands lie approximately 0.5km and 1.5km off the north Dublin coast and are designated SPA's on account of their importance for both breeding seabirds and wintering waterfowl, with six species having populations of national importance and and internationally important population of Brent Geese. Golden Plover and Short-eared owls, both Annex 1 species under the EU Birds directive are also present in minter months.

At the present time, no site synopses are available from the National Parks and Wildlife Service (NPWS) in respect of the proposed Natural Heritage Areas at Knock Lake and the Bog of the Ring. Knock Lake is an artificial lake which formerly provided a source of emergency water for the Wavin factory in Balbriggan and is now of botanical and zoological interest. The Bog of the Ring is a flat low-lying wetland area with impeded drainage. Although the area was drained many years ago, it still contains pockets of marsh vegetation and supports some wild birdlife. The proposed NHA at the Loughshinny Coast is designated a pNHA on geological and/or geomorphological grounds (refer to Chapter 5 of this EIS).

There is also some ecological interest in a site known as the Ballast Pit, a former worked out quarry to the north of Skerries railway station. This site has been partially restored and it includes areas which have been naturally recolonised by reed beds.

4.3 IMPACT OF THE SCHEME

4.3.1 Existing / Proposed Development

The area of the application site is approximately 7.9 hectares (19 acres). At the present time, the application site includes sections of hedgerow, areas of scrub, bare rock, hardstanding surfaces and sealed concrete surfaces. The area beyond the application site includes arable fields to the south, east, north and west.

The application area includes site offices and other structures (including a stone building described as an 'engine room', a protected structure), aggregate processing and concrete production facilities, a plant storage and service area, car parks and a weighbridge. The site is accessed directly via the R127 Regional Road. Existing quarry infrastructure (with some upgrading where necessary) will service the proposed waste recovery facility.

Roadstone Dublin Ltd is the freehold owner of the application area. The company intends to apply for a waste recovery licence to the Environmental Protection Agency to provide for backfilling of the worked-out quarry void with imported inert soil and stone.

The bulk of the materials used to backfill the existing void will comprise inert soils and stones excavated at construction sites elsewhere in the Greater Dublin Area and imported to site. A proportion of the backfill materials (approximately 23%) will come from existing soil (overburden) stockpiles and screening berms around the existing quarry. It is envisaged that as the level of backfilling approaches that of the in-situ or surrounding land, layers of subsoil will be deposited followed by a final layer of topsoil. The topsoil will be seeded with a suitable grass seed mix to produce pasture to stabilise the soil surface and prevent excessive soil runoff after precipitation.

It is likely that minor quantities of other inert concrete or brick or recovered secondary aggregate (crushed and screened concrete, bricks, tiles, and ceramics) will be used to construct temporary haul roads across the application site, as and when required. These materials will either be imported directly to site or sourced from the Applicant's construction and demolition waste recovery facility at Huntstown Quarry.

It is understood that when inert materials are imported to site, they will be checked prior to being unloaded and placed at the active backfill area. If minor quantities of non-inert waste (wood, metals, plastics, etc.) are intermixed with the imported soil, it will be removed by hand or machine and stored temporally in skips at the site. When full, these skips will be dispatched to appropriately licenced or permitted waste disposal or recovery facilities.

4.3.2 Relevant Aspects of Scheme

Backfilling and restoration of the quarry using naturally occurring inert materials will give rise to the following impacts within the application area:

- Loss of approximately 1.0 hectares of naturally re-colonised scrub
- Loss of approximately 1.1 hectares of bare ground and/or exposed calcareous rock
- Loss of approximately 2.6 hectares of recently quarried ground
- Establishment of approximately 4.0 hectares of improved agricultural grasslands

4.3.3 Direct Impacts

From an ecological standpoint, most of the application area (over 90%) has already been negatively impacted by quarrying activities. Much of the site is either bare of vegetation or has sparse vegetation cover and, within the site boundary, the only remaining natural habitat is the boundary hedgerow.

The following impacts will arise during the backfilling and restoration work at the application site:

a) Hedgerows
There will be no significant impact on the sections of perimeter hedgerow since these are being retained and will be incorporated into the restoration scheme for the quarry site. It is possible that placement and compaction of inert soils in close proximity to hedgerows may temporarily and locally reduce potential foraging and shelter habitat for both mammals and birds.

b) Scrub Area
Some existing areas of scrub in and around the quarry will be completely destroyed by the proposed backfilling and restoration of the quarry, but other areas will remain unaffected. Removal of scrub will result in the loss of any flora and disturbance of any fauna that have colonised these areas.

c) Quarry Void, Exposed Calcareous Rock and Recolonising Bare Ground
The objective in backfilling the existing quarry void is to restore much of the application site to that ground level which existed before quarrying commenced at the site. This activity will therefore result in the burial and/or disappearance of most of those areas which have been created by quarrying activities.

As backfilling works are completed, the site will be progressively restored to agricultural pasture lands. This will be in keeping with the surrounding area which is composed predominately of improved agricultural land. The expected ecological diversity of the restored site is likely to be low, similar to that of the surrounding, intensively farmed lands.

The arable farmland which is located within and immediately beyond the boundary of the application site will not be directly affected by the proposed waste recovery activities.

4.3.4 Indirect Impacts

Dust deposition could occur as an indirect impact of the placement, spreading and compaction of naturally occurring inert materials. This could potentially have a negative impact on flora in the area, particularly on perimeter hedgerows, if foliage were to become covered in excessive levels of dust, potentially reducing the amount of photosynthesis taking place. Given the recent quarry history at the site, noise emissions from waste recovery activities are unlikely to have any adverse impact on fauna at the site.

4.4 MITIGATION MEASURES

The floral diversity at the application site, at 65 species, is considered to be quite moderate, but is nonetheless greater than would be found in the adjoining intensively farmed arable land. The majority of species are associated with the perimeter hedgerows.

Other common floral and faunal elements, because of their widespread distribution, are likely to occur at times, or in the case of some birds and mammals occasionally visit the site. Although other plant and animal species could be added to the inventory of identified species by surveying at other times, this is considered unnecessary given the existing scale of disturbance on the site.

Apart from Peregrine Falcon (*Falco peregrinus*), all the plant and animal species identified at the application site are common throughout Ireland and in the general area. No protected, endangered or rare species, other than Peregrine Falcon (*Falco peregrinus*), were found on the site.

It is recommended that the following program of mitigation measures be implemented to eliminate and minimise the impact of the development on the flora and fauna of the site over the operational life of the proposed waste recovery facility:

i. a suitable roosting and nesting area for the Peregrine Falcon should be retained on one area of existing cliff face so as to provide a suitable roosting and nesting area.

ii. when the level of backfilling approaches that of the surrounding land, layers of subsoil should be deposited followed by a final layer of organic, well drained topsoil. The topsoil should be seeded with a suitable grass seed mix to produce pasture. This will serve to stabilise the soil surface and prevent excessive soil erosion and wash-out of fines;

iii. in order to retain landscape connectivity and minimise loss of potential nesting sites for birds, existing boundary hedgerows should be retained. Retention of boundary hedgerows will also serve as a visual and acoustic barrier;

iv. to ensure the continued biodiversity of boundary hedgerows, backfilling and restoration operations in close proximity to existing hedgerows should also be of minimum duration possible;

v. where removal of any shrubs or scrub within the application site is necessary, these works should take place between the months of September and March to avoid the bird nesting season;

vi. if and where practicable, the loss of internal shrubs or hedgerows within the site should be compensated by re-planting following restoration of site to pre-extraction ground levels. Any new planting should comprise a mixture of native tree and shrub species consistent with species readily found in the local area.

vii. the mitigation measures set out in Chapters 7 and 8 of this Environmental Impact Statement should be implemented. Dust and noise emissions from the application site will comply with the recommended DoEHLG (2004) and EPA (2000) emission limit values. Implementation of these measures shall ensure that there will be minimal adverse indirect noise and dust impacts on flora and fauna arising from backfilling and site restoration activities.

viii. following the completion of backfilling operations, the application site will be restored to agricultural use. This will ensure that land use at the site is in keeping with the character of the surrounding area.

Provided that all the mitigation measures proposed above are implemented, the overall impact of the proposed development on flora and fauna from an ecological standpoint is assessed to be a *minor negative* impact over the operational phase.

In the longer-term, after completion of backfilling activities, the overall impact of the scheme is assessed to be a *neutral* impact.

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Peterson, R.; Mountfort, G. and Hollom, P.A.D. (1967) *A Field Guide to the Birds of Britain and Europe*

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APPENDIX 4.1

INVENTORY OF FLORA AND FAUNA

Flora and fauna lists from the application area based on a survey undertaken on 15th May 2008.

Plants (Flora)

A total of 65 plant species were recorded across the entire application site.

Field Maple	Acer campestris
Sycamore	Acer pseudoplatanus
Yarrow	Achillea millefolium
Grey Alder	Alnus incana
Scarlet Pimpernell	Anagallis arvensis
Kidney Vetch	Anthyllis vulneraria
Bur Chervil	Anthriscus caucalis
Cow Parsley	Anthriscus sylvestris
Columbine	Aquilegia sp. (cultivar)
Thrift	Armeria sp. (cultivar)
Daisy	Bellis perennis
Mustard	Brassica sp.
Butterfly-bush	Buddleja davidii
Hedge Bindweed	Calystegia sepium
Common Knapweed	Centaurea nigra
Spear Thistle	Cirsium vulgare
Hazel	Corylus avellana
Cotoneaster	Cotoneaster sp.
Hawthorn	Crataegus monogyna
Leyland Cypress	Cupressocyparis leylandii
Great Willowherb	Epilobium hirsutum
Field Horsetail	Equisetum arvense
Sun Spurge	Euphorbia helioscopia
Ash	Fraxinus excelsior
New Zealand Broadleaf	Griselinia littoralis (cultivar)
Ivy	Hedera helix
Hogweed	Heracleum sphondylium
Hawkweed	Hieracium sp. (aggregate)
Oxeye Daisy	Leucanthemum vulgare
Common Bird's-foot-trefoil	Lotus corniculatus
Scentless Mayweed	Matricaria perforata
Daffodil	Narcissus sp. (cultivar)
Common Poppy	Papaver rhoeas
Hart's-tongue Fern	Phyllitis scolopendrium
Norway Spruce	Picea abies
Ribwort Plantain	Plantago lanceolata
Poplar	Populus sp.
Creeping Cinquefoil	Potentilla reptans
Primrose	Primula vulgaris
Cherry	Prunus sp. (cultivar)
Bracken	Pteridium aquilinum
Meadow Buttercup	Ranunculus acris
Creeping Buttercup	Ranunculus repens
Weld	Reseda luteola
Bramble	Rubus fruticosus
Common Sorrel	Rumex acetosa
Willow	Salix sp. (aggregate)
Elder	Sambucus nigra
Common Ragwort	Senecio jacobaea
Groundsel	Senecio vulgaris
Alexanders	Smyrnium olusatrum
Smooth Sow-thistle	Sonchus oleraceus
Rowan	Sorbus aucuparia
Comfrey	Symphytum sp. (cultivar)
Lilac	Syringa vulgaris
Dandelion	Taraxacum sp. (aggregate)

Hop Trefoil	Trifolium campestre
Red Clover	Trifolium pratense
White Clover	Trifolium repens
Colt's-foot	Tussilago farfara
Gorse	Ulex europaeus
Common Nettle	Urtica dioica
Germander Speedwell	Veronica chamaedrys
Bush Vetch	Vicia sepium
Periwinkle	Vinca sp. (cultivar)
Common Dog-violet	Viola riviniana

Aviformes (Birds)

A total of 16 bird species were recorded from the entire application site. Some other common species of bird species could be expected to occur at times on the site.

The following species of birds were recorded on the site and their status in Ireland is indicated as follows:- R = resident, B = breeding, M = migratory.

Entire Application Area (16 species)

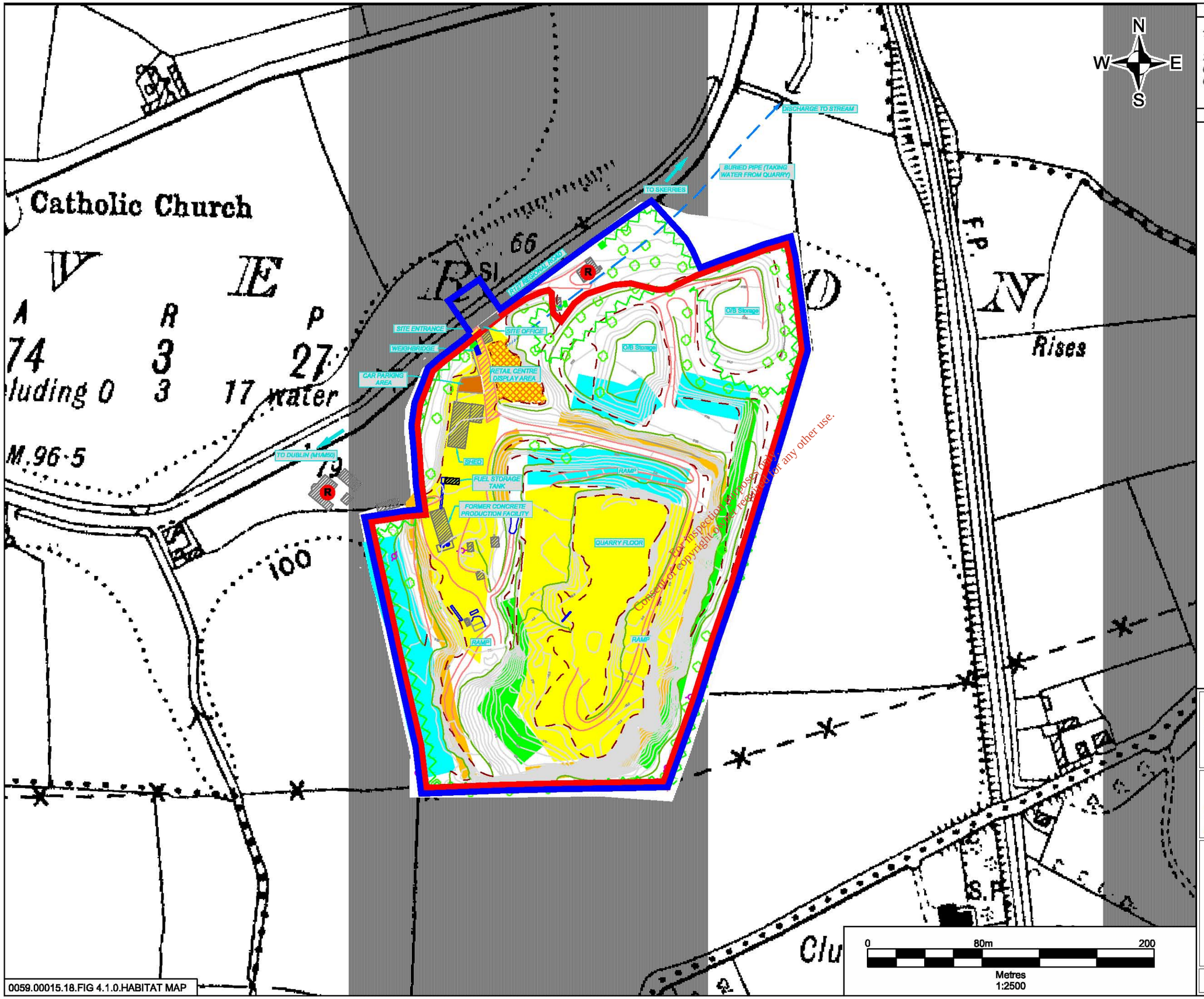
Blackbird	Tudus merula	R & B
Blue Tit	Parus caeruleus	R & B
Collared Dove	Streptopelia decaocto	R & B
Dunnock	Prunella modularis	R & B
Jackdaw	Corvus monedula	R & B
Magpie	Pica pica	R & B
Peregrine	Falco peregrinus	R & B
Pheasant	Phasianus colchicus	R & B
Robin	Erithacus rubecula	R & B
Rook	Corvus frugilegus	R & B
Sand Martin	Riparia riparia	M & B
Song Trush	Turdus philomelos	R & B
Swallow	Hirundo rustica	M & B
Willow Warbler	Phylloscopus trochilus	M & B
Wood Pidgeon	Columba palumbus	R & B
Wren	Troglodytes troglodytes	R & B

Mammals

Brown Rat	Rattus norvegicus
Mountain or Irish Hare	Lepus timidus
Fox	Vulpes vulpes

Insects – Butterflies (Lepidoptera)

Green-veined White	Pieris napi
Holly Blue	Celastrina argiolus
Orange Tip	Anthocaris cardamines
Speckled Wood	Pararge aegeria



NOTES

1. Based on OSi 25inch Dublin Sheet No. 5 & 5a

2. Ordnance Survey of Ireland Licence No. SU 0000709 (c) Ordnance Survey of Ireland & Government of Ireland

LEGEND

- Applicant's Land Interest (c. 8.6ha)
- Waste Licence Application Area (c. 7.9ha)
- Scrub (c. 1.0ha)
- Recolonised Bare Ground (c. 0.64ha)
- Quarry Face (Exposed Calcareous Rock) (c. 0.47ha)
- Previously Quarried Area (c.2.6 ha)
- Hedgerow

ROADSTONE DUBLIN LTD.
FORTUNESTOWN
TALLAGHT
DUBLIN 24

SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

ROADSTONE DUBLIN LTD.
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MILVERTON, SKERRIES, CO. DUBLIN

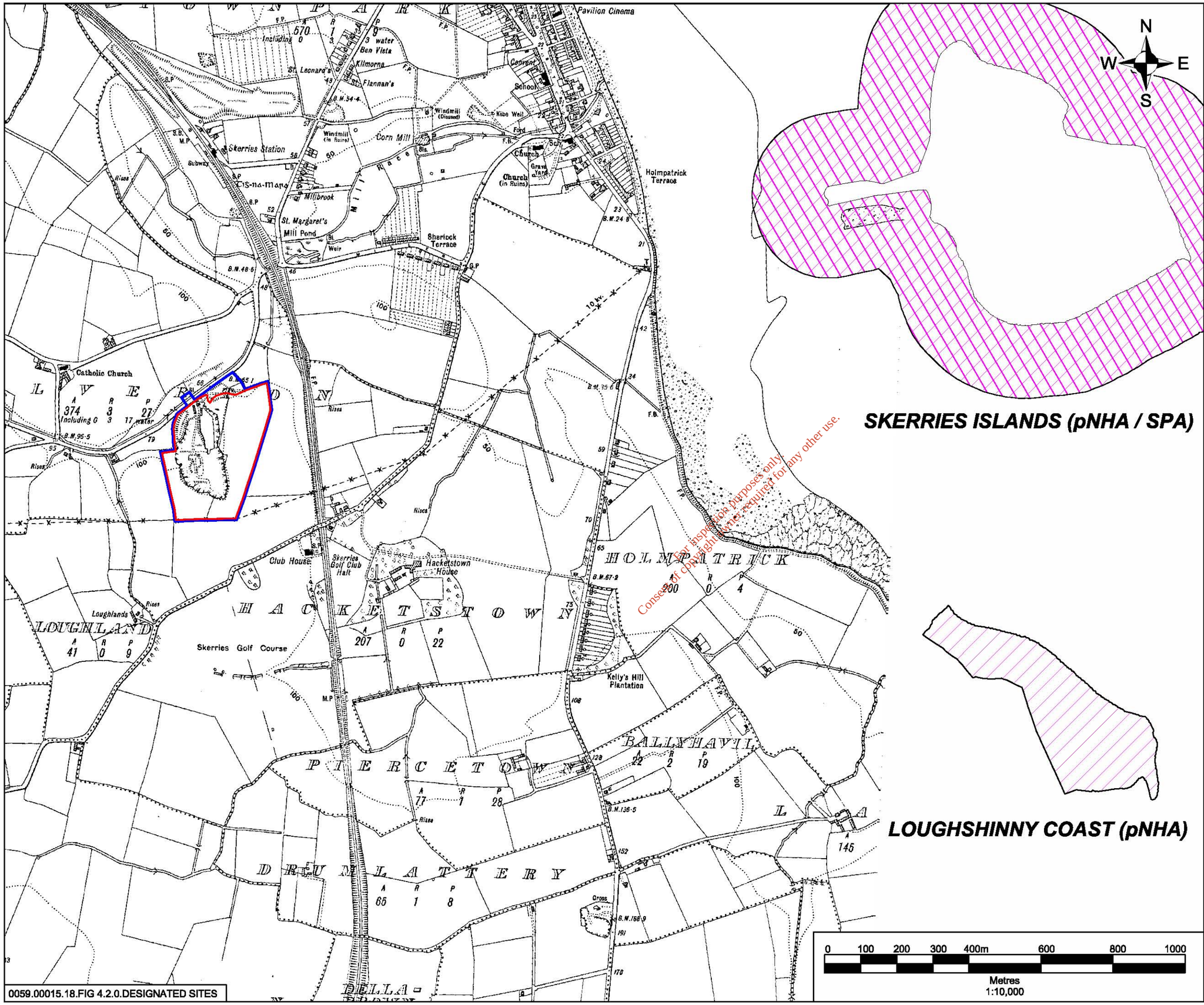
HABITAT MAP

FIGURE 4.1

Scale: 1:2,500 @ A3

Date: AUGUST 2009

0059.00015.18.FIG 4.1.0.HABITAT MAP



SKERRIES ISLANDS (pNHA / SPA)

LOUGHSHINNY COAST (pNHA)

0 100 200 300 400m 600 800 1000

Metres
1:10,000

0059.00015.18.FIG 4.2.0.DESIGNATED SITES

NOTES

1. Based on OSi 25inch Dublin Sheet No. 5 & 5a

2. Ordnance Survey of Ireland Licence No. SU 0000709 (c) Ordnance Survey of Ireland & Government of Ireland

LEGEND

- Applicant's Land Interest (c. 8.6ha)
- Waste Licence Application Area (c. 7.9ha)
- National Heritage Area (NHA)

roadstone

ROADSTONE DUBLIN LTD.
FORTUNESTOWN
TALLAGHT
DUBLIN 24

SLR

SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

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MILVERTON, SKERRIES, CO. DUBLIN

DESIGNATED SITES

FIGURE 4.2

Scale	Date
1:10,000 @ A3	AUGUST 2009