



Coastal Habitat Study for Bearna 2006

Contents

Introduction.....	1
Terrestrial Habitats.....	2
Freshwater Habitats.....	6
Coastal Habitats.....	8
Map of Habitats.....	9
Fauna.....	10
Ecological Landscaping.....	11
Native Trees and Shrubs.....	12
Ecological Networks.....	13

Introduction

As part of the preparation of the *Bearna Local Area Plan 2007-2013* (LAP), a Coastal Habitat Study was undertaken to identify the main habitats and wildlife species on the coastal lands and seashore of Bearna. The area for this study extended from the R336 Regional Road down to the High Water Mark (HWM) and from Liberty Stream in the west to Silver Strand Road in the east.

The study was primarily undertaken by Elaine O’Riordan, Project Manager, ‘People and Nature’ – The Galway County Biodiversity Project, Applied Ecology Unit, Centre for Environmental Science, National University of Ireland, Galway. Field work was carried out in early April and early June 2006 by Elaine O’Riordan with the assistance of GMIT student George McDonogh. Maps and aerial photos from the OSI and Pobal Bhearna were studied and preliminary habitat classifications assigned to the area. Permission was obtained from land owners where possible to enter lands. The area was then walked over a number of days and the habitats classified according to Fossitt’s (2000) *A Guide to Habitats in Ireland*. A hand held GPS unit (Gecko 301) was used to obtain positions of features and to delineate between habitat boundaries. Dr Julie Fossitt visited the area with Elaine O’Riordan on one occasion to provide advice on the habitat classification. On completion of the field work, the GPS points taken in the field were plotted on maps which were printed and used to prepare preliminary (hand drawn) habitat maps. These were then digitised by Bridin Feeney and Mark Conroy in the IT department of Galway County Council.

The project was undertaken under the direction of Marie Mannion, the Heritage Officer for Galway County Council, in order to provide a pilot project for other coastal settlements in County Galway. The project shows how coastal environmental issues can form an important consideration in undertaking more informed land use planning and environmental management in these areas.

The study has also referred to a report undertaken as part of a planning application on an area of coastal lands in Freeport townland, entitled *Ecological Assessment of Lands at Barna, Co. Galway* and dated 22nd July 2004. The assessment was undertaken by KOS Environmental Consultants on behalf of Bomac Properties Ltd. Where information has been extracted from this report, it is specifically acknowledged in the relevant section.

Terrestrial Habitats

The majority of the habitats in the survey area consist of semi-improved grassland vegetation. The nature of these grasslands depends on the ground and soil conditions as well as the management regime in place at the site. The classification of the grassland habitats in particular is somewhat difficult as for the most part, they consist of a mosaic of semi-improved grassland types containing elements of improved, wet and dry-humid acid grassland (GS3) types.

In parts of the western end of the survey area, the grassland is closer to Improved Agricultural Grassland (GA1) as it is grazed, drained and fertilized. However, it is not intensively managed and though it is not particularly species rich would be considered as semi-improved grassland (GS) (Fossitt, *pers comm.*).

In places, especially towards the western end of the study area and on the higher ground closest to the road, the grassland tends towards dry-humid acid grassland and patches of this are especially evident on some of the drier hummocks. Primrose, violet, self heal yarrow and thyme growing on these places. Hummocks generally coincide with areas where the underlying granite geology lies at or near the surface on which lichens, moss and stonecrops are common.

In many areas, active management (i.e. grazing, fertilization, drainage, re-seeding) has ceased and here the grass has grown rank and the area has become overgrown with weeds such as docks, ragwort, rushes, thistles and bindweed.

A small area of dry heath (HH1) exists on one marginal area of raised ground along the shore at (southwest of Lacklea, just above the channelled stream). It is likely that the steep ground supported dry heath vegetation in the past. Though now completely overgrown with bracken and scrub it still retains some of the characteristic vegetation including St Dabeoc's heath.

On drier more sloping ground, many areas have become completely overgrown with dense bracken, often with heavy growth of brambles and varying degrees of blackthorn encroachment. In some of these areas, especially at the eastern end of Bearna, abandoned fields are now being grazed by horses which is helping to keep back the growth of bracken to some extent.



Semi-Improved Grassland at Old Chapel



Bracken Scrub and Marsh



Semi-Improved Grassland with Encroaching Scrub



Dry Heath



Improved Wet Grassland



Dry Humid Grass

Areas of wet grassland (GS4) are present throughout the survey area although some fields have been extensively drained to overcome this. Many fields have abundant rushes and large dense stands of yellow flags. Lesser celandines, buttercups and meadowsweet are also plentiful as well as agricultural species such as sorrel, docks, and thistles. In two areas of wet grassland in particular orchids are growing. Of particular note is the field eastwards and adjacent to the old shellfish holding area, which contains a very wet area that may be classified as Poor Flush (PF2) and which supports a variety of orchid species (*see photos*).



Dry Hummock Vegetation



Quarry



Dry Hummock



Recolonising Bare Ground



Furze Scrub



Stonecrop and Moss on Rock



Last Year's Orchid



Wet Grass Orchids



Orchids



Tall Reed Swamp

Freshwater Habitats

The landscape in Bearna is generally wet with considerable amounts of surface water moving from the hinterland to the sea. There are three streams that channel water through the landscape. In addition, there are quite a few drainage ditches (FW4) in the fields, especially in the lower ground to make the land more productive for farming.

According to the *Ecological Assessment of Lands at Barna, Co. Galway* dated 22nd July 2004 and undertaken by KOS Environmental Consultants on behalf of Bomac Properties Ltd., the coastal portion of Trusky Stream has the following species in or on the banks of the stream:

Common Name	Latin Name
Water Cress	<i>Rorippa nasturtium-aquaticum</i> agg.
Purple Loosestrife	<i>Lythrum salicaria</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hartstongue Fern	<i>Phyllitis scolopendrium</i>
Broad Buckler Fern	<i>Dryopteris dilatata</i>

Source: *Ecological Assessment of Lands at Barna, Co. Galway*, KOS Environmental Consultants, July 2004.

Where there is continuous seepage of fresh water over the surface and where it collects in depressions in the landscape, small patches of marsh or flush vegetation have developed. Many of the lower lying fields close to the shore (such as the area pictured) would be considered to be very wet and are extensively drained. Also, according to local information, are inundated by sea water once or twice a year during winter storms or very high tides.



Channelled Stream



Emerging Stream



Drain



Trusky Stream Outlet



Stream from Artificial Pond



Artificial Pond



Seasonal Pond



Spring



Seepage Zone Spring



Stream to Saltmarsh



Horseshoe Stream

Coastal Habitats

Along much of the coast, the uppermost limit of the shoreline is delineated by a stone wall; either an old traditional dry stone wall or a coastal defence structure composed of very large boulders lined up along the top of the shore. There are also coastal defence works in the form of groynes at a number of points along the shore. These stone walls are often covered by brambles or low growing blackthorn or gorse scrub.

Much of the upper shoreline above the high water line may be classified as shingle and gravel bank (CB1) or storm beach as it consists of accumulations of cobbles, pebbles and gravel. The banks vary from narrow strips just a couple of metres wide to extensive cobble fields. In places, particularly around the (old shellfish station to channelled river) area, there are very large accumulations of shingle so the banks are very high and deep. Where large cobble banks exist, they often extend into the adjoining field on the leeward side. This would suggest that there has at some stage in the past been significant accretion of material at certain points along the shoreline.

Vegetation on the cobble banks is relatively sparse but in sheltered areas and on the leeward side of the banks areas of grassland have developed as well as typical coastal species such as Sea sandwort, sea radish, sea beet and thrift are found as well as low growing blackthorn and brambles. Along a couple of short stretches of the upper shore where no storm beach exists (e.g. just west of the pier at Bearna), the habitat is uniformly rocky shore from the upper limit of the intertidal through to the sublittoral zone.

Along one section of the upper shore the land adjoining the shore is higher than the beach and this shows evidence of low level erosion as the sediment and rock are exposed. The exposed face at less than 3m is not deep enough to be classified as a sedimentary cliff. It appears that erosion is ongoing at this area and it is possible that some small scale quarrying has taken place nearby in the past.

Most of the littoral (intertidal) habitat along this stretch of coast would be classified as Moderately Exposed Rocky Shore (LR2) dominated by stable accumulations of boulders, cobbles and pebbles interspersed with of bedrock and patches of sediment and shingle. Short stretches of Sandy Shore (LS2) are found along the coast near Silver Strand and close to Bearna Pier.



Storm Beach Buildup



Large Storm Beach



Leeside of Storm Beach



Cave



Eroding Face



Lazy Beds

Scattered along the shore are found small patches of old peat from ancient bogs that existed here in the past but have been gradually submerged by sea level rise over a long period of time. Archaeological investigations in the area have dated submerged tree stumps and deer antlers at circa 4000 years ago. These peat substrates now support lower saltmarsh (CM2) vegetation.

An area of salt marsh is also located on either side of the road to Silver Strand where Lenarevagh Stream meets the tidal zone. Saltmarsh is an ecologically important habitat with 4 types listed in Annex I of the EU Habitats Directive. This area may be a nursery area for some fish species as the tidal influence extends for some distance upstream from the shore itself.



Rocky Shore



Salt Marsh (west of Silver Strand Road)



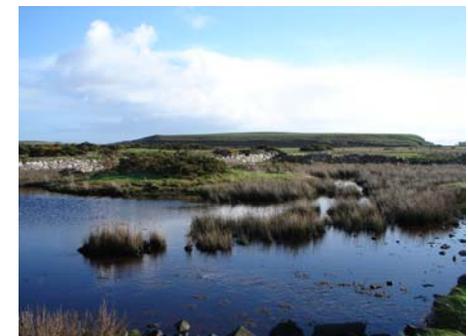
Cobble Bank Vegetation



Salt Marsh (west of Silver Strand Road)



Vegetated Cobbles



Salt Marsh (east of Silver Strand Road)



Map of Habitats

Fauna

A number of animals were observed over the course of the habitat mapping field work. Mammals sighted include stoat and a badger (dead). Evidence of foxes was found in the form of scat and odour. From previous and subsequent visits, the area next to Silver Strand Road is known to contain bats. The adjacent Rusheen Bay is a very important site for a variety of water birds especially ducks during autumn and winter. And a large number of Grey Herons nest in the adjacent woods.

It is likely that many common sea birds are found feeding along the shoreline in Bearna including oystercatchers, gulls, curlew and ringed plover. Small woodland birds including green and gold finches, blue tits, coal tits and great tits are common in gardens, scrub and hedges. A kestrel was observed hovering on a few occasions. Many of the rushy wet fields have snipe nesting in them. Although not a listed species, this bird has been in decline in Ireland in recent years due to loss of suitable nesting habitat.

According to the *Ecological Assessment of Lands at Barna, Co. Galway* dated 22nd July 2004 and undertaken by KOS Environmental Consultants on behalf of Bomac Properties Ltd., a variety of bird species were recorded on the vicinity of the coastal lands in Freeport townland:

Common Name	Latin Name
Grey Heron	<i>Ardea cinerea</i>
Oystercatcher	<i>Haematopus ostralegus</i>
Black-headed Gull	<i>Larus ridibundus</i>
Great Black-backed Gull	<i>Larus marinus</i>
Herring Gull	<i>Larus argentatus</i>
Woodpigeon	<i>Columba palumbus</i>
Swallow	<i>Hirundo rustica</i>
Rock Pipit	<i>Anthus petrosus</i>
Meadow Pipit	<i>Anthus pratensis</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>
Wren	<i>Troglodytes troglodytes</i>
Stonechat	<i>Saxicola torquata</i>
Starling	<i>Stumus vulgaris</i>
Greenfinch	<i>Carduelis chloris</i>
Jackdaw	<i>Corvus monedula</i>
Rook	<i>Corvus frugilegus</i>

Source: *Ecological Assessment of Lands at Barna, Co. Galway*, KOS Environmental Consultants, July 2004.

The *Ecological Assessment* also noted that there were a number of invertebrates recorded in the area. Shore Crab (*Carcinus maenus*) were noted at the seashore, as were colonies of Honeycomb Worm (*Sabellaria alveolata*) that were attached to rocks on the lower shore and tube worms (*Spirorbis spp.*) that were attached to Serrated Wrack (*Fucus serratus*). The only terrestrial invertebrates noted was a butterfly, Meadow Brown (*Maniola jurtina*).

Ecological Landscaping

While much of the landscape between the road and the sea front would not be considered especially important in terms of habitat conservation, the diversity of grassland types, scrub and wet and dry habitats means it nevertheless has value for biodiversity and an aesthetic appeal. Ideally this should be taken into account when devising policy for landscaping of local developments.

High quality semi-natural grassland habitat has become increasingly rare in Ireland in couple of decades due to widespread intensification of farming methods in recent years. Semi-natural grasslands have a higher biodiversity value than very improved agricultural grasslands or amenity grasslands (lawn). In addition, highly modified lush grasslands are not in keeping with the character of the landscape at Bearna. So far as possible, landscaping should be sympathetic to the natural landscape. This can be done easily and at low cost in a number of ways:

- Grass areas to be maintained through methods that mimic traditional grassland management (low level grazing/mowing regimes).
- Where possible avoid importing topsoil from outside the area.
- Avoid artificial reseeding of grassland, allow natural regeneration of the vegetation.
- When planting flowers, shrubs, trees use suitable native species ideally from a local source (heathers, yellow flag iris, violets, primroses, gorse, hawthorn, alder, willow, birch, holly, sloe). Cultivated varieties of such species typical of damp acid relatively exposed coastal environments may also be used when native species are unavailable.
- Allow some areas to go 'wild' where bramble and scrub, etc. can develop.
- Large bushy hedges are not typical in this area; instead, low growing hawthorn, gorse and blackthorn form hedges alongside stone walls.
- Do not sow garden plants that have the potential to become invasive.

When planning for development and landscaping in the Bearna area, the hydrology of the area should be closely considered. For the most part, this is a very wet, low-lying landscape parts of which have very thin soils. Consequently water tends to move through the habitat over surface seepage lines, drains and streams or collecting in depressions and forming marshy areas. These wet areas are important in terms of habitat diversity and water purification. The salt marsh areas in particular may be vulnerable if they contain fish nurseries. Any future development should take cognisance of this to minimise the threat of pollution of surface and ground water due to runoff from traffic, domestic and horticultural sources. Some measures that will reduce the risk include the following:

- Avoid using artificial fertiliser which will cause local enrichment and encourage the growth of agricultural weeds.
- Avoid herbicides and pesticides, never use in or near water.
- Minimise areas of hard landscaping (paving, concrete, etc.), which exacerbates the problem of pollution by water runoff contaminated by toxins, nutrients and sediment.

Native Trees and Shrubs

The following table provides a list of trees and shrubs that would be suitable for planting in the Bearna area. Not all of the trees and shrubs currently occur in Bearna but would nonetheless be considered suitable to the climatic and soil conditions in the area.

Common Name	Latin Name	Irish Name	Site Suitability
Trees			
Alder	<i>Alnus glutinosa</i>	Fearnóg	Prefers wet ground and stream banks. Tolerates some flooding.
Ash	<i>Fraxinus excelsior</i>	Fuinseóg	Prefers well drained neutral to alkaline soils. Will withstand exposed and coastal sites.
Birch Silver Downy	<i>Betula pendula</i> <i>Betula pubescens</i>	Beith gheal	Prefers light infertile soils. Downy does well on poorly drained peat.
Bird Cherry	<i>Prunus padus</i>	Donnoisc	Prefers damp fertile soils. Does not like exposed sites.
Elm	<i>Ulmus glabra</i>	Leámhan sléibhe	No particular preference but thrives in fertile free draining soil.
Holly	<i>Ilex aquifolium</i>	Cuilleann	A very hardy species. Tolerant of exposed sites and shade. Prefers neutral to acid peaty soil. Does not like wet poorly drained soil.
Sessile Oak Pedunculate Oak	<i>Quercus petraea</i> <i>Quercus robur</i>	Dair	Prefers clay and damp lowlands but generally tolerant. Does not like badly drained infertile soils. Sessile more tolerant of poorer, lighter acid soils.
Rowan	<i>Sorbus aucuparia</i>	Caorthann	Poor thin acid soils. Very hardy. Tolerant of exposed sites.
Irish Whitebeam	<i>Sorbus hibernica</i>	Fionncholl	Prefers alkaline but will grow in a range of soils. Tolerates coastal exposure, rocky ground and fairly damp sites.
Shrubs			
Blackthorn	<i>Prunus spinosa</i>	Draighean	Tolerates a wide range of soils. Can grow in exposed and windswept areas. Can become invasive.
Broom	<i>Cytisus scoparius</i>	Giolcach sléibhe	Grows best on light, dry, acid soils.
Alder Buckthorn	<i>Frangula alnus</i>	Paide bréan	Grows on wet peaty soils.
Gorse	<i>Ulex europaeus</i>	Aiteann	Prefers dry and neutral soils.
Hawthorn	<i>Crataegus monogyna</i>	Sceach Gheal	Tolerates wide range of soils. Very hardy and adaptable.
Honeysuckle	<i>Lonicera periclymenum</i>	Féithleann	Prefers neutral to light acid soils.
Juniper	<i>Juniperus communis</i>	Aiteal	Grows in rocky areas and on mountain heath. Very tolerant of exposure.
Bramble	<i>Rubus fruticosus</i>	Dris	Tolerates a range of soils.
Ivy	<i>Hedera helix</i>	Eidhneán	Tolerates a range of soils.
Willow	<i>Salix</i>	Sáileach	Prefer damp/wet soils. Some may become invasive.

(Source: Adapted from: *Our Trees – A guide to growing Ireland's native trees in celebration of a new millennium. The Peoples Millennium Forest, 2000*)

Ecological Networks

An ecological network, or 'EcoNet', is a network of sites or 'core areas' of high biodiversity value interconnected by a series of wildlife 'corridors' or 'stepping stones' and surrounded by a buffer zone. Ecological corridors are intended to counteract the negative effect of habitat fragmentation on biodiversity by providing a safe habitat for species in the core areas and the means to disperse throughout the landscape via suitable habitat corridors all of which are protected from the effects of human activity through the buffer zone.

EcoNet's are supported at EU level through the *European Spatial Development Perspective* and *Natura 2000* and underpin the *Pan-European Biological and Landscape Diversity Strategy* (PEBLDS), which has been ratified by Ireland. Research has been carried out into a National EcoNet for Ireland as part of the preparation of the *NSS 2002-2020* in a report entitled the *Preliminary Study of the Needs Associated with a National Ecological Network 2001*. This study proposes the classification of open space areas according to their ecological functioning or 'naturalness' ranging from Class 1 (predominantly natural areas of high biodiversity) to Class 5 (low biodiversity areas such as continuous urban fabric). In Galway, the *Galway City Habitat Inventory 2005* and the *GCDP 2005-2011* support the establishment of an ecological network or 'green network' for Galway City.

As regards to developing an ecological network for Bearna, consideration must be given to the relative biodiversity value of the existing and surrounding habitats and the size of the area required for an effective ecological corridor. Firstly, the size of the area under consideration for this study is relatively small and it is intended to develop as the expanded village area in the future. Secondly, the most sensitive and priority habitats of for conservation in Bearna are the watercourses, the orchid rich wet grasslands, the coast and the saltmarsh. Outside the of the study area, the priority habitats for conservation are the heaths, blanket bog and lakes in the hinterland.

Considering these factors, it would seem implausible to devise an EcoNet with large core habitat areas throughout the Bearna Plan Area as most of the habitats in the area are grasslands of secondary importance. Instead, the Plan Area should be considered as part of a larger EcoNet with core areas comprised of the designated sites on the edges of the Plan Area connected by a system of wildlife corridors throughout the Plan Area. This can be managed by designating buffer zones with no development around the important habitat areas named above. In

addition, where possible, natural vegetation or habitats should be incorporated into the fabric of the village. This can be achieved through sensitive landscaping of recreation and amenity areas and residential and commercial development as described above.

The table below shows an indicative EcoNet for the Bearna area based on the EcoNet Classes identified in the *Preliminary Study of the Needs Associated with a National Ecological Network 2001*. This includes the coastal study area as well as other elements, including areas inland of the coastal lands and surrounding significant environmental sites, in particular Natural Heritage Areas (NHAs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Galway Bay.

EcoNet Class	Location	Conservation Value	Primary Functions
Class 1 Areas			
Galway Bay Complex cSAC/pNHA & Inner Galway Bay SPA	<ul style="list-style-type: none"> Lough Rusheen Barna Woods Barna Stream 	International	Core Area of High Biodiversity; Designated Wildfowl Sanctuary; Wildlife & Habitat Conservation; Estuary; Fish Breeding & Habitat; Passive & Active Recreation
Moycullen Bogs NHA	<ul style="list-style-type: none"> Lough Inch & River Poleeney Bog 	National	Core Area of High Biodiversity; Recreation & Amenity; Bird Habitat
Coastal Beaches, Sandy Shores, Rocky Shores, Shingle & Gravel Banks	<ul style="list-style-type: none"> Coastal Buffer/Amenity 	High Local	Core Area of High Biodiversity; Coastal Protection; Wildlife & Habitat Conservation; Passive & Active Recreation; Shore Swimming, Fishing & Boating; Ecological Corridor linking Galway Bay Complex cSAC/pNHA and Inner Galway Bay SPA to Na Forbacha Wood pNHA and <i>Conamara</i> coastline to west
Sea & Ocean	<ul style="list-style-type: none"> Galway Bay 	National	Core Area of High Biodiversity; Fish & Cetacean Habitat; Sea Fishing & Boating; Ecological Corridor linking Galway Bay Complex cSAC/pNHA and Inner Galway Bay SPA to Na Forbacha Wood pNHA and <i>Conamara</i> coastline to west
Class 2 Areas			
Salt Marshes	<ul style="list-style-type: none"> Lenarevagh Stream Coastal Buffer 	International/High Local	Area of High Biodiversity; Wildlife & Habitat Conservation
Watercourses	<ul style="list-style-type: none"> Liberty Stream Barna Stream Forramoyle Streams Trusky Stream Lenarevagh Stream 	High Local	Ecological Corridor linking Galway Bay Complex cSAC/pNHA, Inner Galway Bay SPA, Coastal Amenity and Galway Bay to Moycullen Bogs pNHA (Barna Stream); Ecological Corridor linking Coastal Amenity and Galway Bay to Moycullen Bogs pNHA (Liberty Stream); Ecological Linkages (other streams); Wildlife & Habitat Conservation; Surface Water Drainage System; Flooding, Erosion & Sedimentation Control; Visual Amenity & Design Features
Poor Flush	<ul style="list-style-type: none"> Coastal Lands 	High Local	Area of High Biodiversity; Wildlife & Habitat Conservation; Orchid Species
Class 3 Areas			
Hedgerows	<ul style="list-style-type: none"> Across Plan Area 	Moderate Local	Ecological Linkages; Habitat for Birds & Insects
Grasslands (Improved, Wet & Dry-Humid Acid)	<ul style="list-style-type: none"> Coastal Lands and Across Plan Area 	Moderate Local	Ecological Stepping Stones; Visual Amenity; Retention of Village Landscape Setting
Sports & Leisure	<ul style="list-style-type: none"> GAA Pitch 	Moderate Local	Ecological Stepping Stones; Active Recreation & Organised Sports
Green Urban Areas	<ul style="list-style-type: none"> Public Open Spaces Private Gardens 	Moderate Local	Ecological Stepping Stones; Visual Relief & Streetscape Value; Civic Functions (Public Spaces); Passive & Active Recreation; Children's Play Areas
Agriculture with Natural Vegetation	<ul style="list-style-type: none"> Inland Areas Green Belts 	Moderate Local	Ecological Stepping Stones; Visual Amenity; Retention of Village Landscape Setting
Dry Heath	<ul style="list-style-type: none"> Across Plan Area 	Moderate Local	Ecological Stepping Stones; Visual Amenity; Retention of Village Landscape Setting
Mixed Forest	<ul style="list-style-type: none"> Tree Lines & Clusters 	Moderate Local	Ecological Stepping Stones; Bird & Insect Habitat; Visual Amenity
Class 4 Areas			
Roads & Footpaths	<ul style="list-style-type: none"> Across Plan Area 	Low Local	Ecological Stepping Stones
High Productivity Grasslands	<ul style="list-style-type: none"> Coastal Lands Inland Areas 	Low Local	Ecological Stepping Stones
Agriculture	<ul style="list-style-type: none"> Inland Areas 	Low Local	Ecological Stepping Stones
Discontinuous Urban Fabric	<ul style="list-style-type: none"> Village Core & Edges 	Low Local	Ecological Stepping Stones
Exploited Bogs	<ul style="list-style-type: none"> Inland Areas 	Low Local	Ecological Stepping Stones
Class 5 Areas			
Continuous Urban Fabric	<ul style="list-style-type: none"> Village Core 	Low Local	Low Value
Construction Sites	<ul style="list-style-type: none"> Village Core 	Low Local	Low Value

Note: The above table is indicative only and would need to be supplemented by more detailed information.