

# Wicklow Urban Habitat Mapping November 2008

*An Action of the County Wicklow Heritage Plan 2004-  
2008*



An Chomhairle Oidhreachta  
The Heritage Council



*Report prepared by:*



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# 1. Introduction

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## 1.1 Project brief

Wicklow County Council commissioned the Urban Habitat Mapping Project 2008 with the primary objectives of carrying out habitat surveys (classified to Fossitt level III and Habitats Directive Annex 1) of the towns of Bray, Wicklow and Arklow and their environs, identifying Areas of Local Biodiversity Value, and producing habitat management guidelines for each town.

The outcomes of the survey will be used to guide policy development and best practice in relation to urban areas of biodiversity value, which will be aided by the identification of conservation priorities and management recommendations. This report examines the area that lies within the urban boundary of Wicklow.

The specific aims of this project are to:

- Create, using the Heritage Council draft methodology, habitat maps and vegetation surveys for sites within the urban boundary of Wicklow, Co. Wicklow.
- Identify locally important biodiversity areas.
- Assess the ecological value of the biodiversity areas and threats to their conservation
- Identify linkages between identified biodiversity areas and the surrounding countryside in order to strengthen their overall biodiversity value and the local network of biodiversity areas.
- Use the data collected to make recommendations on conservation priorities and any future work that should be carried out.
- Use the data collected to produce a set of user-friendly habitat management guidelines for the town.
- Collate and make this information available for future research, through a detailed survey report, annotated maps and a set of raw data (including field notes and maps) as appendices.

## **1.2 Background**

Biodiversity, the shortened term for "Biological diversity" means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Under International, EU and National legislation, Ireland has an obligation to protect and enhance its biodiversity. Throughout the country a number of areas and species are protected under this legislation.

In Ireland environmental designation and protection of biodiversity sites concentrates mainly on international and nationally important sites. As a consequence, there is a lack of information on locally important biodiversity areas, which precludes their consideration at policy level through development plans, in development control, in the provision of services or engaging with communities in the promotion of biodiversity at the local level. In particular, areas of biodiversity value within an urban setting are becoming increasingly threatened by development pressure in addition to other anthropogenic impacts due to their proximity to large centres of population.

It is now widely recognised that the biodiversity of urban areas needs to be known, understood, protected and managed, not only to provide protection for the habitats and species that occur within it, but also to enhance the human well-being of the communities that dwell within our urban areas.

This survey has provided the baseline information on the flora, fauna and habitats of "green sites" within Wicklow Urban Boundary required to allow informed management decisions to be made. This information, together with the management guidelines and recommendations provided, will assist in the planning and management of these areas and help to prevent negative impacts to sensitive ecosystems. It will also contribute to positively enhancing the biodiversity value of the sites identified by providing recommendations to improve the biodiversity value of sites and by indicating linkages, where possible, between the network of sites in order to strengthen the biodiversity value of individual sites within the area.

## **2. Summary**

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Wicklow is an urban centre located on the mid-east coast of Ireland in Co. Wicklow. Development of the town has increased in the last decade as demand for housing within reach of Dublin increases. Its close proximity to Dublin, together with improved road and rail networks are likely to further increase development pressure on the town in the medium term.

The natural habitats within the towns of Co. Wicklow are often overlooked in favour of the many sites of conservation importance within the broader Wicklow countryside. However, a number of areas within the town are of medium to high conservation value not only in a local context but also at a national level. Of particular importance are parts of the Murrough Wetlands Special Area of Conservation, which extends for 15 km from Ballygannon to the north of Wicklow town within Wicklow urban boundary.

Smaller pockets of green space within the town, which include public parks, areas of railway embankments, and numerous agricultural fields with associated hedgerow systems and small areas of woodland along roadsides and streams all provide areas of valuable biodiversity importance. Many of these areas are in close proximity to each other and as such can provide corridors to link smaller green spaces, further contributing to the enhancement of biodiversity within the town.

While habitat loss and fragmentation, non-native species invasion and scrub encroachment are causing a negative impact on the biodiversity of Wicklow town, there are still a number of areas of high biodiversity value within the area, together with corridors that interconnect some of these areas.

### **3. Methodology**

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#### **3.1 Desk study**

As recommended in the Heritage Councils guidelines for Habitat Survey and Mapping in Ireland (2002) the desk study was conducted by carrying out a full review of the aerial imagery (from year 2005) for Wicklow town. Due to the relatively small size of the area under study it was possible to examine the aerial imagery for the entire area and to ascertain likely areas of biodiversity interest. All areas of possible biodiversity interest (river valleys, streams, public parks, green fields, shorelines etc) were marked on the aerial imagery and the associated six-inch Ordnance Survey maps (1906 3rd edition) of the area. Areas that were enclosed private gardens were excluded from the study. In addition, consultation took place with the National Parks and Wildlife Conservation Officer for the area and the Heritage Officer for Wicklow County Council. Further information was sourced from individuals and bodies (e.g. the Eastern Regional Fisheries Board) with local knowledge of the area.

All areas, which appeared to contain habitats of biodiversity value, were subsequently marked on the aerial imagery and associated six-inch maps so that they could be fully assessed during the field survey.

#### **3.2 Field study**

Louise Scally and Bryan Deegan conducted fieldwork during the months of July and August 2008. Each site indicated through the desk study was visited during the field survey. Subsequently, some sites were deemed not worthy of further study in the field. Generally this occurred where sites had been developed post 2004/5, the year for which the latest available aerial imagery is available. All other sites were fully surveyed to assess the habitat/s present, the characterising species, any negative impacts or activities occurring within the site and the production of a site map indicating the boundaries and the habitat/s present using the Fossitt habitat classification code (Fossitt, J.A. 2000).

Photographic records were made of each site to provide an overview of the site and these images are contained in a separate DVD that accompanies this report.

### **3.3 Assessment of the biodiversity value of sites**

Following field survey an assessment of the biodiversity value of each site was made. This assessment was based on the Ratcliffe criteria for site evaluation (as recommended by the Heritage Council draft methodology for habitat mapping) and also the National Roads Authority Site Evaluation Scheme. The Ratcliffe scheme produces a largely qualitative result and it is therefore unsuitable for allowing consistent evaluations to be made across sites. For this reason the National Roads Authority Site evaluation scheme was used in conjunction with the Ratcliffe scheme to allow more quantitative comparisons to be made between sites.



Figure 1. Special Areas of Conservation, Special Protection Areas and Natural Heritage Areas in Wicklow

## 4. Results

### 4.1 Habitat assessment summary

Table 1. Sites surveyed in Wicklow Urban Area

Site No.	Grid Reference	Habitats present	Threats	Evaluation
1	330503/194501	WL2/ GA1/WS3	Scrub encroachment. Possible development pressure.	E: Low value, locally Important
2	330905/194209	WD1	None evident	D: Moderate value, locally Important
3	331179/193829	WD1/GA2	None evident	D: Moderate value, locally Important
4	331352/193915	GA1/WL1	Possible development pressure.	D: Moderate value, locally Important
5	331272/194030	BC4/FW2/BL1	None evident	C: High value, locally Important
6	331031/194298	WL2	None evident	C: High value, locally Important
7	330966/193666	WD1/FW2	None evident	C: High value, locally Important
8	331729/193520	GA1/WL2	Possible development pressure.	C: High value, locally Important
9	331398/192993	GS2/WL1/WS1	Domestic dumping. Over grazing Poaching of ground by horses	D: Moderate value, locally Important
10	331623/193171	GS2/WL1	Domestic dumping. Burning.	D: Moderate value, locally Important
11	331813/193427	WD1	Possible development pressure.	D: Moderate value, locally Important
12	331985/193472	GA2	Possible development pressure.	E: Low value, locally Important
13	331991/193522	FW2/WS1	Scrub encroachment	D: Moderate value, locally Important
14	332066/193226	GA1/WL1	Possible development pressure.	C: High value, locally Important
15	331955/193188	WS1/WL1/GA1	Possible development pressure. Scrub encroachment.	C: High value, locally Important
16	332175/192659	BC1/WL1/FW2	None evident	C: High value, locally Important
17	332350/192695	WL1/WS2/ED2	Modification of habitat.	D: Moderate value, locally Important
18	332414/192832	GA1	None evident	D: Moderate value, locally Important
19	332495/192741	FW2/ FL4/WD4/GS4	Possible pollution of stream. Afforestation.	C: High value, locally Important
20	332433/192931	GA1/BC1	None evident.	D: Moderate value, locally Important
21	332595/192904	WS1	Scrub encroachment.	D: Moderate value, locally Important

Site No.	Grid Reference	Habitats present	Threats	Evaluation
22	332199/193425	GA2/WL1	None evident.	D: Moderate value, locally Important
23	332895/193047	WS1	N/A	D: Moderate value, locally Important
24	333006/193160	CB1/CS3/CS1/HH1	Over maintenance of grass and heath habitats. Erosion of cliff top.	B/C: High to Nationally Important
25	332759/193445	GA2/WD5	Golf club, site already modified.	E: Low value, locally Important
26	332603/193701	CS1	None evident.	C: High value, locally Important
27	330924/194709	GA1/WL1	Over grazing Poaching of ground by horses	E: Low value, locally Important
28	331145/194458	WD1/WL1/GS2	None evident.	D: Moderate value, locally Important
29	331203/194507	WD1/WS1	Bracken encroachment	D: Moderate value, locally Important
30	331337/194226	GS2	Application of herbicide to grass verges.	D: Moderate value, locally Important
31	331378/194672	CC1	None evident.	E: Low value, locally Important
32	331463/194486	ED3	None evident.	E: Low value, locally Important
33	331424/194534	WS1	None evident.	E: Low value, locally Important
34	331280/194951	LS1	None evident.	D: Moderate value, locally Important
35	331363/194420	FW2/GA2/WS1	Over maintenance.	B: Nationally Important
36	330585/194750	ED3	Herbicide application	D: Moderate value, locally Important
37	330974/194799	CW2	Domestic dumping. Scrub encroachment	C: High value, locally Important
38	330895/194551	FW2	Domestic dumping. Infilling of stream by vegetation	D: Moderate value, locally Important
39	330499/194657	ED3	None evident.	E: Low value, locally Important



Figure 2. Sites surveyed in Wicklow Town with Fossitt classification (Appendix 6)

## 4.2 Site descriptions.

### Site: 1

Habitats Present	Grid Reference
WL2 Treelines	330503/194501
GA1: Improved agricultural grassland	
WS3: Ornamental/non-native scrub	



This site consists of the grounds of a derelict house. A sloping driveway leading up to the house is boarded with numerous conifers together with Sycamore, Holly and Scots pine. The original garden is overgrown and consists of a lawn area with numerous shrubs including Fuchsia, Laurel and Elder together with Rhododendron, Cherry and Rosa sp. Woodbine, Ivy and Bramble, are common along the margins. A neglected field to the south of the house is characterised by Silverweed, Creeping buttercup, Forget-me-not, Spear thistle, Willow-herb, Goose-grass and Bindweed with Ragwort common throughout. Bracken has started to dominate in parts of the field.

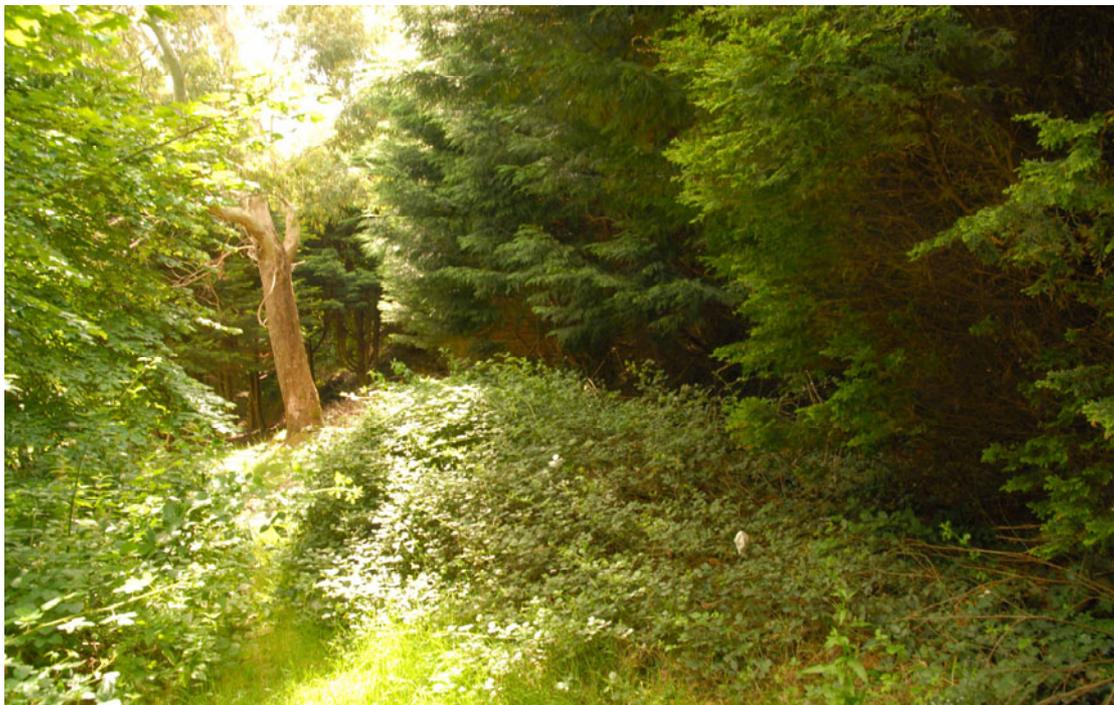
This appears to be a private house with grounds once planted with mainly non-native species that has since become neglected. Bracken has started to dominate in parts of the site and there is evidence of burning from locals lighting fires in the grounds. Non-native species are frequent but many native herbs are also present.

Although a private site the area provides a refuge for birds and small mammals and as such is considered to be of medium biodiversity value in an urban context.

The main threat to this site is probable development of the house and grounds. Scrub encroachment by non-native and native species is also likely in the absence of any maintenance.

**Site: 2**

Habitats Present	Grid Reference
WD1 Mixed (broadleaf) woodland	330905/194209



Fringe of conifers forming a narrow woodland leading into a housing estate with a steep bank behind them. As the woodland progress it widens out and is characterised by Sycamore, Birch, Holly, Ash and Rowan with Bramble forming the main under story, the ground flora is very poorly developed, consisting mainly of Ivy and Nettle with occasional Male-fern.

The site is of overall low biodiversity value due to the species poor habitat and non-native plantings. However, linear stretches such as narrow woodland/treelines contribute to the overall biodiversity value of the urban area by providing wildlife corridors, shelter and nesting sites for birds.

No threats to the site were evident.

**Site: 3**

Habitats Present	Grid Reference
WD1: (Mixed) broadleaved woodland	331179/193829
GA2: Amenity grassland (improved)	



Narrow strip of woodland on a steep sided hill with a small area of amenity grassland at the top of the hill. The majority of trees are non-natives, including Sycamore, Copper beech, Horse chestnut with occasional Ash. Elder and Buddleja form a shrub layer, while the ground flora consists mainly of Ivy, Nettle, Bindweed and Bramble.

While the site is generally species poor with a large number of non native trees it does provides a suitable habitat for many bird species and a wildlife corridor to other sites within the area and in this regard is considered to be of medium ecological value.

No threats to the site were evident.

**Site: 4**

Habitats Present	Grid Reference
GA1: Improved agricultural grassland	331352/193915
WL1: Hedgerows	

This site consists of a small field to the side of a church. A hedgerow boarding the field is characterised by Elder, Gorse and Buddleja with occasional Sycamore. Hedgerows are considered an important habitat for birds and also in their role as a corridor for other species.

The site is considered to be of medium biodiversity value for its hedgerow and function and a biodiversity corridor.

The main threat to the site is likely development pressure.

**Site: 5**

Habitats Present	Grid Reference
BC4: Flowerbeds and borders	331272/194030
FW2: Lowland depositing rivers	
BL1: Stone walls and other stonework	



Highly maintained small private park containing the ruin of an old church. The site is set out in lawn with ornamental borders and a small stream dissects the site. Scattered non-native trees (Sycamore and Cordyline) occur throughout.

While this is a private site and contains many non-native plantings and a managed lawn area with ornamental borders it provides an urban green space and a habitat for birds and invertebrate species, as such the site contributes to the overall biodiversity of Wicklow town.

No current threats or impacts on the site were evident.

**Site: 6**

Habitats Present	Grid Reference
WL2 Treelines	331031/194298



This treeline, adjacent to the current site of Tesco, is mainly comprised of Ash, Sessile oak, Hawthorn and Sycamore many of which are covered on Ivy. The ground flora is characterised by Bramble, Woodbine, Herb Robert, Hart’s-tongue fern, and Bush vetch.

The site is considered to be of medium biodiversity value due to the number of native trees species present and its function as a biodiversity corridor.

No current threats or impacts on the site were evident.

**Site: 7**

Habitats Present	Grid Reference
WD1 (Mixed) broadleaved woodland	330966/193666
FW2: Lowland depositing rivers	



Small woodland area to the side of a road leading to private houses with a small stream running through it. The woodland is dominated by Ash, and Sycamore with Elder, Fuchsia and Bramble forming an under story. Water horsetail, Ivy and Woodbine is frequent along the streamside. Access to the side was restricted as the area is fenced off.

The area is of medium conservation value.

No obvious threats to the site were noted.

**Site: 8**

Habitats Present	Grid Reference
WL2: Treelines	331729/193520
GA1: Improved agricultural grassland	



Small abandoned field within the grounds of the Dominican Convent. The field is boarded by a tree line consisting of Horse chestnut, Lime, Scot pine, Holly and Laurel.

This site is of medium biodiversity value. While the majority of species are non-native trees, the site provides a habitat for birds and other wildlife.

No impacts are evident. Development pressure is possible.

**Site: 9**

Habitats Present	Grid Reference
GS2: Dry meadows and grassy verges	331398/192993
WL1: Hedgerows	
WS1: Scrub	



This site consisted of a largely neglected system of fields adjacent to a housing estate. A number of horses were grazing in the field at the time of survey. The principle herb species included Ragwort, White clover, Red clover, Daisy, Spear thistle, Marsh thistle, Corn poppy and Creeping buttercup. Gorse forms a hedgerow around the perimeter of the site. The scrub area was dominated by Gorse. What appeared to be an overgrown disused quarry was located in the south eastern edge of the area.

This site is considered to be of medium conservation value.

The main threat to the site appears to be from domestic dumping which was evident at a number of locations. Overgrazing and poaching by horses are also likely.

**Site: 10**

Habitats Present	Grid Reference
GS2: Dry meadows and grassy verges	331623/193171
WL1: Hedgerow	
WS1: Scrub	



This site is very similar to site number 9, consisting of a neglected field surrounded by a gorse hedgerow and scrub. The site is of medium biodiversity and high amenity value. The main threat to the site appears to be from domestic dumping and burning.

**Site: 11**

Habitats Present	Grid Reference
WD1 (Mixed) Broadleaved woodland	331813/193427



Small Sessile oak plantation within the grounds of the convent. Additional tree species included Beech and Sycamore with a shrub layer of Elder, Bramble and Rosa sp.

The site is of medium biodiversity value.

No current threats to the site were evident but development pressure is possible.

**Site: 12**

Habitats Present	Grid Reference
GA2 Amenity grassland (improved)	331985/193472

Fenced grassy field with a perimeter of Bramble, Gorse and Bracken. This site appears to have been previously used as a playing field and is now neglected. The site is species poor.

The site is of low biodiversity value.

No current threats to the site were evident but development pressure is possible.

**Site: 13**

Habitats Present	Grid Reference
FW2 Lowland/depositing rivers	331991/193522
WS1: Scrub	



A small stream boarded by tall grasses, Nettle, Greater plantain, Bindweed, White clover, Ragwort, Woundwort and Bramble. Areas of Willow and Bramble scrub occur.

The site is of medium conservation value.

The main impact on the site is the encroachment of scrub.

**Site: 14**

Habitats Present	Grid Reference
GA1 Improved agricultural grassland	332066/193226
WL1: Hedgerows	



This site consists of a series of fields bounded by hedgerows of gorse and bramble. The fields are currently being used for cattle grazing and were being cleared of Ragwort by hand picking at time of survey.

While agricultural fields are generally species poor and of overall low conservation value, these field contribute to the overall biodiversity of Wicklow town by forming a link to the wider countryside while the presence of hedgerows contributes to the species diversity in addition to providing a wildlife corridor.

The site is considered to be of medium conservation value.

Currently no threats to the site were present but development pressure is possible.

**Site: 15**

Habitats Present	Grid Reference
GA1 Improved agricultural grassland	331955/193188
WS1: Scrub	
WI1: Hedgerows	



This site was comprised of a sloping field with one side consisting mainly of grassland, which was being cut for silage at the time of survey. The northern end of the field was dominated by scrub (Gorse and Bracken), with abundant Ragwort. Dandelion, Greater plantain, Creeping buttercup, and Spear thistle occurred throughout. The field is also grazed by horses. A hedgerow dominated by Gorse and Bracken runs along the perimeter.

While agricultural fields are generally species poor and of overall low conservation value, these field contribute to the overall biodiversity of Wicklow town by forming a link to the wider countryside while the presence of hedgerows contributes to the species diversity in addition to providing a wildlife corridor.

The site is considered to be of medium conservation value.

The main threat to the site is encroachment of scrub. Development pressure is possible.

**Site: 16**

Habitats Present	Grid Reference
BC1: Arable crops	332175/192659
WL1: Hedgerows	
FW2: Depositing Lowland rivers	



The site consists of two fields, currently cultivated for Barley with hedgerows along the perimeter. The hedgerows along the perimeter of the fields are characterised by Sycamore, Ash, Beech, Elder, Bramble and Bracken with Marsh thistle, Fox glove and Ragwort along the margins. While the hedgerow dividing the two fields is dominated by Hawthorn. A stream running along the western side of the site is boarded by a hedgerow dominated by Hawthorn with occasional Ash and Sycamore. The under story of this hedgerow is composed of Bramble and Gorse with Nettle, Willow herb and Foxglove along the margins.

This site exhibits good examples of species rich hedgerows, many consisting mainly of native species, which are a valuable conservation resource. The banks of the stream are also species rich and represent typical shaded streamside vegetation.

The site is considered to be of medium conservation value.

No threats were obvious at this side, although development pressure is possible.

**Site: 17**

Habitats Present	Grid Reference
WL1: Hedgerows	332350/192695
WS2: Immature woodland	
ED2: Spoil and Bare ground	



This site consisted of a mosaic of the above three habitat classes; part of the site has been fenced off for domestic pigs (ED2) while much of the remainder of the site has been recently planted with a variety of tree species in a single plot (WS2). Tree species within this plot (planted in linear rows) include Sessile Oak, Ash, Sycamore, Alder, Holly, Birch, Willow and Apple. A Beech hedgerow has recently been planted along the perimeter of the site.

This is an unusual and highly modified site. The plantation is clearly for commercial purposes and the addition of a Beech hedge is an unusual feature. The site is of low medium diversity but could not be considered a natural habitat due to the modification that has already taken place.

The conservation value of the site in its current state would be considered low to medium.

Threats to the site include ongoing modification and disturbance.

**Site: 18**

Habitats Present	Grid Reference
GA1 Improved agricultural grassland	332414/192832

Species poor agricultural grassland. At time of survey this field was being cut for silage. This site is of low conservation value. No obvious threats were noted.

**Site: 19**

Habitats Present	Grid Reference
FL4: Mesotrophic lakes	332495/192741
FW2: Depositing/lowland rivers	
GS4: Wet grassland	
WD4: Conifer plantation	



A small pond fed by a stream. This area has been taken in care and signage has been erected to indicate its importance for local wildlife. The pond is fringed with Bulrush, Soft rush and Water horsetail while the open water contains White water lily and Duckweed. The stream running into the pond is fringed with willow. The remainder of the site consists of wet grassland. A small conifer plantation lies adjacent to the site.

Although small in area this site is of medium to high conservation value due to the range of habitats and species richness of the site both in terms of its flora and invertebrate life. The site has been enhanced by the provision of signage.

No damaging activities were noted. Possible threats relate to the proximity of the conifer plantation and possible pollution of the stream leading into the pond.

**Site: 20**

Habitats Present	Grid Reference
BC1: Arable crops	332433/192931
GA1: Improved agricultural grassland	



This site comprises a series of agricultural fields, some of which appeared to be used for grazing and silage production and others for arable crops. Although species richness was low at this site it provides a green space within the Wicklow town urban boundary. Bird boxes had been placed on telegraph poles running throughout the site.

The conservation value of this area is considered to be of medium value as it provides a green space within a largely urban area and efforts appear to have been put in place to increase species diversity by the placing of bird boxes.

**Site: 21**

Habitats Present	Grid Reference
WS1: Scrub	332595/192904



Area of scrub dominated by Gorse, Bramble and Bracken with patches of grass.

Scrub can provide a habitat for birds and other small mammals even though in itself its species richness is generally low the denser it becomes. It is therefore considered to be of low to medium conservation value.

The main threat to this site is further development of the scrub leading to reduced species richness.

**Site: 22**

Habitats Present	Grid Reference
GA2: Amenity grassland (improved)	332199/193425
WL1: Hedgerows	



A small playing field surrounded by hedgerows. The hedgerow is characterised by Gorse, Bramble, Elder and Bracken.

Conservation value low to medium.

Treats: None evident, the site is part of the private grounds of the convent but public access for recreation is permitted.

**Site: 23**

Habitats Present	Grid Reference
WS1: Scrub	332895/193047
FL8: Other artificial lakes and ponds	
FW2: Lowland/depositing rivers	

An area of scrub on a bank adjacent to the stream. The scrub area was dominated by Bramble with Elder, Gorse and Bracken present. The scrub was quite dense preventing the development of a significant under story. Three small man made ponds were present at this site.

Conservation status: Medium

Threats: Scrub has already resulted in lowered species diversity.

**Site: 24**

Habitats Present	Grid Reference
CB1: Shingle and gravel banks	333006/193160
CS3: Sedimentary sea cliffs	
HH1: Dry siliceous heath	



Shingle beach backed by low sedimentary sea cliffs dominated by grasses including Red fescue with Thrift and Sea plantain. The top of the sea cliffs displayed a mosaic of heath and grassland habitats characterised by Ling with White clover, Bird's-foot trefoil, Silverweed and Sheep's bit. Bracken has started to dominate in part of the heath area. The area is subject to severe erosion pressure from walkers and much of the tops of the sea cliffs are devoid of vegetation.

This site is considered of medium to high conservation status for the good range of habitats within it. The rare plant *Trifolium subterraneum* is historically known from this site in the vicinity of Black Castle but a recent survey (2006) failed to relocate the species. The area in the region of Black Castle is part of the Wicklow Town Sites NHA.

Threats include over mowing and maintenance of the grass and heath areas and erosion of the sea cliffs through amenity pressure.

**Site: 25**

Habitats Present	Grid Reference
GA2: Amenity grassland (improved)	332759/193445
WD5: Scattered trees and parkland	



Golf links and environs. Generally a species poor environment in common with many golf links. There are a few areas of scatted trees and gorse dominated scrub throughout but otherwise the site is devoid of any notable vegetation.

Conservation status: Low

The site is already a highly modified environment with poor species richness so further threats to the site are not applicable.

**Site: 26**

Habitats Present	Grid Reference
CS1: Rocky sea cliffs	332603/193701
HH1: Dry siliceous heath	



This site forms a part of three designated areas, Wicklow Head NHA and Wicklow Town Sites NHA and is also designated as an SPA (Wicklow Head SPA). The section comprises a an area of rocky sea cliffs with pockets of soil which are characterised by a range of maritime species including English Stonecrop, Sea Pink Wild Thyme and Sheep’s bit together with grasses such as Festuca.

The area is of high conservation value as Rocky sea cliffs are a designated habitat under Annex 1 of the EU Habitats Directive.

No threats to this site were noted.

**Site: 27**

Habitats Present	Grid Reference
GA1: Improved agricultural grassland	330924/194709
WL1: Hedgerows	



A field to the rear of a housing estate currently being grazed by Donkeys. The area is heavily poached and Ragwort is frequent throughout. Hedgerows surrounding the site are comprised of Gorse and Bramble.

The field and surrounding hedgerow is species poor and of low conservation value  
Threats include continued poaching of the ground by Donkeys.

**Site: 28**

Habitats Present	Grid Reference
GS2: Dry meadows and grassy verges	331145/194458
WL1: Hedgerows	
WD1: (Modified) broadleaved woodland	



A site on the banks of the Leitrim River comprised of a grassy verge characterised by *Lolium* sp. with White clover, Creeping buttercup, Daisy and Marsh thistle. Hedgerows along the perimeter are comprised of Bramble and Woodbine. An area of broadleaved woodland runs down a steeply sloping bank to the river. The area to the north is dominated by Sycamore and Ash.

Although the habitats are species poor the site is of medium conservation value due to the presence of Hedgerows and woodland, which can act as wildlife corridor in addition to providing a nesting site for birds.

No obvious threats were noted.

**Site: 29**

Habitats Present	Grid Reference
WD1: (Modified) broadleaved woodland WS1: Scrub	331203/194507

An area of broadleaved woodland on the slopes of the Leitrim River dominated by Sycamore with Scots pine, Horse chestnut, Lime, Buddleja, Elder and Willow with Bracken and Water horsetail forming an under story in parts.

Although the site comprises many non-native tree species and the under story is poorly developed the site provides a corridor for biodiversity and is considered to be of medium conservation value.

Threats to the sites include the encroachment of bracken in the under story.

**Site: 30**

Habitats Present	Grid Reference
GS2: Dry meadows and grassy verges	331337/194226



An old graveyard with areas of cut lawn and occasional trees including Yew and Ash.

Graveyards are often considered to be of high biodiversity value due to their often rich species composition in an otherwise urban environment. They are also known to provide a refuge for birds and small mammals as well as for their value as a repository of built heritage. This particular site is well maintained and not particularly species rich. It is therefore considered to be of medium conservation value.

Threats include over cutting of the grassy verges and the use of herbicide.

**Site: 31**

Habitats Present	Grid Reference
CC1: Sea walls, piers and jetties	331378/194672



An area of boulders installed as a coastal defence. The area is devoid of vegetation and is therefore of no conservation value.

**Site: 32**

Habitats Present	Grid Reference
ED3: Recolonising bare ground	331463/194486



A fenced area comprising recolonising bare ground. The characterising species currently include Poppy, Dog daisy, Ragwort spear thistle, Dandelion, Red and white clover and grasses.

The site is species poor and of low conservation value in its current state. It is likely to be the subject of development in the medium term.

**Site: 33**

Habitats Present	Grid Reference
WS1: Scrub	331424/194534

A narrow line of scrub (Gorse) adjacent to the rocky coastal defence. This area is of low conservation value.

**Site: 34**

Habitats Present	Grid Reference
LS1: Shingle and gravel shores	331280/194951

A shingle beach. No vegetation noted.

**Site: 35**

Habitats Present	Grid Reference
FW2: Depositing/lowland rivers	331363/194420
GA2: Amenity grassland (Improved)	
WS1: Scrub	



This area comprises a managed walk along the Leitrin River. The river at this point has a gravelly bottom with margins colonised by Common Glasswort in places. The riverbank consists of a lawn area that is heavily mowed and areas of scrub with Gorse and Red valerian. This site forms part of an NHA (Wicklow Town Sites NHA) but this section has been highly modified and managed.

This part of the NHA is species poor and highly modified to provide a recreational area for locals. In its current state it would be considered of medium to high biodiversity value but could be greatly enhanced by a number of management measures (see section 5.2).

*Trifolium subterranean*, a species listed under the Flora Protection Order 1987 is known to occur at this site.

Threats include over maintenance of the riverbank.

**Site: 36**

Habitats Present	Grid Reference
ED3: Recolonising bare ground	330585/194750
WL1: Hedgerows	



This site is represented by a section of railway line and its associated embankment on either side of the track. The vegetation along the embankments are typical of this type of habitat consisting mainly of weedy species and garden escapes including Snowberry, Rhododendron and Lilac with Red Valerian Ivy, Bramble, Ragwort, and Rosa sp. Trees included Ash and Hawthorn.

While the site is neither species rich or a natural habitat it does provides a suitable habitat for many bird species and a wildlife corridor to other sites within the area and in this regard is considered to be of medium ecological value.

Threats to the embankment include both cutting and spraying with herbicide.

**Site: 37**

<b>Habitats Present</b>	<b>Grid Reference</b>
CW2: Tidal rivers	330974/194799



This site comprises the lower reaches of the Leitrim River and the banks along this stretch of river, which are currently signed as a “Nature trail”. The river along this section is fringed with Common reed, Ash, Elder and Willow. Bracken and Water horsetail are common along the margins and numerous bird species were noted.

The site is of medium to high conservation value in its current state.

Treats to the river include dumping and scrub encroachment.

**Site: 38**

Habitats Present	Grid Reference
FW2: Depositing/lowland rivers	330895/194551



A small stream to the side of Wicklow County Council offices. The stream is bordered by dense stands of common reed with Ash, Elder and Willow along the margins.

This site is of medium conservation value as it represents a corridor for biodiversity and a refuge for bird species.

Threats include infilling by vegetation and dumping.

**Site: 39**

Habitats Present	Grid Reference
ED3: Recolonising bare ground	330499/194657



This site consists of a small field with green houses, bare patches and areas of rough grass with abundant Ragwort and Marsh thistle.

The site is species poor and of low conservation value in its current state.

## 5. Discussion

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### 5.1 Sites of local biodiversity importance

A total of 53 sites were selected from a review of aerial imagery of the area within Wicklow Town. All of these sites were examined in the field and a number of them were subsequently excluded from more detailed survey. Sites were excluded from further survey if they had been developed post 2005 (the latest year for which aerial imagery is available), or were gardens attached to larger houses, or were considered to have little biodiversity value.

A total of 39 sites were surveyed in detail as outlined in table 1. The areas surveyed were evaluated using a combination of the Ratcliffe Criteria (Heritage Council 2002) and the National Roads Authority site evaluation scheme (2002) (see Appendix 1). The Ratcliffe Criteria provides an overview of each site in terms of its size, diversity, naturalness, rarity, fragility, typicalness, while the National Roads Authority site evaluation scheme provides a system for assessing sites in terms of qualifying criteria and criteria for assessing impact significance.

Of the 39 sites surveyed two were considered to be national importance (Sites 24 and 35). Ten were considered to be of high value and locally important. Nineteen sites were considered to be of moderate value and locally important and eleven sites was considered as low value, but locally important.

Site 24 provided good examples of a number of important habitats including shingle beaches, sedimentary sea cliffs and mosaics of heath and grassland. The rare plant rare plant *Trifolium subterraneum* is historically known from this site in the vicinity of Black Castle, but a recent survey (2006) failed to relocate it. It is possible that pressure from walkers and over management of this site has caused its decline.

Site 35 forms part of the Murrough Wetland Special Area of Conservation and is therefore afford protection as a designated conservation site. Although the area surveyed within Wicklow urban area only forms a small part of the overall SAC, it is an area of valuable conservation interest at both a local and national level. This area is however subject to high recreational pressure from walkers and the site also appears to be over maintained, thereby reducing its overall level of diversity and natural vegetation.

10 sites were rated as C sites, High value, locally important. These comprised of site numbers 5, 6, 7, 8, 14, 15, 16, 19, 26 and 37. Sites were considered to be of high value and locally important were they contained either a good range of habitats and native species or habitats that provided additional biodiversity value, such as hedgerows, which in addition to often containing a good range of native species are considered an important wildlife corridor that can contribute to the overall connectivity of sites within the town.

19 sites were rated as D sites, Moderate value and locally important. These comprised site numbers 2, 3, 4, 9, 10, 11, 13, 17, 18, 20, 21, 22, 23, 28, 29, 30, 34, 36 and 38. Sites were considered to be of moderate value and locally important if they contained a high percentage of non-native species and/or were small in size thereby reducing their chance of being capable of supporting a natural habitat and its associated species in the medium to long term. However such sites are still of considerable biodiversity value as they can provide nesting sites for birds and can also contributed to connecting sites of higher biodiversity value.

11 sites were considered to be E sites, Low value and locally important. These sites comprised site numbers 1, 12, 25, 27, 31, 32, 24, 25, 30 and 39. Generally these sites were either destroyed, consisting of wasteland or were very small and of very low species diversity. Those species that did exist were generally non-native. However, many such sites would be capable of providing suitable habitats and contributing to the overall biodiversity of the town if suitably managed and maintained.

## **5.2 Management recommendations for each site**

Many of the sites identified in section four require some degree of management to enhance their biodiversity value and/or to mitigate negative impacts. In urban situations habitat loss and fragmentation, a major driver of biodiversity loss, has already occurred to a large degree. Therefore most realistic management recommendations can only deal with measures to prevent further habitat loss and fragmentation and methods to enhance the biodiversity of the remaining sites. Specific recommendations for each site are outlined in table 2. General recommendations to deal with each of the issues identified as having a negative impact in addition to enhancement measures are outlined below.

### 5.2.1 Control of Damaging Practices

#### *Invasive non-native species.*

Invasion by non-native species is becoming an increasing problem throughout Ireland. During this study Bracken and Buddleja and Rhododendron were noted as a particular problem at a number of sites. Advice and measures for the control of Measures to control Bracken are provided in Appendix 1.

#### *Dumping*

Dumping on a small scale was noted at a number of sites. All of the instances of dumping recorded related to the dumping of domestic rubbish, so called "Fly-tipping". Evidence has shown that, unless removed as soon as possible small scale dumping can lead to an increase in dumping in the same area by others. An initiative known as PURE (Protecting Uplands & Rural Environments) and supported by Wicklow County Council aims to raise awareness as well as removing dumped rubbish in the Wicklow and Dublin Mountains. The expansion of projects such as PURE into the area of urban biodiversity hotspots, could assist in educating the public and keeping areas of urban areas of biodiversity value rubbish free.

### 5.2.2 Enhancement measures

#### *Planting of native tree species*

The planting of native tree species should be encouraged, especially in urban parks and also on streets. Increasing the number and variety of native tree species will assist in providing habitats and shelter for birds in addition to enhancing the aesthetic value of streetscapes. Much of the central and outlying areas of Wicklow Town are devoid of trees. The narrow nature of many the streets would inhibit planting. However in the more open areas in the centre of town and in the housing estates to the south and west of the town it is strongly recommended that such a planting regime is undertaken. This would add to the amenity and biodiversity value of the town.

#### *Planting of native herbaceous plants and shrubs*

The planting of native herbaceous plants and shrubs in urban parks and open areas would greatly increase species diversity, while providing a habitat for invertebrates and birds. It could also be used as a tool for education and awareness of biodiversity if appropriate signage were placed *in situ*.

### *Creation and management of Hedgerows*

Hedgerows are a valuable habitat, acting as both a corridor for biodiversity in addition to providing shelter for a wide variety of wildlife. Even within an urban setting the planting of native hedgerows is possible. While it may be preferable to keep hedgerow size to a minimum in urban parks for health and safety reasons, consideration should be given to the provision of low hedgerows and/or areas consisting of native shrub species to increase both species diversity and provide shelter.

Today, neglect of, and damage to, hedgerows have replaced direct loss as the most significant factors affecting the habitat. Excessive flailing and cutting of hedges down to a metre or so in height, the use of agricultural pesticides, herbicides and fertilisers right up to base of hedgerows has led to physical damage, loss of species and nutrient enrichment. Lack of traditional hedgerow management such as coppicing or laying has led to hedges growing tall or becoming fragmented. Positive management can play a major part in enhancing and recreating damaged and neglected hedgerows.

In Wicklow there are very few hedgerows. These are mainly in the south of the town along the town boundary. Many of the housing estates in Wicklow would benefit greatly from a hedgerow planting regime. This along with tree planting would soften the urban landscape of Wicklow, in particular the housing estates, as well as increasing biodiversity significantly in the town.

### *Engaging local business*

The topic of engaging with local business to enhance the biodiversity value of their sites is becoming an increasingly important area of research at EU level. Evidence shows that engaging with local business often leads to their willingness to enhance the biodiversity value of their sites. For example, a number of golf clubs in Ireland have initiated measures to increase the biodiversity value of their sites by introducing native tree species, wildflower meadows and by building suitable habitats for nesting birds on riverbanks within their sites. It is recommended that Wicklow Town Council initiate a system to engage with local business in this regard. Sites 25 (golf links) and 31 (Bare ground beside the sea) could benefit greatly from such measures.

### *Building links with the Planning Departments*

Planning Departments have significant means at their disposal to ensure the conservation/ enhancement of biodiversity in both urban and rural environments. The promotion of sound ecological principles/conservation measures through the planning process would assist in not only maintaining current areas of biodiversity, but would encourage and enhance biodiversity in the Wicklow area.

During the planning stages of any development the power to enhance biodiversity is significant and should be encouraged. The enhancement, creation and amalgamation of wildlife corridors and areas of biodiversity would be key in the overall strategy in conserving biodiversity through planning. This should be done in such a manner so as to encourage areas of biodiversity and wildlife corridors e.g. treelines, ponds and small woodlands.

Fragmentation of the remaining wildlife corridors should be avoided at all costs. If roadways etc. are to bisect a corridor, measures should be taken to minimise disruption of the corridor e.g. passes, bridges, planting etc. Of prime importance in this respect are the Leirim River, the Convent lands to the south of the town and the area running inland from the beach at site 23. It is essential that corridors are maintained and enhanced where possible. In general, the promotion of green areas with native planting should be encouraged. The creation of native hedgerows surrounding open areas should also be promoted.

In relation to larger developments, preplanning meetings should be encouraged and the importance of biodiversity expressed to the developer. This would include the importance of hedgerows, treelines, shrubs, ponds (in conjunction with sustainable urban drainage systems) etc. This would allow for the creation of unfragmented areas for biodiversity, that would compliment and feed into current areas of biodiversity in the town.

The monitoring and enforcement of biodiversity related decisions would be key and essential in the enhancement of biodiversity. For example the Council would not take charge of an area until all biodiversity actions have been completed.

In the Wicklow Urban Habitats Study many of the areas and habitats examined had no protection or conservation measures. Even though these areas are not nationally important they are significant at a local level, as Wicklow is quite urbanised. Conservation measures should be sought for the areas of high biodiversity that remain unprotected.

**Table 2: Site conservation rating and management practices**

Site Number	Habitats present	Conservation rating	Threats	Recommended management practices
1	WL2/WS3/GA1	Unfavourable	Scrub encroachment. Possible development pressure.	Private derelict site. None recommended.
2	WD1 or WL1 (greater than 4m its WD1)??	Favourable	None evident	None recommended.
3	WD1/GA2	Unfavourable	None evident	Careful management of this site could improve its value. Replacement of a percentage of the non-native species with native trees and removal of scrub and management would increase the native ground flora.
4	GA1/WL1	Unfavourable	Possible development pressure.	Manage hedgerows: see section 5.2.2.
5	BC4/FW2	Favourable	None evident	Private site. None recommended.
6	WL1	Unfavourable	None evident	Manage woodland scrub: see section 5.2.2. Replace non-native trees with native species.
7	WD1/FW2	Favourable	None evident	Careful management of this site could improve its value. Replacement of a percentage of the non-native species with native trees and removal of scrub and management would increase the native ground flora.
8	GA1/WL2	Unfavourable	Possible development pressure.	Private site. None recommended.
9	GS2/WL1	Unfavourable	Domestic dumping. Over grazing Poaching of ground by horses	Manage hedgerows: see section 5.2.2. Remove dumped waste.
10	GS2/WL1	Unfavourable	Domestic dumping. Burning.	Manage hedgerows: see section 5.2.2. Remove dumped waste.
11	WD1	Unfavourable	Possible development pressure.	Private site. None recommended.
12	GA2	Unfavourable	Possible development pressure.	None recommended
13	FW2	Unfavourable	Scrub encroachment	Manage woodland scrub: see section 5.2.2.
14	GA1/WL1	Unfavourable	Possible development pressure.	Manage hedgerows: see section 5.2.2.
15	WS1/WL1/GA1	Unfavourable	Possible development pressure. Scrub encroachment.	Manage hedgerows: see section 5.2.2. Control scrub.

Site Number	Habitats present	Conservation rating	Threats	Recommended management practices
16	BC1/WL1/FW2	Unfavourable	None evident.	Manage hedgerows: see section 5.2.2.
17	WL1/WS2/ED2	Unfavourable	Modification of habitat.	Private site. None recommended.
18	GA1	Unfavourable	None evident.	None recommended.
19	FW2/ FL4/WD4/GS4	Unfavourable	Possible pollution of stream. Afforestation.	Assist in promotion of this site as a wildlife sanctuary. Improve native species diversity of the wet grassland part of the site.
20	GA1/BC1	Unfavourable	None evident.	Assist in the promotion of the placement of bird boxes in this area. Assess feasibility of the further promotion of biodiversity initiatives such as the planting of hedgerows.
21	WS1	Unfavourable	Scrub encroachment.	Manage scrub encroachment.
22	GA2/WL1	Unfavourable	None evident.	Manage hedgerows: see section 5.2.2.
23	WS1	Unfavourable	N/A	Manage scrub encroachment.
24	CB1/CS3/HH1	Unfavourable	Over maintenance of grass and heath habitats. Erosion of cliff top.	Highlight problems caused by the over maintenance of grass and heath habitats. Restrict access to cliff margins to reduce impact of erosion by walkers.
25	GA2/WD5	Favourable	Golf club, site already modified.	Encourage golf club to increase species and habitat diversity by disseminating information on the importance of biodiversity and methods to enhance it, including information indicating how other golf clubs have addressed this issue. The Druids Glen Golf club in particular has initiated measures to vastly enhance biodiversity at that golf club.
26	CS1	Unfavourable	None evident.	
27	GA1/WL1	Unfavourable	Over grazing Poaching of ground by horses.	None recommended
28	WD1/WL1/GS2	Unfavourable	None evident.	Manage woodland scrub: see section 5.2.2. Replace non-native trees with native species.

Site Number	Habitats present	Conservation rating	Threats	Recommended management practices
29	WD1/WS1	Unfavourable	Bracken encroachment.	Manage woodland scrub: see section 5.2.2. Replace non-native trees with native species. Control encroachment of Bracken.
30	GS2	Unfavourable	Application of herbicide to grass verges.	Disseminate information on the use of herbicide and its negative impact on biodiversity.
31	CC1	Destroyed	N/A site already destroyed.	None recommended.
32	ED3	Destroyed	N/A site already destroyed.	None recommended.
33	WS1	Destroyed	N/A site already destroyed.	None recommended.
34	LS1	Unfavourable	N/A	None recommended.
35	FW2/GA2/WS1	Unfavourable	Over maintenance.	Discourage over maintenance of riverbanks. Encourage the planting of native tree species and native wildflower meadows at this site.
36	ED3	Unfavourable	Herbicide application.	Discourage the use of herbicide on the embankments.
37	CW2	Unfavourable	Domestic dumping. Scrub encroachment.	Control scrub encroachment and remove dumped rubbish.
38	FW2	Unfavourable	Domestic dumping. Infilling of stream by vegetation.	Remove excess vegetation within the stream to prevent infilling. Remove dumped rubbish.
39	ED3	Destroyed	N/A	None recommended.

**Appendix 1: List of plant species mentioned in the text**

Ash	<i>Fraxinus excelsior</i>
Alder	<i>Alnus glutinosa</i>
Apple	<i>Malus sp.</i>
Barley	<i>Hordeum murinum</i>
Beech	<i>Fagus sylvatica</i>
Bell heather	<i>Erica cinerea</i>
Bindweed	<i>Convolvulus arvensis</i>
Bramble	<i>Rubus fruticosus</i>
Buddleja (Butterfly-bush)	<i>Buddleja davidii</i>
Bush vetch	<i>Vicia sepium</i>
Butterbur	<i>Petasites hybridus</i>
Cherry	<i>Prunus sp.</i>
Common glasswort	<i>Salicornia europaea</i>
Common gorse	<i>Ulex europaeus</i>
Common nettle	<i>Urtica dioica</i>
Copper beech	<i>Fagus sylvatica Purpurea</i>
Corn poppy	<i>Papaver rhoeas</i>
Creeping buttercup	<i>Ranunculus repens</i>
Creeping thistle	<i>Cirsium arvense</i>
Dandelion	<i>Taraxacum sp.</i>
Dog daisy	<i>Leucanthemum vulgare</i>
Cordyline	<i>Cordyline australis</i>
Downy birch	<i>Betula pubescens</i>
Duckweed	<i>Lemna minor</i>
Elder	<i>Sambucus nigra</i>
English stonecrop	<i>Sedum anglicum</i>
Forget-me-not	<i>Myosotis arvensis</i>
Foxglove	<i>Digitalis purpurea</i>
Fuchsia	<i>Fuchsia magellanica</i>
Greater plantain	<i>Plantago major</i>
Grey willow	<i>Salix cinerea</i>
Goose-grass	<i>Galium aparine</i>
Hart's-tongue	<i>Phyllitis scolopendrium</i>
Hawthorn	<i>Crataegus monogyna</i>
Hazel	<i>Corylus avellana</i>
Heather	<i>Calluna vulgaris</i>
Herb robert	<i>Geranium robertianum</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Holly	<i>Ilex aquifolium</i>
Horse-chestnut	<i>Aesculus hippocastanum</i>
Ivy	<i>Hedera helix</i>
Laurel	<i>Prunus laurocerasus</i>
Lime	<i>Tilia platyphyllos</i>
Male-fern	<i>Dryopteris filix-mas</i>
Marsh thistle	<i>Cirsium palustre</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ragwort	<i>Senecio jacobaea</i>
Red clover	<i>Trifolium pratense</i>
Red Valerien	<i>Centranthus ruber</i>
Rhododendron	<i>Rhododendron ponticum</i>
Rose	<i>Rosa sp.</i>
Rowan	<i>Sorbus aucuparia</i>
Scots pine	<i>Pinus sylvestris</i>
Sea pink	<i>Armeria maritima</i>
Sessile oak	<i>Quercus petraea</i>

Sheep's bit	<i>Jasione montana</i>
Silverweed	<i>Potentilla anserina</i>
Soft rush	<i>Juncus effuses</i>
Spanish chestnut	<i>Castanea sativa</i>
Spear thistle	<i>Cirsium vulgare</i>
Sycamore	<i>Acer pseudoplatanus</i>
Water horsetail	<i>Equisetum fluviatile</i>
Water mint	<i>Mentha aquatica</i>
White clover	<i>Trifolium repens</i>
Wild thyme	<i>Thymus praecox</i>
Willow Herb	<i>Epilobium montanum</i>
Woundwort	<i>Stachys sylvatica</i>
Yellow iris	<i>Iris pseudacorus</i>

## Appendix 2: Information on the control of Bracken

### Bracken (*Pteridium aquilinum*)

Bracken is a native Irish fern. Originally a woodland species, bracken is now capable of spreading into open areas without canopy cover and it has become widespread and abundant across much of the Irish landscape. Changes in land use practice, especially fewer grazing cattle in uplands resulting in less trampling of the bracken, poor management of heather and grassland among other factors have contributed to the spread of bracken. While the spread of bracken on a large scale ultimately leads to decreased species and habitat diversity, there are benefits to allowing limited stands of bracken within a habitat mosaic.

A dense cover of bracken inhibits the growth of other plants and ultimately leads to reduced species diversity and habitat diversity. It also inhibits woodland regeneration. Bracken is carcinogenic and toxic to animals and the spores are also considered a hazard to human health. Bracken can also contribute to the risk of fire. However, as part of a habitat mosaic, bracken can be important for many forms of wildlife including invertebrates, small mammals and certain bird species. It can also contribute to the prevention of erosion on steep hillsides.

While there are a number of methods for the control of bracken, consideration should first be given to the reasons for the control of bracken, the desired result of this control and the physical character of the landscape in which control is required. Scottish Natural Heritage have published guidelines on the control of bracken and this publication is available to download at:

[http://www.sepa.org.uk/pdf/publications/leaflets/bracken/bracken\\_leaflet.pdf](http://www.sepa.org.uk/pdf/publications/leaflets/bracken/bracken_leaflet.pdf)

### Appendix 3: National Roads Authority Site Evaluation Scheme

Rating	Qualifying Criteria
<b>A</b> <b>Internationally Important</b>	Sites designated (or qualifying for designation) as an SAC <sup>1</sup> or SPA <sup>2</sup> under the EU Habitats or Birds Directives. Undesignated sites containing good examples of Annex I <i>priority</i> habitats under the EU Habitats Directive. Major salmon river fisheries or major Salmonid (salmon, trout or char) lake fisheries.
<b>B</b> <b>Nationally Important</b>	Sites or waters designated or proposed as an NHA <sup>3</sup> or Statutory Nature Reserve. Undesignated sites containing good examples of Annex I habitats (under EU Habitats Directive). Undesignated sites containing <i>significant numbers</i> of resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive. Major trout river fisheries. Water bodies with major amenity fishery value or commercially important coarse fisheries.
<b>C</b> <b>High value, locally Important</b>	Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or significant populations of locally rare species. Small water bodies with known salmonid populations or with good salmonid habitat. Sites containing <i>any</i> resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive. Large water bodies with some coarse fisheries value.
<b>D</b> <b>Moderate value, locally Important</b>	Sites containing some semi-natural habitat or habitat locally important for wildlife. Small water bodies with some coarse fisheries value or some potential salmonid habitat. Any waterbody with unpolluted water (Q-value rating 4-5).
<b>E</b> <b>Low value, locally Important</b>	Artificial or highly modified habitats with low species diversity and low wildlife value. Water bodies with no current fisheries value and no significant potential fisheries value.

<sup>1</sup> SAC Special Area of Conservation

<sup>2</sup> SPA Special Protection Area

<sup>3</sup> NHA Natural Heritage Area

## Appendix 4: Ratcliffe scheme

**Size.** The area of a site must be habitat type (e.g. calcareous spring) may not be viable for another (e.g. woodland). large enough to be viable in respect of its resistance to edge effects, loss of species and colonisation by unwanted species. In general, the larger the site the more important it will be for biodiversity conservation because large areas of natural or semi-natural habitat are typically rare. Small sites are less likely to be viable in the long term. However, what is a viable size for one

**Diversity.** Sites with high species, habitat and structural diversity tend to be of more value for biodiversity conservation than sites with low diversity. Valid comparisons of species diversity can only be made between examples of the same habitat because some habitats (e.g. calcareous grassland) are intrinsically more diverse than others (e.g. raised bog). Species diversity should not be derived from non-native species, recent planting or disturbance.

**Naturalness.** Most Irish habitats have been modified to a greater or lesser degree by human influences. In general, the more unmodified the habitat, the higher its nature conservation value. Sites with natural or semi-natural habitats are more ecologically valuable than those that contain artificial or highly modified habitats, but there are exceptions.

**Rarity.** In general, the rarer the habitat or species, the higher its conservation value. Sites that contain rare habitats or species are generally more highly valued than those that do not. Rarity can be considered at national, regional or local levels if the relevant background information on distribution is available. The importance for conservation decreases from national to local.

**Fragility.** This is a measure of the sensitivity of natural and semi-natural habitats to human impact and climate change, including the probability of such impacts arising. In general, the more fragile the habitat, the higher its conservation value.

**Typicalness.** A typical habitat is a characteristic one, i.e. one that displays more of the typical features of the habitat type, or that is at the centre of the variation for that habitat type. However, it is important to remember that there is a limit to the extent to which all the features of a given habitat type can be encompassed within a single site. An alternative way to evaluate typicalness may be to ensure that a site selected in a region encompasses the range of habitat variation within that region.

**Non-recreatability.** The more natural the habitat, the greater the degree of difficulty of re-creating its original richness and complexity if damaged or destroyed. Re-created habitats tend to be inferior to their natural counterparts, which is why such emphasis is placed on the conservation of natural and semi-natural habitats where they occur.

## Appendix 5: Designated sites within Wicklow Town

### a) SITE SYNOPSIS for Wicklow Head SAC/NHA

**SITE CODE: 000734**

Wicklow Head is a rocky headland with extensive exposures of mica-schist. It is situated about a mile south of Wicklow town. A coastguard station and lighthouse are located on the headland.

The southern side of the headland is indented with inlets. The sheer cliffs provide nesting sites for sea birds, mostly Kittiwakes and smaller numbers of Fulmars, Razorbills and Guillemots. Black Guillemots, Herring Gulls and a few pairs of Shags also nest. Ravens nest annually on the cliffs. The exposed rocks provide a habitat for a considerable range of lichens.

At the top of the cliffs and in rock crevices, thin pockets of soil are colonised by English Stonecrop (*Sedum anglicum*), Sea Pink (*Armeria maritima*), Wild Thyme (*Thymus drucei*), Sheep's Bit (*Jasione montana*), Bladder Campion (*Silene vulgaris*) and Hair Grass (*Aira praecox*). Red Fescue (*Festuca rubra*) is dominant over much of this area.

Behind the headland there is a heath with Gorse (*Ulex europaeus*) and Bell Heather (*Erica cinerea*). Also present are Heath Bedstraw (*Galium saxatile*), Tormentil (*Potentilla erecta*), some Burnet Rose (*Rosa pimpinellifolia*), Buckthorn (*Prunus spinosa*), Brambles (*Rubus fruticosus*) and Wood Sage (*Teucrium scorodonia*). Dense bracken (*Pteridium aquilinum*) grows on the slopes north of the lighthouse.

A strip of scrub grows in a depression along the south western part of the site. It follows the line of a stream which flows down towards a shingle beach. The scrub is dominated by Willow (*Salix atrocinerea*), while Brambles (*Rubus fruticosus*), Purple Loosestrife, (*Lythrum salicaria*), Creeping Buttercup (*Ranunculus repens*) and Broad Buckler Fern (*Dryopteris dilatata*) also occur.

Open wet areas at the northern end of the scrub are dominated by Purple Moor-grass (*Molinia caerulea*), Bird's-foot Trefoil (*Lotus corniculatus*), Water Mint (*Mentha aquatica*), Angelica (*Angelica sylvestris*) and Common Sedge (*Carex nigra*). A Badger set was found in this area.

This site is important as a good example of a rocky headland showing nice rock exposures on steep cliffs, which also provide habitat for regionally important concentrations of nesting sea birds. The small area of heath, grassland and wet scrub increase the habitat diversity of this coastal site.

**b)SITE NAME: WICKLOW TOWN SITES (NHA)****SITE CODE: 001929**

This site comprises two sub-sites, each of which contains rare plants protected under the Flora Protection Order 1987.

**Leitrim River Sub-Site**

A gravelly bank of the Leitrim river supports a community of plants typical of disturbed ground and includes Clovers (*Trifolium repens*, *T. dubium*), Ribwort Plantain (*Plantago lanceolata*), Common fumitory (*Fumaria officinalis*), Yarrow (*Achillea millefolium*), Ragwort (*Senecio jacobea*), Bugloss (*Echium vulgare*) and Spotted medick (*Medicago arabica*).

The rare Subterranean clover (*Trifolium subterranean*) grows among this community.

**Blackcastle Sub-Site**

Blackcastle is a rocky area adjoining cliffs at the edge of Wicklow town and is also the site of a ruined castle. On the landward side of the cliffs is a grassy area used for amenity purposes. The vegetation is dominated by Red fescue grass (*Festuca rubra*). Other species found growing there include Bird's-foot trefoil (*Lotus corniculatus*), White clover (*Trifolium repens*), and Curled dock (*Rumex crispus*).

Two rare Clovers are found growing in this coastal grassland area. They are: Bird's-foot clover (*Trifolium ornithopodioides*) and Subterranean clover (*Trifolium subterranean*). This site is important because of the rare plants it contains. The distribution of species is confined in Ireland to three sites in county Wicklow. The other rare species is known only in the south east of the country.

**c) SITE NAME: THE MURROUGH WETLANDS (SAC)****SITE CODE: 002249**

The Murrough is a coastal wetland complex which stretches for 15 km from Ballygannon to north of Wicklow town, and in parts, extends inland for up to 1 km. A shingle ridge stretches the length of the site and carries the mainline Dublin-Wexford railway.

The site supports a number of habitats listed on Annex I of the EU Habitats Directive and a number of bird species listed on Annex I of the EU Birds Directive, as well as a wide range of important migratory birds. There are also many rare plants in the site.

On the seaward side, driftline vegetation includes species such as Sea Rocket (*Cacile maritima*), Sea Sandwort (*Honkenya peploides*), Sea Holly (*Eryngium maritimum*) and Yellow-horned Poppy (*Glaucium flavum*). The rare and legally protected Oyster Plant (*Mertensia maritima*) (Flora (Protection) Order, 1999) has been recorded on the gravelly shore in the past but is now considered to be extinct from this locality.

Low sand hills occur at Kilcoole, with Marram (*Ammophila arenaria*) and Lyme-grass (*Leymus arenarius*). In other areas and further inland a rich grassy sward, which is most extensive in the south end of the site, has developed. Typical species include Sweet Vernal-grass (*Anthoxanthum odoratum*), Crested Dog's-tail (*Cynosurus cristatus*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Burnet Rose (*Rosa pimpinellifolia*) and Pyramidal Orchid (*Anacamptis pyramidalis*). A community dominated by Silverweed (*Potentilla anserina*) and Strawberry Clover (*Trifolium fragiferum*) occurs in some of the wetter, grassy areas. In some places, particularly at the south of the site, a Gorse (*Ulex*) heath has developed on the stony ridge.

Saltmarsh is present within the site in two distinct areas. At the southern end of the site, Broad Lough, a brackish, partly tidal lake, has a well developed saltmarsh community which includes Sea Rush (*Juncus gerardii*), Common saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Sea Purslane (*Hamillione portulacoides*) and Common Scurvy-grass (*Cochlearia officinalis*). Common Reed (*Phragmites australis*) is abundant along the western shore, along with some Sea Clubrush (*Scirpus maritimus*).

Saltmarsh is also present in the northern end of the site in the vicinity of the Breaches. Though this has been greatly affected by drainage in the late 1980s and early 1990s, localised Sea Couch (*Elymus pycnanthus*) still occurs. The grassland which was improved as a result of the drainage is now influenced by seepage and flooding of saline waters.

An area of fen occurs at Five Mile Point. Here Black Bog-rush (*Schoenus nigricans*) is dominant, with Marsh Pennywort (*Hydrocotyle vulgaris*), Purple Moor-grass (*Molinia caerulea*), heather (*Calluna vulgaris*), Cross-leaved heath (*Erica tetralix*), Devil's-bit Scabious (*Succisa pratensis*) and a wide variety of orchids also present. The rare, Narrow-leaved Marsh Orchid (*Dactylorhiza traunsteineri*) has also been recorded here. Fen Sedge (*Cladium mariscus*) is

present where the ground is wetter. This in turn, merges into areas dominated by Common Reed. Fen is found in mosaic with reed bed, and wet woodland in the townland of Blackditch.

A fine wet woodland occurs at Blackditch. Birch (*Betula pubescens*) is the dominant species with some Alder (*Alnus glutinosa*), Willow (*Salix* spp.) and Ash (*Fraxinus excelsior*) also present. The ground flora of this wooded area is often quite dense. This wood also contains a rich invertebrate community with at least eight rare or notable species of fly (Diptera) occurring, including *Syntormon setosus*, a species unknown elsewhere in Britain or Ireland.

A wide range of freshwater and brackish marsh habitats occur within the site. These vary from reed-marsh dominated by reeds and Rushes (*Juncus* spp.), to those of Sedges (*Carex* spp.) with other areas supporting a mixture of Sedges and Yellow Iris (*Iris pseudacorus*) also occurring. A wide variety of grasses and herbs are also found. These include Meadowsweet (*Filipendula ulmaria*), Silverweed and Common Spikerush (*Eleocharis palustris*). The scarce, Marsh Pea (*Lathyrus palustris*) occurs in one area. The marshes merge into wet grassland in many areas. Where grazing pressure is low, a herb-rich sward occurs with species such as Ragged Robin (*Lychnis flos-cuculi*), Cuckoo Flower (*Cardamine pratensis*), Meadowsweet and Spotted Orchid (*Dactylorhiza maculata*) occurring. Sedges are abundant in the wetter areas. Where drains have been cut, there are many other species such as Greater Spearwort (*Ranunculus lingua*), Bogbean (*Menyanthes trifoliata*) and the scarce Reed Sweetgrass (*Glyceria maxima*).

The Murrough is an important site for wintering waterfowl and breeding birds. Annex I bird species present include Red-throated Diver, Little Egret, Bewick's Swan, Whooper Swan, Greenland White-fronted Goose, Golden Plover, Kingfisher, Sandwich Tern and Little Tern. Average peak winter counts from 1994/95 - 1997/98 showed the site to have an internationally important population of Brent Geese (1,318, which is much higher than it was in the early 90s), nationally important populations of Wigeon (1,518), Teal (772), Common Scoter (103) and Lapwing (3,140) and regionally or locally important populations of Whooper Swan (80), Little Grebe (22), Shelduck (95), Gadwall (9), Mallard (391), Shoveler (22), Golden Plover (615), Curlew (605) and Redshank (181). Greylag Geese numbers were nationally important in the early 90s but these numbers have dropped off. The average peak is now 213.

Little Tern breed on the shingle beach near The Breaches and this is the largest colony on the east coast (c.50 pairs in 1993, an average of 37 pairs over the ten year period 1988-1998 ). Redshank, Oystercatcher, Ringed Plover and Water Rail also breed. The reedbeds at Broad Lough provide habitat for Reed Warbler and the rare Bearded Tit has bred here. Otter has been reported regularly from the Murrough.

Recent farming and drainage practices and afforestation have greatly reduced the area and quality of the wetlands habitats - the area between Kilcoole and Newcastle is particularly affected. In 1997 there was some levelling of the sand hills below Killoughter station. Pollution, reclamation and further drainage would adversely affect this site.

This site is of importance as it is the largest coastal wetland complex on the east coast of Ireland. Although much affected by drainage, it still contains a wide range of coastal and freshwater habitats including five listed on Annex I of the EU Habitats Directive, some of which contain threatened plants. Areas on the site contain a rich invertebrate fauna, including several rarities. It is an important site for both wintering and breeding birds and supports a wide variety of species listed on Annex I of the EU Birds Directive.

**d) SITE SYNOPSIS SITE NAME: THE MURROUGH SPA  
SITE CODE: 004186**

The Murrough SPA comprises a coastal wetland complex that stretches for 13 km from Kilcoole Station, east of Kilcoole village in the north to Wicklow town in the south, and extends inland for up to 1 km in places. The site includes an area of marine water to a distance of 200m from the low water mark. A shingle ridge runs along the length of the site and carries the Dublin-Wexford railway line.

Beside the shingle shore is a stony ridge supporting perennial vegetation. Driftline vegetation on the seaward side includes species such as Sea Rocket (*Cakile maritima*), Sea Sandwort (*Honkenya peploides*), Sea Holly (*Eryngium maritimum*) and Yellow-horned Poppy (*Glaucium flavum*). Low sand hills occur at Kilcoole, with Marram (*Ammophila arenaria*) and Lyme-grass (*Leymus arenarius*). In other areas and further inland a rich grassy sward, which is most extensive in the south end of the site, has developed. A community dominated by Silverweed (*Potentilla anserina*) and Strawberry Clover (*Trifolium fragiferum*) occurs in some of the wetter, grassy areas. In some places, particularly at the south of the site, a Gorse (*Ulex*) heath has developed on the stony ridge.

At the southern end of the site, Broad Lough, a brackish, partly tidal lake, has a well-developed saltmarsh community. Common Reed (*Phragmites australis*) is abundant along the western shore, along with some Sea Club-rush (*Scirpus maritimus*). Saltmarsh is also present in the northern end of the site in the vicinity of the Breaches. An area of fen occurs at Five Mile Point. Here, Black Bogrush (*Schoenus nigricans*) is dominant. Fen Sedge (*Cladium mariscus*) is present where the ground is wetter. This merges into areas dominated by Common Reed. A wide range of freshwater and brackish marsh habitats occur within the site. These vary from reed-marsh dominated by reeds and rushes (*Juncus* spp.), to those of sedges (*Carex* spp.) with other areas supporting a mixture of sedges and Yellow Iris (*Iris pseudacorus*) also occurring.

The marshes merge into wet grassland in many areas and where grazing pressure is low, a herb-rich sward occurs. Sedges are abundant in the wetter areas. Where drains have been cut, there are many other species such as Greater Spearwort (*Ranunculus lingua*), Bogbean (*Menyanthes trifoliata*) and Reed Sweet-grass (*Glyceria maxima*). The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Red-throated Diver, Greylag Goose, Light-bellied Brent Goose, Wigeon, Teal, Black-headed Gull, Herring Gull and Little Tern.

The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds. The shingle ridge at Kilcoole is a traditional nesting area for Little Tern, and the site now supports one of the largest colonies in the country. Numbers vary between years, with an average of 30 pairs recorded for the four years 1999-2002. In 2005, 100 pairs were recorded here. A tern protection scheme and research programme, co-

ordinated by BirdWatch Ireland and the National Parks and Wildlife Service, has been in operation since 1985.

Breeding success varies from year to year, largely due to predation by foxes, crows and other species. During the winter this site is important for a number of waterbirds - all population sizes are the mean of peak counts for the 5 years, 1995/96 – 1999/2000. Light-bellied Brent Goose occurs here in internationally important numbers (859). Other species that visit here in nationally important numbers are Red-throated Diver (32), Greylag Goose (300), Wigeon (1,209), Teal (644), Black-headed Gull (997) and Herring Gull (506). Other species that are known to occur here are Little Grebe, Grey Heron, Cormorant, Mute Swan, Whooper Swan, Greenland White-fronted Goose, Shelduck, Gadwall, Shoveler, Mallard, Golden Plover, Ringed Plover, Lapwing, Dunlin, Curlew, Greenshank and Redshank. Short-eared Owl is recorded here during the winter. Little Egret has bred locally in recent years and this site is a main feeding area, with several birds present regularly. While formerly a rare bird in Ireland, Little Egret is now well-established with most birds occurring in the south-east and south (Counties Wexford, Waterford and Cork).

The Murrough is presently at the edge of the species' range. This site is one of the few sites in Ireland where Reed Warbler breeds regularly. It is considered that 1-4 pairs bred each year during the 1980s and early 1990s, with a minimum of 6 birds in song in 1993. An absence of records since 1996 may be due to under-recording. For some years in the 1980s, Bearded Tit bred - this is the only known site in the country where breeding of this rare species has been proven; there have, however, been no subsequent records. Kingfisher regularly uses the site. Sandwich Tern are recorded from the site during the autumn. Recent farming and drainage practices and afforestation have greatly reduced the area and quality of the wetlands habitats - the area between Kilcoole and Newcastle is particularly affected. Some levelling of the sand hills near Killougher has also occurred. Pollution, reclamation and further drainage would adversely affect this site. The Murrough SPA is an important site for wintering waterbirds, being internationally important for Brent Goose and nationally important for Red-throated Diver, Greylag Goose, Wigeon, Teal, Black-headed Gull and Herring Gull. It is probably the most important site in the country for nesting Little Tern..

The regular occurrence of Red-throated Diver, Little Egret, Whooper Swan, Greenland White-fronted Goose, Golden Plover, Little Tern, Sandwich Tern, Short-eared Owl and Kingfisher is of note as these species are listed on Annex I of the E.U. Birds Directive.

The site also supports a typical diversity of birds associated with reed swamp, including Reed Warbler, a very localised species in Ireland. The site is also of considerable importance for the wide range of coastal and freshwater habitats that it supports, including several that are listed on Annex I of the E.U. Habitats Directive.

## Appendix 6: Fossitt Habitat Classification

<b>Non-Marine</b>			
<b>F Freshwater</b>	FL Lakes and Ponds	FL1 Dystrophic lakes	
		FL2 Acic oligotrophic lakes	
		FL3 Limestone/marl lakes	
		FL4 Mesotrophic lakes	
		FL5 Eutrophic lakes	
		FL6 Turloughs	
		FL7 Reservoirs	
		FL8 Other artificial lakes and ponds	
	FW Watercourses	FW1 Eroding/upland rivers	
		FW2 Depositing/lowland rivers	
		FW3 Canals	
		FW4 Drainage ditches	
	FP Springs	FP1 Calcareous springs	
		FP2 Non-Calcareous springs	
	FS Swamps	FS1 Reed and large sedge swamps	
		FS2 Tall herb swamps	
	<b>G Grassland and Marsh</b>	GA Improved grassland	GA1 Improved agricultural grassland
			GA2 Amenity grassland (improved)
GS Semi-natural grassland		GS1 Dry calcareous and neutral grassland	
		GS2 Dry meadows and grassy verges	
		GS3 Dry-humid acid grassland	
		GS4 Wet grassland	
GM Freshwater marsh		GM1 Marsh	
<b>H Heath and dense bracken</b>		HH Heath	HH1 Dry siliceous heath
	HH2 Dry calcareous heath		
	HH3 Wet heath		
	HH4 Montane heath		
	HD Dense bracken	HD1 Dense bracken	
	<b>P Peatlands</b>	PB Bogs	PB1 Raised bogs
PB2 Upland blanket bog			

		PB3 Lowland blanket bog
		PB4 Cutover bog
		PB5 Eroding blanket bog
	PF Fens and Flushes	PF1 Rich fen and flush
		PF2 Poor fen and flush
		PF3 Transition mire and quaking bog
<b>W Woodland and scrub</b>	WN Semi-natural woodland	WN1 Oak-birch-holly woodland
		WN2 Oak-ash-hazel woodland
		WN3 Yew woodland
		WN4 Wet pedunculate oak-ash woodland
		WN5 Riparian woodland
		WN6 Wet willow-alder-ash woodland
		WN7 Bog woodland
	WD Highly modified/non-native woodland	WD1 (Mixed) broadleaved woodland
		WD2 Mixed broadleaved/conifer woodland
		WD3 Yew woodland
		WD4 Conifer plantation
		WD5 Scattered trees and parkland
	WS Scrub/transitional woodland	WS1 Scrub
		WS2 Immature woodland
		WS3 Ornamental/non-native shrub
		WS4 Short rotation coppice
		WS5 Recently-felled woodland
	WL Linear woodland/scrub	WL1 Hedgerows
		WL2 Treelines
<b>E Exposed rock and disturbed ground</b>	ER Exposed rock	ER1 Exposed siliceous rock
		ER2 Exposed calcareous rock
		ER3 Siliceous scree and loose rock
		ER4 Calcareous scree and loose rock
	EU Underground	EU1 Non-marine caves

	rock and caves	
		EU2 Artificial underground habitats
	ED Disturbed ground	ED1 Exposed sand, gravel or till
		ED2 Spoil and bare ground
		ED3 Recolonising bare ground
		ED4 Active quarries and mines
		ED5 Refuse and other waste
<b>B Cultivated and built land</b>	BC Cultivated land	BC1 Arable crops
		BC2 Horticultural land
		BC3 Tilled land
		BC4 Flower beds and borders
	BL Built land	BL1 Stone walls and other stonework
		BL2 Earth banks
		BL3 Buildings and artificial surfaces
<b>C Coastland</b>	CS Sea cliffs and islets	CS1 Rocky sea cliffs
		CS2 Sea stacks and islets
		CS3 Sedimentary sea cliffs
	CW Brackish waters	CW1 Lagoons and saline lakes
		CW2 Tidal rivers
	CM Salt marshes	CM1 Lower salt marsh
		CM2 Upper salt march
	CB Shingle and gravel banks	CB1 Shingle and gravel banks
	CD Sand dune systems	CD1 Embryonic dunes
		CD2 Marram dunes
		CD3 Fixed dunes
		CD4 Dune scrub and woodland
		CD5 Dune slacks
		CD6 Machair
	CC Coastal constructions	CC1 Sea walls, piers and jetties
		CC2 Fish cages and rafts

## Appendix 7: Useful Contact Details

Litter Line (LoCall 1890548837)

The Murrough Centre (recycling) (0404) 64 120, [murrough@wicklowwasteaware.ie](mailto:murrough@wicklowwasteaware.ie)

Heritage Officer (0404) 20191/(0404) 67792 [dburns@wicklowcoco.ie](mailto:dburns@wicklowcoco.ie)

Wicklow Town Council (0404) 20100

Environmental Awareness Officer (0404) 64120  
(LoCall 1890222276) [eao@wicklowcoco.ie](mailto:eao@wicklowcoco.ie)

National Parks & Wildlife Service (0404) 45800

Eastern Regional Fisheries Board (01) 2787022 [info@erfb.ie](mailto:info@erfb.ie)



Figure 2. Sites surveyed in Wicklow Town with Fossitt classification (Appendix 6)