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An Chomhairle Oidhreachta  
The Heritage Council



# Monasterevin



**KILDARE HABITAT SURVEYS AND GREEN**

**INFRASTRUCTURE MAPPING 2014**

*KILDARE COUNTY COUNCIL*

Monasterevin 2014



**MONASTEREVIN**

**HABITAT SURVEY AND GREEN INFRASTRUCTURE MAPPING**

**Prepared for  
KILDARE COUNTY COUNCIL**

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# MONASTEREVIN HABITAT SURVEY AND GREEN INFRASTRUCTURE MAPPING

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## **INTRODUCTION**

### **1.1 Background**

Kildare County Council, in partnership with the County Kildare Heritage Forum and the Heritage Council commissioned a series of Habitat Survey and Mapping projects for a number of towns in Kildare. An action of both the County Kildare Heritage and Biodiversity Plans are to identify local important biodiversity areas. Such habitats are essential for preserving the biodiversity of an area and supporting its wildlife. In addition, there are a wide range of benefits to maintaining biodiversity areas such as provision of recreation and amenity areas, protection of soil and water quality, sustainable food and fuel production, flood alleviation and carbon sequestration. As a result, the importance of these habitats in Ireland is widely recognised and their significance should be fully appreciated

In recognition of the importance of these habitats Kildare County Council prepared objectives for the County Kildare Biodiversity Action Plan (Kildare County Council 2009a). These objectives are the same as those that were adopted in the County Kildare Heritage Plan (Kildare County Council 2005). These plans are distinct in that the main focus of the biodiversity plan is natural heritage. The objectives are as follows:

1. To facilitate the collection and dissemination of heritage information;
2. To raise public awareness, understanding and appreciation of County Kildare's heritage;
3. To promote best practice in heritage conservation and management; and,
4. To inform policy and provide advice to Kildare local authorities.

The Kildare County Development Plan 2011-2017 (Kildare County Council 2011) sets out a strategic approach to the management of development in the county. One of the strategies within this plan is to protect local assets by preserving the quality of the landscape, open space, natural, architectural, archaeological and cultural heritage and material assets of the county. Part of the core strategy of this plan is to balance the environment with sustainable and appropriate development. As such, within this plan, it is the policy of the Council to:

- Protect and conserve the natural environment;
- Protect and conserve nationally important and EU designated sites;
- Promote and enhance biodiversity throughout the county; and,
- Ensure that the built heritage is appropriately protected through the Record of Protected Structures with policies to support the sensitive reuse and integration of such structures into new development works.

Protecting the environment by implementing an environmental protection policy which recognises the various environmentally sensitive zones within the county but not to mutually exclude appropriate and otherwise acceptable uses and development is one of the items which the preferred development strategy aims to achieve.

## **1.2 Objectives**

The purpose of this study was to:

- Survey, map and assess habitats within the development boundary of the town;
- Identify green infrastructure;
- To liaise with Kildare County Council staff in the development of policies and objectives to protect and conserve the green infrastructure; and,
- To raise awareness about the biodiversity of the towns.

It is the intention of the Kildare County Council that the results of this study will:

- Inform future strategic planning;
- Identify green infrastructure;
- Assist the appropriate management of biodiversity;
- Provide information for the general public and relevant community groups; and,
- Raise awareness about the biodiversity resources that the towns support.

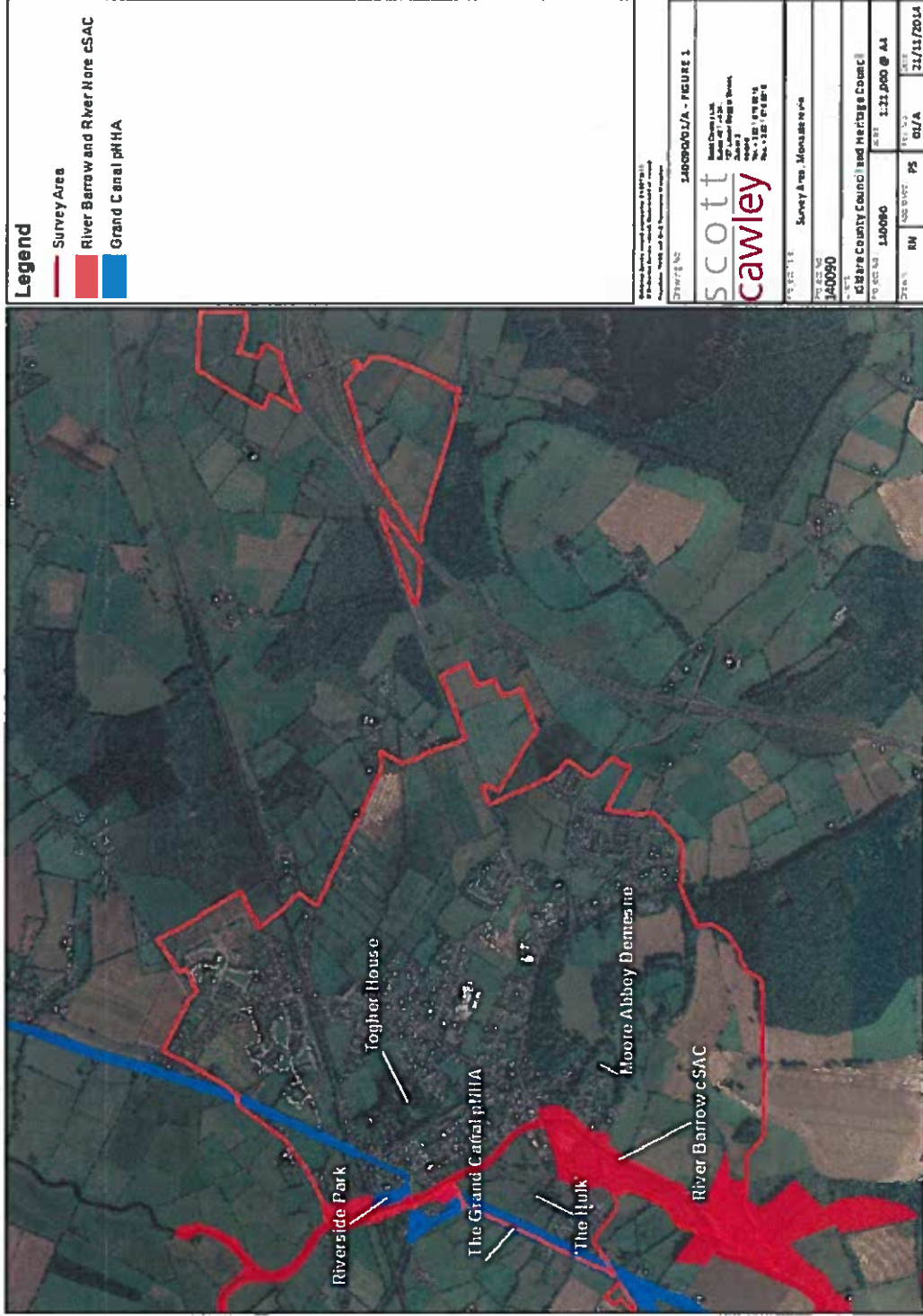
In order to efficiently conserve and sustainably manage the natural heritage of towns in Kildare a high level of understanding of the county's habitats and landscapes is required. One of the main aims of this study was to carry this out so that the safeguarding and sustainable management of habitats and green infrastructure within these towns can be full integrated within the planning process.

## **1.3 The Study Area**

This report focuses on the habitat survey and green infrastructure (as defined below in Section 2.4) mapping for Monasterevin. This town is located on the River Barrow and Grand Canal, approximately 55km west of Dublin, 10km west of Kildare town and 15km east of Portlaoise, just off the M7 Motorway which links Dublin, Limerick and Cork. The town derives its name from St. Evin's monastery which was built on the site of the present Moore Abbey. The natural constraints of the River Barrow and Grand Canal to the west, the railway line to the north and the M7 and Moore Abbey to the south have resulted in the majority of development occurring in the east of the town.

Areas of undeveloped, open space have been measured and mapped in Kildare as part of the Open Space Strategy (Kildare County Council 2008). This study included: public parks and gardens; private gardens or grounds; amenity green-space; play-spaces for children and teenagers; sports areas; green corridors; natural / semi-natural green-spaces; other green spaces (such as allotments, churchyards and cemeteries); and, civic space (such as squares). The Council estimated a total of c.26ha of open space and amenity land (where this data was available during the study) is located within the Monasterevin settlement (Kildare County Council 2008). This included land that is Council owned, areas of land-use zoning, privately owned land and areas owned by Waterways Ireland. As part of the objectives within the Kildare County Development Plan (Kildare County Council 2011) and Local Area Plans there is a push to explore potential areas for enhancement of open space while identifying and protecting the core areas of Green Infrastructure in Monasterevin. The survey area for this town can be seen in Figure 1 below.





Monasterevin – Kildare Habitats and Green Infrastructure Mapping 2015

## 2 METHODOLOGY

### 2.1 Desk Study and Consultation

A desk study was carried out to collect any available information on the local ecological environment within the town. The following resources and organisations were consulted:

- Ordnance Survey of Ireland mapping and aerial photography available from [www.osi.ie](http://www.osi.ie);
- Online data available on European Sites (Natura 2000 Sites) and protected species as held by the National Parks and Wildlife Service (NPWS) from [www.npws.ie](http://www.npws.ie);
- National Biodiversity Data Centre (NBDC) records available from <http://maps.biodiversityireland.ie/#/Map>;
- Environmental Protection Agency map view <http://gis.epa.ie/Envision>;
- Kildare County Council Heritage Officer;
- Bat Conservation Ireland <http://www.batconservationireland.org/>;
- Inland Fisheries Ireland <http://www.fisheriesireland.ie/>;
- Waterways Ireland <http://www.waterwaysireland.org/>;
- Control of Aquatic Invasive Species in Ireland (CAISIE) <http://caisie.ie/>;
- Kildare County Development Plan 2011 – 2017;
- Kildare Open Space Strategy 2008;
- Kildare Biodiversity Action Plan 2009 - 2014; and,
- County Kildare Hedgerow Survey Report 2006.

In addition, the following guidance was followed during these surveys:

- *Best Practice Guidance for Habitat Survey and Mapping* (Smith *et al.* 2011); and,
- *A Guide to Habitats in Ireland* (Fossitt, J. A. 2000)

Organisations that were contacted directly in order to obtain additional information for this study were:

The NPWS provided a subset of their habitat data for the designated sites within the study area. Aspects of these data sets may be incomplete and this information did not substitute for up-to-date field surveys.

*Waterways Ireland* was contacted in order to obtain any additional or updated information regarding habitat mapping and species records that are not already available on their website.

*Inland Fisheries Ireland (IFI)* were contacted in the same capacity as the above.

Where received, all additional relevant data has been included in the species lists in Appendix A.

### 2.2 Evaluation of Habitats and Designated Sites

One of the main aims of a habitat survey is to identify its ecological value. Criteria for such evaluation may include noting its rarity, the abundance and diversity of its species, the level of human interference/modification and/or management of an area, their connectivity to other natural habitats and their size. Through gathering such information it is possible to identify habitats of conservation importance which should be offered greater protection than those of less value. The habitats in this study were evaluated according to the NRA Guidelines provided in Appendix D. This is discussed further in Section 4.

The European Commission has identified the prime habitats of conservation importance across Europe. Of these habitat types, 59 exist in Ireland and a number of these are qualifying features for designated sites here.

Special Areas of Conservation (SAC) are designated under the Habitats Directive (92/43/EEC). This Directive enables the protection, conservation and restoration of certain habitats and/ or species (habitats listed on Annex I, and species listed on Annex II/IV of the Habitats Directive). Designated SACs are compiled within a framework of protected areas known as Natura 2000 or European Sites. In Ireland candidate SAC's are afforded the same level of protection as SACs. Legislation that will regularise the list of cSACs is likely to commence in 2015.

Special Protection Areas (SPAs) are designated under the Birds Directive (79/409/EEC). SPAs are designated to protect birds listed on Annex I of the Birds Directive, as well as for populations of regularly occurring migratory species. The Birds Directive obliges member states to conserve wetlands, especially those of international importance.

The Birds and Habitats Directives are principally transposed into Irish law by the European Communities Birds and Natural Habitats Regulations 2011(SI 477/2011) (as amended).

Natural Heritage Areas are designated and protected under the Wildlife Act 1976 (as amended), while proposed Natural Heritage Areas (pNHAs) are offered some level of protection until such time as they are fully designated, under development plans.

The designated sites within this town are described within Table 1 below.



Table 1 – Designated Sites that lie within the town's development boundary (or immediately adjacent).

Designated sites (Special Areas of Conservation, Special Protection Areas and proposed Natural Heritage Areas) within the town boundary			
Code	Site Name	Designation	Qualifying Interests (i.e. reasons for designation)
Monastererevin - (* = priority; numbers in brackets are Natura 2000 codes)			
Site Vulnerability			
002162	River Barrow (and River Nore)	SAC	<p>[1130] Estuaries</p> <p>[1140] Tidal Mudflats and Sandflats</p> <p>[1310] <i>Salicornia</i> Mud</p> <p>[1330] Atlantic Salt Meadows</p> <p>[1410] Mediterranean Salt Meadows</p> <p>[3260] Floating River Vegetation</p> <p>[4030] Dry Heath</p> <p>[6430] Hydrophilous Tall Herb Communities</p> <p>[7220] Petrifying Springs*</p> <p>[91A0] Old Oak Woodlands</p> <p>[91E0] Alluvial Forests*</p> <p>[1016] Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>)</p> <p>[1029] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>)</p> <p>[1092] White-clawed Crayfish (<i>Austropotamobius pallipes</i>)</p> <p>[1095] Sea Lamprey (<i>Petromyzon marinus</i>)</p> <p>[1096] Brook Lamprey (<i>Lampetra planeri</i>)</p> <p>[1099] River Lamprey (<i>Lampetra fluviatilis</i>)</p> <p>[1103] Twaitte Shad (<i>Alosa fallax</i>)</p> <p>[1106] Atlantic Salmon (<i>Salmo salar</i>)</p> <p>[1355] Otter (<i>Lutra lutra</i>)</p> <p>[1421] Killarney Fern (<i>Trichomanes speciosum</i>)</p> <p>[1990] Nore Freshwater Pearl Mussel (<i>Margaritifera durrovensis</i>)</p>
002104	Grand Canal	pNHA	<p>The Grand Canal proposed Natural Heritage Area (pNHA) comprises the canal channel and the banks on either side of it. Otter <i>Lutra lutra</i> and the rare and legally protected Opposite-leaved Pondweed (<i>Groenlandia densa</i>) (Flora Protection Order 1987) is present at a number of sites in the eastern section of the Main Line. This is a linear habitat, providing connectivity between habitats and supporting a diverse range of species.</p>
			<p>30% of the site consists of water: 10% freshwater and 20% of estuarine and tidal stretches. The Annex II species listed in Section 4.2 are dependent on the quality of these waters.</p> <ul style="list-style-type: none"> <li>▪ Pollution caused by increased fertiliser application, sewage and industrial waste.</li> <li>▪ There is also loss of saltmeadow habitat with two legally protected species and a rare sedge, as a result of infilling and agricultural intensification.</li> <li>▪ <i>Alosa fallax</i> may be vulnerable to angling pressure.</li> <li>▪ Intensification of aquaculture is a threat.</li> </ul>
			<p>Habitats and species within this pNHA may be threatened by impacts such as:</p> <ul style="list-style-type: none"> <li>▪ Water pollution.</li> <li>▪ Over fishing.</li> <li>▪ Litter.</li> <li>▪ Disturbance.</li> </ul>

## 2.3 Notable Flora

NPWS and NBDC species lists can be seen in Appendix A. Plants of particular note which were recorded during the survey (refer to Appendix B) are discussed below.

There were no Flora Protection Order (FPO) species recorded during the field surveys. It is important to note that the findings are based on surveys conducted towards the end of the optimal survey season for many habitats and species. Records should be sought from the Vice County recorder to ensure that no Flora Protection Order species are missed when drafting policies and objectives for this town. There are three FPO species within 2km of Monasterevin for which historic records are available on the NPWS Map Viewer (this is discussed further in Section 3.1 below).

Cotoneaster (*Cotoneaster sp.*), which is known to be invasive in Ireland, was noted during the surveys. Other invasive plants are likely to be present within the town, particularly along watercourses or within the railway line estate. Records for invasive flora and fauna in Monasterevin are also discussed further in Section 3.1 below.

## 2.4 Field Surveys

The assessments comprised a walkover of the town within the Study Area boundary during August and September 2014. A summary of the results is presented below. Desktop records are listed in Appendix A and species recorded during the field survey are provided in Appendix B. It should be noted that due to the limitations outlined in section 2.5 below, these lists do not constitute a full and complete species list for the Study Area, but instead provide a 'snapshot' of species that were recorded during the surveys at that time of year.

### 2.4.1 Habitats and Flora

The aim of the walkover was to identify habitats and flora that are either protected or of conservation importance. The Study Area was surveyed using methodology outlined in the Heritage Council's *Best Practice Guidance for Habitat Survey and Mapping* (Smith *et al.* 2011). All habitat types were identified and classified using the Heritage Council's *A Guide to Habitats in Ireland* (Fossitt, 2000). Within each habitat the dominant plant species and/or any notable species were recorded.

A summary description of each of the habitats identified within this town has been provided in this report. A list of all flora and fauna species recorded during the field surveys is appended in Appendix B.

Hedgerows were individually surveyed and their value assessed according to the hedgerow evaluation form in Appendix E.

### 2.4.2 Fauna

The habitats within the towns were considered for their potential to support protected flora and fauna. Where definitive evidence of this was found during the survey (such as tracks, habitats, markings, feeding signs, droppings and by direct observation), this was recorded as 'Target Notes' which have been incorporated into the mapping data. Likewise, *ad hoc* observations of notable bird species within the study area were recorded.

## 2.5 Green Infrastructure

Green infrastructure is broadly defined as *“an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations. Green Infrastructure is the ecological framework needed for environmental, social and economic sustainability – in short it is a nation’s natural life sustaining system”* (Benedict et al. 2002).

There is no standard definition for Green Infrastructure. As such, Comhar have conducted studies in Ireland using the following definition; *“Green Infrastructure is a strategically planned and managed network featuring areas with high quality biodiversity (uplands, wetlands, peatlands, rivers and coast), farmed and wooded lands and other green spaces that conserve ecosystem values which provide essential services to society.”* (Comhar 2010)

The Green Infrastructure within the towns was mapped by paying regard to the two definitions above. The field surveys and desktop research identified area of high local importance and where appropriate, included other habitats that provided important ecosystem services or acted as ecological corridors or stepping stones for wildlife, these included habitats such as unmanaged grassland or scrub and low intensity farmland. These areas were recorded as ‘Key Green Infrastructure’ and is illustrated on the maps (refer to Map 2 in Appendix E) and within the results section 3.3 of this report.

Areas which are of lower ecological value, but which may provide useful ‘stepping stones’ for wildlife, included amenity areas and parks. Generally these were not included in the ‘Key Green Infrastructure’ unless they consisted of significant areas of woodland, hedgerow or scrub. However, these areas are noted for their ability to support certain flora and fauna and to encourage wildlife into more urbanised areas. Consequently, they contributed in part to the connectivity of the wider green infrastructure.

## 2.6 Limitations

Interpretation of the results of this study took account of seasonal limitations. These surveys provide a snapshot of the ecology of the towns within a specific time during the survey season. These assessments were undertaken towards the end of the optimum survey period for a number of habitats, and outside of the optimal period for surveying habitats such as woodland and species-rich grasslands. As such, species could not always be accurately identified.

Many of the fields on site were heavily grazed, mown or cut which may lead to certain flora being overlooked, that could be present in the sward before such interventions.

As it was still possible to identify a number of the flora that had not yet senesced, the surveys undertaken were sufficient for identifying and evaluating the habitats and ecological features of value within the towns.

The data for species records held by the National Biodiversity Data Centre and statutory bodies (such as National Parks and Wildlife Service) is often provided on an *ad hoc* basis by recorders. These records can provide an indication of what species

might be found in an area, however, they do not constitute full and complete species lists. Absence of certain species from these sources does not confirm absence of species in the area.

### 3 RESULTS

#### 3.1 Desktop Study Records

The desktop study results give an indication of what notable species might be found within 2km of this town (10km for bat roost records). These details can be found in Appendix A of this report.

##### 3.1.1 Notable Habitats and Flora

###### *Flora Protection Order (FPO) Species*

Although no recent records of FPO species exist for this town, a number of historic records for such plants have been noted (NPWS Map Viewer). These include:

- Opposite-leaved Pondweed (*Groenlandia densa*) which can be found occurring in lakes, rivers, canals and ditches with clear base-rich water (and is more recently known to occur in the Grand Canal in Dublin)<sup>1</sup>;
- Basil Thyme (*Clinopodium acinos*) grows in dry, calcareous habitats in areas such as quarries, rocky sites and grassy, arable land – it has been recorded near Pollardstown Quarry in County Kildare in 2010<sup>2</sup>; and,
- Lesser Centaury (*Centaureum pulchellum*), which is a tiny flower that requires short turf in which to grow so that it is not outcompeted by surround vegetation. In Ireland it survives in habitats such as damp grassy places, sandy coastal ground and dry saltmarshes where the vegetation height is suitable<sup>3</sup>.

It is possible that these FPO species could occur within the boundaries of Monasterevin. No rare plant species were recorded during the field survey.

###### *Invasive Species*

A number of invasive flora and fauna have been recorded within 2km of Monasterevin. These include high impact species such as Canadian Waterweed (*Elodea canadensis*), Nuttall's pondweed (*Elodea nuttallii*) (which are both known to occur within the Grand Canal), Japanese Knotweed (*Fallopia japonica*) and invasive mammals such as Grey Squirrel (*Sciurus carolinensis*). Although they are likely to exist within the town, none of these species were noted in Monasterevin during the survey.

##### 3.1.2 Notable Fauna

A number of Birds of Conservation Concern (Red and Amber listed birds according to Colhoun *et al.* 2013) have been highlighted within the desktop search. The majority of red listed species were historic records within 10km of this town. The amber listed species were recorded more recently (from 2010 onwards) and were cited within 2km

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<sup>1</sup> <http://www.botanicalenvironmental.com/projects/rare-threatened-species/plants/monitoring-populations-of-opposite-leaved-pondweed-groenlandia-densa-in-the-royal-and-grand-canal-co-dublin/>

<sup>2</sup> [http://www.wildflowersofireland.net/plant\\_detail.php?id\\_flower=498&wildflower=Thyme,%20Basil](http://www.wildflowersofireland.net/plant_detail.php?id_flower=498&wildflower=Thyme,%20Basil) and [http://www.bsbimaps.org.uk/atlas/map\\_page.php?spid=12.0&sppname=Clinopodium%20acinos&commname=Basil%20Thyme](http://www.bsbimaps.org.uk/atlas/map_page.php?spid=12.0&sppname=Clinopodium%20acinos&commname=Basil%20Thyme)

<sup>3</sup> [http://www.wildflowersofireland.net/plant\\_detail.php?id\\_flower=381&wildflower=Centaury,%20Lesser](http://www.wildflowersofireland.net/plant_detail.php?id_flower=381&wildflower=Centaury,%20Lesser)



of the town. A mosaic of habitats across this town means that various bird species might be present in Monasterevin. For example, arable fields can be important feeding grounds for farmland birds such as Yellowhammer (*Emberiza citrinella*) and may provide breeding sites for ground nesting species such as Skylark (*Alauda arvensis*), although these species were not noted during the field survey. In addition, species such as Grey Wagtail (*Motacilla cinerea*) and Kingfisher (*Alcedo atthis*) may use habitats along the River Barrow SAC and the Grand Canal pNHA.

The presence of diverse fish populations in the watercourses of this town highlights the sensitivity of Kildare's aquatic ecosystems. The Grand Canal pNHA traverses the western side of Monasterevin town. A description of this designated site can be seen in Table 1 in Section 2.2 and details of species recorded here can be seen in Appendix A. The Grand Canal and its associated habitats provides overall biodiversity. Its waters and habitats allow aquatic and terrestrial species to migrate or commute through rural and urban environments. This canal also represents a biologically valuable fishery, supporting significant populations of coarse fish such as Pike (*Esox lucius*), Perch (*Perca fluviatilis*), Roach (*Rutilus rutilus*), Rudd (*Scardinius erythrophthalmus*), Bream (*Abramis brama*) and Tench (*Tinca tinca*) (Pers. Comm. Senior Fisheries Environmental Officer, Inland Fisheries Ireland).

The River Barrow (part of the River Barrow and River Nore SAC) also runs along the western side of the town. This river dissects a number of different habitat types across the town and provides a wildlife corridor between these, connecting habitats further afield. Further details of the species that are supported by this SAC can be seen in Table 1 of Section 2.2 and within Appendix A. The Barrow SAC represents a highly significant salmonid catchment supporting Atlantic Salmon (*Salmo salar*), Lamprey species (*Petromyzonidae*), White-clawed Crayfish (*Austropotamobius pallipes*), Twaite Shad (*Alosa fallax*), Freshwater Pearl Mussel (*Margaritifera margaritifera*) and Sea Trout (*Salmo trutta*) (Pers. Comm. Senior Fisheries Environmental Officer, Inland Fisheries Ireland).

### 3.2 Habitat Categories

Map 1 in Appendix E illustrates the extent of all habitat types present within Monasterevin. A list of all flora and fauna species recorded during the field survey is shown in Appendix B which includes scientific (Latin) names according to *New Flora of the British Isles*, 3rd Edition (Stace 2010) for plant species.

Overall, the main habitats comprised of mixed woodlands, improved and semi-improved grasslands, arable crops, scrub, hedgerows and trees. There were areas of recolonising bare ground and spoil, where construction activities had been undertaken or were taking place.

The main areas of ecological importance within Monasterevin were:

- River Barrow (and River Nore) SAC;
- Grand Canal pNHA;
- Moore Abbey Demesne;
- Monasterevin Railway line; and,
- Monasterevin Former Charter School (locally known as 'The Hulk').

The following habitat types were identified during the survey:

### 3.2.1 Woodland, scrub and hedgerows

Woodland habitats are important for a variety of flora and fauna. Floral descriptions of the woodlands recorded in Monasterevin can be seen below.

#### *Mixed Broadleaved Woodland (WD1)*

The main areas which consisted of mixed broadleaved woodland existed at:

- Moore Abbey Demesne;
- Togher House;
- 'The Hulk';
- Railway line; and,
- Woodland surrounding Monasterevin Waste Water Treatment Works (WWTW).



**Figure 2: WD1 Mixed Broadleaved Woodland with WS1 Scrub habitat at Monasterevin WWTW.**

In general the mixed broadleaved woodland in Monasterevin comprised of mature trees with the dominant species being Horse chestnut (*Aesculus hippocastanum*), Silver Birch (*Betula pendula*) and Ash (*Fraxinus excelsior*). Other occasional species included Alder (*Alnus glutinosa*), Oak (Pedunculate), Hawthorn (*Crataegus monogyna*), Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*), Cypress (*Cupressus sp.*) species and Scots pine (*Pinus sylvestris*). The understory included Bramble (*Rubus fruticosus agg.*), Ivy (*Hedera helix*) and herbaceous species such as Lords-and-ladies (*Arum maculatum*), Lesser celandine (*Ranunculus ficaria*), Violet sp. (*Viola sp.*) and Germander speedwell (*Veronica chamaedrys*). In general, the Mixed Broadleaved Woodlands in Monasterevin were dense and shaded with limited ground flora. Most of this woodland is not maintained anymore and suffers encroachment by the spread of laurel (*Prunus laurocerasus*), ash and sycamore saplings. In Togher Woods the dominant species included Horse chestnut, Limes (*Tilia x europaea*), Beech and occasional Sycamore, Monkey Puzzle (*Araucaria araucana*), Laurel and Yew (*Taxus baccata*).

### *Mixed Conifer Woodland (WD3)*

This habitat type was not common in Monasterevin. One area of mixed coniferous woodland was noted within Moore Abbey Demesne. This was dominated by species such as Norway spruce (*Picea abies*) and included other conifer trees such as Scots Pine and Yew.

### *Oak-Ash-Hazel Woodland (WN2)*

This woodland was dominated by Pedunculate Oak (*Quercus robur*) with occasional Ash and Hazel (*Corylus avellana*) and existed mainly within the grounds of Moore Abbey Demesne (where dead & decaying wood was common and there was some poaching of the ground by livestock) and 'The Hulk'. Ground flora includes Ivy, Violet sp., Lords-and-ladies. The parasitic plant, Common Broomrape (*Orobanche minor*), was also noted within this woodland at 'The Hulk'. This plant is mainly parasitises Pea flowers or composites (daisy family species).



**Figure 3a: WN2 Oak-Ash-Hazel Woodland habitat within the grounds of the 'The Hulk' (mature Oak)**



**Figure 3b: WN2 Oak-Ash-Hazel Woodland habitat within the grounds of the 'The Hulk' (Common Broomrape).**

#### *Immature Woodland (WS2)*

This habitat was noted in discrete areas within the grounds of 'The Hulk', near the western end of the Monasterevin Railway line and adjacent to Junction 14 of the M7. This habitat consisted of young and sapling trees, and included areas that were planted relatively recently.

#### *Scrub (WS1)*

This habitat was scattered throughout the town of Monasterevin and provided areas of habitat connectivity and good coverage for wildlife. Scrub habitats within the town included species such as Bramble aggregate, Traveller's Joy (*Clematis vitalba*), Hedge bindweed (*Calystegia sepium*), Willowherb sp. (*Epilobium sp.*) and Hawthorn.

#### *Hedgerows (WL1) and Treelines (WL2)*

A survey of a subset of hedgerows was conducted in Kildare on behalf of Kildare County Council (Foulkes 2006). This survey found that on the whole, hedgerows in Kildare compare well with those that had been surveyed in other parts of the country (these surveys used a different methodology to the one listed in this report, which was a rapid survey assessment of the hedgerows in Monasterevin).

Of the 68 hedgerows that were surveyed in Monasterevin (using the evaluation method provided in Appendix D), more than 55% of these were found to be of moderate ecological value. The majority of these hedgerows were recorded within agricultural areas in east Monasterevin. A number were surveyed along the north of the Grand Canal pNHA and within the agricultural improved and semi-improved grasslands that were surveyed adjacent to Junction 14 of the M7.



Approximately 30% of hedgerows were categorised as being of high value. These were noted primarily in the north-east, and east of the town within areas of agricultural improved grassland. There were a number of high value hedgerows identified to the north-west of the town (which helped to connect the habitats along the Grand Canal, River Barrow and railway line in this area) and to the South within Moore Abbey Demesne.

The remainder (c.14%) were of low value and these were scattered throughout the town.

The majority of treelines surveyed were mature and provided good habitat connectivity. Some of these were noted to be overgrown hedgerow habitat such as can be found alongside the Grand Canal pNHA. This habitat occurs in a wide range of areas across the town including, 'The Hulk', Moore Abbey Demesne, Grand Canal pNHA and within the centre of Monasterevin town.

Hedgerow and treeline habitat within the town mainly consisted of the following species; Alder, Ash, Beech, Field Maple (*Acer campestre*), Hawthorn, Horse-chestnut, Pedunculate Oak, Osier (*Salix viminalis*), Grey Willow (*Salix cinerea*) and Yew. Within the hedgerows, dominant species included hawthorn, ash, elder (*Sambucus nigra*), ivy and bramble. Occasional species noted were hazel, blackthorn (*Prunus spinosa*) and dog rose (*Rosa canina*). Other species that were found within these habitats included Dog Rose, Bramble aggregate, Cleavers (*Galium aparine*), Traveller's Joy (*Clematis vitalba*), Guelder Rose, Common Broomrape, Cat's ear (*Hypochaeris radicata*) and Bent grass species (*Agrostis sp.*).

Old stone wall boundaries within Moore Abbey Demesne provided connectivity to old Yew treelines within the grounds. These are features of historic and ecological conservation value.

Non-native species such as Butterfly-bush (*Buddleja davidii*) and Cotoneaster (which can be invasive particularly in rocky or cliff habitats) were also noted within some of the poorer hedgerow habitats. Whilst they are regarded as invasive flora, they do provide food and shelter for birds and insects.



### 3.2.2 Grasslands

The majority of grassland habitat in Monasterevin comprised of improved, amenity, semi-improved and wet grassland.

#### *Improved agricultural grassland (GA1)*

Improved grassland was common within Monasterevin. This habitat was low in species diversity due to its intense management and fertilisation for use as agricultural grassland (e.g. for silage or grazing). This grassland type has been reseeded and consists of species such as Perennial Rye-grass (*Lolium perenne*) (dominant), White clover (*Trifolium repens*), Creeping Thistle (*Cirsium arvense*) and Dandelion (*Taraxacum sp.*). Brome species (*Bromus sp.*) were also noted within this habitat. The largest areas of this habitat were found to occur to the north and west of the River Barrow; to the south, within the Moore Abbey Demesne; and to the east, within the main area of agricultural land in the town.

#### *Amenity grassland, Improved (GA2)*

This habitat was also very common, and scattered throughout the town. It consisted of managed areas of fertilised or mown grass that was not used in agriculture (such as gardens and parks). Common species noted were Clover sp. (*Trifolium sp.*), Dandelion, Daisy (*Bellis perennis*) and grasses such as Red Fescue (*Festuca rubra*) and Yorkshire Fog (*Holcus lanatus*).

#### *Dry Calcareous and Neutral Grassland (GS1)*

This habitat was noted to be rarely recorded in Monasterevin in comparison to other grassland types within the town. The main areas where it was recorded were along the banks of the Grand Canal (particularly the northern end) and within the grounds of Togher House where the grasslands are unimproved or semi-improved (habitats which have been less intensely managed). Dominant species within this habitat included Lady's Bedstraw (*Galium verum*), Bird's-foot Trefoil (*Lotus corniculatus*), Devil's Bit Scabious (*Succisa pratensis*), Meadow Vetchling (*Lathyrus pratensis*), Yarrow (*Achillea millefolium*), Knapweed (*Centaurea nigra*), Common Quaking Grass (*Briza media*) and Wild Carrot (*Daucus carota*). Occasional species found alongside the Canal included Yellow-wort (*Blackstonia perfoliata*), Mouse-ear Hawkweed (*Hieracium pilosella*), Common Centaury (*Centaureum erythraea*), Slender St. John's-wort (*Hypericum pulchrum*), Yellow-rattle (*Rhinanthus minor*), Oxeye Daisy (*Leucanthemum vulgare*) and Field Scabious (*Knautia arvensis*). This grassland was in small, narrow patches along the canal and may qualify as being species rich if a detailed botanical survey is conducted at the optimal time of year. Bare ground was also common along the bank due to recent construction activity.

#### *Wet Grassland (GS4)*

This habitat was recorded occasionally in Monasterevin. The main areas are within Moore Abbey Demesne, 'The Hulk', amongst the agricultural land to the north-east of the town and within fields adjacent to Junction 14 of the M7. The dominant species recorded were Hard rush (*Juncus inflexus*), Yorkshire Fog and Creeping Bent (*Agrostis stolonifera*). Frequent species that were noted included Tufted Hair Grass

(*Deschampsia cespitosa*), Meadowsweet (*Filipendula ulmaria*), Creeping Cinquefoil (*Potentilla reptans*) and Sorrel (*Oxalis acetosella*). Species that were noted occasionally throughout the wet grassland habitats were Soft-rush (*Juncus effusus*), Red Clover (*Trifolium pratense*), Marsh Willowherb (*Epilobium palustre*), Marsh Horsetail (*Equisetum palustre*), Hairy Sedge (*Carex hirta*) and Meadow Vetchling (*Lathyrus pratensis*). Some of the wet grasslands were undergoing management, and had been cut or fertilised at the time of survey. Others were grazed by cattle.

It should be noted that many of the wet grassland habitats included *Drainage ditches (FW4)* which sometimes supported other wetland flora such as Bulrush (*Typha latifolia*) and Club-rush species such as Common Club-rush (*Schoenoplectus lacustris*).



**Figure 4a and b: GS4 Wet Grassland habitat within (a) Moore Abbey Demesne and (b) adjacent to Junction 14 of the M7.**

### *Dry meadows and Grassy Verges (GS2)*

This habitat is occasional within the town, mainly occurring north of the Monasterevin railway line and small patches occur throughout the town. Species recorded within this grassland included Bird's-foot Trefoil, Cat's-ear, Timothy (*Phleum pratense*). Invasive species noted included Butterfly-bush and Creeping Thistle. Although often occurring on ground that has been disturbed in the past, such habitat can often support a good invertebrate assemblage due to its diversity of floral species. However these habitats were not found to be particularly species rich in Monasterevin.

### **3.2.3 Watercourses**

The main watercourses in Monasterevin provide important green infrastructure and wildlife corridors for a number of species connecting various different types of habitats across the town.

#### *River Barrow SAC – Depositing Lowland River (FW2)*

Generally a slow to medium flowing lowland River with a mud/silt substrate. Certain sections are c.7-8m wide and 1-2m in depth. There were occasional stones and small weirs, particularly at the Dublin Road Bridge (which is a more modern concrete structure which crosses the River). The river banks were predominantly narrow, wet grassland verges within agricultural fields with livestock. In some areas the gardens of residential properties bound the river. No notable species were recorded and there was limited in-river vegetation.

#### *Grand Canal pNHA*

The canal is c. 12-15m wide in parts, and was noted to be very slow flowing with potential depths of c.1.5-2.5m. In places the substrate was silt/mud, although the majority of water had a high sediment content making it difficult to see the bottom. The dominant vegetation along the banks was noted to be Yellow Iris (*Iris pseudacorus*), Meadowsweet and Common Reed. Bulrush, Water Mint (*Mentha aquatica*), False Oat-grass (*Arrhenatherum elatius*), Creeping Bent and Yorkshire Fog were occasional. No notable species were recorded.

### **3.2.4 Other habitats**

#### *Arable Crops (BC1)*

These fields have been cultivated and managed for crop production. They provide little ecological value in terms of flora (although field margins may provide more diversity).

#### *Stone Walls and Other Stonework (BL1)*

Buildings and hard standing (BL3) is present across the town which supported little or no ecologically valuable flora. However there were also a number of old or derelict stone buildings which were noted to support vegetation such as Ivy and bramble and

may provide important resting sites for wildlife (this is discussed further in Section 3.3 below). Figure 5 below illustrates buildings of this type.



Figure 5: BL1 Stone Walls and Other Stonework - Old derelict building at 'The Hulk'.

#### *Disturbed ground or ornamental/planted habitats*

These areas were scattered throughout the town and comprised of construction sites with spoil, rubble etc. They contained habitats such as *Recolonising bare ground (ED3)*, *Spoil and bare ground (ED2)* and *Earth banks (BL2)*. The latter two habitats had little or no vegetation. The recolonising bare ground had dominant species such as Butterfly-bush, Red Fescue, Nettle (*Urtica dioica*), Willow species (e.g. Osier and Grey Willow), False Oat-grass, Common Bent and Yorkshire Fog. Occasional species included Red Bartsia (*Odontites vernus*), Ragwort (*Senecio Jacobea*), Rough Meadow-grass (*Poa trivialis*), Tufted Vetch (*Vicia cracca*), Bush Vetch (*Vicia sepium*), Cocksfoot (*Dactylis glomerata*), Red Clover and Knapweed.

*Ornamental shrubs (WS3)* and *planted flower beds (BC4)* were noted throughout the town. These provide little ecological value other than possibly supporting nesting birds and as foraging areas for pollinators.

### **3.3 Fauna**

Species that were noted to be present in Monasterevin are discussed at the end of the table in Appendix B. The most notable species were:

- Irish hare (*Lepus timidus hibernicus*), recorded at Moore Abbey grounds;
- Buzzard (*Buteo buteo*), noted to be flying above Moore Abbey Demesne; and,
- Badger (*Meles meles*), a sett was noted to the west of the town (this was noted to be disused at the time of survey with the potential for re-occupation by mammals).



Other *ad hoc* field records included Mallard (on the Grand Canal) and the following species were noted within hedgerows around the town: Rabbit (*Oryctolagus cuniculus*), Robin (*Erithacus rubecula*), Blackbird (*Turdus merula*), Blue Tit (*Cyanistes caeruleus*), Wren (*Troglodytes troglodytes*), Pied Wagtail (*Motacilla alba*), Song Thrush (*Turdus philomelos*), Great Tit (*Parus major*), Rook (*Corvus frugilegus*) and Wood Pigeon (*Columba palumbus*).

### Bats

Buildings and hard standing habitat was present across the town. Buildings (even more modern structures) can provide nesting sites for birds and roosting sites for bats. There were a number of old or derelict buildings which were noted to provide high potential for roosting bats due to their suitable features. Figure 5 in Section 3.2.4 illustrates buildings of this type. Bat roost potential buildings were noted at Togher House, Moore Abbey Demesne and 'The Hulk'.

Mature trees across Monasterevin may have the potential to support roosting bats. Woodlands, grasslands and hedgerows can provide important roosting and foraging sites. Bats often use linear features such as woodland edge, hedgerows, walls and watercourses (or even the linear verges of infrastructure) to navigate through the countryside. These areas can also present important foraging sites.

### 3.4 Target Notes

Areas of particularly important habitats (including those with high potential for protected species) have been Target Noted (TN) for Monasterevin. These are illustrated in Figure 6 below.

The Target Notes are as follows:

- 1 - Monasterevin Railway line provides a wildlife corridor habitat (foraging, resting and commuting sites) for species such as bats, breeding birds, badgers and potentially red squirrel. The mature trees along this habitat may support roosting bats.
- 2 - Wet grassland (GS4) adjacent to Junction 14 of the M7 was found to support a diverse flora.
- 3 - Woodland and scrub habitats at Togher House, 'The Hulk' and Moore Abbey provide suitable habitat for wildlife and can act as a wildlife corridor connecting into other habitats such as hedgerows. These sites were also noted to have old or derelict buildings which might support bat roosts. In addition, the mature trees in these locations could provide bats with roosting sites.
- 4 - The Grand Canal (pNHA) acts as a wildlife corridor for aquatic and terrestrial species. There is semi-natural grassland here (classified as GS1) which may also be species rich.
- 5 - River Barrow & River Nore (cSAC) acts as a wildlife corridor for aquatic and terrestrial species. There may be potential for Annex I habitats, as listed on the 1992 EC Habitats Directive (92/43/EC), to be found here, although none were noted within Monasterevin during the field surveys. Annex I Habitats such as floating river vegetation and calcareous springs are a qualifying feature for this Special Area of Conservation.



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## 4 DISCUSSION

### 4.1 Habitats and their potential for Protected Species in Monasterevin

The habitats of ecological importance within Monasterevin town are discussed below. Their potential to support protected species was considered. These habitats were evaluated according to the NRA 2009 criteria.

#### *Woodland*

Many woodlands in Ireland have been modified in some way, a large number occur within old or current estates (demesne woodlands) or forestry plantations. The National Survey of Native Woodlands (BEC 2008) found that of the woodlands that were surveyed across Ireland, Kildare registered the highest proportion of sites with old conifer planting (54%), followed by Dublin (53%) and Wexford (50%).

*“The most notable feature of the data is that the majority of woodlands were associated with man-made habitats... This reflects the high number of woodlands which occur within the agricultural landscape, but also the number of sites which occur in conjunction with commercial forestry plantations or as part of large demesnes.”* (BEC 2008, pg. 34 & 35)

Of the woodlands that were surveyed in Kildare within BEC’s study, >15% were primarily associated with flat river floodplains and lowland riversides – this was a relatively rare association in the rest of the country.

#### *Woodland Fauna*

The conservation of broadleaved (particularly native) woodland is essential for maintaining the biodiversity and ecological value of our landscapes. Woodland habitats are important for a variety of flora and fauna. This habitat provides essential foraging and resting sites for species such as Bats, Badger, Breeding birds, Otter (*Lutra lutra*), Red Squirrel (*Sciurus vulgaris*), Pine marten (*Martes martes*) - all of which are protected to varying degrees and have been recorded in County Kildare (some within 2km of Monasterevin as seen in Appendix A). Other species which are supported within marginal areas of woodland habitats are reptiles (such as Ireland’s only native reptile, Common Lizard *Zootoca vivipara*) and amphibians (e.g. Common Frog *Rana temporaria* and Smooth Newt *Lissotriton vulgaris*). Many of these species appear to be under-recorded in County Kildare and have not been noted within 2km of Monasterevin in the recent past (according to the NBDC records).

The habitat category of mixed broadleaved woodland located within Moore Abbey Demesne may comprise Long-Established Woodland (II), which can be defined as:

*‘Woodland that has remained continuously wooded since the first edition OS maps of 1830-44, but for which there is positive evidence in older documentation that it is not ancient in origin.’* (Perrin & Daly 2010, Pg. 6)

Buzzard was recorded flying overhead at Moore Abbey Demesne indicating that the habitats in this location offer suitable foraging areas (and potentially breeding sites for species such as this bird of prey).

Red squirrel has been recorded in Hybla Wood to the north-east of Monasterevin town as recently as 2012. Although this woodland was outside of the survey area, according to the aerial maps it can be seen to have undergone intensive deforestation. This habitat is vulnerable to threats such as development impacts, deforestation, dumping overgrazing (although appropriate grazing of livestock can be used as a woodland management practice) and encroachment by invasive species.

A number of the mixed broadleaved woodlands in this town were considered to be relatively undisturbed and unmanaged. These areas provide very good foraging and resting sites for wildlife within the town. Some of these habitats were associated with old or derelict buildings, a number of which had the potential to support roosting bats.

#### *Woodland Value*

*“The presence of semi-natural habitats next to a woodland can increase the value of that site as it forms part of a larger mosaic of semi-natural vegetation. It can also indicate that the woodland has the possibility of natural expansion by colonising the adjacent land.” (BEC 2008, Pg. 34)*

The woodland habitats across Monasterevin, and their associated mature trees, derelict building etc. were, as a minimum, classified as being of ‘Local Importance’ (Higher Value). Further detailed botanical and protected species surveys of these woodlands and buildings could provide invaluable information regarding species supported at these sites. For instance, if populations of bats that are uncommon within the county were found, then the evaluation of that habitat could be raised to that of ‘County Importance’.

#### *Hedgerow and Treeline Habitats*

These linear habitats provide essential foraging and commuting areas for a wide variety of species such as breeding birds, badger and bats. According to the County Kildare Hedgerow Survey Report (Foulkes 2006), hedgerows in Kildare typically show a higher level of fragmentation compared to those found in other counties. This is due, in part, to increased development and the intensification of agriculture that has occurred in the county. Considering the low percentage cover of native woodland within Kildare, hedgerows are of particular conservation importance. In areas where intensive farming dominates the landscape, hedgerows may be the only significant wildlife habitat remaining. This includes hedgerows ranked as low value.

In Monasterevin, during these surveys, it was noted that species diversity and connectivity of these linear routes was good. This supports some of the overall findings from other studies regarding hedgerows in Kildare (Foulkes 2006). For the most part, hedgerows and treelines in the Study Area had the potential to provide wildlife corridors which connected into the wider ‘Key Green Infrastructure’ areas of the town.

Hedgerows that were classified as being of High (c.30%) or Moderate value (c.55%) were considered to be of ‘Local Importance’ (Higher Value). These were mainly located in the south east (high value), east and north-west (moderate value) areas. Those that were classified as being Low value hedgerows (c.14%) are still of some importance in maintaining habitat links and were therefore classified as being of ‘Local Importance’ (Lower Value). Such hedgerows were generally found in the north of Monasterevin.

## Grasslands

*“Semi-natural grasslands act as an important refuge for invertebrate, bird and mammal species, and also provide suitable habitats for many rare and protected plant species. Despite their importance, however, semi-natural grasslands are extremely vulnerable in Ireland.”* (BEC 2013, Pg. 4)

Semi-natural grasslands are those that have not undergone intensive fertilisation or re-seeding with species such as Perennial Rye Grass or White Clover, but may have undergone mowing and grazing to some degree.

*“The low-intensity agricultural practices that once allowed the development of species-rich semi-natural grasslands have now all but ceased, threatening the existence of these habitat types within Ireland.”* (BEC 2013, Pg. 3)

### *Improved (GA1) & Amenity (GA2) Grasslands and Dry Meadows and Grassy Verges (GS2)*

The majority of grasslands in Monasterevin have undergone some level of management to provide land of agricultural areas or recreational/amenity sites. Grasslands, particularly those that are less intensely managed, can provide resting and foraging sites for a number of species e.g. Irish hare was noted within the grassland at Moore Abbey Demesne. The improved and amenity grasslands were found to be of low ecological value, containing fewer species and consisting of a more uniform sward. The dry meadows and grassy verges (GS2) habitat within Monasterevin was generally found to be on recently-disturbed ground and had relatively low species diversity. These grasslands were evaluated to be of Local Importance (Lower Value) as they provide a level of habitat connectivity which links into the wider green areas within the town.

### *Dry Calcareous and Neutral Grassland (GS1) and Wet Grassland (GS4)*

A number of grassland sites were identified which should be conserved and enhanced where possible. These included the dry calcareous and neutral grasslands alongside the western boundary of the Grand Canal. Additional species were found here which indicate that this habitat may constitute species-rich semi-natural grassland (these are discussed in Section 3.2.2.) if surveyed at the optimal time of year. The GS1 grasslands within the grounds of Togher House and the wet grasslands, particularly those noted within Moore Abbey Demesne and the fields to the north of Junction 14 on the M7 motorway, may also classify as species-rich grassland. The latter habitat is of ecological value partly due to the niche it provides for species which can sustain wetter conditions, such as those found occurring within drainage ditches (FW4). Wet grassland and drainage ditch habitats can be an important habitat for a variety of species including riparian mammals such as otter, as well as amphibians. Both of these grassland types can be particularly important habitat for a variety of invertebrate species.

Due, in part, to their rarity within this town, the dry calcareous and neutral grassland and wet grassland was evaluated as being of ‘Local Importance’ (Higher Value). Further surveys of these habitats could result in this value being raised to ‘County Importance’ if they are found to support *“sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county”* (NRA 2009).

### *Watercourses*

The River Barrow is part of an SAC and is of 'International Importance'. The Grand Canal is a pNHA and as such it is deemed to be of 'National Importance' according to the NRA Guidelines (NRA 2009). Many of the flora and fauna that these wildlife corridors support are protected under the Habitats Directive (Annex II and/or IV) and/or the Wildlife Acts.

These habitats are particularly vulnerable to development and change in land use. One of the primary objectives of the EU Water Framework Directive (2000/60/EC) is to establish an effective framework of water environment policy and regulation which prevents the further deterioration of, and protects and enhances the status of, aquatic ecosystems such as these. The River Barrow is currently classified as being '*at risk of not achieving good status*' under the Directive according to the Environmental Protection Agency (EPA) envision mapping (Water Framework Directive Risk Scores).

No Annex I habitats were noted within the river during the survey, however, it is highly likely that protected species such as Otter and White-clawed Crayfish (which are two of the qualifying features for this SAC) can be found within the town boundaries. And there may be potential for Annex I habitats such as Floating River Vegetation [habitat code 3260] to be found within the town boundaries in the future.

### *Arable Crops (BC1)*

Following the habitat surveys it was found that arable crop fields are not extensive in Monasterevin. These fields only exist in the south and north-east of the town. In addition, there are no Special Protection Areas (SPAs) specifically designated for their bird species within close proximity to this town and the potential for significant numbers of breeding or over-wintering birds to rely on these habitats in Monasterevin is lower. This habitat was evaluated as being of 'Local Importance' (Lower Value) as it affords some potential to provide resting and foraging sites for bird species.

## **4.2 Green Infrastructure in Monasterevin**

*"Green Infrastructure is a strategically planned and managed network featuring areas with high quality biodiversity (uplands, wetlands, peatlands, rivers and coast), farmed and wooded lands and other green spaces that conserve ecosystem values which provide essential services to society." (Comhar 2010, Pg. 11)*

The most important Green Infrastructure habitats within the town are the watercourses (River Barrow SAC and Grand Canal pNHA) and their associated habitats. These provide essential linear habitats which allow the movement of both aquatic and terrestrial flora and fauna.

The Monasterevin railway line offers an area of relatively undisturbed (verge) habitat which connects sites across the northern extents of the town. This linear corridor connects directly with the main watercourses in this town.

Moore Abbey Demesne would be considered to be a substantial area of green space within the town which comprises of old woodland estate, semi-improved grassland and scrub habitats. This demesne also connects directly with the Grand Canal and the River Barrow.



In addition, due in part to its location between Moore Abbey and these watercourses, 'The Hulk' which offers woodland, scrub and semi-improved grassland connectivity is an important area of Green Infrastructure in the town.

#### *'Stepping Stone' Habitats*

Although not highlighted within the 'Key Green Infrastructure' map in Appendix E (map 3), important habitat connectivity is also provided by the valuable network of hedgerows that is present across the town. These hedgerows link in to stepping stone habitats such as that found within arable fields (field margins, stubble from crops, rough or long grassland/crops etc.). In addition, parks such as Riverside Park can provide useful habitats which connect into areas of greater biodiversity allowing species to widen their range. These areas also provide important amenity and recreational sites (the Grand Canal bank walk also offers such benefits).

## 5 RECOMMENDATIONS

It is an aim of this study that all relevant information will be used by Kildare County Council planning staff in the development of policies and objectives to protect and conserve the Key Green Infrastructure and to raise awareness about the biodiversity of these towns. As such recommendations to help in achieving this goal have been outlined below. This advice should inform discussion, and feed into the policies and objectives for the Monasterevin Local Area Plan. The policies and objectives have been drafted by the Council with regard to these recommendations, these can be seen in Appendix F, along with specific target notes for sensitive Green Infrastructure areas.

### 5.1 Policy Guidance

#### *Habitat and Green Infrastructure Protection and Enhancement*

Consideration should be given when drafting planning policy and objectives to the ecological, social and economic benefits that can be reached by conserving and improving habitats and green spaces. In Monasterevin, the following strategic planning recommendations could help in this regard:

- All habitats should be protected appropriately according to their ecological value;
- Developers should be asked to demonstrate how they are making efforts to protect, enhance and appropriately manage the habitats and land in which they develop;
- Ensuring that all developments are shown to pay due consideration to the flood risk and that they include Sustainable Urban Drainage systems (SUDs); and,
- Planting of riparian buffer zones (to be confirmed with more detailed, site specific research and guidance from organisation such as the EPA and IFI) adjacent to the River Barrow and the Grand Canal. Further specific advice can be sought in relation to this from the Inland Fisheries Ireland Senior Fisheries Environmental Officer.

Those responsible for managing Green Infrastructure and ecologically-valuable habitats should undertake best practice in Conservation management by enhancing habitats of low ecological value e.g. improved and poor semi-improved grassland. The following actions could be taken:

- Managing woodlands and grasslands (such as those habitats in Moore Abbey, 'The Hulk', Togher House, along the River Barrow SAC and along the Grand Canal pNHA) in an appropriate manner that will increase their biodiversity and habitat connectivity;
- Consideration should be given to the appropriate land use of Moore Abbey Demesne, 'The Hulk', Togher House (and grounds), and the woodland habitat surrounding Monasterevin WWTW in terms of their potential to provide ecologically valuable areas and where appropriate to increase the public amenity sites within the town; and,
- All identified Key Green Infrastructure and 'Stepping Stone' habitats such be appropriately protected (according to their value) and enhanced where possible.

## 5.2 General Recommendations for Monasterevin

### *Education and Public Engagement*

The potential for increasing the level of public awareness and association with the habitats and green spaces within the town could be grasped by undertaking the following:

- A Monasterevin 'Bio-Blitz' event could be organised, this would benefit both the town's awareness of its flora and fauna as well as providing valuable field records for this town (it is recommended that all records are shared with the NBDC and the Tidy Towns committee); and,
- Where appropriate, and where it has not already been undertaken, educational signs and posters could be designed which outline the ecological importance of habitats within monasterevin such as the Grand Canal pNHA, The River Barrow cSAC and Moore Abbey Demesne.

### *Further Research and Evaluation*

The following steps could be taken to add further valuable information to the research undertaken to date:

- In order to determine the ecological value of the woodlands within Monasterevin, and their associated buildings (with the potential to support roosting bats), it is recommended that detailed bat activity and building inspection surveys be carried out at the three main areas Target Noted during this survey – these include Moore Abbey, Togher House and 'The Hulk' as well as their associated grounds. Such a survey would help to identify whether or not these sites are of 'County Importance' in terms of the bat species and population densities found there, which would support efforts to protect the biodiversity of this town;

*"Invasive species, particularly invasive shrubs and trees, are a major threat to native woodland. They are characterised by being highly competitive, typically quick growing and highly fecund, and are often unpalatable to browsing animals. Invasive shrubs can dominate the understorey, outcompeting native herbs and impacting on the natural regeneration of native trees...Many of the sites where invasive shrubs were recorded were woodlands associated with demesnes and estates." (BEC 2008, Pg. 36)*

- An Invasive Species survey could be conducted at a suitable time of year to identify such flora and to devise appropriate mitigation to prevent their further spread. Such an action would help to increase biodiversity in areas where invasive plants are a problem. All future records of Invasive Species in this town should be submitted to the Invasive Species Ireland Database and NBDC; and,
- An ecological survey of a selection of bridges and culverts within the watercourses of the town would identify areas which are presenting obstacles to the migration and dispersal of aquatic life (particularly fish). This would allow for suitable mitigation to be devised that might remove such obstacles, thereby increasing habitat connectivity and overall biodiversity.

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## APPENDIX A: RECORDS FOR PROTECTED, RARE OR NOTABLE SPECIES

\*It should be noted that the species records below are based on ad hoc information submitted to the data centres and as a result this list does not necessarily represent a full and complete species list of the area. (Sources include NPWS map viewer and the NBDC mapping portal).

Records of Protected, Rare and other Notable Flora and Fauna Species within (2km search around Monasterevin unless stated otherwise)*						
Common Name	Scientific Name	Protection <sup>4</sup>	Red-Listing Status <sup>5</sup>	Number of Records;	Date	Source
<b>Flora</b>						
Opposite-leaved Pondweed	<i>Groenlandia densa</i>	WA; FPO	-	2;	1885 & 1898	NPWS
Basil Thyme	<i>Acinos arvensis (Stace: Clinopodium acinos)</i>	WA; FPO	-	2;	1898 & 1992	NPWS
Lesser Centaury	<i>Centaurium pulchellum</i>	WA; FPO	-	1;	1896	NPWS
<b>Fauna</b>						
<b>Birds – Red Listed Birds within 10km of Monasterevin</b>						
Barn Owl	<i>Tyto alba</i>	WA	Red	1984		NBDC
Black-headed Gull	<i>Larus ridibundus</i>	WA	Red	1991		NBDC
Curlew	<i>Numenius arquata</i>	WA, BD Annex II	Red	1991		NBDC
Corncrake	<i>Crex crex</i>	WA, BD Annex I	Red	1972		NBDC
Dunlin	<i>Calidris alpina</i>	WA, BD Annex I	Red	1984		NBDC
Golden Plover	<i>Pluvialis apricaria</i>	WA, BD Annex I, II & III	Red	1984		NBDC
Grey Partridge	<i>Perdix perdix</i>	WA, BD Annex III	Red	1972		NBDC
Grey Wagtail	<i>Motacilla cinerea</i>	WA	Red	1991		NBDC
Herring Gull	<i>Larus argentatus</i>	WA	Red	1991		NBDC
Lapwing	<i>Vanellus vanellus</i>	WA, BD Annex II	Red	1984		NBDC
Meadow Pipit	<i>Anthus pratensis</i>	WA	Red	1991		NBDC
Nightjar	<i>Caprimulgus europaeus</i>	WA, BD Annex I	Red	1972		NBDC
Pintail	<i>Anas acuta</i>	WA, BD Annex II and III	Red	1984		NBDC
Pochard	<i>Aythya ferina</i>	WA, BD Annex II and III	Red	1984		NBDC
Quail	<i>Coturnix coturnix</i>	WA	Red	1991		NBDC

<sup>4</sup> HDII/IV = Habitats Directive Annexes II/IV; FPO = Flora Protection Order; WA = Wildlife Acts; BD I = Birds Directive Annex I; FA = Fisheries Acts.

<sup>5</sup> Mammal Red-list from Marnell et al., 2009. Birds from Birds of Conservation Concern in Ireland (BoCCI) (Colhoun et al. 2013); Vascular Flora from the Irish Red Data Book 1 Vascular Plants (Curtis & McGough 2005); Fish and Amphibians from King et al., 2011; Non-Marine Molluscs from Byrne et.al, 2009.



Records of Protected, Rare and other Notable Flora and Fauna Species within (2km search around Monasterevin unless stated otherwise) *					
Common Name	Scientific Name	Protection <sup>4</sup>	Red-Listing Status <sup>5</sup>	Number of Records; Date	Source
Red Grouse	<i>Lagopus lagopus</i>	WA BD Annex II & III	Red	1984	NBDC
Redshank	<i>Tringa totanus</i>	WA	Red	1972	NBDC
Shoveler	<i>Anas clypeatea</i>	WA, BD Annex II & III	Red	1984	NBDC
Tufted Duck	<i>Aythya fuligula</i>	WA, BD Annex II & III	Red	1984	NBDC
Whinchat	<i>Saxicola rubetra</i>	WA	Red	1991	NBDC
Wigeon	<i>Anas penelope</i>	WA, BD II & III	Red	1984	NBDC
Woodcock	<i>Scolopax rusticola</i>	WA, BD Annex II & III	Red	1984	NBDC
Yellowhammer	<i>Emberiza citrinella</i>	WA	Red	1991	NBDC
<b>Birds – Red and Amber Listed Birds within 2km of Monasterevin</b>					
Common Kingfisher	<i>Alcedo atthis</i>	WA; BD I;	Amber List	1; 2010	NBDC
Common Swift	<i>Apus apus</i>	WA	Amber List	1; 2010	NBDC
Stock Dove	<i>Columba oenas</i>	WA	Amber List	1; 2011	NBDC
Mute Swan	<i>Cygnus olor</i>	WA	Amber List	2; 2010	NBDC
Barn Swallow	<i>Hirundo rustica</i>	WA	Amber List	3; 2010	NBDC
Golden Plover	<i>Pluvialis apricaria</i>	WA; BD I	Red List	2; 2012	NBDC
Sand Martin	<i>Riparia riparia</i>	WA	Amber List	2; 2010	NBDC
S Skylark	<i>Alauda arvensis</i>	WA, BD II	Amber List	3; 1991 (most recent)	NBDC
<b>Invertebrates</b>					
<b>Hymenoptera – Bees, Ants &amp; Wasps</b>					
Large Red Tailed Bumble Bee	<i>Bombus (Melanobombus) lapidarius</i>	-	Near Threatened	1; 2013	NBDC
<b>Fish</b>					
Please also see SAC designation for River Barrow and River Nore (Section 2 Table 1 of this report).					
European Smelt	<i>Osmerus eperlanus</i>	FA	Least Concern	July 2013 (River Barrow)	IFI
Brown trout	<i>Salmo trutta</i>	FA	Least Concern	2014 (River Barrow)	IFI
European Eel	<i>Anguilla anguilla</i>	-	Critically Endangered	2014 (River Barrow)	IFI
Atlantic salmon	<i>Salmo salar</i>	HDII/IV, FA	Vulnerable	2014 (River Barrow)	IFI
Perch	<i>Perca fluviatilis</i>	-	Non-native non-benign	2014 (River Barrow)	IFI

Records of Protected, Rare and other Notable Flora and Fauna Species within (2km search around Monasterevin unless stated otherwise)*						
Common Name	Scientific Name	Protection <sup>4</sup>	Red-Listing Status <sup>5</sup>	Number of Records; Date	Source	
Stone Loach	<i>Barbatula barbatula</i>	FA	Non-native benign	2014 (River Barrow)	IFI	
Roach	<i>Rutilus rutilus</i>	FA	Non-native non-benign	2014 (River Barrow)	IFI	
Gudgeon	<i>Gobio gobio</i>	FA	Non-native benign	2014 (River Barrow)	IFI	
Common Minnow	<i>Phoxinus phoxinus</i>	FA	Non-native non-benign	2014 (River Barrow)	IFI	
Pike	<i>Esox lucius</i>	FA	Non-native non-benign	2014 (River Barrow)	IFI	
Dace	<i>Leuciscus leuciscus</i>	FA	Invasive requiring management	2014 (River Barrow)	IFI	
Common Bream x Roach	<i>Abramis brama x Rutilus rutilus</i>	FA	- (hybrid)	2014 (River Barrow)	IFI	
<b>Crustacean</b>						
Freshwater White-clawed Crayfish (River Barrow)	<i>Austropotamobius pallipes</i>	HD II; V & WA	-	2009	NBDC	
<b>Mollusc</b>						
Heath Snail	<i>Helicella itala</i>	-	Vulnerable	1; 1990	NBDC	
Blind Snail	<i>Cecilioides (Cecilioides) acicula</i>	-	Vulnerable	1; 1990	NBDC	
Des Moulins' Whorl Snail Grand Canal (North of Monasterevin)	<i>Vertigo moulinsiana</i>	HD II	Vulnerable (IUCN Endangered)	1; 1971 (historic)	NBDC	
<b>Mammal</b>						
Brown Long-eared bat	<i>Plecotus auritus</i>	HD IV & WA	Least Concern	1; 2004	NBDC	
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	HD IV & WA	Least Concern	1; 2004	NBDC	
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	HD IV & WA	Least Concern	1; 2004	NBDC	
Leisler's bat	<i>Nyctalus leisleri</i>	HD IV & WA	Near Threatened	1; 2004	NBDC	
Natterer's bat	<i>Myotis nattereri</i>	HD IV & WA	Least Concern	1; 2004	NBDC	
Daubenton's bat	<i>Myotis daubentonii</i>	HD IV & WA	Least Concern	1; 2004	NBDC	
Badger	<i>Meles meles</i>	WA	-	8; 2013	NBDC	
Hedgehog	<i>Erinaceus europaeus</i>	WA	-	1; 2007	NBDC	

Records of Protected, Rare and other Notable Flora and Fauna Species within (2km search around Monastererevin unless stated otherwise)*					
Common Name	Scientific Name	Protection <sup>4</sup>	Red-Listing Status <sup>5</sup>	Number of Records; Date	Source
Eurasian Red Squirrel	<i>Sciurus vulgaris</i>	WA	-	2012	NBDC

Records of Invasive Species in the Monastererevin area					
Common Name	Scientific Name	Status <sup>6</sup>	Number of Records; Date	Source	
Canadian Waterweed	<i>Elodea canadensis</i>	High Impact Invasive Species	1; 2009	NBDC	
Common Garden Snail	<i>Cornu aspersum</i>	Medium Impact Invasive Species	2; 1990	NBDC	
Eastern Grey Squirrel	<i>Sciurus carolinensis</i>	High Impact Invasive Species	1; 2014	NBDC	
European Rabbit	<i>Oryctolagus cuniculus</i>	Medium Impact Invasive Species	1; 2013	NBDC	
Japanese and hybrid knotweeds	<i>Fallopia japonica x bohemica</i>	High Impact Invasive Species	N/A	CAISIE <sup>7</sup>	
Jenkins' Spire Snail	<i>Potamopyrgus antipodarum</i>	Medium Impact Invasive Species	1; 1971	NBDC	
Nuttall's pondweed	<i>Elodea nuttallii</i>	High Impact Invasive Species	N/A	CAISIE <sup>7</sup>	

<sup>6</sup> According to NBDC online data

<sup>7</sup> CAISIE Final Report (2013) Accessed at <http://caisie.ie/wp-content/uploads/2013/09/CAISIE-Final-Report-LIFE-07-NAT-IRL-0003411.pdf>

Bat Conservation Ireland records of species roosting within a 10km<sup>2</sup> boundary from the following town centroid: Delete as appropriate Monasterevin - SF 61309 72382

Latin Name	Common Name	Location	Distance to site <sup>1</sup>	Protection Status <sup>2</sup>	Red Data Book Category
<i>Pipistrellus pipistrellus</i>	Common pipistrelle bat	Nurney, Portarlington, County Kildare	c.9 km to SE	HDIV, WA	Least Concern
<i>Plecotus auritus</i>	Brown long-eared bat	Rathdaire, Portarlington, County Kildare	c.5.5 km to SW	HDIV, WA	Least Concern
<i>Nyctalus leisleri</i> ; <i>Pipistrellus pygmaeus</i> ; <i>Plecotus auritus</i>	Leisler's bat Soprano pipistrelle bat Brown long-eared bat	Emo Court, Emo, Co Laois.	c.9.5 km to SW	HDIV, WA HDIV, WA HDIV, WA	Near Threatened Least Concern Least Concern
<i>Myotis daubentonii</i>	Daubenton's bat	Esker, Portlaoise Road, Timahoe, Co. Laois	c. 10 km to SW	HDIV, WA	Least Concern
<i>Plecotus auritus</i>	Brown long-eared bat	Ballintubbert, Stradbally, County Laois	c. 10km to S	HDIV, WA	Least Concern
<i>Plecotus auritus</i>	Brown long-eared bat	Curraclone, Stradbally, County Laois	c. 10km to S	HDIV, WA	Least Concern
<i>Myotis mystacinus</i>	Whiskered bat	Court House Square, Stradbally, County Laois	c. 10km to S	HDIV, WA	Least Concern
<i>Pipistrellus pygmaeus</i> ; <i>Pipistrellus spp.</i> <i>Plecotus auritus</i>	Soprano pipistrelle bat Pipistrelle bat sp. Brown long-eared bat	Emo Court, Emo, County Laois	c.9.5 km to SW	HDIV, WA	Least Concern Least Concern Least Concern
Unidentified Bat Sp.	Unidentified Bat Sp.	Redhills; County Kildare	c.1.62km to W	HDIV, WA	Least Concern

<sup>1</sup>Distance to site is approximate as full grid references not available for these records.

<sup>2</sup> HDII/IV/V = Habitats Directive Annexes II/IV/V; WA = Wildlife Acts

## APPENDIX B: SPECIES RECORDED DURING THE SURVEY

Scientific name	Common Name
<i>Acer campestre</i>	Field Maple
<i>Acer pseudoplatanus</i>	Sycamore
<i>Achillea millefolium</i>	Yarrow
<i>Aesculus hippocastanum</i>	Horse-chestnut
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Angelica sylvestris</i>	Wild Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Araucaria araucana</i>	Monkey puzzle tree
<i>Arrhenatherum elatius</i>	False Oat-grass
<i>Arum maculatum</i>	Lords-and-Ladies
<i>Bellis perennis</i>	Common Daisy
<i>Betula pendula</i>	Silver Birch
<i>Blackstonia perfoliata</i>	Yellow-wort
<i>Blechnum spicant</i>	Hard Fern
<i>Brachypodium sylvaticum</i>	False Brome
<i>Briza media</i>	Common Quaking Grass
<i>Bromus sp.</i>	Brome sp.
<i>Buddleja davidii</i>	Butterfly-bush
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Carex flacca</i>	Glaucous Sedge
<i>Carex hirta</i>	Hairy Sedge
<i>Carex nigra</i>	Common Sedge
<i>Carex panicea</i>	Carnation sedge
<i>Centaurea nigra</i>	Knapweed
<i>Centaureum erythraea</i>	Common Centaury
<i>Cerastium fontanum</i>	Common Mouse-ear
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Clematis vitalba</i>	Traveller's-Joys
<i>Corylus avellana</i>	Hazel
<i>Cotoneaster</i>	Cotoneaster sp.
<i>Crataegus monogyna</i>	Hawthorn
<i>Crepis capillaris</i>	Smooth Hawk's-beard sp.
<i>Dactylis glomerata</i>	Cocksfoot
<i>Daucus carota</i>	Wild Carrot
<i>Deschampsia cespitosa</i>	Tufted Hair Grass
<i>Epilobium palustre</i>	Marsh Willowherb
<i>Equisetum palustre</i>	Marsh Horsetail
<i>Equisetum sylvaticum</i>	Wood Horsetail
<i>Euphrasia sp.</i>	Eyebright sp.
<i>Fagus sylvatica</i>	Beech
<i>Festuca rubra</i>	Red Fescue
<i>Filipendula ulmaria</i>	Meadowsweet



<i>Fragaria vesca</i>	Wild Strawberry
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Galium palustre</i>	Common Marsh-bedstraw
<i>Galium verum</i>	Lady's Bedstraw
<i>Glechoma hederacea</i>	Ground-ivy
<i>Glyceria declinata</i>	Small Sweet-grass
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Hypericum tetrapterum</i>	Square-stalked St. John's-wort
<i>Hypericum pulchrum</i>	Slender St. John's-wort
<i>Hypochaeris radicata</i>	Cat's-ear
<i>Ilex aquifolium</i>	Holly
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus bulbosus</i>	Bulbous Rush
<i>Juncus effusus</i>	Soft-rush
<i>Juncus inflexus</i>	Hard Rush
<i>Knautia arvensis</i>	Field scabious
<i>Lamium sp.</i>	Deadnettle sp.
<i>Lapsana communis</i>	Nipplewort
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Leucanthemum vulgare</i>	Oxeye Daisy
<i>Lolium perenne</i>	Perennial Rye-grass
<i>Lotus corniculatus</i>	Bird's-foot Trefoil
<i>Luzula sylvatica</i>	Great Woodrush
<i>Lythrum salicaria</i>	Purple-loosestrife
<i>Mentha aquatica</i>	Water mint
<i>Odontites vernus</i>	Red Bartsia
<i>Origanum vulgare</i>	Wild Marjoram
<i>Orobanche minor</i>	Common Broomrape
<i>Persicaria sp.</i>	Persicaria / Bistort species
<i>Phleum pratense</i>	Timothy
<i>Phragmites australis</i>	Common Reed
<i>Picea sp.</i>	Spruce species
<i>Pilosella officinarum</i>	Mouse-ear Hawkweed
<i>Pinus sylvestris</i>	Scots Pine
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Poa trivialis</i>	Rough Meadow-grass
<i>Polygonum sp.</i>	Knotgrass sp.
<i>Populus sp.</i>	Poplar sp.
<i>Potentilla anglica</i>	Trailing Tormentil
<i>Potentilla erecta</i>	Tormentil
<i>Potentilla reptans</i>	Creeping cinquefoil
<i>Potentilla reptans</i>	Creeping Cinquefoil
<i>Primula sp.</i>	Primrose sp.
<i>Prunus laurocerus</i>	Cherry Laurel
<i>Prunus spinosa</i>	Blackthorn
<i>Quercus robur</i>	Pedunculate Oak

<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus ficaria</i>	Lesser Celandine
<i>Rhinanthus minor</i>	Yellow-rattle
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble aggregate
<i>Rumex acetosa</i>	Sorrel
<i>Rumex sanguineus</i>	Wood Dock
<i>Salix cineria</i>	Grey Willow
<i>Salix viminalis</i>	Osier
<i>Sambucus nigra</i>	Elder
<i>Schoenoplectus sp.</i>	Club-rush sp.
<i>Senecio aquaticus</i>	Marsh Ragwort
<i>Senecio jacobaea</i>	Ragwort - Invasive (but not listed on WCA)
<i>Senecio vulgaris</i>	Groundsel
<i>Sorbus aucuparia</i>	Rowan
<i>Stellaria sp.</i>	Stitchwort species
<i>Succisa pratensis</i>	Devil's Bit Scabious
<i>Taraxacum agg.</i>	Dandelion
<i>Taxus baccata</i>	Yew
<i>Tilia x europaea</i>	Common Lime
<i>Trifolium campestre</i>	Hop Trefoil
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Typha latifolia</i>	Bulrush
<i>Ulex europaeus</i>	Gorse
<i>Ulmus glabra</i>	Wych Elm
<i>Urtica dioica</i>	Nettle
<i>Valeriana officinalis</i>	Valerian (Common )
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Viburnum opulus</i>	Guelder-rose
<i>Vicia cracca</i>	Tufted Vetch
<i>Vicia sepium</i>	Bush Vetch
<i>Viola riviniana</i>	Common Dog Violet

#### Fauna

##### **Mammals**

<i>Meles meles</i> (Sett)	Badger (Sett)
<i>Lepus timidus hibernicus</i>	Irish hare (Moore Abbey)
<i>Oryctolagus cuniculus</i>	Rabbit

##### **Birds**

<i>Buteo buteo</i>	Buzzard (Moore Abbey)
<i>Anas platyrhynchos</i>	Mallard (Grand Canal pNHA)
<i>Erithacus rubecula</i>	Robin
<i>Turdus merula</i>	Blackbird
<i>Troglodytes troglodytes</i>	Wren
<i>Cyanistes caeruleus</i>	Blue Tit
<i>Motacilla alba</i>	Pied wagtail
<i>Turdus philomelos</i>	Song Thrush
<i>Parus major</i>	Great Tit
<i>Corvus frugilegus</i>	Rook
<i>Columba palumbus</i>	Wood Pigeon

## APPENDIX C: CRITERIA FOR ECOLOGICAL EVALUATION FROM:

*Guidelines for assessment of Ecological Impacts of National Road Schemes (NRA, 2009)*

Criteria for Ecological Evaluation
<p><b>International Importance:</b></p> <ul style="list-style-type: none"><li>• 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.</li><li>• Proposed Special Protection Area (pSPA).</li><li>• Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).</li><li>• Features essential to maintaining the coherence of the Natura 2000 Network.<sup>8</sup></li><li>• Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.</li><li>• Resident or regularly occurring populations (assessed to be important at the national level)<sup>9</sup> of the following:<ul style="list-style-type: none"><li>○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and / or</li><li>○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.</li></ul></li><li>• Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).</li><li>• World Heritage Site (Convention for the Protection of World Cultural &amp; Natural Heritage, 1972).</li><li>• Biosphere Reserve (UNESCO Man &amp; The Biosphere Programme).</li><li>• Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).</li><li>• Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).</li><li>• Biogenetic Reserve under the Council of Europe.</li><li>• European Diploma Site under the Council of Europe.</li><li>• Salmonid water designated pursuant to the European Communities (Quality of Salmonid</li></ul>

<sup>8</sup> See Articles 3 and 10 of the Habitats Directive.

<sup>9</sup> It is suggested that, in general, 1% of the national population of such species qualifies as an internationally important population. However, a smaller population may qualify as internationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

Criteria for Ecological Evaluation
Waters) Regulations, 1988, (S.I. No. 293 of 1988). <sup>10</sup>
<p><b>National Importance:</b></p> <ul style="list-style-type: none"> <li>• Site designated or proposed as a Natural Heritage Area (NHA).</li> <li>• Statutory Nature Reserve.</li> <li>• Refuge for Fauna and Flora protected under the Wildlife Acts.</li> <li>• National Park.</li> <li>• Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.</li> <li>• Resident or regularly occurring populations (assessed to be important at the national level)<sup>11</sup> of the following: <ul style="list-style-type: none"> <li>○ Species protected under the Wildlife Acts; and/or</li> <li>○ Species listed on the relevant Red Data list.</li> </ul> </li> <li>• Site containing 'viable areas'<sup>12</sup> of the habitat types listed in Annex I of the Habitats Directive.</li> </ul>
<p><b>County Importance:</b></p> <ul style="list-style-type: none"> <li>• Area of Special Amenity.<sup>13</sup></li> <li>• Area subject to a Tree Preservation Order.</li> <li>• Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>• Resident or regularly occurring populations (assessed to be important at the County level)<sup>14</sup> of the following: <ul style="list-style-type: none"> <li>○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>○ Species of animal and plants listed in Annex II and/or IV of the Habitats</li> </ul> </li> </ul>

<sup>10</sup> Note that such waters are designated based on these waters' capabilities of supporting salmon (*Salmo salar*), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*).

<sup>11</sup> It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

<sup>12</sup> A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

<sup>13</sup> It should be noted that whilst areas such as Areas of Special Amenity, areas subject to a Tree Preservation Order and Areas of High Amenity are often designated on the basis of their ecological value, they may also be designated for other reasons, such as their amenity or recreational value. Therefore, it should not be automatically assumed that such sites are of County importance from an ecological perspective.

<sup>14</sup> It is suggested that, in general, 1% of the County population of such species qualifies as a County important population. However, a smaller population may qualify as County importance where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

### Criteria for Ecological Evaluation

#### Directive;

- Species protected under the Wildlife Acts; and/or
- Species listed on the relevant Red Data list.
- Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
- County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP) if this has been prepared.
- Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
- Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

#### Local Importance (higher value):

- Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
- Resident or regularly occurring populations (assessed to be important at the Local level)<sup>15</sup> of the following:
  - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
  - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
  - Species protected under the Wildlife Acts; and/or
  - Species listed on the relevant Red Data list.
- Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;
- Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

#### Local Importance (lower value):

<sup>15</sup> It is suggested that, in general, 1% of the local population of such species qualifies as a locally important population. However, a smaller population may qualify as locally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.



**Criteria for Ecological Evaluation**

- Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;
- Sites or features containing non-native species that are of some importance in maintaining habitat links.

## APPENDIX D: HEDGEROW EVALUATION CRITERIA

The hedgerow evaluation criteria shown in table below have been adapted from various sources, including the 'Ecological criteria for evaluation of hedgerows' (NRA guidance), UKBAP priority habitat description and the Hedgerow Regulations 1997 (England and Wales). This method was agreed with Kildare County Council for the purpose of this study.

A hedgerow is defined as any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less than 20m wide. Any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is herbaceous vegetation within 2m of the centre of the hedgerow.

For each hedgerow an assessment is made of the 14 features listed in the table below. The hedgerow is then valued according to the category for which it contains the most features. Mature treelines (or very overgrown hedgerows) were separately recorded as such and these are considered to be of high value.

Hedgerow ecological evaluation criteria			
Feature	High value (County Importance)	Moderate value (Local Importance -- higher value)	Low value (Local Importance -- lower value)
1. Average shrub canopy height (excluding treelines)	> 5m	2-5m	<2m
2. Average width at ground level	>4m	2-4m	<2m
3. Ground cover	Dense	Patchy	Little or none
4. Mature standard trees per 50m length	> 5	1-5	None
5. Gaps per 50m length	< 10%	10-30%	>30%
6. Connection to other hedges	>4	2-3	<2
7. Dominant tree and shrub species	Mainly native or naturalised* species	Mixed native or naturalised species and non-native species	Mainly non-native species
8. Hedge acting as a wildlife corridor linking adjacent semi-natural habitats that would otherwise be isolated	Yes	Yes	No
9. Diversity of tree or shrub species per 50m length	>7	4-7	<3
10. Ground flora	Typical diverse woodland flora present	Some woodland ground flora present	No woodland ground flora present
11. Epiphytic flora (e.g. bryophytes & lichens)	Diverse epiphytic flora present	Some epiphytic flora present	No epiphytic flora
12. Associated stream or drain	With permanent water	With seasonal water only	No
13. Associated hedge bank height	>1m in height	0.5-1m	None
14. Age	Veteran hedge (approx. >50 yrs) with high landscape value	Mature hedge (approx. 10-50 yrs) with some landscape value	Recent hedge (approx. <10yrs) with little landscape value
<b>Total</b>	<b>/14</b>	<b>/14</b>	<b>/14</b>

## **APPENDIX E: HABITAT AND GREEN INFRASTRUCTURE MAPS**

## **APPENDIX F: POLICY INFORMATION AND SITE SPECIFIC TARGET NOTES**

The Green Infrastructure policies that are being drawn up by Kildare County Council (KCC), for Monasterevin town, have been largely based on discussions following this study of the town's habitat categories, green infrastructure areas and the location of notable ecological features. This information was used to inform draft policies and objectives in the Monasterevin Local Area Plan, and can be seen below. In addition, a number of site specific target notes have been outlined to assist the council when dealing with future planning applications in recognition of the ecological value noted in certain lands zoned for future development. These are discussed further below, also.

### **Key Green Infrastructure Areas identified in Monasterevin:**

Following a series of communication with the Council they have proposed the following policies for Green Infrastructure within Monasterevin Town.

#### **Green Infrastructure**

In addition to the sites designated under EU legislation substantial areas of high biodiversity value and habitat connectivity are found in Monasterevin. Habitat and landscape features have an important role to play as ecological corridors as they allow for the movement of species, and help to sustain the habitats, ecological processes and functions necessary to enhance and maintain biodiversity. It is important that these areas of green infrastructure are conserved and appropriately managed to encourage wildlife and species diversity.

Green Infrastructure can be defined as a strategically planned and managed network featuring areas with high quality biodiversity (uplands, wetlands, peat lands, rivers and coast), farmed and wooded lands, and other green spaces that conserve ecosystem values and provide essential services to society. This green network provides homes for an array of wildlife, trees and wildflowers, bryophytes and lichens. It also provides a wide range of benefits for the humans that live and work in and near them, including opportunities for recreation and relaxation, protection of soil and water quality, flood regulation, carbon sequestration and sustainable production of food and fuel.

Green Infrastructure networks are made up of core areas of high biodiversity value connected by corridors or stepping stones. Corridors are more or less linear avenues of habitats that link larger areas of habitats and allow species such as mammals, birds, invertebrates and plants to move among them. Examples of corridors could be hedgerows linking areas of woodland or rivers and riverside habitats connecting larger areas of wetlands or natural grasslands. Stepping stones are more isolated habitat patches located in built-up areas or intensive farmland that allow animals and plants to jump between core habitat areas. Stepping stones include small wetlands or ponds in farmland, grasslands that have developed on abandoned quarries, or even urban parks. The importance of corridors and stepping stones is that they reduce ecological fragmentation in the landscape, increasing connectivity among habitats and give plants and animals' greater access to living space and other resources.

Under Article 10 of the Habitats Directive planning and development policies must endeavour to conserve and manage sustainably the corridors and stepping stone habitat features found in an area. In recognition of this the Kildare County Development Plan (2011-2017) proposes actions to address biodiversity in County Kildare and to prepare a plan for its management at a local level.

The following sections describe some of the different Green Infrastructure areas identified in Monasterevin.

These key habitats adjoin additional open space, gardens, agricultural lands and woodland (including Moore Abbey Woods). They are interconnected by stretches of valuable hedgerow, scrub and wooded habitats. Descriptions of some of the habitats found in Monasterevin are provided below:

#### The River Barrow and the Grand Canal

The River Barrow, designated Special Area of Conservation, and the Grand Canal, proposed Natural Heritage Area, are two significant ecological features in the town. The rivers main channel is edged by open space, gardens, agricultural lands and woodland (including Moore Abbey Woods) as it passes through the town. The Grand Canal is edged by two paths and amenity grassland.

#### Moore Abbey Woodlands

The mature long established mixed broadleaved woodland associated with Moore Abbey woodlands supports a variety of broadleaf and conifer trees, mainly beech, ash, oak, Norway spruce and Douglas fir. The importance of these habitats within this green infrastructure network lies in their potential cover for fauna added to their roosting and nesting potential for birds and bats. The proximity of these habitats to the River Barrow and Grand Canal further enhances their biodiversity potential.

#### Improved Grassland

Surrounding the development boundary of Monasterevin and within the boundary are areas of improved grassland which are used as a feed source for livestock. These areas are of limited ecological value. Their value lies in the surrounding hedgerows.

#### Semi Natural Grassland

These areas consist of unmanaged areas including dry meadows and grassy verges along roadsides. These areas tend to support coarse grasses which in turn can support various species of butterfly and other invertebrates. Areas of semi natural grassland in addition to wet grassland have been identified throughout the town. These habitats are not common in Monasterevin and provide a greater diversity of plants and invertebrates than the more improved grasslands.

#### Open Space, Amenity Grassland and Gardens

These areas are of limited ecological value however they facilitate recreational and sporting activities that enhance physical and mental well-being. In Monasterevin the areas include amenity grasslands, grasslands associated with larger public and private open spaces that are found in housing estates, detached dwellings and institutional grounds. These areas (such as Riverside Park) can act as a stepping stones for wildlife to aid species when expanding their range.



## Ecological Corridors

These areas comprise scrub and grassland habitats, many of which are bordered by valuable hedgerows and mature tree lined networks. These provide corridors for wildlife into and out of ecologically important sites, or example woodland habitats and those adjoining or providing linkages with Moore Abbey woodlands. These habitats are also ecologically valuable in their own right and act as important breeding, foraging and resting sites for a range of species.

## Green Infrastructure – Policies

It is the policy of the Council:

**GI 1:** To protect the Green Infrastructure of Monasterevin (Refer to Map 6) and to maintain existing ecological linkages with the surrounding countryside, with designated sites within the town and with other significant habitats within the town boundary.

**GI 2:** To conserve and protect the Green infrastructure, all planning applications on greenfield sites must:

- (a) Have regard to the Site Specific Target Notes and detailed Habitat Mapping carried out for Monasterevin set out in the supplementary report on Green infrastructure which accompanies this plan.
- (b) Identify all ecological habitats and corridors, which are present on the proposed development lands (including hedgerows and masonry stonewalls) that are likely to be affected by the development proposal.
- (c) Identify any losses to these habitats and corridors, which would result if the development proceeds.
- (d) Show how such losses would be fully offset through the replacement of the relevant habitats with similar native species or by enhancing these habitats (preferably prior to any habitat loss).
- (e) Include a landscaping and habitat management plan for the proposed development with details of how any green infrastructure proposed as part of the development (e.g. green open spaces, hedgerows, tree lines, etc.) contribute positively to the development and protection of the overall green infrastructure assets of Monasterevin as identified on Map 6 and how it protects and enhances linkages to the wider natural landscape features.

**GI 3:** To identify, protect, conserve, and enhance, wherever possible, wildlife habitats and species of local importance, not otherwise protected by legislation. Such habitats may include woodland, river, grassland areas and field boundaries (hedgerows, stone walls and ditches). Such features form part of a network of habitats and corridors, which allow wildlife to exist and flourish. Once a locally important habitat has been identified it shall be surveyed to establish its significance and a site-specific conservation plan prepared to establish development guidelines for the area.

**GI 4:** To seek the protection of the following trees and groups of trees of special amenity value at the following locations;

- Within Moore Abbey Demesne
- Drogheda Street
- Along the River Barrow
- Around Togher House

- Around the Parochial House
- In the grounds of Monasterevin Convent Primary School, Drogheda Street
- Two trees at intersection of Whelan and Drogheda Streets
- Two trees outside Tyna Knitware, Whelan Row
- Open space outside the new cemetery
- Along the front of the Glanbia site
- In the grounds of 'The Hulk'
- The row of large mature beech trees in the grounds of 'Beech Lodge', Gorteenooona, Nurney Road.

GI 5: To prohibit development where it is likely that damage would be caused either to trees protected by a Tree Preservation Order or, to those which have a particular local amenity or nature conservation value. Development that requires the felling of mature trees of amenity value, conservation value or special interest notwithstanding the fact that they may not be listed in this plan, will be discouraged.

GI 6: To seek the provision of links between larger areas of green infrastructure (particularly areas of public open space) where appropriate.

GI 7: To ensure biodiversity conservation and /or enhancement measures, as appropriate, are included in all proposals for new development. Particular notice should be given to European Protected Species such as bats, otters, kingfisher and other protected species.

GI 8: To ensure that green infrastructure provision and management does not lead to the spread of invasive species and to encourage the early treatment of such species by landowners where possible to avoid their further spread.

GI 9: To ensure all planting within developments gives preference to the planting of native species where possible and that alien and invasive species are avoided wherever possible on planting specifications

GI 10: To ensure old stone walls are protected where appropriate and that the contribution they make to green infrastructure is protected.

GI 11: To support the enhancement and correct management of semi natural grasslands within new developments and existing amenity grassland areas.

GI 12: To ensure that valuable hedgerows, identified on Map 6, and the linkages that they provide to larger areas of green infrastructure and the wider countryside, are retained where appropriate and integrated into the design of new developments.

GI 13: To encourage the development and appropriate management of small wooded areas within new developments.

GI 14: To seek the creation of new wetlands (e.g. swales or constructed wetland basins) and/or enhancement of existing wetland habitat (particularly within the floodplain of the River Barrow) through the provision for Sustainable Urban Drainage Systems (SuDS) and Integrated Constructed Wetlands (ICW) where appropriate.

GI 15: To seek to protect the views and prospects identified on map 5 and to ensure that all development in the proximity of the River Barrow and Grand Canal do not detract from the views and prospects along these waterways.

GI 16: To identify the primary Green Infrastructure areas across the town which would most benefit from reinforcing and strengthening their biodiversity value.

### **Green Infrastructure- Objectives**

It is an objective of the Council:

GIO 1: To require all new developments to contribute to the protection and enhancement of existing green infrastructure assets, as identified through the provision of new green infrastructure as an integral part of any planning application.

GIO 2: To ensure that all appropriate surveys and ecological assessments have been carried out, where deemed necessary prior to submission of a planning application. Particular attention should be given to the requirement for Appropriate Assessment Screening where necessary and seasonally-dependent ecological surveys such as bat surveys.

***Note: These Policies and Objectives were drawn up for the Draft LAP for Monasterevin and the most current draft should be referred to in order to ensure that the most up to date information is being used.***

### **Site Specific Target Notes**

Subsequent to further communication with the Council the following site specific target notes were suggested for areas zoned for development within Monasterevin Town, and other notable sites. ***Note: the most up to date draft of the Monasterevin Local Area Plan should be referred to when referring to the recommendations below.***

It is the policy of the Council:

To ensure that any planning application or pre planning consultation has regard to the habitat description and recommendations set out in the site specific target notes for Green Infrastructure set out in Table below:

Zoning Reference	Land Use Zoning	Zoning Objective	Site Specific Green Infrastructure Target Notes
B1	Existing Residential/Infill	<p><b>Specific Objective B 1</b>  <b>Togher House &amp; Kilrue House</b></p> <p><b>B 1:</b> To acknowledge the existing residential use of the existing structures on these sites, and to seek to protect the amenity of the protected structures and their curtilage, including the entrance, outbuildings, boundary, trees, views and prospects.</p> <p>This zoning principally covers existing residential areas and also provides for the protection of the amenity of the overall sites. The primary aims of this zoning objective is that the curtilage of both Togher House and Kilrue House shall be protected from the pressure of additional residential development</p>	<p><b>Description of habitat</b>  Mature unmanaged mixed woodland here; good wildlife habitat. Suitable for breeding birds, bats etc. Disused building/house with potential for bat species to roost here.</p> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• Conserve connectivity where possible.</li> <li>• Retain valuable bio-diverse habitat and good green infrastructure connecting into the railway line linear corridor.</li> </ul>
C1	New Residential	183 units granted (Committed) on c.7.4 ha	<p><b>Description of habitat</b>  Dry meadows grassy verges and recolonizing bare ground with high value hedgerows.</p> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• Maintain hedgerows or replace where removed.</li> </ul>
C2	New Residential	To provide for new residential areas. This zoning provides for new residential development areas and for associated local shopping and other services incidental to new residential development.	<p><b>Description of habitat</b>  The habitat comprises re-colonising bare ground with valuable tree line boundaries and moderate value hedgerows on site</p> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• Maintain tree line boundaries and hedgerows on site. Replace these if removing.</li> <li>•</li> </ul>

<b>C3</b>	<b>New Residential</b>	36 units granted (Committed) on c. 1.9ha	<p><b>Description of habitat</b> Improved grassland (Low ecological value) with moderate value hedgerows.</p> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• Retain hedgerows or replace where removing.</li> </ul>
<b>C4</b>	<b>New Residential</b>	To provide for new residential areas. This zoning provides for new residential development areas and for associated local shopping and other services incidental to new residential development.	<p><b>Description of habitat</b> This habitat is of low ecological value.</p> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• Enhance green infrastructure where possible e.g. planning of hedgerows, re-seeding of grasslands with higher species richness</li> </ul>
<b>C5</b>	<b>New Residential</b>	To provide for new residential areas. This zoning provides for new residential development areas and for associated local shopping and other services incidental to new residential development.	<p><b>Description of habitat</b> Dry meadows comprising grassy verges and spoil and bare ground with moderate value hedgerows</p> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• Retain moderate value hedgerow on site and replace if removing.</li> <li>• Maintain connectivity along railway line habitats.</li> </ul>
<b>C7</b>	<b>New Residential</b>	<p><b>Specific Objective C.7</b> <b>To provide for new low density residential serviced sites</b></p> <p><b>C.7:</b> This zoning shall provide for new residential serviced sites only at a maximum density of 10-15 units per hectare. Serviced residential sites should be provided to people wishing to build their own house to their own design and layout. Full planning permission should be sought by the developer/landowner for the site layout and development works and outline permission for each individual house. Each individual applicant should then submit individual</p>	<p><b>Description of habitat</b> Amenity grassland (lower value) with moderate value hedgerows</p> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• Retain hedgerows or replace where removing.</li> </ul>



	design proposals and apply for full planning permission/approval consequent to outline permission on a serviced site.	
<b>C6 and C8</b>	<b>New Residential</b> 184 units granted (Committed) on c. 7.5ha	<b>Description of habitat</b> C6 - Dry meadows and grassy verges with moderate value hedgerows. <b>Recommendations</b> <ul style="list-style-type: none"> <li>Retain hedgerows or replace where removing.</li> </ul> <b>Description of habitat</b> C8 – Spoil and bare ground & dry calcareous and neutral grassland (GS1) with high and moderate value hedgerows. <b>Recommendations</b> <ul style="list-style-type: none"> <li>Incorporate GS1 grassland into schemes where possible, if removing re-use soil in grassland elsewhere on site to retain biodiversity.</li> <li>Retain hedgerows or replace where removing.</li> </ul>
<b>C9</b>	<b>New Residential</b> To provide for new residential areas. This zoning provides for new residential development areas and for associated local shopping and other services incidental to new residential development.	<b>Description of habitat</b> Woodland and tree lines. The woodland provides good connectivity along the railway line. <b>Recommendations</b> <ul style="list-style-type: none"> <li>Avoid removal of woodland.</li> <li>Tree lines should be maintained or replaced if being removed.</li> </ul>
<b>E</b>	<b>Community and Educational</b> To protect and provide for the development of community and educational facilities. This zoning objective provides for the development of local civic, religious, community, educational, recreational and cultural facilities along with development associated with tourism.	<b>Description of habitat</b> High value grassland (GS4) and high value woodlands <b>Recommendations</b> <ul style="list-style-type: none"> <li>Detailed ecological surveys should be conducted at pre planning stage in order to inform any proposed</li> </ul>

	<p><b>Specific Objective E1</b> <b>Moore Abbey Demesne</b></p> <p><b>E1:</b> A specific objective is identified for Moore Abbey Demesne. This objective provides for the development of recreation, amenity and sports facilities to be facilitated in a campus type development to meet the needs of a number of sports clubs operating within the town. Any development shall be easily accessible with a focus on pedestrian and cyclist connections with the school, town centre and residential areas. The design, layout, access arrangements and landscaping of any development within the demesne shall be sympathetic and have regard to the green infrastructure network and historic demesne landscape and curtilage of Moore Abbey.</p> <p><b>Specific Objective E 2:</b> <b>E 2:</b> To provide for a new secondary school campus on the site identified within Moore Abbey Demesne.</p> <ul style="list-style-type: none"> <li>- Pedestrian and Cyclist connections with the town centre and residential/amenity areas.</li> <li>- Design, layout, access arrangements and landscaping of any development within the demesne shall be sympathetic and have regard to the historic landscape, green infrastructure within and adjoining the curtilage of the Demesne.</li> </ul>	<p>development.</p> <ul style="list-style-type: none"> <li>• Avoid the development of hardstand or buildings in these locations.</li> </ul> <p><b>Description of habitat</b> <b>Specific Objectives E1 and E2</b> Large area of mature mixed woodland in Moore Abbey Demesne. Potential for wildlife such as badger, bats etc. Drainage ditches and old stone walls occur around the demesne that provides other habitats for wildlife. Areas of diverse wet grassland with potential for conservation management. Old mature yew tree line.</p> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• Detailed ecological surveys should be conducted at pre planning stage in order to inform any proposed development.</li> <li>• Yew tree line should be conserved.</li> <li>• Avoid the development of hardstand or buildings in these locations.</li> </ul>	<p>development.</p> <ul style="list-style-type: none"> <li>• Avoid the development of hardstand or buildings in these locations.</li> </ul> <p><b>Description of habitat</b> <b>Specific Objectives E1 and E2</b> Large area of mature mixed woodland in Moore Abbey Demesne. Potential for wildlife such as badger, bats etc. Drainage ditches and old stone walls occur around the demesne that provides other habitats for wildlife. Areas of diverse wet grassland with potential for conservation management. Old mature yew tree line.</p> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• Detailed ecological surveys should be conducted at pre planning stage in order to inform any proposed development.</li> <li>• Yew tree line should be conserved.</li> <li>• Avoid the development of hardstand or buildings in these locations.</li> </ul>
<p><b>H</b></p>	<p><b>Industrial and Warehousing</b></p>	<p><b>To provide for office, warehousing and industrial development.</b> This zoning provides for office, warehousing and industrial development excluding retail warehousing. The office content of any development should not exceed 20% of the total floor area and be ancillary to the industrial or warehouse use. Other uses, ancillary</p>	<p><b>Description of habitat</b> Mosaic of habitats. Improved grassland habitat, amenity grassland and arable crops (lower ecological value). Large area of wet grassland, scrub, treelines and moderate to the high value hedgerows (habitat of ecological value).</p>

	<p>or similar to industry and warehousing will be considered on the merits of each planning application and may be acceptable in this zone.</p>	<p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• All development at this site should aim to conserve and enhance these habitats where possible.</li> <li>• Removal of ecological habitats of value should be balanced by replacement planting elsewhere of equal or better quality.</li> <li>• Retain moderate and high value hedgerows and drainage ditches and enhance where possible</li> </ul>
<p><b>D</b></p> <p><b>Neighbourhood Centre</b></p>	<p><b>To provide for neighbourhood centre and associated facilities appropriate to the area, while having regard to the natural heritage and visual amenity of the Grand Canal.</b></p> <p>The purpose of this zoning is mainly to provide for new neighbourhood centre to serve the needs of new residential areas. A mix of small scale retail, services, community and recreational development to serve the local population is permissible in this zone. Limited residential development sufficient to ensure the viable and satisfactory working of the neighbourhood centre may be considered in this zone.</p> <p>The neighbourhood centre are intended to serve the immediate needs of a localised catchment i.e. the local working, commuting and residential population and complement, rather than compete with similar retail uses within the established town centre. Recreation, amenity facilities (gym), childcare facilities (crèche), and a small convenience store are envisaged for this area.</p> <p>The threshold or floor area proposed for each neighbourhood centre will be assessed in relation to the nature and extent of retail</p>	<p><b>Description of habitat</b></p> <p>Dry meadows and grassy verges. Boundary of mixed broadleaved woodland runs along the railway line with strong habitat connectivity.</p> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• Habitat connectivity along the railway line should be maintained.</li> <li>• Areas of semi-improved and more species rich grassland should be encouraged where possible.</li> </ul>

	<p>provision in accordance with the current retail strategy, the intended catchment area for the neighbourhood centre and the impact that the proposal may have on the vitality and viability of the established town centre.</p>	
<p><b>Q</b></p> <p><b>Enterprise and Employment</b></p>	<p><b>To facilitate opportunities for employment and enterprise uses, manufacturing, research and development, light industry, employment and enterprise related uses within a high-quality campus/park type development.</b></p> <p>It is intended that these lands will be used for enterprise and employment uses in a high quality well designed environment.</p> <p>Any development proposal facing the Dublin Road shall be of high quality architectural design and landscaping having regard to the location of the sites at gateway locations to Monasterevin, particularly with respect to those lands on the eastern edge of the town along the R445. Landscaping proposals shall include substantial mature planting be in place prior to the occupation of any units on site. All parking, service and delivery areas shall be sensitively and appropriately located to the rear of the buildings.</p> <p>Road layouts in all development proposals on lands zoned Q 'Enterprise &amp; Employment' and H 'Industrial and Warehousing' shall be designed so as to facilitate access to adjacent lands.</p> <p>Heavy industrial proposals more suitable to Industrial and Warehousing zoned land and retail proposals more suitable to Town Centre zoned land will not normally be permitted in the Enterprise and Employment zone.</p>	<p><b>Description of habitat</b></p> <p>Improved grassland habitat but low intensity management with moderate and high value hedgerows and drainage ditches. All these features these all provide ecologically valuable habitats.</p> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>• Retain moderate and high value hedgerows and drainage ditches and enhance where possible.</li> <li>• <b>Landscaping proposals should incorporate and enhance these habitats where possible.</b></li> </ul>
<p><b>T</b></p> <p><b>General Development (The Hulk)</b></p>	<p><b>To provide for General Development.</b></p> <p>This zoning allows for a mix of uses. In this zone it is important to</p>	<p><b>Description of habitat</b></p> <p>Improved grassland but low intensity management. Badger sett on site; Very mature oak trees; Derelict Building with</p>

<p>avoid abrupt transitions in scale and use at the boundary of adjoining land use zones and also to avoid developments that would be detrimental to the visual amenity and architectural/historical significant of the structure and its curtilage.</p> <p>It is envisaged that The Hulk and surrounding area would offer a mix of attractions, arts and craft studios, workshops, local artisan food/beverage producing and education and leisure amenities, enhanced river walkways and connections to the town centre, with a limited level of residential development. Any development of the site should have spin-off benefits for Monasterevin in terms of increased visitor numbers, local employment opportunities and spin-off trade into the community. The Council will encourage proposals to establish a unique, vibrant cultural amenity, commercial and creative hub for Monasterevin while having regard to the history, unique character and architectural heritage of The Hulk and its curtilage.</p>	<p>bat potential on site; Connectivity with Moore Abbey Estate, large green infrastructure; unmanaged grasslands potentially suitable for conservation management.</p> <p>Recommendations</p> <ul style="list-style-type: none"> <li>• This area has scope for habitat enhancement.</li> <li>• Due to its proximity to the River Nore and River Barrow cSAC this habitat should be retained and the site should be developed in an ecologically sensitive manner. Appropriate measures shall be taken to avoid impacts on the c SAC such as: <ul style="list-style-type: none"> <li>- Set back of development from the River Barrow,</li> <li>- Pollution Control</li> <li>- Appropriate Assessment</li> <li>- Incorporate and enhance existing biodiversity.</li> </ul> </li> <li>• Detailed ecological assessments should be conducted particularly to assess the potential for bat roosts in the derelict building and potentially the need for a buffer zone from the River Barrow cSAC to protect it from site runoff.</li> <li>• All development at this site should aim to incorporate and enhance existing biodiversity.</li> <li>• A detailed habitat management plan should be drafted for this site.</li> </ul>
<p><b>U</b></p> <p><b>Public Utilities &amp; Services</b></p>	<p><b>To provide for and protect public utilities and infrastructure.</b> This zoning objective provides for the development and protection of general public utilities.</p>

**OTHER TNs to protect where possible:**









- Grand Canal – Wildlife corridor with good areas of species rich grasslands on verges. Habitat is suitable for a number of species including otter, breeding birds, bats etc.
- Area not on zoning map beside junction 14 of M7 has species rich wet grassland, valuable hedgerows and wet ditches. This area provides suitable habitats for a variety of species including breeding birds, bats, otter (foraging) and badger, however this is not linked to the main Monasterevin settlement.

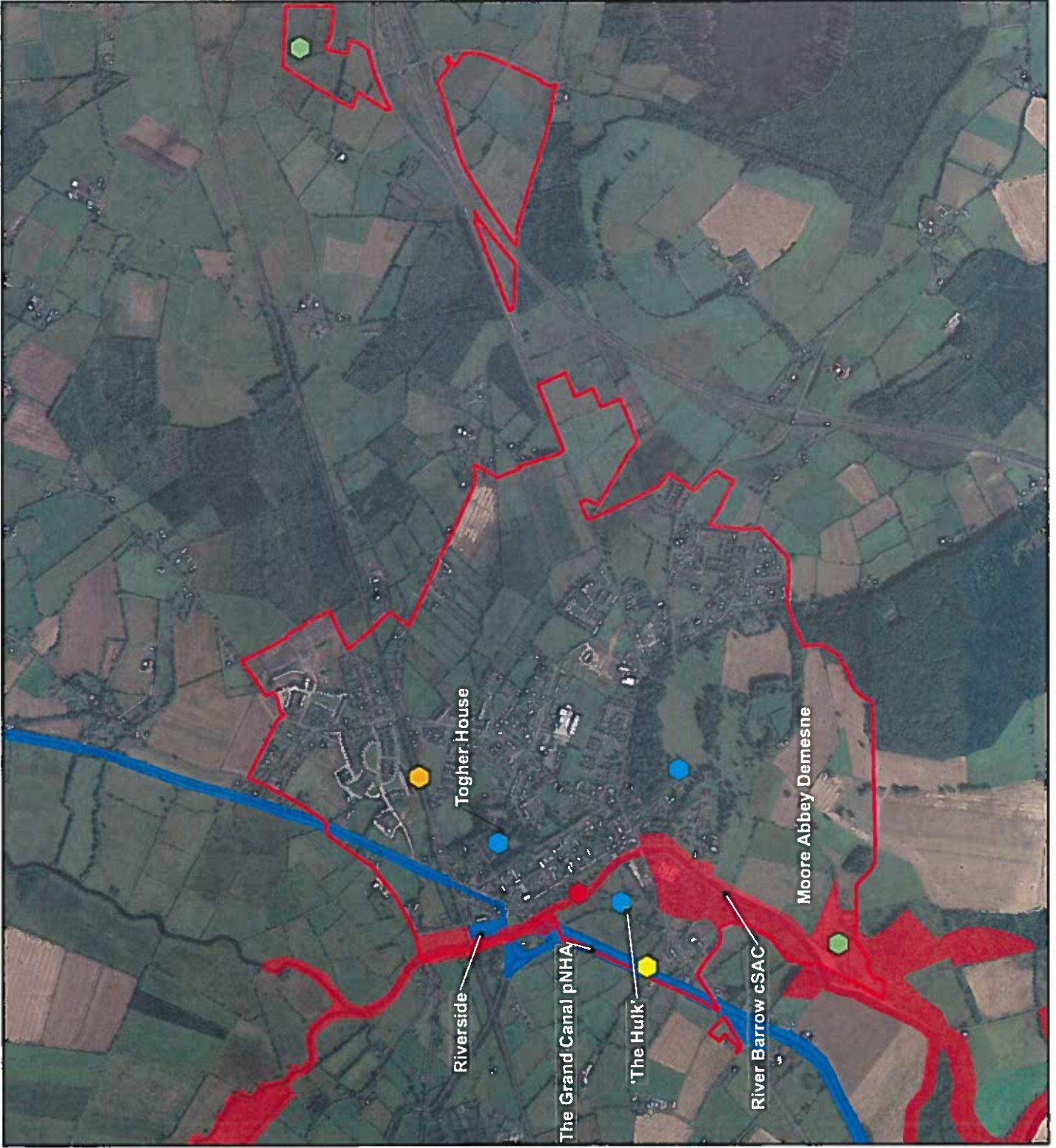




**Legend**

**Target Notes**

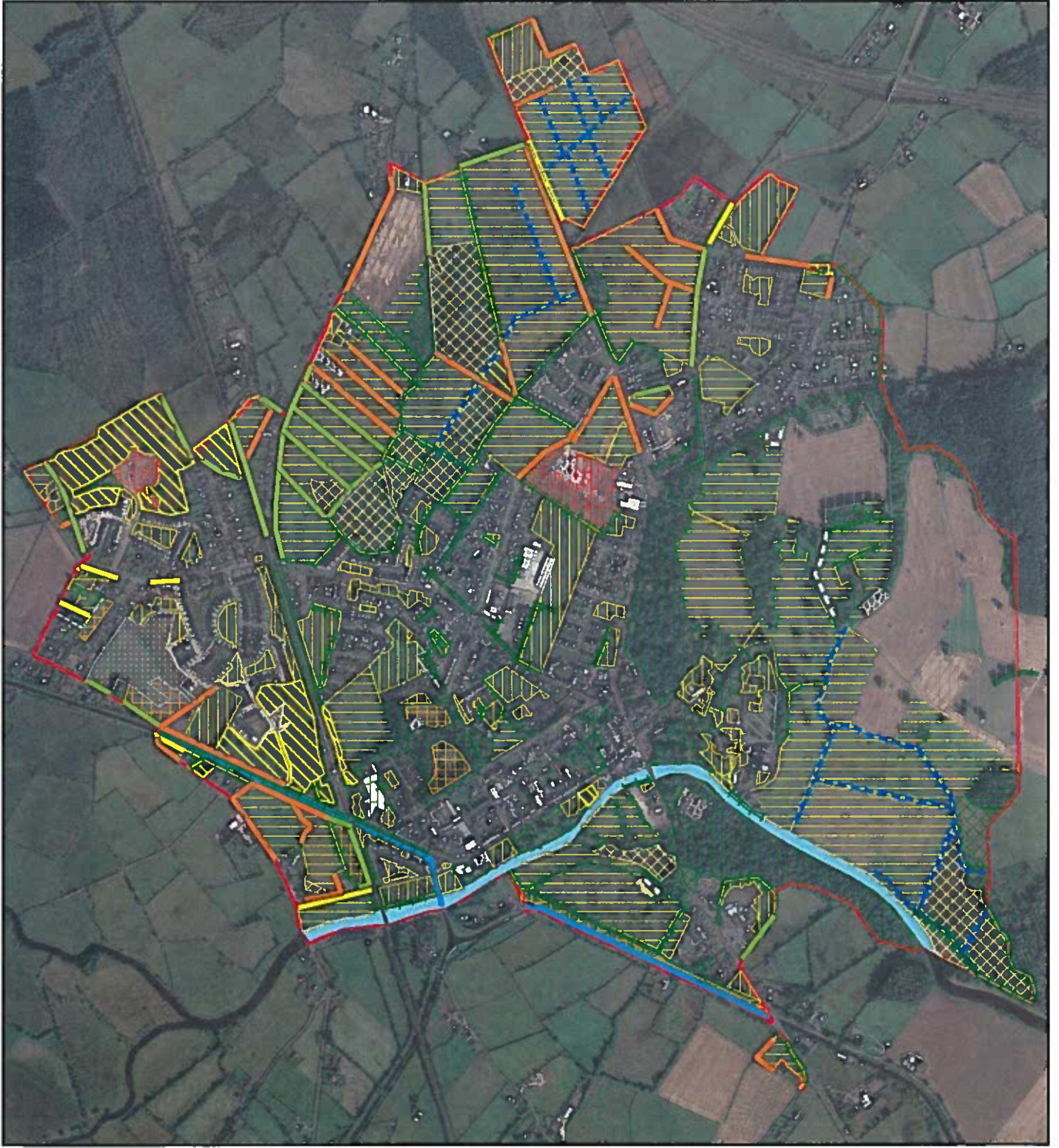
-  Wildlife corridor (WC)
-  Potential for Species Rich Grassland (GS4)
-  WC & Bat roost potential building
-  WC & Potential for Annex | Habitat (GS1 grassland)
-  WC & Potential for Annex | Habitat (cSAC)
-  Survey Area
-  River Barrow and River Nore cSAC
-  Grand Canal pNHA



Drawing No:	140090/01/A		
Project Title:	Target Notes Monasterevin		
Client:	Kildare County Council and Heritage Council		
Project No:	140090	Scale:	1:15,000 @ A4
Drawn:	RN	Approved:	PS
		Rev No:	01/A
		Date:	09/01/2015







**Legend**

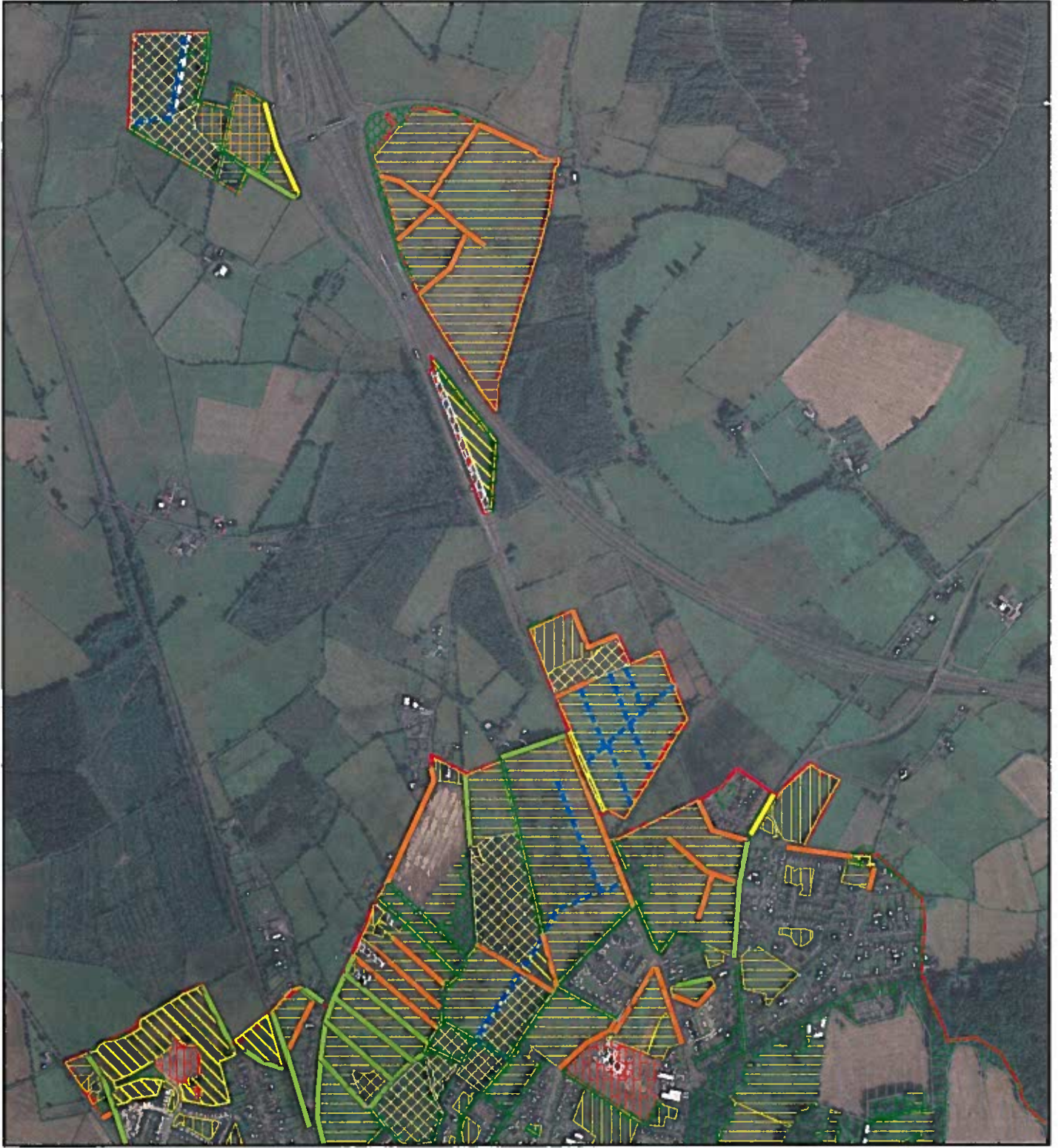
**Fossitt Title**

- Canals (FW3)
- Drainage Ditches (FW4)
- Earth Bank (BL2)
- Hedgerow (WL1) High Value
- Hedgerow (WL1) Moderate Value
- Hedgerow (WL1) Low Value
- Treeline (WL2)
- (Mixed) Broadleaved Woodland (WD1)
- (Mixed) Conifer Woodland (WD3)
- Amenity Grassland (Improved) (GA2)
- Arable Crops (BC1)
- Buildings and Artificial Surfaces (BL3)
- Depositing/Lowland Rivers (FW2)
- Dry Calcareous and Neutral Grassland (GS1)
- Dry Meadows and Grassy Verges (GS2)
- Flower Beds and Borders (BC4)
- Immature Woodland (WS2)
- Improved Grassland (GA1)
- Oak-ash-hazel Woodland (WN2)
- Ornamental/Non-Native Shrub (WS3)
- Recolonising Bare Ground (ED3)
- Scattered Trees and Parkland (WD5)
- Scrub (WS1)
- Spoil and Bare Ground (ED2)
- Wet Grassland (GS4)
- Survey Area

Drawing No: 140090/01/A	
Project Title: <b>Habitats, Monsterevin - 1 of 2</b>	
Client: Kildare County Council and Heritage Council	
Project No: 140090	Scale: 1:15,000 @ A4
Drawn: RN	Approved: PS
Rev. No: 01/A	Date: 07/01/2015







**Legend**

**Fossitt Title**

- Canals (FW3)
- Drainage Ditches (FW4)
- Earth Bank (BL2)
- Hedgerow (WL 1) High Value
- Hedgerow (WL 1) Moderate Value
- Hedgerow (WL 1) Low Value
- Treeline (WL2)
- (Mixed) Broadleaved Woodland (WD1)
- (Mixed) Conifer Woodland (WD3)
- Amenity Grassland (Improved) (GA2)
- Arable Crops (BC1)
- Buildings and Artificial Surfaces (BL3)
- Depositing/Lowland Rivers (FW2)
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- Recolonising Bare Ground (ED3)
- Scattered Trees and Parkland (WD5)
- Scrub (WS1)
- Spoil and Bare Ground (ED2)
- Wet Grassland (GS4)
- Survey Area

Drawing No: 140090/01/A

Project Title: **Habitats, Monasterevin - 2 of 2**

Client: **Kildare County Council and Heritage Council**

Project No.: 140090 Scale: 1:15,000 @ A4

Drawn: RN	Approved: PS	Rev. No.: 01/A	Date: 07/03/2015
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