



# ECOLOGICAL ASSESSMENT OF THE GRAND CANAL MAIN LINE



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# Waterways Ireland

## Ecological Assessment Report

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# Waterways Ireland

## Ecological Assessment Report

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# 1. INTRODUCTION

## 1.1 Background

Roughan & O'Donovan Environmental were appointed by Waterways Ireland to undertake an Ecological Assessment of the Grand Canal Main Line in order to update current ecology records of the Site. The overall purpose of updating ecology records of the Grand Canal is to inform maintenance and capital projects, as necessary.

The Site, the Grand Canal Main Line, involves a 45km stretch of canal from Lock 20 near the County Offaly/ County Kildare border to Lock 9 near the M50 including the Waterways Ireland property boundary, as presented in Figure 1 (hereafter referred to “the Site”). The Site was divided into 30 sections, (hereafter referred to as “canal markers”), for surveying and reporting purposes. The Site comprises mainly the canal channel, the canal verge and adjoining towpath including the boundary; however certain areas included adjacent fields under the ownership of Waterways Ireland were included.

A full consultation, desk study and ecological survey were carried out to enhance the current knowledge of fauna, flora and habitats within the Site.

## 1.2 Report Content and Structure

This report contains a summary of the ecological survey of the Grand Canal Main Line including the findings of the desk study and ecological survey. The assessment reviews publicly available records on protected species within 2km of the Site and considers the potential for other protected species to be present or likely to use the Site. A comprehensive walkover survey of the entire Site was undertaken to record all habitats and species, identifying any protected habitats, higher plants, red listed vascular plants and species to inform an evaluation of their conservation status. The content and structure of the report includes:

- Chapter 2: Methodology – an outline of the desk study and field survey methods used;
- Chapter 3: Ecological Overview – a presentation of the main findings on designated areas, species and habitats;
- Chapter 4: Survey Results – the results of the field surveys for each of the 30 sections of the Grand Canal Main Line are provided by canal section;
- Chapter 5: Ecologically Sensitive Areas – a description of areas of high ecological value in the Site;
- Chapter 6: References; and,
- Appendix A: Habitat Maps

## 1.3 Objectives

The objectives of this assessment include:

- To map, classify and describe the habitats within the boundary of the Site using the Fossitt classification system (Heritage Council, 2011);
- To identify and evaluate the flora and fauna (including mammals and birds) present within each section of the Site according to the best practice Environmental Impact Assessment Guidelines (CIEEM, 2006) and to present objective, relevant, accurate, fair and impartial information pursuant to Guidelines for Ecological Report Writing (CIEEM, 2015);
- To identify Ecologically Sensitive Areas and any particularly important habitats or species within the Site (e.g. Protected or Priority Habitats and Red List species); and,
- To prepare a database of habitat maps, rare species, invasive species and ecological features of interest.

## 2. METHODOLOGY

### 2.1 Consultation and Desk Study

The purposes of the desk study were to review information available in the public domain and to obtain information held by statutory and non-statutory consultees. A 15km and 2km buffer zone for designated sites and protected species records respectively was considered to be sufficient for the desk study based on the size of the Site (approximately 45km in length and 0.8km in width at its widest point).

ArcView software using Ordnance Survey maps and NPWS shapefiles were used to identify the boundary of the Site in relation to Natura 2000 sites, i.e. Special Areas of Conservation (SAC) designated under the EC Habitats Directive (Council Directive 92/43/EEC) and Special Protection Areas (SPA) designated under the EC Birds Directive (Directive 2009/147 EC); and, other sites of national conservation importance, for instance, Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA). The location of the Site in relation to designated areas is shown in Figure 1 (page 10).

As part of the information gathering process, a desk study was carried out to identify recent and historical records of protected species within and adjacent to the Site. The desk study was conducted using the following sources:

- National Biodiversity Data Centre (NBDC Online Interactive Map);
- OSi vector mapping;
- OSi aerial photography;
- NPWS designated area shapefiles, conservation objectives, management plans and other data for designated areas in the vicinity;
- NPWS data on Annex I habitats, any other habitat data available and species of conservation interest;
- National Parks & Wildlife Service (2013) The Status of EU Protected Habitats and Species in Ireland. Volume 2 & 3: Article 17 Assessments. Department of Arts, Heritage and Gaeltacht.

During preparation of the desk study, the statutory consultee National Parks & Wildlife Service (NPWS) provided data on designations and species of nature conservation interest within the Site. Additionally, consultation with relevant bodies was undertaken to obtain records of species and information about the ecology of the area. The following bodies/individuals were contacted:

- National Parks & Wildlife Service (Ms. Ciara Flynn, Mr. Noel Bugler, Mr. Colm Malone, Mr. Roy Thompson and Mr. Jason Monaghan)
- Kildare County Council (Ms. Bridget Loughlin, Heritage Officer)
- Offaly County Council (Ms. Amanda Pedlow, Heritage Officer)
- Bat Conservation Ireland (Ms. Tina Aughney)
- Tree Council of Ireland (Mr. Brendan Fitzsimons and Ms. Kay Hartigan)
- BirdWatch Ireland (Ms. Olivia Crowe)
- Inland Fisheries Ireland (Mr. Paul McLoone and Ms. Tara Gallagher)

As with all desk studies, the data considered were only as good as the data supplied by the recorders and recording schemes. The recording schemes provide disclaimers in relation to the quality and quantity of the data they provide and these were considered when examining out-puts of the desk study.

## 2.2 Field Surveys

### 2.2.1 Habitats and Flora

A Habitat Survey was conducted on Site during August and September 2015 by suitably qualified ecological surveyors. The vegetation was described and mapped following the methods described in the Heritage Council Best Practice Guidance for Habitat Survey and Mapping (2011) using the Fossitt Classification system (Fossitt, 2000) and adhering to the Chartered Institute for Ecology and Environmental Management (CIEEM) best practice guidelines (CIEEM, 2006).

Survey sheets were prepared using 1:2000 scale Ordnance Survey maps and cross referenced with publicly available topographical maps and orthophotography. These maps were used in the field for assigning and mapping habitat types as part of the Fossitt habitat survey. The smallest habitat sizes typically mapped were c.20m<sup>2</sup>. A species list was compiled and the presence and location of natural features with potential to support protected species within each canal marker noted during the site walkover. A hand-held Garmin geographical positioning system (GPS) was used to take 10 figure grid reference readings at the relevant locations. The towpath along both sides of the canal was walked at a slow pace to accurately map all habitats patches to the highest resolution possible.

The habitat study was conducted using the following guides:

- Poland, J., & Clement, E. J. (2009). *Vegetative key to the British Flora*. John Poland; Botanical Society of the British Isles.
- Sterry, P., (2010). *Collins Complete Guide to Irish Wildlife*. London;
- Streeter, D., Hart-Davies, C., Hardcastle, A., Cole, F. and Harper, L. (2009). *Collins Flower Guide*. London;
- Fossitt, J. (2000). *A Guide to Habitats in Ireland*. The Heritage Council. Dublin.

### 2.2.2 Mammals

A review of satellite imagery during the desk study showed that habitats on Site could potentially support a wide range of protected mammals, notably Otter. Evidence of mammals was assessed along the towpath and upto and beyond the canal boundary during the field survey. Signs of mammals were recorded and mapped. In particular, signs of Otter within the Site were recorded including spraints, couches, holts, hairs on wire fences and possible trackways. Otter spraints and potential Otter resting places were recorded during the survey and their locations mapped using GPS.

Additionally, all fence lines, woodland, and scrub habitats were systematically surveyed for evidence of Badger in the form of latrines, trackways, snuffle holes, setts etc. The presence of bat droppings, insect wings and urine stains were investigated whilst holes, gaps, cracks and crevices in masonry walls, stone and brickwork that could provide potential access points for bats were given particular attention.

### 2.2.3 Birds

A bird survey was concomitantly carried out during the habitat survey in which the presence, location and abundance of bird species were recorded. A modified standard methodology for surveying wintering and breeding birds of open habitats was considered the most appropriate for the flat and linear canal environment (Brown & Shepherd, 1993). Standard survey techniques were amended to suit the restricted survey area along the waterway. At regular intervals, the surveyor would scan the area for species and also listen out for calls and songs. All records were annotated on a 1:10,000 scale map using British Trust of Ornithology (BTO) symbols and a note of the species activity. Due to seasonal constraints the bird survey determined presence/absence of species only rather than assigning any weighting to breeding status.

#### 2.2.4 Terrestrial & Aquatic Invertebrates

No specific targeted survey methods were used for terrestrial or aquatic invertebrates, however during the habitat survey, casual records of any invertebrate species detected were noted and where possible identified to the lowest possible taxonomical level.

#### 2.3 Survey Limitations

Standard survey methods were followed (Heritage Council, 2011) however, any biases or limitations associated with these methods could potentially affect the results collected. While every effort was made to provide a full assessment and comprehensive description of the site, it is unlikely that one survey can achieve full characterization due to temporal variation.

The Fossitt Habitat survey was conducted in August and September and would be considered an optimal time of year for habitat surveys. The optimum time of year for broad habitat surveys is considered to be between May and September. It is recognised that whenever a survey is carried out (within the defined season), it is a compromise, suitable for the vast majority of species, but possibly too early or too late for some species. This is certainly a consideration when assigning criterion on the ecological quality of dry neutral or calcareous grassland within the canal corridor and boundary. The flowering periods for many positive indicator and diagnostic Orchids species corresponding to Orchid-rich priority habitat [Annex listed habitat: 6210\*] had passed during the time of the survey. Subsequently there may have been reduced detectability of indicator species that finish flowering in June/July such as *Listera ovate*, *Neotinea maculate*, *Ophrys apifera*, *O. insectifera*, *Orchis morio*, *Plantanthera bifolia* and *P. chlorantha*.

The timing of the surveys likely restricted the detectability of certain terrestrial invertebrates of conservation interest, notably species with a short flight periods (e.g certain *Odonata*, such as Hairy Dragonfly *Brachytron pratense*; and, *Lepidoptera*: Marsh Fritillary *Euphydryas aurinia*, Small Blue *Cupido minimus*, Cryptic Wood White *Leptidea juvernica*).



### 3. ECOLOGICAL OVERVIEW

#### 3.1 Designated Sites

A review of all designated sites within a 15km radius of the Grand Canal Main Line Kildare to Dublin was undertaken to identify habitats and species of conservation importance within the wider area and to ensure that any designated features linked to these sites and that may have potential to occur within the Site were a material consideration during the survey.

Within 15km of the Grand Canal Main Line, there are:

- 10 Special Areas of Conservation (SACs)
- 4 Special Protected Area (SPA)
- 2 Natural Heritage Area (NHA)
- 24 proposed Natural Heritage Areas (pNHAs)

Fourteen Natura 2000 sites occur within 15km of the Site, namely Ballynafagh Bog SAC (Site Code: 000391), Ballynafagh Lake SAC (Site Code: 001387), Red Bog, Kildare SAC (Site Code: 000397), Wicklow Mountains SAC (Site Code: 002122), Wicklow Mountains SPA (Site Code: 004040), Moud's Bog SAC (Site Code: 02331), Pollardstown Fen SAC (Site Code: 000396), Glenasmole Valley SAC (Site Code: 001209), North Dublin Bay SAC (Site Code: 00206), South Dublin Bay SAC (Site Code: 000210), North Bull Island SPA (Site Code: 004006), South Dublin Bay and River Tolka SPA (Site Code: 004024), Rye Valley / Carton SAC (Site Code: 004024) and Poulaphouca Reservoir SPA (Site Code: 004063).

Two NHAs and 24 pNHAs (many pNHA overlap existing SAC designation boundaries) occur within 15km of the Grand Canal Main Line from Lock 20 to Lock 9. The majority of the Site is designated as the Grand Canal pNHA. NHAs are sites identified as high conservation value and considered important for the habitats present or which hold species of plants and animals whose habitat needs protection. Proposed NHAs are similiary sites of national conservation interest, however currently have no specific statutory protection (i.e. statutory instrument). All NHAs and pNHAs were published on a non-statutory basis in 1995. With the exception of the Grand Canal pNHA, the Liffey Bank above Athgarvan pNHA is the closest other pNHA to the Site (Figure 1). The designated sites within 15km of the Site and their qualifying interests are detailed below in Table 3.1.1.

**Table 3.1.1 Qualifying Interests of the Designated Sites within 15km of the Site**

Designated Area	Site Code	Main Features
Ballynafagh Bog SAC / pNHA	000391	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]
Ballynafagh Lake SAC / pNHA	001387	Alkaline fens [7230] <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016] <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]
Red Bog, Kildare SAC / pNHA	000397	Transition mires and quaking bogs [7140]
Wicklow Mountains SAC	002122	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130]

Designated Area	Site Code	Main Features
		<p>Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) [8110]</p> <p>Calcareous rocky slopes with chasmophytic vegetation [8210]</p> <p>Siliceous rocky slopes with chasmophytic vegetation [8220]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p>
Wicklow Mountains SPA	004040	<p>Merlin (<i>Falco columbarius</i>) [A098]</p> <p>Peregrine (<i>Falco peregrinus</i>) [A103]</p>
Poulaphouca Reservoir pNHA	000731	<p>Greylag Goose (<i>Anser anser</i>) [A043]</p> <p>Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]</p>
Poulaphouca Reservoir SPA	004063	<p>Greylag Goose (<i>Anser anser</i>) [A043]</p> <p>Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]</p>
Curragh (Kildare) pNHA	000392	Limestone Geology
Moud's Bog pNHA	000395	Raised Bog Habitat
Moud's Bog SAC	002331	<p>Active raised bogs [7110]</p> <p>Degraded raised bogs still capable of natural regeneration [7120]</p> <p>Depressions on peat substrates of the Rhynchosporion [7150]</p>
Pollardstown Fen SAC / pNHA	000396	<p>Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]</p> <p>Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p> <p>Alkaline fens [7230]</p> <p><i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]</p> <p><i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]</p> <p><i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016]</p>
Grand Canal pNHA	002104	<p>Habitat and species diversity</p> <p>Ecological corridor</p>
Donadea Wood pNHA	001391	Old woodland
Royal Canal pNHA	002103	Aquatic Flora and Fauna, Corridor value
Slade of Saggart and Crooksling Glen pNHA	000211	Wooded river valley and wetland system. Rare plant and invertebrate species.
Liffey Valley Meander Belt pNHA	000393	<p>Chironomid communities</p> <p>Ash-woods and marshy areas</p>
Black Castle Bog NHA	000570	Peatlands
Carbury Bog NHA	001388	Peatlands
Ballina Bog pNHA	000390	The condition of the vegetation and surface makes Ballina Bog of considerable scientific importance
Dodder Valley pNHA	000991	<p>Natural river bank vegetation</p> <p>Variety of bird species including kingfisher, little grebe and a breeding colony of sand martens</p>

Designated Area	Site Code	Main Features
Glenasmole Valley SAC / pNHA	001209	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Petrifying springs with tufa formation (Cratoneurion) [7220]
Lugmore Glen pNHA	001212	Yellow Archangel ( <i>Lamiastrum galeobdolon</i> ) Wooded glen
Fitzsimon's Wood pNHA	001753	Woodland
Liffey Valley pNHA	000128	Lowland depositing river valley with mixed broadleaved woodland and wet marsh. Rare and protected plant species present. Salmonid river.
Santry Demesne pNHA	000178	Broadleaved woodland, with a wide range of herbaceous plants
Dolphins, Dublin Docks pNHA	000201	Tern species
North Dublin Bay SAC / pNHA	000206	Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] <i>Petalophyllum ralfsii</i> (Petalwort) [1395]
South Dublin Bay SAC / pNHA	000210	Mudflats and sandflats not covered by seawater at low tide [1140]
Boosterstown Marsh pNHA	001205	Borrer's Saltmarsh-grass ( <i>Puccinellia fasciculata</i> )
North Bull Island SPA	004006	Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Shelduck ( <i>Tadorna tadorna</i> ) [A048] Teal ( <i>Anas crecca</i> ) [A052] Pintail ( <i>Anas acuta</i> ) [A054] Shoveler ( <i>Anas clypeata</i> ) [A056] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Golden Plover ( <i>Pluvialis apricaria</i> ) [A140] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Knot ( <i>Calidris canutus</i> ) [A143] Sanderling ( <i>Calidris alba</i> ) [A144] Dunlin ( <i>Calidris alpina</i> ) [A149] Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Turnstone ( <i>Arenaria interpres</i> ) [A169] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Wetland and Waterbirds [A999]

Designated Area	Site Code	Main Features
South Dublin Bay and River Tolka SPA	004024	Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130] Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Knot ( <i>Calidris canutus</i> ) [A143] Sanderling ( <i>Calidris alba</i> ) [A144] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Redshank ( <i>Tringa totanus</i> ) [A162] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Roseate Tern ( <i>Sterna dougallii</i> ) [A192] Common Tern ( <i>Sterna hirundo</i> ) [A193] Arctic Tern ( <i>Sterna paradisaea</i> ) [A194] Wetland and Waterbirds [A999]
Rye Valley / Carton SAC / pNHA	001398	Petrifying springs with tufa formation (Cratoneurion) [7220] <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016]

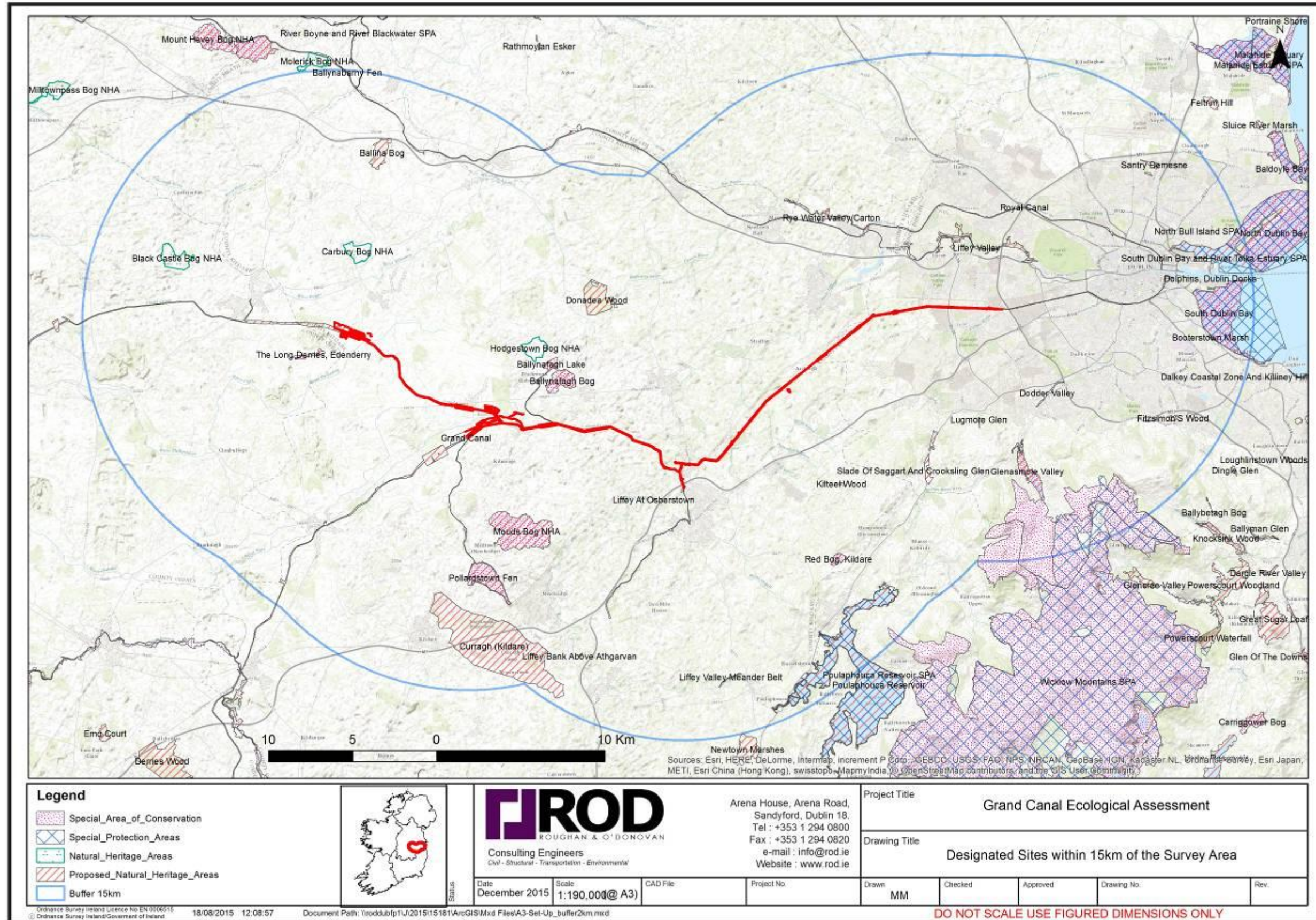


Figure 1 Designated Sites within 15km of the Site Location

### 3.2 Habitats

The Fossitt habitat categories identified on Site are listed in Table 3.2.1 and full habitat maps are presented in Appendix A. Overall, the Site largely comprises canal, dry meadows and grassy verges, wet grassland and improved agricultural grassland. Much of the canal boundary consists of scrub, hedgerows or treelines. The dominant classifications found on Site are described below in Table 3.2.1.

**Table 3.2.1 Fossitt Habitat Classifications found within the Site.**

Code	Fossitt Habitat Classification
TM	Towpath Mosaic
<b>FRESHWATER HABITATS</b>	
FW2	Depositing/lowland river
FW3	Canal
FW4	Drainage ditch
FS1	Reed and large sedge swamp
FS2	Tall herb swamp
FL8	Other artificial lakes and ponds
<b>GRASSLAND AND MARSH</b>	
GA1	Improved agricultural grassland
GA1/GS4	Improved agricultural grassland/Wet grassland
GA2	Improved amenity grassland
GM1	Marsh
GM1/GS4	Marsh/Wet grassland
GS1	Dry calcareous and neutral grassland
GS1/GA1	Mosaic: Dry calcareous/Improved agricultural grassland
GS1/GA2	Mosaic: Dry calcareous/Improved amenity grassland
GS1/GS4	Mosaic: Dry calcareous/Wet grassland
GS2	Dry meadows and grassy verges
GS2/WS1	Mosaic: Dry meadows/scrub
GS4	Wet grassland
GS4/WS1	Mosaic: Wet grassland/Scrub
<b>HEATH AND DENSE BRACKEN</b>	
HH1	Dry siliceous heath
HH3	Wet Heath
HD1	Dense bracken
<b>PEATLANDS</b>	
PB4	Cutover bog
PF1	Rich fen and flush
<b>WOODLAND AND SCRUB</b>	
WN5	Riparian woodland
WN6	Wet willow-alder-ash woodland
WN7	Bog woodland
WD1	Mixed broadleaved woodland
WD1/WS1	Broadleaved woodland/Scrub
WD2	Mixed broadleaved/conifer woodland
WD4	Conifer plantation
WD5	Scattered trees and parkland

Code	Fossitt Habitat Classification
WS1	Scrub
WS1/FS1	Mosaic Scrub / Reed swamp
WS2	Immature woodland
WL1	Hedgerows
WL2	Treelines
WS3	Ornamental/non-native shrub
<b>EXPOSED ROCK AND DISTURBED GROUND</b>	
ED1	Exposed sand, gravel or till
ED2	Spoil & bare ground
ED3	Recolonising bare ground
ED2/ ED3	Spoil and bare ground/Recolonising bare ground
ED4	Active quarries and mines
<b>CULTIVATED AND BUILT LAND</b>	
BC1	Arable crops
BC2	Horticultural land
BC3	Tilled land
BC4	Flower beds and borders
BL1	Stone Walls
BL3	Buildings
BL3/ GA2	Buildings and gardens

### **TM Towpath Mosaic**

Towpath Mosaic is a bespoke habitat category developed by Waterways Ireland to describe the uniform habitat components that occur between open canal (FW3) and the vegetation either side of the towpath including the canal verge. This approach and habitat category is consistent with other Waterways Ireland canal surveys (see also Smith & Gittings, 2014). Due to the narrow bands of varying habitats along the canal bank, a towpath mosaic was used to map the transition from emergent vegetation at the edge of the canal to the semi-natural neutral/calcareous dry grassland communities found consistently throughout the canal towpath and boundary. This zonation in habitat was typically categorised as incorporating habitat types reed and large sedge swamp (FS1) to marsh (GM1) to wet grassland (GS4) and then to dry meadows and grassy verges (GS2) at the edge of the towpath. The towpath mosaic occurs over a width of approximately 2-3 m or less. Additionally, a towpath mosaic consisting of amenity grassland (GA2), spoil and bare ground (ED2), dry meadows and grassy verges (GS2) and scrub (WS1) was often a common zonation identified along the canal bank (see Plate 3.1).



**Plate 3.1 Example of TM Towpath Mosaic with both paved and grassy towpath on Mainline Canal section near Allenwood, Co. Kildare**

### **FW2 Depositing Lowland River**

This category includes watercourses, or sections of these, where fine sediments are deposited on the river bed. Depositing conditions are typical of lowland areas where gradients are low and water flow is slow and sluggish. This habitat occurs at the River Liffey which passes underneath the Leinster Aqueduct.

### **FW3 Canal**

Canals are artificial waterways that form part of the navigable waterway system. The canal environment is typically within a maintained modified state to accommodate largely seasonal and recreational boat traffic. Canals need a reliable supply of water in order for locks to function. The Grand Canal pNHA is a site designated for canal flora, fauna and semi-natural habitats and the heritage value of the variety of canal structures (locks, tunnels, bridges). In addition to the main channel of the canal there are towpaths, hedgerows, scrub, woodland, feeder streams, side arms, swamp or fen. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. The Grand Canal pNHA crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods.



**Plate 3.2 A section of the Grand Canal Main Line with typical features associated with canals, i.e. a lock and a paved towpath (now a road)**



Canal environments are mainly lowland, mesotrophic to eutrophic, base rich waterbodies and, as such, support a wide range of intermediate communities' characteristic of both lakes and rivers. Canals therefore have a high biodiversity interest. The particular ecology in an individual canal may show limited regional influences or habitat heterogeneity due to its open, uniform and linear function as an ecological corridor. Channel dredging and maintenance to retain canal function for boat traffic typically removes shallower, marginal areas within the channel. Subsequently, there is a sharp transition between the grassy verge/emergent vegetation and communities of the deeper channel.

#### **FW4 Drainage Ditches**

Ditches are an abundant feature along the base of canal embankments and link the edge of the canal towpath mosaic to land parcel boundaries and adjacent areas of wet grassland, mire and woodland. They are often associated with fields and field boundaries and lead into natural watercourses, which also form most of the main continuous corridors within the Site. The most diverse drainage channel flora are found on sites with extensive networks of drainage channels, a wide range of drainage channel types and a range of seral stages, representing habitats from open water to drainage channels choked with well established emergent vegetation. Typical zonation includes *Phragmites-Glyceria* and *Filipendulo-Iridetum* in open ditches at field margins beyond the canal boundary. At the base of embankments with well established scrub or treelines, much of this emergent community is lacking.

#### **FS1 Reed and tall sedge swamp**

This category includes species-poor stands of herbaceous vegetation that are dominated by reeds *Phragmites* and other large grasses *Glyceria* or large, tussock-forming sedges. Most reed and large sedge swamps are overwhelmingly dominated by one or a small number of species, as in the case of reedbeds. Stands of vegetation can range from very dense to open. The broadleaved herb component is minor. Vegetation typically lacks stratification as there is little or no development of an understory element. This habitat classification was found in narrow strips along the verge of the canal in the majority of sections.



**Plate 3.3 Reed and tall sedge swamp (FS1) visible along both sides of the canal east of Sallins County Kildare**

#### **FS2 Tall-herb swamps FS2**

Tall-herb swamps are comparatively species-rich stands of herbaceous vegetation that occur in wet areas where the water table is above the ground surface for most of the year, or where water levels fluctuate regularly as in the case of tidal sections of rivers. Tall or robust broadleaved herbs dominate and common components include Lesser Waterparsnip (*Berula*

*erecta*), Fool's Water-cress (*Apium nodiflorum*), Gipsywort (*Lycopus europaeus*), Brooklime (*Veronica beccabunga*), Hemlock Water-dropwort (*Oenanthe crocata*), Hemp-agrimony (*Eupatorium cannabinum*) and Water Forget-me-not (*Myosotis scorpioides*). These swamps may also support Yellow Iris (*Iris pseudacorus*), Water-plantain (*Alisma plantago-aquatica*) and Water Horsetail (*Equisetum fluviatile*), in addition to occasional reeds, large grasses (*Glyceria maxima*, *Festuca arundinacea*) and sedges. This habitat forms part of the zonation within the Towpath Mosaic (TM).

#### **FL8 Artificial lakes and ponds**

This category should be used for artificial or ornamental bodies of standing water that may be found in parks, demesnes, gardens or golf courses. Flooded quarries, tailings, ponds and water treatment plants (with open water) should also be included. The nutrient status of these artificial water bodies is variable and may be high as in the case of hypertrophic lakes in urban parks. Moats can also be included here if there is no obvious connection to a wider drainage network.

#### **GA1 Improved agricultural grassland**

This category is used for intensively managed or highly modified agricultural grassland that has been reseeded and/or regularly fertilized, and is now heavily grazed and/or used for silage making. It includes regularly-reseeded monoculture grasslands and rye-grass leys that are planted as part of an arable rotation. These differ significantly from areas of permanent grassland. Improved agricultural grassland is typically species-poor. As agriculture is the predominant land use in the area, a large proportion of the land outside the canal and its verges and towpaths is classified as Improved Agricultural Grassland.



**Plate 3.4 Improved agricultural grassland (foreground) adjacent to the Grand Canal Main Line near Ticknevin**

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

This type of grassland is improved, or species-poor, and is managed for purposes other than grass production. It includes amenity, recreational or landscaped grasslands, but excludes farmland. Small sections of amenity grassland were identified along the verges of the canal, often adjacent to buildings.



**Plate 3.5 Amenity grassland to the right of the paved towpath**

#### **GM1 Marsh**

Marsh is found on level ground near river banks, lakeshores, and in other places where mineral or shallow peaty soils are waterlogged, and where the water table is close to ground level for most of the year. Unlike swamps, standing water is not a characteristic feature except, perhaps, during very wet periods or in winter months. Marsh is comparatively species-rich and supports a high proportion of wetland species in addition to the typical dominants: rushes (*Juncus* spp.), sedges (*Carex* spp.) and Meadowsweet (*Filipendula ulmaria*). Grasses such as Creeping Bent (*Agrostis stolonifera*), Tall Fescue (*Festuca arundinacea*) and Purple Moor-grass (*Molinia caerulea*) may be present but not abundant. To be considered as marsh, the proportion of sedges and grasses should not exceed 50%. Marsh occurs within the zonation of Towpath Mosaic (TM) and also is recorded at seeps or saturated corners of field boundaries beyond the canal boundary.

#### **GS1 Dry calcareous and neutral grassland**

This encompasses all unimproved and semi-improved grasslands on both calcareous and neutral soil. It is associated with freedraining mineral soils and low intensity agriculture. Calcareous grassland is restricted in its distribution and is now largely confined to the steep slopes of esker ridges and moraines in the midlands, and to other areas with shallow and rocky limestone soils. Management and fertiliser use makes calcareous grasslands more like neutral grasslands in character and these have a wider distribution. Dry calcareous and neutral grassland may comprise a wide range of grasses and broadleaved herbs. Species richness varies and can be high. This habitat occurs on open embankments and ridges along the canal boundary and also in suitable conditions at the towpath verge.

#### **GS2 Dry meadows and grassy verges**

This habitat occurs in more exposed and open areas of the canal in the form of a later successional stage of colonising bare ground and often also grading from and within a mosaic of scrub (WS1) at the towpath verge and canal boundaries. This habitat also occurs in areas that are occasionally mown and where there is limited management or low intensity grazing regime. The development of grasslands with a high proportion of tall, coarse and tussocky grasses such as False Oat-grass (*Arrhenatherum elatius*) and Cock's-foot (*Dactylis glomerata*) is typical. Other grasses may include Yorkshire-fog (*Holcus lanatus*), Smooth Meadow-grass (*Poa pratensis*), Barren Brome (*Anisantha sterilis*) and Meadow Foxtail

(*Alopecurus pratensis*). A broadleaved herb component is characterised by a range of species that either grow tall, such as Cow Parsley (*Anthriscus sylvestris*), Hogweed (*Heracleum sphondylium*), Nettle (*Urtica dioica*) and Common Knapweed (*Centaurea nigra*), or climb the stems of others, as in the case of Bush Vetch (*Vicia sepium*) and Meadow Vetchling (*Lathyrus pratensis*). Grassy verges may support other smaller broadleaved herbs such as Pignut (*Conopodium majus*), Creeping Cinquefoil (*Potentilla reptans*) and clovers (*Trifolium spp.*).



Plate 3.6 Dry meadows and grassy verges (GS2) on the edge of the canal towpath

#### GS4 Wet grassland

This type of grassland is frequent throughout the Site and can be found on flat or sloping ground in low intensity managed agricultural grassland beyond the canal boundary. Wet grassland occurs on wet or waterlogged mineral or organic soils that are poorly-drained or, in some cases, subjected to seasonal or periodic flooding, occurring in some cases on less managed canal towpaths. On sloping ground, wet grassland is mainly confined to clay-rich gleys and loams, or organic soils that are wet but not waterlogged. Wet grassland often contains abundant rushes (*Juncus effusus*, *J. acutiflorus*, *J. articulatus*, *J. inflexus*) and/or small sedges (*Carex flacca*, *C. hirta*, *C. ovalis*), in addition to grasses such as Yorkshire-fog (*Holcus lanatus*), Creeping Bent (*Agrostis stolonifera*), Marsh Foxtail (*Alopecurus geniculatus*), Rough Meadow-grass (*Poa trivialis*) and Tufted Hair-grass (*Deschampsia caespitosa*). Purple Moor-grass (*Molinia caerulea*) may also be present but should not dominate. The proportion of broadleaved herbs is often high.

#### HH1 Dry Heath

Dry siliceous heath can be found on flat to steeply sloping ground in upland and lowland areas. The underlying soils are relatively dry or free-draining but are acid and poor in nutrients (mainly mineral-rich or peaty podzols). Typical components of the vegetation include Ling (*Calluna vulgaris*), Bell Heather (*Erica cinerea*), Bilberry (*Vaccinium myrtillus*) and low-growing Western Gorse (*Ulex gallii*). Other dwarf shrubs such as Crowberry (*Empetrum nigrum*), Bearberry (*Arctostaphylos uva-ursi*) and Cowberry (*Vaccinium vitis-idaea*) may be locally abundant. This habitat occurs infrequently within the Site and beyond the canal boundary in association with regenerating patchwork of Birch (*Betula*) woodland, Gorse scrub (*Ulex*) (WS1) and Bracken (HD1).



**Plate 3.7 Dry Heath (HH1) adjacent to the canal close to the county boundary between Kildare and Offaly**

### **HH3 Wet Heath**

This habitat category consists of vegetation with at least 25% cover of dwarf shrubs on peaty soils and shallow wet peats that typically have an average depth of 15-50 cm. Wet heath is typically dominated by Ling (*Calluna vulgaris*) and Cross-leaved Heath (*Erica tetralix*), but can also be dominated by Purple Moor-grass (*Molinia caerulea*) and/or sedges. Other common species include Bell Heather (*Erica cinerea*), Crowberry (*Empetrum nigrum*), Deergass (*Trichophorum caespitosum*) and Heath Rush (*Juncus squarrosus*). Wet Heath is scarce within the Site occurring in only a few locations beyond the canal boundary as part of a mosaic or as small remnant pockets associated with cut over bog (PB4).



**Plate 3.8 Wet heath (HH3) adjacent to the Grand Canal Main Line**

### HD1 Dense Bracken

This habitat is dominated by dense stands of Bracken (*Pteridium*). In most areas where Bracken was recorded it formed uniform patchwork at the edge of the towpath or within the understory of Scrub (WS1) or mixed Birch or broadleaved woodland (WD1).



Plate 3.9 Thin strip of Dense Bracken (HD1) adjacent to canal towpath

### PB4 Cutover bog

This category should be used in situations where part of the original mass of peat has been removed through turf cutting or other forms of peat extraction. Areas of high bog that have been exploited using Difco cutters, or 'sausage' machines, are included only if the surface vegetation has been removed. Cutover can be associated with all peat-forming systems, including fens and some areas of wet heath.

### PF1 Rich Fen and Flush

Rich fen and flush PF1 Rich fens and flushes are fed by groundwater or flowing surface waters that are at least mildly base-rich or calcareous, and are usually found over areas of limestone bedrock. The substratum is waterlogged peat (except in the case of some flushes) and this usually has a high mineral content. Vegetation is typically dominated by Black Bog-rush (*Schoenus nigricans*) and/or small to medium sedges such as *Carex viridula*, *C. nigra*, *C. dioica* and *C. panicea*. Other prominent components of the vegetation include rushes, particularly Blunt-flowered Rush (*Juncus subnodulosus*), Purple Moor-grass (*Molinia caerulea*), Marsh Pennywort (*Hydrocotyle vulgaris*), Lesser Spearwort (*Ranunculus flammula*), Water Mint (*Mentha aquatica*), Common Marsh-bedstraw (*Galium palustre*), Grass-of-parnassus (*Parnassia palustris*), Common Butterwort (*Pinguicula vulgaris*) and Devil's-bit Scabious (*Succisa pratensis*). Rich fen and flush can be important for orchids such as *Epipactis palustris* and *Dactylorhiza spp.* Within the Grand Canal this habitat is scarce and not extensive occurring at seeps or bases of embankments.

### WN5 Riparian woodland

This category includes wet woodlands of river margins (gallery woodland) and low islands that are subject to frequent flooding, or where water levels fluctuate as a result of tidal movement (in the lower reaches of rivers). Riparian woodland is dominated by stands of willows that may include native (*Salix cinerea*, *S. purpurea*, *S. triandra*) and nonnative (*Salix fragilis*, *S. alba*, *S. viminalis*) species. Alder (*Alnus glutinosa*) is occasional. The field layer is characterised by broadleaved herbs such as Nettle (*Urtica dioica*), Creeping Buttercup (*Ranunculus repens*), Wood Dock (*Rumex sanguineus*), Meadowsweet (*Filipendula ulmaria*), Wild Angelica (*Angelica sylvestris*), Hemlock Water-dropwort (*Oenanthe crocata*) and Hedge Bindweed

(*Calystegia sepium*). Stands of Reed Canary-grass (*Phalaris arundinacea*) are common. This habitat is not frequent within the Site mainly occurring at the River Liffey. Constant species typical of Riparian Woodland occur throughout, usually in a graded form with wet willow-alder-ash woodland (WN6).



**Plate 3.10 Riparian woodland (WN5) with willows and Reed Canary-grass adjacent to the Grand Canal Main Line near Roberstown**

#### **WN6 Wet willow-alder-ash woodland**

This broad category includes woodlands of permanently waterlogged sites that are dominated by willows (*Salix* spp.), Alder (*Alnus glutinosa*) or Ash (*Fraxinus excelsior*), or by various combinations of some or all of these trees. It includes woodlands of lakeshores, stagnant waters and fens, known as carr, in addition to woodlands of spring-fed or flushed sites. The modified and linear canal environment lacks any extensive stands of WN6 with the constant species of this habitat dominant along the canal boundary and along embankments in association with Drainage Ditches (FW4).

#### **WN7 Bog woodland**

This category includes woodlands of intact ombrotrophic bogs, bog margins and cutover bog. Bog woodland typically occurs on deep acid peat that is relatively well-drained in the upper layers and is commonly associated with former turf cutting activity or drainage. This habitat occurs beyond the canal boundary in only a few locations. It may also occur in areas of cutover bog where most of the peat has been removed. Downy Birch (*Betula pubescens*) is the usual dominant and may form pure stands. Other trees and shrubs can include Holly (*Ilex aquifolium*), Rowan (*Sorbus aucuparia*), Scots Pine (*Pinus sylvestris*), Oaks (*Quercus* spp.) and willows (*Salix* spp.). Dwarf shrubs such as Ling (*Calluna vulgaris*) or Bilberry (*Vaccinium myrtillus*) may occur in the field layer, usually in association with Bracken (*Pteridium aquilinum*), Bramble (*Rubus fruticosus* agg.), Ivy (*Hedera helix*), Purple Moor-grass (*Molinia caerulea*) and Honeysuckle (*Lonicera periclymenum*).

#### **WD1 (Mixed) Broadleaved woodland**

This general category includes woodland areas with 75-100% cover of broadleaved trees, and 0-25% cover of conifers. It should be used in situations where woodland stands cannot be classified as semi-natural on the basis of the criteria outlined in Fossitt (2000). Trees may include native and non-native species. Plantations of broadleaved trees are included if the canopy height is greater than 5 m, or 4 m in the case of wetland areas. Mixed Broadleaved woodland occurs frequently within the Site along the Grand Canal boundary often forming important corridors with adjacent land parcel boundaries, treelines and hedgerows.



**Plate 3.11 Mixed broadleaved woodland adjacent to the canal**

#### **WD2 Mixed broadleaved/ conifer woodland**

This category includes woodland areas with mixed stands of broadleaved trees and conifers, where both types have a minimum cover of 25%, and a maximum cover of 75%. Trees may be either native or non-native species. Mixed broadleaved/ conifer plantations are included if the canopy height is greater than 5 m, or 4 m in the case of wetland areas.

#### **WD3 (Mixed) conifer woodland**

This general category includes woodland areas with 75-100% cover of conifers, other than conifer plantation - WD4. The broadleaved component should be less than 25%. Woodlands that belong in this category are most likely to be found in parks or gardens, or in the grounds of old estates and institutions where there has been a history of planting. Non-native trees usually dominate. The term 'mixed' should be used in the habitat title if woodland stands comprise a number of different conifer species.

#### **WD4 Conifer plantation**

This category is used for areas that support dense stands of planted conifers where the broadleaved component is less than 25% and the overriding interest is commercial timber production. Conifer plantations are characterised by even-aged stands of trees that are usually planted in regular rows, frequently within angular blocks. Species diversity is low and single species stands are common. The majority of planted conifers are non-native species such as Sitka Spruce (*Picea sitchensis*), Lodgepole Pine (*Pinus contorta*), Norway Spruce (*Picea abies*) and larches (*Larix* spp.). Conifer plantations may be fringed with narrow bands of broadleaved trees, most of which are also planted.

#### **WS1 Scrub**

This broad category includes areas that are dominated by at least 50% cover of shrubs, stunted trees or brambles. The canopy height is generally less than 5 m, or 4 m in the case of wetland areas. Scrub frequently develops as a precursor to woodland and is often found in inaccessible locations, or on abandoned or marginal farmland. In the absence of grazing and mowing, scrub can expand to replace grassland or heath vegetation. Trees are included as components of scrub if their growth is stunted as a result of exposure, poor soils or waterlogging. If tall trees are present, these should have a scattered distribution and should not form a distinct canopy. This classification is ubiquitous throughout the canal boundary often forming the towpath verge often in combination with treelines or as the transitional zone and understorey of broadleaved woodland (WD1) largely comprising *Crataegus-Prunus*



associations. Scrub can be either open, or dense and impenetrable, and it can occur on areas of dry, damp or waterlogged ground. Common components include spinose plants such as Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Gorse (*Ulex europaeus*), Juniper (*Juniperus communis*), Bramble (*Rubus fruticosus* agg.) and erect or scrambling roses (*Rosa* spp.), in addition to a number of willows (*Salix* spp.), small birches (*Betula* spp.) and stunted Hazel (*Corylus avellana*).

### **WS2 Immature Woodland**

Immature woodland includes areas that are dominated by young or sapling trees that have not yet reached the threshold heights (5 m, or 4 m in the case of wetland areas) for inclusion in the woodland categories previously described. This habitat occurs infrequently in the Site and typically beyond the canal boundary.



**Plate 3.12 Immature woodland (WS2) adjacent to the Grand Canal Main Line**

### **WS3 Ornamental/non-native shrub**

This category covers areas dominated by ornamental and non-native shrubs. Most of these originate from planting and can be found in formal beds and borders in gardens, parks and other landscaped areas in association with Amenity Grassland (GA1).

### **WL1 Hedgerows**

Where they exist, hedges are an important feature of the local canal corridor network. In some areas they are the only direct link between disparate habitats. In general a greater variety of hedgerow species produces a broader range of hedge structure and niches. Hedgerows are linear strips of shrubs, often with occasional trees, that typically form field or property boundaries. Most hedgerows originate from planting and many occur on raised banks of earth that are derived from the excavation of associated Drainage Ditches (FW4). Species composition varies with factors such as age, management, geology, soils and exposure. Hedgerows share many constant species and commonly support a high proportion of spinose plants such as Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Gorse (*Ulex europaeus*), Holly (*Ilex aquifolium*), Dog-rose (*Rosa canina*) or Bramble (*Rubus fruticosus* agg.), in addition to many other native and non-native trees and shrubs including, for example, Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), Beech (*Fagus sylvatica*), Elder (*Sambucus nigra*), elms (*Ulmus* spp.) and willows (*Salix* spp.).

### **WL2 Treelines**

A treeline is a narrow row or single line of trees that is greater than 5 m in height and typically occurs along field or property boundaries. This category includes tree-lined roads or avenues,

narrow shelter belts with no more than a single line of trees, and overgrown hedgerows that are dominated by trees. Most treelines are planted and trees are often regularly spaced. Treelines are found usually along the canal boundary or delineating public road and land parcels.



**Plate 3.13 Treeline (WL2) present to the left of the canal towpath**

**ED1 Exposed sand, gravel or till**

This category includes natural or artificial exposures of unconsolidated coarse or mixed sediment. Sand and gravel are mostly made up of sediment particles that are less than 16mm in diameter. Till, or boulder clay, is an unsorted mixture of peddles, cobbles or boulders in a matrix of finer material such as sand, silt or clay. Most exposures of these sediments are associated with sand and gravel pits, or with excavated glacial landscape features such as eskers, drumlins or moraines, and include road cuttings or construction sites.



**Plate 3.14 Recently exposed soil adjacent to the canal**

### **ED3 Recolonising bare ground**

This category is used for any areas where bare or disturbed ground, derelict sites or artificial surfaces of tarmac, concrete or hard core have been invaded by colonising opportunistic herbaceous plants.

### **BC1 Arable crops**

Agricultural land that is cultivated and managed for the production of arable crops, including cereals (wheat, barley, oats, maize), and root, leaf, energy or fibre crops such as sugar beet, turnips, rape and flax. Fields of potatoes can be included here, but most other vegetable crops are excluded, as are market gardens. Much of the existing land surrounding the canal is used for agriculture and this habitat category featured frequently in adjacent fields beyond the canal boundary.



**Plate 3.15 Arable crops (BC1) adjacent to the Grand Canal Main Line**

### **BC2 Horticultural land**

This category includes areas of land that are cultivated and managed for the production of vegetables, fruit crops, culinary or aromatic herbs, flowers and other ornamental plants. It should also be used for market gardens, tree nurseries, garden centres, greenhouses, polythene tunnels and smaller vegetable plots in gardens and allotments.

### **BC3 Tilled land**

This category should be used in situations where land has been tilled and prepared for planting but where the type of crop, or future use of the land, cannot be established.

### **BL3 Buildings and artificial surfaces**

This broad category incorporates areas of built land that do not fit elsewhere in the classification. It includes all buildings (domestic, agricultural, industrial and community). It also includes areas of land that are covered with artificial surfaces of tarmac, cement, paving stones, bricks, blocks or Astroturf (e.g. roads, car parks, pavements, runways, yards, and some tracks, paths, driveways and sports grounds). This classification comprises paths, roads, bridges, houses and farm buildings along the canal.

## **3.3 Protected Species**

Online sources of publicly available data provided by National Biodiversity Centre (NBDC) informed the desk study with regards to protected species and the results are presented in Table 3.3.1.

**Table 3.3.1 National Biodiversity Data Centre Notable Protected Species Records within 2 km of the Site**

Species	Most Recent Date Recorded	Suitable Habitat within the Site
<b>Wildlife Act</b>		
Eurasian Red Squirrel ( <i>Sciurus vulgaris</i> )	2015	Yes
Eurasian Badger ( <i>Meles meles</i> )	2013	Yes
Fallow Deer ( <i>Dama dama</i> )	2010	Yes
Pine Marten ( <i>Martes martes</i> )	2014	Yes
White-clawed Crayfish ( <i>Austropotamobius pallipes</i> ) (Note: this species is also protected under EU Habitats Directive)	2006	Yes
<b>EU Directive</b>		
Leisler's Bat ( <i>Nyctalus leisleri</i> )	2008	Yes
Pipistrelle ( <i>Pipistrellus pipistrellus sensu lato</i> )	2008	Yes
Soprano Pipistrelle ( <i>Pipistrellus pygmaeus</i> )	2008	Yes
Daubenton's Bat ( <i>Myotis daubentonii</i> )	2008	Yes
Brown Long-eared Bat ( <i>Plecotus auritus</i> )	2007	Yes
Natterer's Bat ( <i>Myotis nattereri</i> )	2007	Yes
European Otter ( <i>Lutra lutra</i> )	2014	Yes
Eurasian Curlew ( <i>Numenius arquata</i> )	2014	Yes
European Golden Plover ( <i>Pluvialis apricaria</i> )	2011	Yes
Northern Lapwing ( <i>Vanellus vanellus</i> )	2014	Yes

National Parks and Wildlife Service provided results from the Irish National Badger Settle Database and National Otter Survey 2010/2012 within 1km of the Site. These are summarised in Table 3.3.2 as are records of Pine marten and Stoat.

**Table 3.3.2 Protected Mammal Records within 1 km of the Site**

Species	Sample Location	Survey Name	Date
Otter ( <i>Lutra lutra</i> )	Tallaght, Co. Dublin	Animal Survey IBRC – Location Species Lists	1960
Otter ( <i>Lutra lutra</i> )	Within 1 km of Site	Badger and Habitat Survey of Ireland	1992
Otter ( <i>Lutra lutra</i> )	Within 1 km of Site	Badger and Habitat Survey of Ireland	1991
Otter ( <i>Lutra lutra</i> )	Within 1 km of Site	Badger and Habitat Survey of Ireland	1991
Otter ( <i>Lutra lutra</i> )	Grand Canal near Peamount	Otter Survey of Ireland 1982 – Vincent Wildlife Trust	1980
Otter ( <i>Lutra lutra</i> )	Grand Canal near Peamount	Otter Survey of Ireland – Vincent Wildlife Trust	1980
Otter ( <i>Lutra lutra</i> )	Grand Canal, 12 <sup>th</sup> Lock, Lucan	Otter et al. – incidental sightings via NPWS website	2011
Otter ( <i>Lutra lutra</i> )	River Bridge, Co. Kildare	Otter – National Otter Survey 2010-2011	2010
Pine marten ( <i>Martes martes</i> )	Within 1 km of Site	Pine Marten – National Pine Marten Survey 2005/2006	2005
Pine marten ( <i>Martes martes</i> )	Within 1 km of Site	Pine Marten – National Pine Marten Survey 2005/2006	2005
Pine marten ( <i>Martes martes</i> )	Bohernabreena	Pine Marten – NPWS records	2005
Pine marten ( <i>Martes martes</i> )	Allenwood, Co. Kildare	Incidental Records from NPWS staff and others	2011

Species	Sample Location	Survey Name	Date
Irish Stoat ( <i>Mustela erminea</i> )	Near Edenderry, Co. Offaly	<i>Mustela erminea</i> subsp. <i>hibernica</i> Records	1972
Irish Stoat ( <i>Mustela erminea</i> )	Saggart Forest, Co. Dublin	<i>Mustela erminea</i> subsp. <i>hibernica</i> Records	1972
Irish Stoat ( <i>Mustela erminea</i> )	Clonsilla, Co. Dublin	<i>Mustela erminea</i> subsp. <i>hibernica</i> Records	1976
Irish Stoat ( <i>Mustela erminea</i> )	Tallaght, Co. Dublin	Animal Survey IBRC – Location Species Lists	1960

**Table 3.3.3 Bat Species Records within 1 km of the Site**

Species	Sample Location	Most Recent Date Recorded
Brown Long-eared Bat ( <i>Plecotus auritus</i> )	Within 1 km of Site	2008
Common Pipistrelle ( <i>Pipistrellus pipistrellus</i> )	Within 1 km of Site	2008
Daubenton's Bat ( <i>Myotis daubentonii</i> )	Within 1 km of Site	2008
Leisler's Bat ( <i>Nyctalus leisleri</i> )	Within 1 km of Site	2008
Soprano Pipistrelle ( <i>Pipistrellus pygmaeus</i> )	Within 1 km of Site	2008

### 3.4 Flora

The Grand Canal is lightly trafficked and, in certain branches, untrafficked. It has base-poor feeder channels draining moorland, woodland and rough grassland-dominated catchments overlying sandy or peaty soils and supporting a diverse range of aquatic plants. Aquatic and swamp communities within the canal are well developed with reed swamp communities of *Phragmites* forming extensive ribbons (FS1/FW2) along the canal margins. Sequences of *Glyceria* are frequent and abundant within *Phragmites*, with interspersed patchworks of *Schoenoplectus*. In more stable conditions within the canal network swamps like *Glycerietum*, the *Typhetum* and *Sparganietum* develop. The compressed zonation of the emergent *Phragmitetum* swamp grade sharply into narrow strips of dense *Iris- Filipendula* mire community mosaics on the canal bank. In heavily managed sections of the canal emergent vegetation may be scarce with an open water transition to an amenity towpath mosaic may be. From the reed margins pushing into deeper water of the channel a *Nuphar lutea* community is often abundant.

The high diversity of plant communities is a central feature of lightly trafficked canals and also untrafficked sections in which succession processes are periodically or infrequently arrested, usually by management. Within sections of the canal that are well used by disturbance by boats, the increased level of disturbance results in a convergence of the various above assemblages towards communities typical of lowland watercourses, with species such as *Nuphar*, *Potamogeton*, *Sparganium* and *Sagittaria*. Such sites may be of increasing ecological value in regions where the natural surrounding watercourses have been extensively degraded.

A total of 261 vascular plant species were recorded on the Grand Canal Main Line. A comprehensive species itinerary for each canal marker along the route is provided in Section 4. Variable distances of each canal marker subsequently mean there is no evenness across the survey area by which to correlate species richness. Increased habitat heterogeneity with distance should therefore be a consideration when interpreting comparable species diversity between canal markers and/or canal sections. The canal functions as a strategic continuous ecological corridor, particularly important for the movement of many kinds of plants and animals. Certain species listed in the itinerary are highly likely to be constants and the presence or absence is not conclusive, only indicative of baseline conditions. The most commonly recorded plant species along this section are listed in Table 3.4.1.

**Table 3.4.1 Most Commonly Recorded Vascular plant species**

Common Name	Scientific Name
Yarrow	<i>Achillea millefolium</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Alder	<i>Alnus glutinosa</i>
Wild Angelica	<i>Angelica sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat-grass	<i>Arrhenatherum elatius</i>
Wall Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Cock's-foot	<i>Dactylis glomerata</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Ivy	<i>Hedera helix</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Perennial Rye-grass	<i>Lolium perenne</i>
Common Reed	<i>Phragmites australis</i>
Greater Plantain	<i>Plantago major</i>
Bramble	<i>Rubus fruticosus agg.</i>
Dandelion	<i>Taraxacum officinale agg.</i>
Red Clover	<i>Trifolium pratense</i>
Common Nettle	<i>Urtica dioica</i>
Tufted Vetch	<i>Vicia cracca</i>

### 3.5 Fauna

#### Mammals

Physical evidence of Otter and Badger were recorded at several locations along the Canal Mainline (see Maps in Appendix A). Spraints were noted in several sections near the canal and the canal provides extensive habitat for foraging and commuting. Otters are, therefore, likely to be ubiquitous along the canal. In areas of high recreational pressure and site use by dog walkers apparent Otter/Badger trails were difficult to separate from those of dogs. The locations of mammal activity along the canal are presented within the habitat maps (Appendix A). A list of these locations and species is provided in the species lists per canal marker. No Badger setts were located within the canal boundary.

A bat survey was not undertaken within the Site; however five species of Bat were recorded from national datasets (NBDC; Bat Conservation Ireland (BCI)) (see Table 3.3.3 above). The Bat species recorded include Common Pipistrelle, Soprano Pipistrelle, Daubenton's, Leisler's and Brown Long-Eared Bat. Bridges and Locks along the canal are well maintained. No physical signs of bat roosts were recorded along the canal or within structures in close proximity. The Grand Canal provides excellent foraging and commuting habitat for bats and deserves further study.

#### Birds

A total of 55 bird species were recorded within the Site. The high diversity of linear scrub, hedgerow and stands of woodland provide a wide range of opportunities for many bird groups and most common species were represented and detected during the survey. One Red Listed species (Meadow Pipit) and 14 Amber Listed, notably (Goldcrest; Linnets, House Martin, Kestrel, House Sparrow, Kingfisher, Mistle Thrush, Robin, Swallow, Swift, Starling, Sand Martin and Tree Sparrow) were recorded within the Site.

#### Amphibians and Reptiles

Common Frog (*Rana temporaria*) was recorded frequently throughout the canal verge and boundary and within ditches and wet margins. No reptiles were recorded during the surveys.

### Fish

A comprehensive fisheries survey was not undertaken as part of the field survey. Inland Fisheries Ireland provided detailed species information for the Site. The main species found within the Grand Canal are: Roach (*Rutilus rutilus*), Perch (*Perca fluviatilis*); Pike (*Esox lucius*); Tench (*Tinca tinca*); European Eel (*Anguilla anguilla*); Bream (*Abramis brama*); Rudd (*Scardinius erythrophthalmus*). Roach are the dominant species detected within the Grand Canal in terms of biomass and abundance. The Annex II listed River Lamprey (*Lampetra fluviatilis*) have been recorded at two locations on the Grand Canal, at the 11<sup>th</sup> Lock and 6<sup>th</sup> Locks.

### Invertebrates

White-clawed Freshwater Crayfish (*Austropotamobius pallipes*) have been recorded historically within the Grand Canal and although no specific survey was undertaken to determine presence and distribution, remains were detected in an Otter spraint at Sallins. Dragonflies and Damselflies are abundant along the canal corridor and several common species were constants through-out the Main Line occurring in high densities, notably Brown Hawker (*Aeshna grandis*), Large Red Damselfly (*Pyrrhosoma nymphula*), Common Blue Damselfly (*Ischnura elegans*).

A number of locations along the canal supported a rich terrestrial invertebrate fauna (See Chapter 5 for descriptions in ESAs). Areas important for invertebrates along the canal included species rich canal verge or embankments of free draining mosaics semi-natural grassland and scrub. A species inventory of invertebrates recorded during the surveys and the canal markers are provided Section 4.

## 3.6 Invasive Species

Publicly available data offered online by NBDC identified the presence of invasive species within 2 km of the site, most recently in 2015. These invasive species are listed in Table 3.6.1 Specific locations were also mapped as part of the field surveys where invasive species were recorded. *Gunnera* was identified on the northern side of the canal close to a residential property west of Allenwood (see photo below).



**Plate 3.16 *Gunnera* adjacent to canal west of Allenwood**

A small stand of Japanese knotweed was recorded growing on the northern bank of the canal close to the 10<sup>th</sup> lock and the R113 road bridge near Clondalkin. On closer investigation it

was also found that the plant was growing in another area close by, down the embankment north of the towpath.

Himalayan balsam (*Impatiens glandulifera*) was noted growing along the banks of the River Liffey to the south of the Leinster Aqueduct.

Butterfly bush (*Buddleia davidii*) was recorded between the 12<sup>th</sup> and 11<sup>th</sup> Locks.

**Table 3.6.1 National Biodiversity Data Centre Invasive Species Records within 2 km of the Site**

Invasive Species	Most Recent Date Recorded
Canadian Waterweed ( <i>Elodea canadensis</i> )	2010
Nuttall's Waterweed ( <i>Elodea nuttallii</i> )	2010
Common Garden Snail ( <i>Cornu aspersum</i> )	2006
<i>Physella acuta</i>	2006
European Rabbit ( <i>Oryctolagus antipodarum</i> )	2015
American Mink ( <i>Mustela vison</i> )	2015
Eastern Grey Squirrel ( <i>Sciurus carolinensis</i> )	2007
Budapest Slug ( <i>Tandonia budapestensis</i> )	1971
Keeled Slug ( <i>Tandonia sowerbyi</i> )	1971
Brown Rat ( <i>Rattus norvegicus</i> )	2012
Jenkin's Spire Snail ( <i>Potamopyrgus antipodarum</i> )	2003



## 4. SURVEY RESULTS

### 4.1 20<sup>th</sup> Lock, Ticknevin – Hartley Bridge, Ticknevin

(Maps 1-3, Section length – 0.8 km)

#### Habitats and Flora

This canal marker forms ESA1 (see Section 5 for detailed description). Along the northern bank of the canal (FW3) around the 20<sup>th</sup> Lock, the towpath mosaic (TM) was characterised by a transition from reed and large sedge swamp (FS1) along the edges of the canal to a mown grass towpath of improved amenity grassland (GA2), bordered by dry meadows and grassy verges (GS2) and finally a treeline (WL2). Common species noted along the canal verge included Meadowsweet (*Filipendula ulmaria*), Reed Sweet Grass (*Glyceria maxima*), Reed canary-grass (*Phalaris arundinacea*), Bulrush (*Typha latifolia*). The surface of the towpath transitions from mown grass to graveled access track (BL3) east of the 20<sup>th</sup> Lock (Plate 4.1). The towpath mosaic on the southern bank was characterised by reed and large sedge swamp (FS1) transitioning to dry meadows and grassy verges (GS2) and then improved amenity grassland (GA2) with occasional treelines (WL2). At either end of this section, a road/track (BL3) formed part of the TM.



Plate 4.1 View east from 20<sup>th</sup> Lock showing the towpath mosaic

The area north of the bordering treeline was dominated by improved agricultural grassland (GA1) with patches of wet grassland (GS4), scrub (WS1) and cutover bog (PB4), and a small area of mixed broadleaved/conifer woodland (WD2) and a dry meadow (GS2). Wet willow-alder-ash woodland (WN6) was present west of the 20<sup>th</sup> Lock. To the south, habitats included improved agricultural grassland (GA1), broadleaved woodland (WD1), dry calcareous and neutral grassland (GS1) and isolated patches of scrub (WS1) and dry siliceous heath (HH1). Buildings and artificial surfaces (BL3) occurred occasionally along the northern bank of the canal and buildings and gardens (BL3/GA2) were present south of the 20<sup>th</sup> Lock.

Table 4.1.1 Habitats recorded from 20<sup>th</sup> Lock to Hartley Bridge, Ticknevin

Habitat Code	Habitat Name
FW3	Canals
FS1	Reed and large sedge swamps
GA1	Improved agricultural grassland
GA2	Amenity grasslands (improved)
GS1	Dry calcareous and neutral grassland
GS2	Dry meadows and grassy verges
GS4	Wet grassland
WL2	Treelines
WS1	Scrub
WD1	Broadleaved woodland
WD2	Mixed broadleaved/conifer woodland
WN6	Wet willow-alder-ash woodland
HH1	Dry siliceous heath
PB4	Cutover bog
BL3	Buildings and artificial surfaces

**Table 4.1.2 Vascular plants from 20<sup>th</sup> Lock to Hartley Bridge, Ticknevin**

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Silver Birch	<i>Betula pendula</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Ling	<i>Calluna vulgaris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Lesser Pond Sedge	<i>Carex acutiformis</i>
Star Sedge	<i>Carex echinata</i>
Glaucous Sedge	<i>Carex flacca</i>
Black Sedge	<i>Carex nigra</i>
Flea Sedge	<i>Carex pulicaris</i>
Bottle Sedge	<i>Carex rostrata</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Meadow Thistle	<i>Cirsium dissectum</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Pignut	<i>Conopodium majus</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>

Species	Scientific
<b>Vascular Plants</b>	
Round-leaved Sundew	<i>Drosera rotundifolia</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
Crowberry	<i>Empetrum nigrum</i>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Variegated Horsetail	<i>Equisetum variegatum</i>
Bell Heather	<i>Erica cinerea</i>
Cross-leaved Heath	<i>Erica tetralix</i>
Bog Cotton	<i>Eriophorum angustifolium</i>
Eyebright	<i>Euphrasia</i> spp.
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Common Marsh-bedstraw	<i>Galium palustre</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Imperforate St John's Wort	<i>Hypericum maculatum</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Jointed Rush	<i>Juncus articulatus</i>
Toad Rush	<i>Juncus bufonius</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
White Dead-nettle	<i>Lamium album</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>

Species	Scientific
<b>Vascular Plants</b>	
Purple-loosestrife	<i>Lythrum salicaria</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Bogbean	<i>Menyanthes trifoliata</i>
Purple Moor Grass	<i>Molinia caerulea</i>
Bog Myrtle	<i>Myrica gale</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Bog Asphodel	<i>Narthecium ossifragum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Marsh Lousewort	<i>Pedicularis palustris</i>
Lousewort	<i>Pedicularis sylvatica</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Hart's-tongue	<i>Phyllitis scolopendrium</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>
Smooth Meadow Grass	<i>Poa pratensis</i>
Common Milkwort	<i>Polygala vulgaris</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Fennel Pondweed	<i>Potamogeton pectinatus</i>
Perfoliate Pondweed	<i>Potamogeton perfoliatus</i>
Silverweed	<i>Potentilla anserina</i>
Tormentil	<i>Potentilla erecta</i>
Selfheal	<i>Prunella vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Bracken	<i>Pteridium aquilinum</i>
Meadow Buttercup	<i>Ranunculus acris</i>

Species	Scientific
<b>Vascular Plants</b>	
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
White Beak-sedge	<i>Rhynchospora alba</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Broad-leaved Dock	<i>Rumex obtusifolius</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Branched Bur-reed	<i>Sparganium erectum</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum</i> spp.
Goat's-beard	<i>Tragopogon pratensis</i>
Deergrass	<i>Trichophorum cespitosum</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Gorse	<i>Ulex europaeus</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.1.3 Bird species recorded from 20<sup>th</sup> Lock to Hartley Bridge, Ticknevin**

Species	Scientific
<b>Birds</b>	
Long-tailed Tit	<i>Aegithalos caudatus</i>
Meadow Pipit	<i>Anthus pratensis</i>
Heron	<i>Ardea cinerea</i>
Linnet	<i>Carduelis cannabina</i>
Goldfinch	<i>Carduelis carduelis</i>

Species	Scientific
<b>Birds</b>	
Greenfinch	<i>Carduelis chloris</i>
Siskin	<i>Carduelis spinus</i>
Raven	<i>Corvus corax</i>
Jackdaw	<i>Corvus monedula</i>
Reed Bunting	<i>Emberiza schoeniclus</i>

Species	Scientific
<b>Birds</b>	
Robin	<i>Erithacus rubecula</i>
Chaffinch	<i>Fringilla coelebs</i>
Swallow	<i>Hirundo rustica</i>
Coal Tit	<i>Parus ater hibernicus</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Magpie	<i>Pica pica</i>
Dunnock	<i>Prunella modularis</i>

Species	Scientific
<b>Birds</b>	
Goldcrest	<i>Regulus regulus</i>
Stonechat	<i>Saxicola torquata</i>
Starling	<i>Sturnus vulgaris</i>
Whitethroat	<i>Sylvia communis</i>
Blackcap	<i>Sylvia communis</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.1.4 Other species recorded from 20<sup>th</sup> Lock to Hartley Bridge, Ticknevin**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Black Darter	<i>Sympetrum danae</i>
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
Small Tortoiseshell	<i>Aglais urticae</i>
Small Heath	<i>Coenonympha pamphilus</i>
Large Heath	<i>Coenonympha tullia</i>
The Drinker	<i>Euthrix potatoria</i>

Species	Scientific
<b>Lepidoptera</b>	
Peacock	<i>Inachis io</i>
Meadow Brown	<i>Maniola jurtina</i>
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
Green veined White	<i>Pieris napi</i>
Small White	<i>Pieris rapae</i>
Red Admiral	<i>Vanessa atalanta</i>
Painted Lady	<i>Vanessa cardui</i>
<b>Diptera</b>	
Syrphidae	<i>Melanostomna scalare</i>
Syrphidae	<i>Syrphus ribesii</i>
<b>Hymenoptera</b>	
	<i>Bombus terrestris</i>
Inchnuemonidae	<i>Netelia testacea</i>

## 4.2 Hartley Bridge, Ticknevin – Bord na Móna Bridge, Kilpatrick

(Maps 3 & 4, Section length – 2.2 km)

### Habitats and Flora

The northern bank of the canal (FW3) was characterised by a towpath mosaic (TM) incorporating reed and large sedge swamp (FS1), a graveled access track (BL3), a grassy verge (GS2) and finally bordering treeline (WL2). The grassy verge between the track and the treeline is very narrow along much of this section and the reed and large sedge swamp (FS1) habitat transitions to less diverse amenity grassland (GA2) approximately 800m east of Hartley Bridge. Much of the southern bank was comprised of the typical TM transition with a broken treeline (WL2).



Plate 4.2 View west along the canal showing the towpath mosaic and deciduous treeline

The dominant land-use north of the bordering treeline was agricultural, comprised primarily of improved agricultural grassland (GA1) and arable crops (BC1). Around Hartley Bridge were numerous roads, buildings and gardens (BL3/GA2) together with a small area of mixed broadleaved woodland (WD1) to the northwest and an area of recolonising bare ground (ED3) to the east. More buildings and artificial surfaces (BL3) occurred around Bord na Móna Bridge, particularly to the south.

Table 4.2.1 Habitats recorded from Hartley Bridge, Ticknevin to Bord Na Móna Bridge, Kilpatrick

Habitat Code	Habitat Name
FW3	Canals
FS1	Reed and large sedge swamp
WL2	Treelines
GA1	Improved agricultural grassland
GA2	Amenity grassland
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
WD1	Broadleaved woodland (mixed)
ED3	Recolonised bare ground
WS1	Scrub

Table 4.2.2 Vascular plants recorded from Hartley Bridge, Ticknevin to Bord Na Móna Bridge, Kilpatrick

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Wild garlic	<i>Allium ursinum</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>

Species	Scientific
<b>Vascular Plants</b>	
Wild Angelica	<i>Angelica sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>

Species	Scientific
<b>Vascular Plants</b>	
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Ling	<i>Calluna vulgaris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Star Sedge	<i>Carex echinata</i>
Black Sedge	<i>Carex nigra</i>
Flea Sedge	<i>Carex pulicaris</i>
Bottle Sedge	<i>Carex rostrata</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Pignut	<i>Conopodium majus</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>
Round-leaved Sundew	<i>Drosera rotundifolia</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Variegated Horsetail	<i>Equisetum variegatum</i>
Bell Heather	<i>Erica cinerea</i>
Cross-leaved Heath	<i>Erica tetralix</i>
Bog Cotton	<i>Eriophorum angustifolium</i>
Eyebright	<i>Euphrasia</i> spp.
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Fragrant Orchid	<i>Gymnadenia conopsea</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>

Species	Scientific
<b>Vascular Plants</b>	
Imperforate St John's Wort	<i>Hypericum maculatum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Catsear	<i>Hypochaeris radicata</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Gipsywort	<i>Lycopus europaeus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Purple Moor Grass	<i>Molinia caerulea</i>
Bog Myrtle	<i>Myrica gale</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Bog Asphodel	<i>Narthecium ossifragum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Wild Marjoram	<i>Origanum vulgare</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Hart's-tongue	<i>Phyllitis scolopendrium</i>
Burnet Saxifrage	<i>Pimpinella saxifraga</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>
Smooth Meadow Grass	<i>Poa pratensis</i>
Curled Pondweed	<i>Potamogeton crispus</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Fennel Pondweed	<i>Potamogeton pectinatus</i>
Silverweed	<i>Potentilla anserina</i>
Tormentil	<i>Potentilla erecta</i>
Blackthorn	<i>Prunus spinosa</i>
Bracken	<i>Pteridium aquilinum</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>

Species	Scientific
<b>Vascular Plants</b>	
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus</i> <i>lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>

Species	Scientific
<b>Vascular Plants</b>	
Hedge Woundwort	<i>Stachys sylvatica</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum</i> spp.
Deergrass	<i>Trichophorum</i> <i>cespitosum</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Bulrush	<i>Typha latifolia</i>
Gorse	<i>Ulex europaeus</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.2.3 Bird species recorded from Hartley Bridge, Ticknevin to Bord Na Móna Bridge, Kilpatrick**

Species	Scientific
<b>Birds</b>	
Meadow Pipit	<i>Anthus pratensis</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>
Blue tit	<i>Parus caeruleus</i>

Species	Scientific
<b>Birds</b>	
Willow Warbler	<i>Phylloscopus trochilus</i>
Goldcrest	<i>Regulus regulus</i>
Starling	<i>Sturnus vulgaris</i>
Whitethroat	<i>Sylvia communis</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.2.4 Other Species recorded from Hartley Bridge, Ticknevin to Bord Na Móna Bridge, Kilpatrick**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Black Darter	<i>Sympetrum danae</i>
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
Silver Y	<i>Autographa gamma</i>
Small Heath	<i>Coenonympha pamphilus</i>
The Drinker	<i>Euthrix potatoria</i>

Species	Scientific
Peacock	<i>Inachis io</i>
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
Small White	<i>Pieris rapae</i>
The Cinnabar (larva)	<i>Tyria jacobaeae</i>
Red Admiral	<i>Vanessa atalanta</i>
<b>Diptera</b>	
Syrphidae	<i>Melanostomna scalare</i>
Syrphidae	<i>Myathropa florea</i>
Tipulidae	<i>Tipula maxima</i>
<b>Hymenoptera</b>	
	<i>Bombus lapidarius</i>
	<i>Bombus pascuorum</i>
	<i>Bombus terrestris</i>
Inchnuemonidae	<i>Ichneuemon spp.</i>



### 4.3 Bord na Móna Bridge, Kilpatrick – Hamilton Bridge

(Maps 4 & 5, Section length – 1.2 km)

#### Habitats and Flora

Both the eastern and western banks of the canal (FW3) were characterised by the typical towpath mosaic (TM) with broken treelines (WL2). Habitats present beyond the TM included improved agricultural grassland (GA1) and buildings and artificial surfaces (BL3) with gardens and lawns (GA2). Treeline (TL2) bordered both the northern and southern sides of the towpath in places.



Plate 4.3 View along the northern side of the canal showing the towpath mosaic and deciduous treeline

Table 4.3.1 Habitats recorded from Bord na Móna Bridge, Kilpatrick to Hamilton Bridge

Habitat Code	Habitat Name
FW3	Canals
FS1	Reed and large sedge swamps
GS2	Dry meadows and grassy verges
GA1	Improved agricultural grassland
GA2	Amenity grassland
BL3	Buildings and artificial surfaces
WD1	Broadleaved woodland (mixed)
ED3	Recolonised bare ground
TL2	Treeline

Table 4.3.2 Vascular plants recorded from Bord na Móna Bridge, Kilpatrick to Hamilton Bridge

Species	Scientific
<b>Vascular Plants</b>	
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>

Species	Scientific
<b>Vascular Plants</b>	
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Marsh Marigold	<i>Caltha palustris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Spring Sedge	<i>Carex carophyllea</i>
Star Sedge	<i>Carex echinata</i>
Glaucous Sedge	<i>Carex flacca</i>
Black Sedge	<i>Carex nigra</i>

Species	Scientific
<b>Vascular Plants</b>	
Flea Sedge	<i>Carex pulicaris</i>
Bottle Sedge	<i>Carex rostrata</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Meadow Thistle	<i>Cirsium dissectum</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia spp.</i>
Beech	<i>Fagus sylvatica</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Common Marsh-bedstraw	<i>Galium palustre</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Fragrant Orchid	<i>Gymnadenia conopsea</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Jointed Rush	<i>Juncus articulatus</i>
Toad Rush	<i>Juncus bufonius</i>
Soft Rush	<i>Juncus effusus</i>

Species	Scientific
<b>Vascular Plants</b>	
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Purple-loosestrife	<i>Lythrum salicaria</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Purple Moor Grass	<i>Molinia caerulea</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Wild Marjoram	<i>Origanum vulgare</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Curled Pondweed	<i>Potamogeton crispus</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Fennel Pondweed	<i>Potamogeton pectinatus</i>
Perfoliate Pondweed	<i>Potamogeton perfoliatus</i>
Silverweed	<i>Potentilla anserina</i>
Tormentil	<i>Potentilla erecta</i>
Selfheal	<i>Prunella vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Bracken	<i>Pteridium aquilinum</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Procumbent Pearlwort	<i>Sagina procumbens</i>
Arrowhead	<i>Sagittaria sagittifolia</i>

Species	Scientific
<b>Vascular Plants</b>	
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Branched Bur-reed	<i>Sparganium erectum</i>
Hedge Woundwort	<i>Stachys sylvatica</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>

Species	Scientific
<b>Vascular Plants</b>	
White Clover	<i>Trifolium repens</i>
Gorse	<i>Ulex europaeus</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Ive-leaved Speedwell	<i>Veronica hederifolia</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.3.3 Bird species recorded from Bord na Móna Bridge, Kilpatrick to Hamilton Bridge Kilpatrick to Hamilton Bridge**

Species	Scientific
<b>Birds</b>	
Buzzard	<i>Buteo buteo</i>
Goldfinch	<i>Carduelis carduelis</i>
Woodpigeon	<i>Columba palumbus</i>
Jackdaw	<i>Corvus monedula</i>
Reed Bunting	<i>Emberiza schoeniclus</i>
Swallow	<i>Hirundo rustica</i>
Coal Tit	<i>Periparus ater hibernicus</i>

Species	Scientific
<b>Birds</b>	
Chiffchaff	<i>Phylloscopus collybita</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Goldcrest	<i>Regulus regulus</i>
Starling	<i>Sturnus vulgaris</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.3.4 Other Species recorded from Bord na Móna Bridge, Kilpatrick to Hamilton Bridge Kilpatrick to Hamilton Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
Small Tortoiseshell	<i>Aglais urticae</i>

Species	Scientific
<b>Lepidoptera</b>	
Meadow Brown	<i>Maniola jurtina</i>
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
Small White	<i>Pieris rapae</i>
<b>Diptera</b>	
Syrphidae	<i>Sericomyia silentis</i>
Syrphidae	<i>Syrphus ribesii</i>
Tipulidae	<i>Tipula paludosa</i>
<b>Hymenoptera</b>	
	<i>Bombus terrestris</i>

#### 4.4 Hamilton Bridge – Light Railway Bridge (lifting)

(Maps 5 & 6, Section length – 2.2 km)

##### Habitats and Flora

Both the northeastern and southwestern banks of the canal (FW3) were comprised of the typical towpath mosaic (TM) habitats with broken treelines (WL2) and some adjoining amenity grassland (GA2). A roadway and buildings and gardens (BL3/GA2) were present on the southwestern side. Improved agricultural grassland (GA1) dominated beyond the towpath mosaic on both sides of the canal.



**Plate 4.4** View south from Hamilton Bridge showing towpath mosaic with a mown grass track on the eastern bank and a road on the western bank

**Table 4.4.1** Habitats recorded from Hamilton Bridge to Light Railway Bridge

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
WS1	Scrub
ED3	Recolonised bare ground

**Table 4.4.2** Vascular plants recorded from Hamilton Bridge to Light Railway Bridge

Species	Scientific
<b>Vascular Plants</b>	
Yarrow	<i>Achillea millefolium</i>
Agrimony	<i>Agrimonia eupatoria</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Wild garlic	<i>Allium ursinum</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Stinking Chamomile	<i>Anthemis cotula</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Lesser Burdock	<i>Arctium minus</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>

Species	Scientific
<b>Vascular Plants</b>	
Daisy	<i>Bellis perennis</i>
Lesser Water-parsnip	<i>Berula erecta</i>
Silver Birch	<i>Betula pendula</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Marsh Marigold	<i>Caltha palustris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Glaucous Sedge	<i>Carex flacca</i>
Black Sedge	<i>Carex nigra</i>
Flea Sedge	<i>Carex pulicaris</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Pignut	<i>Conopodium majus</i>

Species	Scientific
<b>Vascular Plants</b>	
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia spp.</i>
Beech	<i>Fagus sylvatica</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Imperforate St John's Wort	<i>Hypericum maculatum</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Fairy Flax	<i>Linum catharticum</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Purple Moor Grass	<i>Molinia caerulea</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>

Species	Scientific
<b>Vascular Plants</b>	
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Burnet Saxifrage	<i>Pimpinella saxifraga</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Silverweed	<i>Potentilla anserina</i>
Tormentil	<i>Potentilla erecta</i>
Selfheal	<i>Prunella vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Bracken	<i>Pteridium aquilinum</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Procumbent Pearlwort	<i>Sagina procumbens</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Crack Willow	<i>Salix fragilis</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.4.3 Bird species recorded from Hamilton Bridge to Light Railway Bridge**

Species	Scientific
<b>Birds</b>	
Sparrowhawk	<i>Accipiter nissus</i>
Long-tailed Tit	<i>Aegithalos caudatus</i>
Meadow Pipit	<i>Anthus pratensis</i>
Goldfinch	<i>Carduelis carduelis</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>
Blue tit	<i>Parus caeruleus</i>

Species	Scientific
<b>Birds</b>	
Coal Tit	<i>Periparus ater hibernicus</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Dunnock	<i>Prunella modularis</i>
Goldcrest	<i>Regulus regulus</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.4.4 Other Species recorded from Hamilton Bridge to Light Railway Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
Small Tortoiseshell	<i>Aglais urticae</i>

Species	Scientific
<b>Lepidoptera</b>	
Peacock	<i>Inachis io</i>
Meadow Brown	<i>Maniola jurtina</i>
Speckled Wood	<i>Pararge aegeria</i>
The Cinnabar (larva)	<i>Tyria jacobaeae</i>
<b>Diptera</b>	
Syrphidae	<i>Syrphus ribesii</i>
Syrphidae	<i>Myathropa florea</i>
<b>Hymenoptera</b>	
Inchnuemonidae	<i>Inchnuemon spp.</i>

#### 4.5 Light Railway Bridge (lifting) – Shee Bridge

(Map 7, Section length – 1.6 km)

##### Habitats and Flora

The northern bank of the canal (FW3) east of the Light Railway Bridge was characterised by a towpath mosaic (TM) incorporating a sharp transition from canal to grassy verge (GS2) to a graveled access track (BL3), bordered by a treeline (WL1). Approximately 600m east of the Light Railway Bridge, this gravel path meets a tarmac road (BL3) running alongside the canal and separated from it by a wide grassy verge (GS2).

In the west of the section, the land both north and south of the canal is mostly improved agricultural grassland (GA1), while in the east of the section, land north of the canal is mostly tilled land (BC3) and land south of the canal contains many buildings and gardens (BL3/GA2).

The invasive plant species *Gunnera* sp. was noted in this section east of the light railway bridge (see Plate 4.6).



Plate 4.5 Looking west from Shee or Scow Bridge



Plate 4.6 *Gunnera* sp. (invasive) on the northern bank of the canal east of Light Railway Bridge

Table 4.5.1 Habitats recorded from Light Railway Bridge to Shee Bridge

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
WL1	Treelines
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
BC3	Tilled land
ED3	Recolonised bare ground
WS1	Scrub

Table 4.5.2 Vascular plants recorded from Light Railway Bridge to Shee Bridge

Species	Scientific
<b>Vascular Plants</b>	
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>

Species	Scientific
<b>Vascular Plants</b>	
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Ling	<i>Calluna vulgaris</i>

Species	Scientific
<b>Vascular Plants</b>	
Marsh Marigold	<i>Caltha palustris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Star Sedge	<i>Carex echinata</i>
Glaucous Sedge	<i>Carex flacca</i>
Black Sedge	<i>Carex nigra</i>
Flea Sedge	<i>Carex pulicaris</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia spp.</i>
Beech	<i>Fagus sylvatica</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Wild Strawberry	<i>Fragaria vesca</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
<b>Giant rhubarb</b>	<b><i>Gunnera sp.</i></b>
Ivy	<i>Hedera helix</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Imperforate St John's Wort	<i>Hypericum maculatum</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>

Species	Scientific
<b>Vascular Plants</b>	
Meadow Vetchling	<i>Lathyrus pratensis</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Fairy Flax	<i>Linum catharticum</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Yellow Pimpernel	<i>Lysimachia nemorum</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Wild Marjoram	<i>Origanum vulgare</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Burnet Saxifrage	<i>Pimpinella saxifraga</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Silverweed	<i>Potentilla anserina</i>
Selfheal	<i>Prunella vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Coltsfoot	<i>Tussilago farfara</i>
Bulrush	<i>Typha latifolia</i>



Species	Scientific
<b>Vascular Plants</b>	
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>

Species	Scientific
<b>Vascular Plants</b>	
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.5.3 Bird species recorded from Light Railway Bridge to Shee Bridge**

Species	Scientific
<b>Birds</b>	
Goldfinch	<i>Carduelis carduelis</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Magpie	<i>Pica pica</i>
Wren	<i>Troglodytes troglodytes</i>

Species	Scientific
<b>Birds</b>	
Swallow	<i>Hirundo rustica</i>
Great tit	<i>Parus major</i>
Coal Tit	<i>Pariparus ater hibernicus</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Blackbird	<i>Turdus merula</i>

**Table 4.5.4 Other Species recorded from Light Railway Bridge to Shee Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Common Darter	<i>Sympetrum striolatum</i>

Species	Scientific
<b>Odonata</b>	
Peacock	<i>Inachis io</i>
Speckled Wood	<i>Pararge aegeria</i>
Small White	<i>Pieris rapae</i>
<b>Diptera</b>	
Syrphidae	<i>Syrphus ribesii</i>
Syrphidae	<i>Melanostomna scalare</i>
<b>Hymenoptera</b>	
Braconidae	<i>Apanteles glomeratus</i>

## 4.6 Shee Bridge – Bond Bridge, Allenwood

(Map 8, Section length – 1.4 km)

### Habitats and Flora

This canal marker forms ESA 2 (see Section 5 for detailed description). The typical towpath mosaic (TM) was recorded along both the northern and southern banks of the canal (FW3) in this section with long strips of *Phragmites* are well developed along the canal banks (See plate 4.7). The land to the north of the canal was mostly wet grassland (GS4) including some areas of mixed wet grassland and scrub (GS4/WS1). Land to the south was dominated by wet grassland (GS4) with some scrub (WS1) and cutover bog (PB4). Buildings and artificial surfaces and gardens (BL3/GA2) occurred near the bridges at either end of this section, *i.e.* Shee or Scow Bridge and Bond Bridge.



**Plate 4.7 View east to Bond Bridge on the northern bank of the canal, showing dense *Phragmites* in the towpath mosaic and mown grass path**

**Table 4.6.1 Habitats recorded from Shee Bridge to Bond Bridge, Allenwood**

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
GS4	Wet grassland
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
WS1	Scrub
PB4	Cutover bog
BC3	Tilled land
BL3	Buildings and artificial surfaces

**Table 4.6.2 Vascular plants recorded from Shee Bridge to Bond Bridge, Allenwood**

Species	Scientific
<b>Vascular Plants</b>	
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>

Species	Scientific
<b>Vascular Plants</b>	
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Glaucous Sedge	<i>Carex flacca</i>
Black Sedge	<i>Carex nigra</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>

Species	Scientific
<b>Vascular Plants</b>	
Nuttall's Waterweed	<i>Elodea nutallii</i>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia spp.</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Wild Strawberry	<i>Fragaria vesca</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Catsear	<i>Hypochaeris radicata</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Yellow Pimpernel	<i>Lysimachia nemorum</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>

Species	Scientific
<b>Vascular Plants</b>	
Common Reed	<i>Phragmites australis</i>
Hart's-tongue	<i>Phyllitis scolopendrium</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Silverweed	<i>Potentilla anserina</i>
Selfheal	<i>Prunella vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa spp.</i>
Bramble	<i>Rubus fruticosus agg.</i>
Raspberry	<i>Rubus idaeus</i>
Common Sorrell	<i>Rumex acetosa</i>
Procumbent Pearlwort	<i>Sagina procumbens</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Biting Stonecrop	<i>Sedum acre</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Branched Bur-reed	<i>Sparganium erectum</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Bulrush	<i>Typha latifolia</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.6.3 Bird species recorded from Shee Bridge to Bond Bridge, Allenwood**

Species	Scientific
<b>Birds</b>	
Long-tailed Tit	<i>Aegithalos caudatus</i>
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>

Species	Scientific
<b>Birds</b>	
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>
Great tit	<i>Parus major</i>

Species	Scientific
<b>Birds</b>	
Coal Tit	<i>Periparus ater hibernicus</i>
Willow Warbler	<i>Phylloscopus trochilus</i>

Species	Scientific
<b>Birds</b>	
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.6.4 Other Species recorded from Shee Bridge to Bond Bridge, Allenwood**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Common Darter	<i>Sympetrum striolatum</i>

Species	Scientific
<b>Lepidoptera</b>	
Meadow Brown	<i>Maniola jurtina</i>
Speckled Wood	<i>Pararge aegeria</i>
Green veined White	<i>Pieris napi</i>
Small White	<i>Pieris rapae</i>
<b>Diptera</b>	
Syrphidae	<i>Syrphus ribesii</i>
Tipulidae	<i>Tipula paludosa</i>

#### 4.7 Bond Bridge, Allenwood – Junction with New Barrow Line

(Maps 8-10, Section length – 1.6 km)

##### Habitats and Flora

The canal section forms ESA3 (see Section 5 for detailed description). East of Bond Bridge, the canal (FW3) banks were characterised by the typical towpath mosaic (TM) with continuous treelines (WL2) and wide grassy verges (GS2). Approximately 250m east of Bond Bridge, drainage ditches (FW4) entered the canal from both banks and the treeline (WL2) on the south bank transitioned to hedgerow (WL1) comprised of primarily of Hawthorn (*Crataegus monogyna*). Further east, broadleaved woodland (WD1) and dry meadows and grassy verges (GS2) were recorded on both sides of the canal. Land to the north of the canal contained many buildings and artificial surfaces (BL3) and gardens (GA2), as well as some arable crops (BC1), improved agricultural grassland (GA1), recolonising bare ground (ED3), an active quarry (ED4) and a small area of broadleaved woodland (WD1).



Plate 4.8 View west towards Bond Bridge showing towpath mosaic and treelines on both sides of the canal

Table 4.7.1 Habitats recorded from Bond Bridge, Allenwood to the Junction with New Barrow Line

Habitat Code	Habitat Name
FW3	Canals
FW4	Drainage ditches
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
WL1	Hedgerows
WL2	Treelines
BC1	Arable crops
ED3	Recolonised bare ground
ED4	Active quarries and mines

Table 4.7.2 Vascular plants recorded from Bond Bridge, Allenwood to the Junction with New Barrow Line

Species	Scientific
<b>Vascular Plants</b>	
Yarrow	<i>Achillea millefolium</i>
Agrimony	<i>Agrimonia eupatoria</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Garlic Mustard	<i>Alliaria petiolata</i>

Species	Scientific
<b>Vascular Plants</b>	
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>

Species	Scientific
<b>Vascular Plants</b>	
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Marsh Marigold	<i>Caltha palustris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Bottle Sedge	<i>Carex rostrata</i>
Knapweed	<i>Centaurea nigra</i>
Red Valerian	<i>Centranthus ruber</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia</i> spp.
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Hawkweed	<i>Hieracium pilosella</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Catsear	<i>Hypochaeris radicata</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Bulbous Rush	<i>Juncus bulbosus</i>
Soft Rush	<i>Juncus effusus</i>

Species	Scientific
<b>Vascular Plants</b>	
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Fairy Flax	<i>Linum catharticum</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Bogbean	<i>Menyanthes trifoliata</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Silverweed	<i>Potentilla anserina</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Hedge Woundwort	<i>Stachys sylvatica</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum</i> spp.

Species	Scientific
<b>Vascular Plants</b>	
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Germander Speedwell	<i>Veronica chamaedrys</i>

Species	Scientific
<b>Vascular Plants</b>	
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.7.3 Bird species recorded from Bond Bridge, Allenwood to the Junction with New Barrow Line**

Species	Scientific
<b>Birds</b>	
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Hooded Crow	<i>Corvus corone cornix</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>

Species	Scientific
<b>Birds</b>	
Swallow	<i>Hirundo rustica</i>
Great tit	<i>Parus major</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.7.4 Other Species recorded from Bond Bridge, Allenwood to the Junction with New Barrow Line**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
Small Tortoiseshell	<i>Aglais urticae</i>

Species	Scientific
<b>Lepidoptera</b>	
Small Heath	<i>Coenonympha pamphilus</i>
Speckled Wood	<i>Pararge aegeria</i>
Green veined White	<i>Pieris napi</i>
The Cinnabar (larva)	<i>Tyria jacobaeae</i>
Garden Carpet	<i>Xanthorhoe fluctuata</i>
<b>Diptera</b>	
Tipulidae	<i>Tipula maxima</i>
Tipulidae	<i>Tipula paludosa</i>

#### 4.8 Junction with New Barrow Line – 19<sup>th</sup> Lock, Lowtown and Lowtown Marina

(Maps 10-12, Section length – 0.2 km)

##### Habitats and Flora

The canal marker forms part of ESA3. The towpath mosaic (TM) on the northern bank of the New Barrow Line (FW3) between the junction with the Main Line and the R415 Bridge showed a transition from reed and large sedge swamp (FS1) to a paved towpath (BL3) and associated grassy verge (GS2) and associated grassy verge (GS2) with a bordering treeline (WL2). The land north of this treeline was a patchwork of improved agricultural grassland (GA1), broadleaved woodland (WD1) and mixed broadleaved/conifer woodland (WD2), with a small area of scrub (WS1) and buildings and artificial surfaces (BL3) adjacent to the bridge.



Plate 4.9 View East from Harbertown Bridge on the southern channel of the Barrow Line

West of the R415 Bridge (BL3), a drainage ditch (FW4) ran between the grassy verge (GS2) and the bordering treeline (WL2). This was associated with reedbeds (FS1) on both sides of the towpath in places. North of the treeline, there were buildings (BL3) with gardens associated with areas of amenity grassland (GA2), as well as an area of wet grassland (GS4), a mixed broadleaved/conifer woodland (WD2) and an adjoining area of broadleaved woodland (WD1). Some improved agricultural grassland (GA1) was also present. At the western extremity, Ballyteague Gaelic Football Club represented a large area of improved amenity grassland (GA2) with a building and some artificial surfaces (BL3).

South of the New Barrow Line, the typical towpath mosaic (TM) was present, again with the addition of a drainage ditch (FW4) west of the R415 bridge, and a continuous treeline (WL2). The area between this channel and the southern access channel was mostly covered by improved agricultural grassland (GA1) and included numerous houses with gardens (BL3/GA2). Two artificial ponds (FL8) were also present, one of which was surrounded by trees and had an associated area of wet grassland (GS4). There was a good diversity of both dragonfly and damselfly in this area with the presence of the following species noted: Brown Hawker Dragonfly (*Aeshna grandis*), Common Blue Damselfly (*Enallagma cyathigerum*) and Banded Demoiselle (*Calopteryx splendens*).

The area south of this southern access channel (FW3) contained houses and gardens (BL3/GA2) interspersed with improved agricultural grassland (GA1), agricultural grassland mixed with wet grassland (GA1/GS4) and small patches of wet grassland (GS4) and scrub (WS1). East of Harbertown Bridge, a few houses and gardens (BL3/GA2) were present with larger areas of improved agricultural grassland (GA1), amenity grassland (GA2) and a patch of scrub (WS1). A linear area of wet willow-alder-ash woodland (WN6) occurred over the last 500 m east to the junction with the main line.

The western bank of the Main Line from the junction with the New Barrow Line was characterised by an area of recolonising bare ground (ED3) and an artificial surface (BL3), followed by a paved quay/towpath (BL3) separated from the canal (FW3) by a narrow strip of grassy verge (GS2). An area of amenity grassland (GA2) and a stone wall (BL1) occurred at the 19<sup>th</sup> Lock. The eastern bank was a quay (BL3) with some buildings and gardens (BL3/GA2) followed by a treeline (WL2).

East of the Main Line in this section was an area of wet grassland bound by treeline (WL2), a hedgerow (WL1) and drainage ditches (FW4). The northern drain was a reed and large sedge swamp (FS1) and strip of broadleaved woodland (WD1). To the north of this was a conifer plantation (WD4).



**Table 4.8.1 Habitats recorded from the Junction with New Barrow Line to 19<sup>th</sup> Lock**

Habitat Code	Habitat Name
FW3	Canals
FW4	Drainage ditches
FL8	Other artificial lakes and ponds
FS1	Reed and large sedge swamps
GS2	Dry meadows and grassy verges
GS4	Wet grassland
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WL2	Treelines
WD1	Broadleaved woodland (mixed)
WD2	Mixed broadleaved/conifer woodland
WD4	Conifer plantation
WN6	Wet willow-alder-ash woodland
BL1	Stone walls and other stonework
ED3	Recolonised bare ground
WS1	Scrub

**Table 4.8.2 Vascular plants recorded from the Junction with New Barrow Line to 19<sup>th</sup> Lock**

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Glaucous Sedge	<i>Carex flacca</i>
Hairy Sedge	<i>Carex hirta</i>

Species	Scientific
<b>Vascular Plants</b>	
Black Sedge	<i>Carex nigra</i>
Bottle Sedge	<i>Carex rostrata</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Pignut	<i>Conopodium majus</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Hemp Agrimony	<i>Eupatorium cannabinum</i>
Eyebright	<i>Euphrasia</i> spp.

Species	Scientific
<b>Vascular Plants</b>	
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Common Water Moss	<i>Fontinalis antipyretica</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Catsear	<i>Hypochaeris radicata</i>
Flag Iris	<i>Iris pseudacorus</i>
Bulbous Rush	<i>Juncus bulbosus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Yellow Pimpernel	<i>Lysimachia nemorum</i>
Field Woodrush	<i>Luzula campestris</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>

Species	Scientific
<b>Vascular Plants</b>	
Annual Meadow Grass	<i>Poa annua</i>
Silverweed	<i>Potentilla anserina</i>
Cowslip	<i>Primula veris</i>
Blackthorn	<i>Prunus spinosa</i>
Common Fleabane	<i>Pulicaria dysenterica</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Broad-leaved Dock	<i>Rumex obtusifolius</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Crack Willow	<i>Salix fragilis</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Corn Sow Thistle	<i>Sonchus arvensis</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum</i> spp.
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Marsh Arrowgrass	<i>Triglochin palustre</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Germander Speedwell	<i>Veronica chamaedrys</i>
Ive-leaved Speedwell	<i>Veronica hederifolia</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.8.3 Bird species recorded from the Junction with New Barrow Line to 19<sup>th</sup> Lock**

Species	Scientific
<b>Birds</b>	
Goldfinch	<i>Carduelis carduelis</i>
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>

Species	Scientific
<b>Birds</b>	
Great tit	<i>Parus major</i>
Coal Tit	<i>Periparus ater hibernicus</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Magpie	<i>Pica pica</i>
Goldcrest	<i>Regulus regulus</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.8.4 Other Species recorded from the Junction with New Barrow Line to 19<sup>th</sup> Lock**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Banded Demoiselle	<i>Calopteryx splendens</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>

Species	Scientific
<b>Lepidoptera</b>	
Small Tortoiseshell	<i>Aglais urticae</i>
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
Small White	<i>Pieris rapae</i>
<b>Diptera</b>	
Syrphidae	<i>Myathropa florea</i>

#### 4.9 19<sup>th</sup> Lock, Lowtown and Lowtown Marina – Binn’s Bridge, Robertstown

(Maps 12-14, Section length – 1.4 km)

##### Habitats and Flora

The towpath mosaic (TM) on the southern bank of the canal (FW3) was a continuous grassy verge (GS2). South of the verge was a riparian woodland (WN5), which transitioned to wet grassland (GS4) and then buildings and artificial surfaces (BL3) associated with gardens and areas of amenity grassland (GA2). South of the riparian woodland, there is an area of mixed marsh and wet grassland (GM1/GS4) with exposed sand, gravel or till (ED1). Wet grassland (GS4) and scrub (WS1) were also present, as well as some improved agricultural grassland.



Plate 4.10 View northwest to Binn’s Bridge, Robertstown

The Towpath mosaic (TM) on the northern bank included a paved road (BL3) and broken treeline (WL2). To the north, habitats included field of improved agricultural grassland (GA1), arable crops (BC1) and extensive areas of wet grassland (GS4). Many of these fields were divided by hedgerows (WL1), treelines (WL2) and drainage ditches (FW4). Roads and buildings (BL3), as well as gardens and areas of improved amenity grassland (GA2), were also recorded. A few small areas of dry meadows (GS2) and a broadleaved woodland (WD1) were also present.

Table 4.9.1 Habitats recorded from the 19<sup>th</sup> Lock to Binn’s Bridge, Robertstown

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
GS4	Wet grassland
GM1	Marsh
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
BC3	Tilled land
ED1	Exposed sand, gravel or till
ED3	Recolonised bare ground
WS1	Scrub
WN5	Riparian woodland

Table 4.9.2 Vascular plants recorded from the 19<sup>th</sup> Lock to Binn’s Bridge, Robertstown

Species	Scientific
<b>Vascular Plants</b>	
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>

Species	Scientific
<b>Vascular Plants</b>	
Garlic Mustard	<i>Alliaria petiolata</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>

Species	Scientific
<b>Vascular Plants</b>	
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Marsh Marigold	<i>Caltha palustris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Glaucous Sedge	<i>Carex flacca</i>
Black Sedge	<i>Carex nigra</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia</i> spp.
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Mare's-tail	<i>Hippuris vulgaris</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Flag Iris	<i>Iris pseudacorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>

Species	Scientific
<b>Vascular Plants</b>	
Wild Privet	<i>Ligustrum vulgare</i>
Fairy Flax	<i>Linum catharticum</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Smooth Meadow Grass	<i>Poa pratensis</i>
Silverweed	<i>Potentilla anserina</i>
Tormentil	<i>Potentilla erecta</i>
Selfheal	<i>Prunella vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea</i> subsp. <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
<b>Snowberry</b>	<b><i>Symphoricarpos albus</i></b>
Dandelions	<i>Taraxacum</i> spp.
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Bush Vetch	<i>Vicia sepium</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.9.3 Bird species recorded from the 19<sup>th</sup> Lock to Binn's Bridge, Robertstown**

Species	Scientific
<b>Birds</b>	
Long-tailed Tit	<i>Aegithalos caudatus</i>
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Hooded Crow	<i>Corvus corone cornix</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>

Species	Scientific
<b>Birds</b>	
Swallow	<i>Hirundo rustica</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>
Blue tit	<i>Parus caeruleus</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.9.4 Other Species recorded from the 19<sup>th</sup> Lock to Binn's Bridge, Robertstown**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>

Species	Scientific
<b>Odonata</b>	
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>

#### 4.10 Binn's Bridge, Robertstown – Bonyngge Bridge or Healy's Bridge

(Maps 14 & 15, Section length – 2.2 km)

##### Habitats and Flora

The typical towpath mosaic (TM) was found continuously along both banks of the canal (FW3) in this section, though a small patch of scrub (WS1) occurred at one point on the south bank. The mosaic in this section was bound by a wide strip of mixed wet grassland and scrub (GS4/WS1) from east of Binn's Bridge, save for a small patch of broadleaved woodland (WD1) on the northern bank.



**Plate 4.11 View west along the northern bank of the canal between Binn's Bridge and Bonyngge or Healy's Bridge showing a good example of the towpath habitat mosaic**

Apart from a relatively small area of houses and gardens (BL3/GA2) just east of Binn's Bridge, agriculture was the dominant land-use on the northern bank of the canal, with much improved agricultural grassland (GA1) and wet grassland (GS4), some of which was mixed with scrub (WS1).

To the south, there were extensive areas of wet grassland (GS4), sometimes mixed with scrub (WS1), mixed broadleaved/conifer woodland (WD2), improved agricultural grassland (GA1) and wet willow-alder-ash woodland (WN6). Drainage ditches (FW4) ran through this area and drained into the canal (FW3). A small area containing houses and gardens (BL3/GA2) was present southwest of Bonyngge or Healy's Bridge. Hedgerows (WL1) were also present in areas of improved agricultural grassland (GA1).

**Table 4.10.1 Habitats recorded from Binn's Bridge to Bonyngge Bridge**

Habitat Code	Habitat Name
FW3	Canals
FW4	Drainage ditches
GS4	Wet grassland
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
WD2	Mixed conifer/broadleaved woodland
WN6	Wet willow-alder-ash woodland
WL1	Hedgerows
ED3	Recolonised bare ground
WS1	Scrub

**Table 4.10.2 Vascular plants recorded from Binn's Bridge to Bonyngge Bridge**

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Yarrow	<i>Achillea millefolium</i>
Horse Chesnut	<i>Aesculus hippocastanum</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Garlic Mustard	<i>Alliaria petiolata</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Glaucous Sedge	<i>Carex flacca</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Common Centaury	<i>Centaureum erythraea</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Field Horsetail	<i>Equisetum arvense</i>
Water Horsetail	<i>Equisetum fluviatile</i>
Eyebright	<i>Euphrasia</i> spp.
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Common Water Moss	<i>Fontinalis antipyretica</i>
Wild Strawberry	<i>Fragaria vesca</i>

Species	Scientific
<b>Vascular Plants</b>	
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Flag Iris	<i>Iris pseudacorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Purple Moor Grass	<i>Molinia caerulea</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>
Smooth Meadow Grass	<i>Poa pratensis</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Silverweed	<i>Potentilla anserina</i>
Tormentil	<i>Potentilla erecta</i>
Barren Strawberry	<i>Potentilla sterilis</i>
Selfheal	<i>Prunella vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Bracken	<i>Pteridium aquilinum</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.



Species	Scientific
<b>Vascular Plants</b>	
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Broad-leaved Dock	<i>Rumex obtusifolius</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Devilsbit Scabious	<i>Succisa pratensis</i>

Species	Scientific
<b>Vascular Plants</b>	
Dandelions	<i>Taraxacum</i> spp.
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Bulrush	<i>Typha latifolia</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.10.3 Bird species recorded from Binn's Bridge to Bonyng Bridge**

Species	Scientific
<b>Birds</b>	
Goldfinch	<i>Carduelis carduelis</i>
Rook	<i>Corvus frugilegus</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>
Blue tit	<i>Parus caeruleus</i>

Species	Scientific
<b>Birds</b>	
Willow Warbler	<i>Phylloscopus trochilus</i>
Goldcrest	<i>Regulus regulus</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.10.4 Other Species recorded from Binn's Bridge to Bonyng Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Common Darter	<i>Sympetrum striolatum</i>

Species	Scientific
<b>Lepidoptera</b>	
Small Tortoiseshell	<i>Aglais urticae</i>
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
Small White	<i>Pieris rapae</i>
<b>Hymenoptera</b>	
Inchnuemonidae	<i>Ichneuemon</i> spp.
	<i>Bombus terrestris</i>
<b>Mammals</b>	
Otter	<i>Lutra lutra</i>

#### 4.11 Bonynge Bridge – Burgh Bridge

(Maps 15 & 16, Section length – 1.8 km)

##### Habitats and Flora

This canal marker forms ESA4 (see Section 5 for a detailed description). The northern bank of the canal (FW3) in this section was characterised by the typical towpath mosaic (TM) with an adjacent linear broadleaved woodland (WD1).

The southern bank was characterised by a sharp transition from canal (FW3) to a very narrow grassy verge (GS2) to broadleaved woodland (WD1) immediately east of Bonynge Bridge, to improved agricultural grassland (GA1) for approximately 300 m of the bank, and to mixed dry meadow and scrub (GS2/WS1) for the remainder of the section. A hedgerow (WL1) was present bordering the aforementioned strip of agricultural grassland (GA1). South of the canal, improved agricultural grassland (GA1) dominated with one field of arable crops (BC1) and a small area of buildings and gardens (BL3/GA2) near Burgh/Cock Bridge.



**Plate 4.12 Dry meadow (GS2) alongside the towpath between Bonynge and Burgh Bridges**

**Table 4.11.1 Habitats recorded from Bonynge Bridge to Burgh Bridge**

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
WL1	Hedgerows
BC1	Arable crops
WS1	Scrub

**Table 4.11.2 Vascular plants recorded from Bonyng Bridge to Burgh Bridge**

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Horse Chesnut	<i>Aesculus hippocastanum</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Bugle	<i>Ajuga reptans</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Garlic Mustard	<i>Alliaria petiolata</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Soft Brome	<i>Bromus hordeaceus</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Hairy Sedge	<i>Carex hirta</i>
Black Sedge	<i>Carex nigra</i>
False Fox Sedge	<i>Carex otrubae</i>
Flea Sedge	<i>Carex pulicaris</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Common Centaury	<i>Centaureum erythraea</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Pignut	<i>Conopodium majus</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>

Species	Scientific
<b>Vascular Plants</b>	
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Water Horsetail	<i>Equisetum fluviatile</i>
Eyebright	<i>Euphrasia</i> spp.
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Wild Strawberry	<i>Fragaria vesca</i>
Ash	<i>Fraxinus excelsior</i>
Common Fumitory	<i>Fumaria officinalis</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Wood Avens	<i>Geum urbanum</i>
Floating Sweet Grass	<i>Glyceria fluitans</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Hawkweed	<i>Hieracium pilosella</i>
Mare's-tail	<i>Hippuris vulgaris</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Bluebell	<i>Hyacinthoides non-scripta</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Slender St John's Wort	<i>Hypericum pulchrum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Catsear	<i>Hypochaeris radicata</i>
Flag Iris	<i>Iris pseudacorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Fairy Flax	<i>Linum catharticum</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Gipsywort	<i>Lycopus europaeus</i>

Species	Scientific
<b>Vascular Plants</b>	
Field Woodrush	<i>Luzula campestris</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Bogbean	<i>Menyanthes trifoliata</i>
Purple Moor Grass	<i>Molinia caerulea</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Wild Marjoram	<i>Origanum vulgare</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Hart's-tongue	<i>Phyllitis scolopendrium</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>
Polypody	<i>Polypodium vulgare</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Silverweed	<i>Potentilla anserina</i>
Tormentil	<i>Potentilla erecta</i>
Barren Strawberry	<i>Potentilla sterilis</i>
Selfheal	<i>Prunella vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>

Species	Scientific
<b>Vascular Plants</b>	
Broad-leaved Dock	<i>Rumex obtusifolius</i>
Wood Dock	<i>Rumex sanguineus</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
White Willow	<i>Salix alba</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>
Burnet	<i>Sanguisorba minor</i>
Sanicle	<i>Sanicula europaea</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Biting Stonecrop	<i>Sedum acre</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Hedge Woundwort	<i>Stachys sylvatica</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum</i> spp.
Upright Hedge-parsley	<i>Torilis japonica</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Germander Speedwell	<i>Veronica chamaedrys</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.11.3 Bird species recorded from Bonyng Bridge to Burgh Bridge**

Species	Scientific
<b>Birds</b>	
Sparrowhawk	<i>Accipiter nissus</i>
Long-tailed Tit	<i>Aegithalos caudatus</i>
Rook	<i>Corvus frugilegus</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>
Great tit	<i>Parus major</i>
Chiffchaff	<i>Phylloscopus collybita</i>

Species	Scientific
<b>Birds</b>	
Willow Warbler	<i>Phylloscopus trochilus</i>
Magpie	<i>Pica pica</i>
Bullfinch	<i>Pyrrhula pyrrhula</i>
Sand Martin	<i>Riparia riparia</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.11.4 Other Species recorded from Bonyng Bridge to Burgh Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
	<i>Catoptria pinella</i>

Species	Scientific
<b>Lepidoptera</b>	
Meadow Brown	<i>Maniola jurtina</i>
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
<b>Diptera</b>	
Syrphidae	<i>Syrphus ribesii</i>
Syrphidae	<i>Melanostomna scalare</i>
Tipulidae	<i>Tipula maxima</i>
<b>Hymenoptera</b>	
	<i>Bombus lapidarius</i>

#### 4.12 Burgh Bridge (Cock) – 18<sup>th</sup> Lock

(Map 17, Section length – 1.2 km)

##### Habitats and Flora

This canal marker forms ESA5 (see Section 5 for detailed description). The northern bank of the canal (FW3) presented the typical towpath mosaic (TM) for most of this section, except at 18<sup>th</sup> Lock, which contained only amenity grassland (GA2) with a paved access track (BL3). North of the towpath mosaic was a continuous strip of scrub (WS1) approximately 50m wide.



**Plate 4.13 Canal bank between Burgh Bridge and 18<sup>th</sup> Lock showing strong evidence of cattle poaching the banks**

The southern bank of the canal was characterised mainly by scrub (WS1). A treeline (WL2) of approximately 200 m in length was present on the southern bank in the middle of this section. A small strip of grassy verge (GS2) was also present. Immediately around 18<sup>th</sup> Lock, there was an area of improved amenity grassland (GA2) surrounded by broadleaved woodland (WD1). A strip of wet grassland (GS4) was also recorded alongside the scrub (WS1). South of the riparian zone, the land was dominated by improved agricultural grassland (GA1) with some buildings and gardens (BL3/GA2) and treelines (WL2). Poaching by cattle was evident on the southern bank in this section (see Plate 4.13).

**Table 4.12.1 Habitats recorded from Burgh Bridge to 18<sup>th</sup> Lock**

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
WD1/WS1	Broadleaved woodland (mixed) / scrub
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
WS1	Scrub

**Table 4.12.2 Vascular plants recorded from Bonyng Bridge to Burgh Bridge**

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Horse Chesnut	<i>Aesculus hippocastanum</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Bugle	<i>Ajuga reptans</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>

Species	Scientific
<b>Vascular Plants</b>	
Stinking Chamomile	<i>Anthemis cotula</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
Lesser Burdock	<i>Arctium minus</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Lesser Water-parsnip	<i>Berula erecta</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>

Species	Scientific
<b>Vascular Plants</b>	
Soft Brome	<i>Bromus hordeaceus</i>
Starworts	<i>Callitriche</i> spp.
Marsh Marigold	<i>Caltha palustris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Black Sedge	<i>Carex nigra</i>
Flea Sedge	<i>Carex pulicaris</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Common Centaury	<i>Centaureum erythraea</i>
Red Valerian	<i>Centranthus ruber</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Pignut	<i>Conopodium majus</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Hemp Agrimony	<i>Eupatorium cannabinum</i>
Eyebright	<i>Euphrasia</i> spp.
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Common Water Moss	<i>Fontinalis antipyretica</i>
Ash	<i>Fraxinus excelsior</i>
Common Fumitory	<i>Fumaria officinalis</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Dove's-foot Crane's-bill	<i>Geranium molle</i>
Herb-Robert	<i>Geranium robertianum</i>
Wood Avens	<i>Geum urbanum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>

Species	Scientific
<b>Vascular Plants</b>	
Hawkweed	<i>Hieracium pilosella</i>
Mare's-tail	<i>Hippuris vulgaris</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Bluebell	<i>Hyacinthoides non-scripta</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Catsear	<i>Hypochaeris radicata</i>
Flag Iris	<i>Iris pseudacorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Yellow Pimpernel	<i>Lysimachia nemorum</i>
Field Woodrush	<i>Luzula campestris</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Purple Moor Grass	<i>Molinia caerulea</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Water Dropwort	<i>Oenanthe aquatica</i>
Hemlock Water Dropwort	<i>Oenanthe crocata</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Hart's-tongue	<i>Phyllitis scolopendrium</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>
Polypody	<i>Polypodium vulgare</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Silverweed	<i>Potentilla anserina</i>
Tormentil	<i>Potentilla erecta</i>
Barren Stawberry	<i>Potentilla sterilis</i>
Selfheal	<i>Prunella vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>

Species	Scientific
<b>Vascular Plants</b>	
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Broad-leaved Dock	<i>Rumex obtusifolius</i>
Wood Dock	<i>Rumex sanguineus</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
White Willow	<i>Salix alba</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Crack Willow	<i>Salix fragilis</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>

Species	Scientific
<b>Vascular Plants</b>	
Rowan	<i>Sorbus aucuparia</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Branched Bur-reed	<i>Sparganium erectum</i>
Hedge Woundwort	<i>Stachys sylvatica</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum</i> spp.
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Coltsfoot	<i>Tussilago farfara</i>
Bulrush	<i>Typha latifolia</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.12.3 Bird species recorded from Bonyng Bridge to Burgh Bridge**

Species	Scientific
<b>Birds</b>	
Long-tailed Tit	<i>Aegithalos caudatus</i>
Heron	<i>Ardea cinerea</i>
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Raven	<i>Corvus corax</i>
Robin	<i>Erithacus rubecula</i>
Chaffinch	<i>Fringilla coelebs</i>
Coot	<i>Fulica atra</i>
Swallow	<i>Hirundo rustica</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>
Blue tit	<i>Parus caeruleus</i>
Great tit	<i>Parus major</i>

Species	Scientific
<b>Birds</b>	
Coal Tit	<i>Periparus ater hibernicus</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Magpie	<i>Pica pica</i>
Dunnock	<i>Prunella modularis</i>
Bullfinch	<i>Pyrrhula pyrrhula</i>
Goldcrest	<i>Regulus regulus</i>
Whitethroat	<i>Sylvia communis</i>
Blackcap	<i>Sylvia communis</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>
Song Thrush	<i>Turdus philomelos</i>

**Table 4.12.4 Other Species recorded from Bonyng Bridge to Burgh Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>

Species	Scientific
<b>Odonata</b>	
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>



Species	Scientific
<b>Lepidoptera</b>	
Small Tortoiseshell	<i>Aglais urticae</i>
Silver Y	<i>Autographa gamma</i>
The Drinker	<i>Euthrix potatoria</i>
Peacock	<i>Inachis io</i>
Small Copper	<i>Lycaena phlaes</i>
Meadow Brown	<i>Maniola jurtina</i>
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
Green Veined White	<i>Pieris napi</i>
Small White	<i>Pieris rapae</i>
Common Blue	<i>Polyommatus icarus</i>
Red Admiral	<i>Vanessa atalanta</i>
Painted Lady	<i>Vanessa cardui</i>
Garden Carpet	<i>Xanthorhoe fluctuata</i>
<b>Diptera</b>	
Syrphidae	<i>Sericomyia silentis</i>

Species	Scientific
<b>Diptera</b>	
Syrphidae	<i>Syrphus ribesii</i>
Syrphidae	<i>Melanostomna scalare</i>
Syrphidae	<i>Myathropa florea</i>
Tipulidae	<i>Tipula maxima</i>
Tipulidae	<i>Tipula paludosa</i>
<b>Hymenoptera</b>	
Tenthredinidae	<i>Thenthredo arcuata</i>
Inchnuemonidae	<i>Netelia testacea</i>
	<i>Bombus terrestris</i>
	<i>Bombus pascuorum</i>
<b>Coleoptera</b>	
7-Spot Ladybird	<i>Coccinella 7-punctata</i>
<b>Mammals</b>	
Badger	<i>Meles meles</i>
<b>Invasive Mammals</b>	
Grey Squirrel	<i>Sciurus carolinensis</i>

#### 4.13 18<sup>th</sup> Lock – 17<sup>th</sup> Lock, Landenstown Bridge

(Maps 17 & 18, Section length – 1.4 km)

##### Habitats and Flora

The northern bank of the canal (FW3) at the 18<sup>th</sup> Lock was characterised by improved amenity grassland (GA2) and a paved access track (BL3) bounded by an area of scrub (WS1). Approximately 800m east of the lock, the access track joins a road (BL3) with a grassy verge (GS2) and sometimes amenity grassland (GA2) on both sides. Closer to the 17<sup>th</sup> Lock, a treeline (WL2) was present alongside the road (BL3). A stone wall (BL1) was present at the 17<sup>th</sup> Lock. North of the banks, improved agricultural grassland (GA1) was dominant interspersed with buildings and gardens (BL3/GA2).

The southern bank of the canal (FW3) in this section was characterised entirely by the typical towpath mosaic (TM) with adjoining broadleaved woodland (WD1). South of the bank, improved agricultural grassland (GA1) dominated. The common frog was noted in this section amongst the reed vegetation on the northern canal bank.

**Table 4.13.1 Habitats recorded from 18<sup>th</sup> Lock to 17<sup>th</sup> Lock**

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
BL3/GA2	Buildings and artificial surfaces / Amenity grassland
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
WS1	Scrub
WL2	Treeline

**Table 4.13.2 Vascular plants recorded from 18<sup>th</sup> Lock to 17<sup>th</sup> Lock**

Species	Scientific
<b>Vascular Plants</b>	
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
False Brome	<i>Brachypodium sylvaticum</i>
Quaking Grass	<i>Briza media</i>

Species	Scientific
<b>Vascular Plants</b>	
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Glaucous Sedge	<i>Carex flacca</i>
Black Sedge	<i>Carex nigra</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Ivy-leaved Toadflax	<i>Cymbalaria mularis</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>

Species	Scientific
<b>Vascular Plants</b>	
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia spp.</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Common Water Moss	<i>Fontinalis antipyretica</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Shining Crane's-bill	<i>Geranium lucidum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Hawkweed	<i>Hieracium pilosella</i>
Mare's-tail	<i>Hippuris vulgaris</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Flag Iris	<i>Iris pseudacorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Bogbean	<i>Menyanthes trifoliata</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>

Species	Scientific
<b>Vascular Plants</b>	
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Silverweed	<i>Potentilla anserina</i>
Tormentil	<i>Potentilla erecta</i>
Selfheal	<i>Prunella vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa spp.</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Broad-leaved Dock	<i>Rumex obtusifolius</i>
Wood Dock	<i>Rumex sanguineus</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.13.3 Bird species recorded from 18<sup>th</sup> Lock to 17<sup>th</sup> Lock**

Species	Scientific
<b>Birds</b>	
Mallard	<i>Anus platyrhynchos</i>
Goldfinch	<i>Carduelis carduelis</i>
Siskin	<i>Carduelis spinus</i>
Rook	<i>Corvus frugilegus</i>

Species	Scientific
<b>Birds</b>	
Jackdaw	<i>Corvus monedula</i>
House Martin	<i>Delichon urbica</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>

Species	Scientific
<b>Birds</b>	
Pied Wagtail	<i>Motacilla alba yarrellii</i>
Great tit	<i>Parus major</i>
Coal Tit	<i>Periparus ater hibernicus</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Willow Warbler	<i>Phylloscopus trochilus</i>

Species	Scientific
<b>Birds</b>	
Magpie	<i>Pica pica</i>
Dunnock	<i>Prunella modularis</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.13.4 Other Species recorded from 18<sup>th</sup> Lock to 17<sup>th</sup> Lock**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
<b>Lepidoptera</b>	
Small Tortoiseshell	<i>Aglais urticae</i>
Peacock	<i>Inachis io</i>
Meadow Brown	<i>Maniola jurtina</i>

Species	Scientific
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
Small White	<i>Pieris rapae</i>
Red Admiral	<i>Vanessa atalanta</i>
Painted Lady	<i>Vanessa cardui</i>
<b>Diptera</b>	
Syrphidae	<i>Melanostomna scalare</i>
Tipulidae	<i>Tipula paludosa</i>
<b>Hymenoptera</b>	
Inchnuemonidae	<i>Ichneuemon spp.</i>
	<i>Bombus lapidarius</i>
	<i>Bombus terrestris</i>

#### 4.14 17<sup>th</sup> Lock, Landenstown Bridge – 16<sup>th</sup> Lock, Digby Bridge

(Maps 18 & 19, Section length – 1.0 km)

##### Habitats and Flora

The northern bank of the canal (FW3) in this section was characterised along the entire length by the typical towpath mosaic (TM) with a bordering treeline (WL2). To the north of the treeline the land was dominated by improved agricultural grassland (GA1). A small area of broadleaved woodland (WD1) was also present, as well as some buildings with gardens (BL3/GA2). The banks at Lock 16 were of improved amenity grassland (GA2).

The south bank was of approximately 50% wet grassland (GS4) with a bordering treeline (WL2) and 50% typical towpath mosaic habitat (TM). South of the canal, mixed wet grassland/scrub (GS4/WS1), broadleaved woodland (WD1) and wet grassland (GS4) were dominant. Some roads (BL3) also occurred.

**Table 4.14.1 Habitats recorded from 17<sup>th</sup> Lock to 16<sup>th</sup> Lock**

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
BL3/GA2	Buildings and artificial surfaces / Amenity grassland
GA2	Amenity grassland
GA1	Improved agricultural grassland
WD1	Broadleaved woodland (mixed)
WS1	Scrub
GS4/WS1	Wet grassland and Scrub

**Table 4.14.2 Vascular plants recorded from 17<sup>th</sup> Lock to 16<sup>th</sup> Lock**

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Lesser Water-parsnip	<i>Berula erecta</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>

Species	Scientific
<b>Vascular Plants</b>	
Glaucous Sedge	<i>Carex flacca</i>
Black Sedge	<i>Carex nigra</i>
Knapweed	<i>Centaurea nigra</i>
Common Centaury	<i>Centaureum erythraea</i>
Red Valerian	<i>Centranthus ruber</i>
Rustyback	<i>Ceterach officinarum</i>
Enchanter's-nightshade	<i>Circaea lutetiana</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>

Species	Scientific
<b>Vascular Plants</b>	
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia spp.</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Wild Strawberry	<i>Fragaria vesca</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Bluebell	<i>Hyacinthoides non-scripta</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Catsear	<i>Hypochaeris radicata</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
White Dead-nettle	<i>Lamium album</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Wild Privet	<i>Ligustrum vulgare</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>

Species	Scientific
<b>Vascular Plants</b>	
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>
Polypody	<i>Polypodium vulgare</i>
Silverweed	<i>Potentilla anserina</i>
Primrose	<i>Primula vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa spp.</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Sanicle	<i>Sanicula europaea</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Germander Speedwell	<i>Veronica chamaedrys</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.14.3 Bird species recorded from 17<sup>th</sup> Lock to 16<sup>th</sup> Lock**

Species	Scientific
<b>Birds</b>	
Goldfinch	<i>Carduelis carduelis</i>
Treecreeper	<i>Certhia familiaris</i>
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Jay	<i>Garrulus glandarius</i>
Swallow	<i>Hirundo rustica</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>

Species	Scientific
<b>Birds</b>	
Blue tit	<i>Parus caeruleus</i>
Great tit	<i>Parus major</i>
Coal Tit	<i>Pariparus ater hibernicus</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Magpie	<i>Pica pica</i>
Dunnock	<i>Prunella modularis</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>
Song Thrush	<i>Turdus philomelos</i>

**Table 4.14.4 Other Species recorded from 17<sup>th</sup> Lock to 16<sup>th</sup> Lock**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>

Species	Scientific
<b>Odonata</b>	
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
Small White	<i>Pieris rapae</i>
<b>Diptera</b>	
Syrphidae	<i>Syrphus ribesii</i>

#### 4.15 16<sup>th</sup> Lock, Digby Bridge – Leinster Aqueduct

(Maps 19 & 20, Section length – 2.2 km)

##### Habitats and Flora

The northern bank of the canal (FW3) in this section was characterised along the entire length by the typical towpath mosaic (TM) with a paved road (BL3) and bordering treeline (WL2). A small area of broadleaved woodland (WD1) occurred just west of the Leinster Aqueduct. To the north of the treeline the land was dominated by improved agricultural grassland (GA1) except for an area of broadleaved woodland (WD1) with buildings and extensive amenity grassland (BL3/GA2) just east of the 16<sup>th</sup> Lock and Digby Bridge, and areas of wet grassland (GS4) west of the Leinster Aqueduct. The aqueduct carries the canal over the River Liffey, a lowland/depositing river (FW2).

The typical towpath mosaic (TM) was also observed along the entire length of the south bank in this section, at the Leinster Aqueduct, where it was replaced by a grassy verge (GS2) and a graveled track (BL3) associated with a small patch of broadleaved woodland (WD1). This artificial surface forms part of the towpath mosaic along this entire section. A treeline (WL2) is also present along much of the southern bank in this section. Habitats occurring to the south included wet grassland (GS4), a large dry meadow (GS2), a substantial amount of improved agricultural grassland (GA1) and a small area of arable crops (BC1), as well as some improved amenity grassland (GA2) and a small area of broadleaved woodland (WD1). In addition, patches of scrub (WS1) occurred within fields containing agricultural grassland (GA1). A few houses with gardens (BL3/GA2) were also present. Himalayan balsam (*Impatiens glandulifera*) was noted to the south of the Leinster Aqueduct, growing along the river bank.

**Table 4.15.1 Habitats recorded from 16<sup>th</sup> Lock to Leinster Aqueduct**

Habitat Code	Habitat Name
FW3	Canals
FW2	Lowland/depositing rivers
GS2	Dry meadows and grassy verges
GS4	Wet grassland
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
BC1	Arable crops
WL2	Treelines
WS1	Scrub

**Table 4.15.2 Vascular plants recorded from 16<sup>th</sup> Lock to Leinster Aqueduct**

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>

Species	Scientific
<b>Vascular Plants</b>	
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Lords-and-Ladies	<i>Arum maculatum</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>



Species	Scientific
<b>Vascular Plants</b>	
Lesser Water-parsnip	<i>Berula erecta</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Glaucous Sedge	<i>Carex flacca</i>
Black Sedge	<i>Carex nigra</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Enchanter's-nightshade	<i>Circaea lutetiana</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Ivy-leaved Toadflax	<i>Cymbalaria mularis</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Couch Grass	<i>Elymus repens</i>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Field Horsetail	<i>Equisetum arvense</i>
Hemp Agrimony	<i>Eupatorium cannabinum</i>
Eyebright	<i>Euphrasia</i> spp.
Beech	<i>Fagus sylvatica</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Wall Barley	<i>Hordeum murinum</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Catsear	<i>Hypochaeris radicata</i>

Species	Scientific
<b>Vascular Plants</b>	
Flag Iris	<i>Iris pseudacorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Fairy Flax	<i>Linum catharticum</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Purple-loosestrife	<i>Lythrum salicaria</i>
Field Woodrush	<i>Luzula campestris</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Purple Moor Grass	<i>Molinia caerulea</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Wild Marjoram	<i>Origanum vulgare</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Butterbur	<i>Petastes hybridus</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Common Reed	<i>Phragmites australis</i>
Hart's-tongue	<i>Phyllitis scolopendrium</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Silverweed	<i>Potentilla anserina</i>
Primrose	<i>Primula vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Bracken	<i>Pteridium aquilinum</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Procumbent Pearlwort	<i>Sagina procumbens</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>

Species	Scientific
<b>Vascular Plants</b>	
Burnet	<i>Sanguisorba minor</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>

Species	Scientific
<b>Vascular Plants</b>	
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.15.3 Bird species recorded from 16<sup>th</sup> Lock to Leinster Aqueduct**

Species	Scientific
<b>Birds</b>	
Long-tailed Tit	<i>Aegithalos caudatus</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>

Species	Scientific
<b>Birds</b>	
Magpie	<i>Pica pica</i>
Dunnock	<i>Prunella modularis</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.15.4 Other Species recorded from 16<sup>th</sup> Lock to Leinster Aqueduct**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>

Species	Scientific
<b>Odonata</b>	
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
Small White	<i>Pieris rapae</i>

#### 4.16 Leinster Aqueduct – Junction with Naas Line at Railway Bridge

(Maps 20 & 21, Section length – 1.0 km)

##### Habitats and Flora

Along the northern bank of the canal (FW3), the typical towpath mosaic (TM) incorporating a graveled road (BL3) and continuous treeline (WL2) was observed along the entire section. The area to the north was dominated by improved agricultural grassland (GA1) and amenity grassland (GA2). Some buildings with gardens (BL3/GA2) were also present.



**Plate 4.14 Grand Canal at the junction with the Naas Corbally Branch**

The south bank again showed the typical towpath mosaic (TM) with a tarmac road (BL3) and broken treeline (WL2). Land to the south was dominated by improved agricultural grassland (GA1) with some buildings and gardens (BL3/GA2). Just west of the junction with the Naas Line, there was an area of mixed broadleaved woodland and scrub (WD1/WS1), within which were a small building (BL3), a small patch of horticultural land (BC2) and an area of improved agricultural grassland (GA1).

This section includes the Naas Line (FW3) as far south as Leinster Mill Bridge and the 2<sup>nd</sup> Lock. Canal side vegetation on the western bank was mostly broadleaved woodland (WD1), except for south of the M7 bridge where it was mostly buildings with associated amenity grassland (BL3/GA2). Land to the west of this channel was dominated by improved agricultural grassland (GA1) divided by roads (BL3), hedgerows (WL1) and treelines (WL2). Some buildings with gardens (BL3/GA2) and patches of scrub (WS1) were also present.

East of the Naas Line (FW3), the bank was characterised by typical towpath mosaic (TM) to the 1<sup>st</sup> Lock and by broadleaved woodland (WD1) from there to the M7, with a continuous treeline (WL2). Land to the east of the canal in this section was mostly agricultural grassland (GA1) and buildings with gardens (BL3/GA2), as well as some broadleaved woodland (WD1) as far as the M7. South of this land use was mostly buildings, roads and amenity grassland (BL3/GA2). Patches of scrub (WS1) were present along the motorway margins.

An island of broadleaved woodland (WD1) was present at the junction of the Main Line and the Naas Line.

**Table 4.16.1 Habitats recorded from Leinster Aqueduct to the Junction with Naas Line**

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
WL1	Hedgerows
WL2	Treelines
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
BC2	Horticultural land
WS1	Scrub

**Table 4.16.2 Vascular plants recorded from Leinster Aqueduct to the Junction with Naas Line**

Species	Scientific
<b>Vascular Plants</b>	
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Horse Chesnut	<i>Aesculus hippocastanum</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Common Centaury	<i>Centaureum erythraea</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Pignut	<i>Conopodium majus</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Ivy-leaved Toadflax	<i>Cymbalaria mularis</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Variiegated Horsetail	<i>Equisetum variegatum</i>
Eyebright	<i>Euphrasia</i> spp.
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Common Water Moss	<i>Fontinalis antipyretica</i>

Species	Scientific
<b>Vascular Plants</b>	
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hawkweed	<i>Hieracium pilosella</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Catsear	<i>Hypochaeris radicata</i>
<b>Himalayan Balsam</b>	<b><i>Impatiens glandulifera</i></b>
Flag Iris	<i>Iris pseudacorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Fairy Flax	<i>Linum catharticum</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Purple-loosestrife	<i>Lythrum salicaria</i>
Field Woodrush	<i>Luzula campestris</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Wild Marjoram	<i>Origanum vulgare</i>
Butterbur	<i>Petastes hybridus</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Hart's-tongue	<i>Phyllitis scolopendrium</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Polypody	<i>Polypodium vulgare</i>
Broad-leaved Pondweed	<i>Potamogeton natans</i>
Silverweed	<i>Potentilla anserina</i>
Cowslip	<i>Primula veris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>

Species	Scientific
<b>Vascular Plants</b>	
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>

Species	Scientific
<b>Vascular Plants</b>	
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Dandelions	<i>Taraxacum</i> spp.
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Coltsfoot	<i>Tussilago farfara</i>
Gorse	<i>Ulex europaeus</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Bush Vetch	<i>Vicia sepium</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.16.3 Bird species recorded from Leinster Aqueduct to the Junction with Naas Line**

Species	Scientific
<b>Birds</b>	
Swift	<i>Apus apus</i>
Heron	<i>Ardea cinerea</i>
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Chaffinch	<i>Fringilla coelebs</i>
Swallow	<i>Hirundo rustica</i>
Great tit	<i>Parus major</i>

Species	Scientific
<b>Birds</b>	
House Sparrow	<i>Passer domesticus</i>
Coal Tit	<i>Periparus ater hibernicus</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Dunnock	<i>Prunella modularis</i>
Goldcrest	<i>Regulus regulus</i>
Sand Martin	<i>Riparia riparia</i>
Starling	<i>Sturnus vulgaris</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.16.4 Other Species recorded from Leinster Aqueduct to the Junction with Naas Line**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>

Species	Scientific
<b>Odonata</b>	
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
<b>Lepidoptera</b>	
The Cinnabar (larva)	<i>Tyria jacobaeae</i>
<b>Diptera</b>	
Syrphidae	<i>Syrphus ribesii</i>
Tipulidae	<i>Tipula maxima</i>

#### 4.17 Junction with Naas Line at Railway Bridge – Sallins Bridge

(Maps 21 & 22, Section length – 0.8 km)

##### Habitats and Flora

The western and northern banks of the canal (FW3) in this section presented the typical towpath mosaic (TM) incorporating a tarmac access road (BL3) and treeline (WL2) over the first 500m (approx.). Land to the west was dominated by improved amenity grassland (GA2) while land to the north was dominated by buildings and gardens (BL3/GA2) and recolonising bare ground (ED3) near Sallins Bridge.



Plate 4.15 Grand Canal in Sallins showing development of the northern bank (BL3)

The eastern bank (early section) was characterised by the typical towpath mosaic (TM) with a treeline, later turning to riparian woodland (WN5) and then to broadleaved woodland (WD1) after the canal turns to take an easterly course. To the south, land was dominated by houses (BL3) with gardens and amenity grasslands (GA2).

Table 4.17.1 Habitats recorded from the Junction with Naas Line to Sallins Bridge

Habitat Code	Habitat Name
FW3	Canals
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
WN5	Riparian Woodland
ED3	Recolonised bare ground

Table 4.17.2 Vascular plants recorded from the Junction with Naas Line to Sallins Bridge

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Yarrow	<i>Achillea millefolium</i>
Horse Chesnut	<i>Aesculus hippocastanum</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Downy Birch	<i>Betula pubescens</i>

Species	Scientific
<b>Vascular Plants</b>	
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Marsh Marigold	<i>Caltha palustris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Spring Sedge	<i>Carex carophyllea</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>

Species	Scientific
<b>Vascular Plants</b>	
Canadian Waterweed	<i>Elodea canadensis</i>
Nuttall's Waterweed	<i>Elodea nutallii</i>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Variegated Horsetail	<i>Equisetum variegatum</i>
Eyebright	<i>Euphrasia spp.</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Common Water Moss	<i>Fontinalis antipyretica</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Catsear	<i>Hypochaeris radicata</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>

Species	Scientific
<b>Vascular Plants</b>	
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Polypody	<i>Polypodium vulgare</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Silverweed	<i>Potentilla anserina</i>
Selfheal	<i>Prunella vulgaris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa spp.</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Wood Dock	<i>Rumex sanguineus</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Marsh Woundwort	<i>Stachys palustris</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Coltsfoot	<i>Tussilago farfara</i>
Gorse	<i>Ulex europaeus</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.17.3 Bird species recorded from the Junction with Naas Line to Sallins Bridge**

Species	Scientific
<b>Birds</b>	
Sparrowhawk	<i>Accipiter nissus</i>
Long-tailed Tit	<i>Aegithalos caudatus</i>
Mallard	<i>Anus platyrhynchos</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>

Species	Scientific
<b>Birds</b>	
Willow Warbler	<i>Phylloscopus trochilus</i>
Magpie	<i>Pica pica</i>
Bullfinch	<i>Pyrrhula pyrrhula</i>
Goldcrest	<i>Regulus regulus</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.17.4 Other Species recorded from the Junction with Naas Line to Sallins Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>

Species	Scientific
<b>Odonata</b>	
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
<b>Diptera</b>	
Tipulidae	<i>Tipula maxima</i>
<b>Mammals</b>	
Otter	<i>Lutra lutra</i>



## 4.18 Sallins Bridge – Railway Bridge

(Maps 22 & 23, Section length – 1.2 km)

### Habitats and Flora

The northern bank of the canal (FW3) was characterised by amenity grassland (GA2) immediately east of Sallins Bridge and thereafter by a thin grassy verge (GS2). In the early part, this was accompanied by a strip of mixed wet grassland and scrub (GS4/WS1) and then by riparian woodland (WN5).

Immediately east of Sallins Bridge, the southern bank was one of amenity grassland (GA2) and a road (BL3). The amenity grassland transitioned to a grassy verge (GS2) with a strip of scrub (WS1) after approximately 100m. Further east, this bank was replaced by the typical topath mosaic (TM) with a broadleaved woodland (WD1) and the road (BL3) ends. A treeline (WL2) of approximately 300 m in length was also present in the middle of this section.

**Table 4.18.1 Habitats recorded from Sallins Bridge to Railway Bridge**

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
WL2	Treelines
WS1	Scrub

**Table 4.18.2 Vascular plants recorded from Sallins Bridge to Railway Bridge**

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Horse Chesnut	<i>Aesculus hippocastanum</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Lords-and-Ladies	<i>Arum maculatum</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Lesser Water-parsnip	<i>Berula erecta</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>

Species	Scientific
<b>Vascular Plants</b>	
	<i>Bromus sterilis</i>
Starworts	<i>Callitriche</i> spp.
Marsh Marigold	<i>Caltha palustris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Hairy Sedge	<i>Carex hirta</i>
Black Sedge	<i>Carex nigra</i>
Knapweed	<i>Centaurea nigra</i>
Hornwort	<i>Ceratophyllum demersum</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nuttallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>

Species	Scientific
<b>Vascular Plants</b>	
Field Horsetail	<i>Equisetum arvense</i>
Variegated Horsetail	<i>Equisetum variegatum</i>
Eyebright	<i>Euphrasia spp.</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Common Water Moss	<i>Fontinalis antipyretica</i>
Wild Strawberry	<i>Fragaria vesca</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Mare's-tail	<i>Hippuris vulgaris</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Fairy Flax	<i>Linum catharticum</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Field Woodrush	<i>Luzula campestris</i>
Black medick	<i>Medicago lupulina</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Wild Marjoram	<i>Origanum vulgare</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>

Species	Scientific
<b>Vascular Plants</b>	
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Silverweed	<i>Potentilla anserina</i>
Cowslip	<i>Primula veris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Wood Dock	<i>Rumex sanguineus</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Bladder Campion	<i>Silene vulgaris</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Marsh Woundwort	<i>Stachys palustris</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Elm	<i>Ulmus agg.</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Pink Water-speedwell	<i>Veronica catenata</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>

**Table 4.18.3 Bird species recorded from Sallins Bridge to Railway Bridge**

Species	Scientific
<b>Birds</b>	
Mallard	<i>Anus platyrhynchos</i>
Goldfinch	<i>Carduelis carduelis</i>
Rook	<i>Corvus frugilegus</i>

Species	Scientific
<b>Birds</b>	
Jackdaw	<i>Corvus monedula</i>
Coot	<i>Fulica atra</i>
Jay	<i>Garrulus glandarius</i>

Species	Scientific
<b>Birds</b>	
Swallow	<i>Hirundo rustica</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>
Great tit	<i>Parus major</i>
House Sparrow	<i>Passer domesticus</i>

Species	Scientific
<b>Birds</b>	
Coal Tit	<i>Periparus ater hibernicus</i>
Magpie	<i>Pica pica</i>
Goldcrest	<i>Regulus regulus</i>
Wren	<i>Troglodytes troglodytes</i>

**Table 4.18.4 Other Species recorded from Sallins Bridge to Railway Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrosoma nymphula</i>

Species	Scientific
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
Small White	<i>Pieris rapae</i>
<b>Hymenoptera</b>	<i>Bombus terrestris</i>
<b>Invasive Mammals</b>	
<b>Grey Squirrel</b>	<b><i>Sciurus carolinensis</i></b>
<b>Brown Rat</b>	<b><i>Rattus norvegicus</i></b>

#### 4.19 Railway Bridge – 15<sup>th</sup> Lock

(Maps 23 & 24, Section length – 2.0 km)

##### Habitats and Flora

Along the northern bank of the canal (FW3), reed and tall sedge swamps (FS1) transitioned to grassy verges (GS2) and then to broadleaved woodland (WD1). An additional riparian woodland (WN5) reduced to a treeline (WL2) in the middle of the section. Amenity grassland (GA2) with some scrub (WS1) and exposed sand, gravel or till (ED1) was present around the 15<sup>th</sup> Lock. Stone walls (BL1) also occurred.

The southern bank was characterised by the typical towpath mosaic (TM). A broadleaved woodland (WD1) was present along much of this section. Further north/east, this was gradually replaced by scrub (WS1) accompanied by a treeline (WL2). Around the 15<sup>th</sup> Lock, amenity grassland (GA2) was present with an area of scrub (WS1) and exposed sand, gravel or till (ED1). A drain (FW4) and treeline (WL2) were also present.

Improved agricultural grassland (GA1) dominated south of the canal.

**Table 4.19.1 Habitats recorded from Railway Bridge to 15<sup>th</sup> Lock**

Habitat Code	Habitat Name
FW3	Canals
FW4	Drainage ditched
FS1	Reed and large sedge swamps
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WD1	Broadleaved woodland (mixed)
WL2	Treelines
ED1	Exposed sand, gravel or till
BL1	Stone walls and other stonework
WS1	Scrub
WN5	Riparian woodland

**Table 4.19.2 Vascular plants recorded from Railway Bridge to 15<sup>th</sup> Lock**

Species	Scientific
<b>Vascular Plants</b>	
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>

Species	Scientific
<b>Vascular Plants</b>	
Daisy	<i>Bellis perennis</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Marsh Marigold	<i>Caltha palustris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Hornwort	<i>Ceratophyllum demersum</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>

Species	Scientific
<b>Vascular Plants</b>	
Traveller's-joy	<i>Clematis vitalba</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia spp.</i>
Beech	<i>Fagus sylvatica</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>

Species	Scientific
<b>Vascular Plants</b>	
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Broad-leaved Pondweed	<i>Potamogeton natans</i>
Silverweed	<i>Potentilla anserina</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Devil'sbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>

**Table 4.19.3 Bird species recorded from Railway Bridge to 15<sup>th</sup> Lock**

Species	Scientific
<b>Birds</b>	
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Hooded Crow	<i>Corvus corone cornix</i>
Jackdaw	<i>Corvus monedula</i>
House Martin	<i>Delichon urbica</i>

Species	Scientific
<b>Birds</b>	
Swallow	<i>Hirundo rustica</i>
Blue tit	<i>Parus caeruleus</i>
Dunnock	<i>Prunella modularis</i>
Starling	<i>Sturnus vulgaris</i>
Wren	<i>Troglodytes troglodytes</i>

Species	Scientific
<b>Birds</b>	
Robin	<i>Erithacus rubecula</i>

Species	Scientific
<b>Birds</b>	
Blackbird	<i>Turdus merula</i>

**Table 4.19.4 Other Species recorded from Railway Bridge to 15<sup>th</sup> Lock**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>

Species	Scientific
<b>Odonata</b>	
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
<b>Diptera</b>	
Tipulidae	<i>Tipula maxima</i>

#### 4.20 15<sup>th</sup> Lock – 14<sup>th</sup> Lock, Devonshire Bridge

(Maps 24 & 25, Section length – 0.6 km)

##### Habitats and Flora

The towpath mosaic (TM) on the northern (western) bank was characterised by a transition from reed and large sedge swamp (FS1) to improved amenity grassland (GA2) and grassy verges (GS2). A treeline (WL2) was present along much of this section and was doubled in places. Buildings (BL3) and stone walls (BL1) were present at the 14<sup>th</sup> Lock.



Plate 4.16 View of the 14<sup>th</sup> Lock with path through GA2

The southern (eastern) bank was characterised by a transition from reed and large sedge swamp (FS1) to an access track (BL3) and a strip of improved amenity grassland (GA2), accompanied by a drainage ditch (FW4) and a bordering treeline (WL2). Killeen Golf Club was present to the south (east) of the canal (FW3) and represented scattered trees and parkland (WD5).

Table 4.20.1 Habitats recorded from 15<sup>th</sup> Lock to 14<sup>th</sup> Lock

Habitat Code	Habitat Name
FW3	Canals
FS1	Reed and large sedge swamps
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
GA2	Amenity grassland
WD1/WS1	Broadleaved woodland (mixed) / scrub
WD5	Scattered trees and parkland
GA1	Improved agricultural grassland
WL2	Treelines
BL1	Stone walls and other stonework

Table 4.20.2 Vascular plants recorded from 15<sup>th</sup> Lock to 14<sup>th</sup> Lock

Species	Scientific
<b>Vascular Plants</b>	
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Lesser Water-parsnip	<i>Berula erecta</i>

Species	Scientific
<b>Vascular Plants</b>	
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Marsh Marigold	<i>Caltha palustris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Hairy Sedge	<i>Carex hirta</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>

Species	Scientific
<b>Vascular Plants</b>	
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia spp.</i>
Beech	<i>Fagus sylvatica</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Flag Iris	<i>Iris pseudacorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>

Species	Scientific
<b>Vascular Plants</b>	
Red Bartsia	<i>Odontites verna</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Silverweed	<i>Potentilla anserina</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa spp.</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.20.3 Bird species recorded from 15<sup>th</sup> Lock to 14<sup>th</sup> Lock**

Species	Scientific
<b>Birds</b>	
Goldfinch	<i>Carduelis carduelis</i>
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Mute Swan	<i>Cygnus olor</i>
House Martin	<i>Delichon urbica</i>
Robin	<i>Erithacus rubecula</i>

Species	Scientific
<b>Birds</b>	
Swallow	<i>Hirundo rustica</i>
Blue tit	<i>Parus caeruleus</i>
Magpie	<i>Pica pica</i>
Goldcrest	<i>Regulus regulus</i>
Starling	<i>Sturnus vulgaris</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>



**Table 4.20.4 Other Species recorded from 15<sup>th</sup> Lock to 14<sup>th</sup> Lock**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>

Species	Scientific
<b>Odonata</b>	
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
Small White	<i>Pieris rapae</i>
<b>Invasive Mammals</b>	
<b>Brown Rat</b>	<b><i>Rattus norvegicus</i></b>

#### 4.21 14<sup>th</sup> Lock, Devonshire Bridge – Ponsonby Bridge

(Maps 25 & 26, Section length – 2.4 km)

##### Habitats and Flora

Immediately north of Devonshire Bridge (BL3), the northern (western) bank of the canal was characterised by a transition from reed and large sedge swamp (FS1) to improved amenity grassland (GA2), which was replaced by scrub (WS1) after 100m. A treeline (WL2) was present also and continued almost unbroken until Ponsonby Bridge. Between the aqueduct over the Painestown River (FW2), only a treeline (WL2) was present on the bank.



Plate 4.17 Mute Swans and cygnets noted east of Devonshire Bridge

The southern (eastern) bank of the canal (FW3) was characterised by the typical towpath mosaic (TM) with a bordering treeline (WL2). A drainage ditch (FW4) was present with the treeline (WL2) from Ponsonby Bridge to the aqueduct over the Painestown River (FW2) and an area of recolonising bare ground (ED3) was present where this drained into the river.

Table 4.21.1 Habitats recorded from 14<sup>th</sup> Lock to Ponsonby Bridge

Habitat Code	Habitat Name
FW2	Depositing lowland river
FW3	Canals
FW4	Drainage ditches
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WL2	Treelines
ED3	Recolonised bare ground
WS1	Scrub

Table 4.21.2 Vascular plants recorded from 14<sup>th</sup> Lock to Ponsonby Bridge

Species	Scientific
<b>Vascular Plants</b>	
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Lesser Water-parsnip	<i>Berula erecta</i>

Species	Scientific
<b>Vascular Plants</b>	
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>

Species	Scientific
<b>Vascular Plants</b>	
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia spp.</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Amphibious bistort	<i>Persicaria amphibia</i>

Species	Scientific
<b>Vascular Plants</b>	
Reed Canary Grass	<i>Phalaris arundinacea</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Silverweed	<i>Potentilla anserina</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa spp.</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.21.3 Bird species recorded from 14<sup>th</sup> Lock to Ponsonby Bridge**

Species	Scientific
<b>Birds</b>	
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>
Blue tit	<i>Parus caeruleus</i>

Species	Scientific
<b>Birds</b>	
Great tit	<i>Parus major</i>
Coal Tit	<i>Periparus ater hibernicus</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Magpie	<i>Pica pica</i>
Goldcrest	<i>Regulus regulus</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.21.4 Other Species recorded from 14<sup>th</sup> Lock to Ponsonby Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>

Species	Scientific
<b>Odonata</b>	
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
<b>Diptera</b>	
Tipulidae	<i>Tipula maxima</i>

## 4.22 Ponsonby Bridge – Henry Bridge

(Maps 26-28, Section length – 2.4 km)

### Habitats and Flora

The northern bank of the canal (FW3) was mostly of reed and large sedge swamp (FS1). Just after Ponsonby Bridge, this transitioned to a strip of improved amenity grassland (GA2), which included a road (BL3) for approximately 300 m. After this, the reed and large sedge swamp (FS1) transitioned into a treeline (WL2). For the last 600 m before Henry bridge, a typical towpath mosaic (TM) was observed was accompanied by a treeline (WL2).

Reed and sedge swamp (FS1) was present along the entire section from Ponsonby Bridge to Henry Bridge, as was a road (BL3). Strips of grassy verges (GS2) and improved amenity grassland (GA2) alternated along the southern side of this road. A treeline (WL2) was present along much of the southern bank in this section and stonework (BL1) was present at Henry Bridge. An area of recolonising bare ground was noted approximately 300 metres west of Henry Bridge.

**Table 4.22.1 Habitats recorded from Ponsonby Bridge to Henry Bridge**

Habitat Code	Habitat Name
FW3	Canals
FS1	Reed and large sedge swamps
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
GA1	Improved agricultural grassland
GA2	Amenity grassland
WL2	Treelines
BL1	Stone walls and other stonework
ED3	Recolonising bare ground

**Table 4.22.2 Vascular plants recorded from Ponsonby Bridge to Henry Bridge**

Species	Scientific
<b>Vascular Plants</b>	
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Lesser Water-parsnip	<i>Berula erecta</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>

Species	Scientific
<b>Vascular Plants</b>	
Cuckoo Flower	<i>Cardamine pratensis</i>
Hairy Sedge	<i>Carex hirta</i>
Black Sedge	<i>Carex nigra</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>

Species	Scientific
<b>Vascular Plants</b>	
Eyebright	<i>Euphrasia spp.</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Flag Iris	<i>Iris pseudacorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>

Species	Scientific
<b>Vascular Plants</b>	
Greater Plantain	<i>Plantago major</i>
Silverweed	<i>Potentilla anserina</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa spp.</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.22.3 Bird species recorded from Ponsonby Bridge to Henry Bridge**

Species	Scientific
<b>Birds</b>	
Long-tailed Tit	<i>Aegithalos caudatus</i>
Goldfinch	<i>Carduelis carduelis</i>
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>

Species	Scientific
<b>Birds</b>	
Blue tit	<i>Parus caeruleus</i>
Great tit	<i>Parus major</i>
Coal Tit	<i>Pariparus ater hibernicus</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Magpie	<i>Pica pica</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.22.4 Other Species recorded from Ponsonby Bridge to Henry Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>

Species	Scientific
<b>Odonata</b>	
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
<b>Diptera</b>	
Syrphidae	<i>Syrphus ribesii</i>
Tipulidae	<i>Tipula maxima</i>

## 4.23 Henry Bridge – 13<sup>th</sup> Lock

(Maps 28 & 29, Section length – 1.2 km)

### Habitats and Flora

The northern bank of the canal (FW3) was lined by reed and large sedge swamp (FS1) and a treeline (WL2) running almost continuously along the bank for this section.

The southern bank of the canal (FW3) was characterised by the typical towpath mosaic (TM) with a broken treeline (WL2) and stone walls (BL1). A surfaced roadway ran along the entire length of this section (BL3) and was bordered on the south by the Lyons estate.

At the 13<sup>th</sup> Lock, some amenity grassland was present to the north and buildings and artificial surfaces (BL3) were present to the south.



Plate 4.18 looking east towards the 13<sup>th</sup> Lock on the south side of the canal with the walls of the Lyons estate visible (BL1)

Table 4.23.1 Habitats recorded from Henry Bridge to 13<sup>th</sup> Lock

Habitat Code	Habitat Name
FW3	Canals
FS1	Reed and large sedge swamps
BL3	Buildings and artificial surfaces
GA2	Amenity grassland
BL1	Stone walls and other stonework
WL2	Treeline

Table 4.23.2 Vascular plants recorded from Henry Bridge to 13<sup>th</sup> Lock

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Brown Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Downy Birch	<i>Betula pubescens</i>

Species	Scientific
<b>Vascular Plants</b>	
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Hairy Sedge	<i>Carex hirta</i>
Black Sedge	<i>Carex nigra</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>



Species	Scientific
<b>Vascular Plants</b>	
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia spp.</i>
Beech	<i>Fagus sylvatica</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Flag Iris	<i>Iris pseudacorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Common Reed	<i>Phragmites australis</i>

Species	Scientific
<b>Vascular Plants</b>	
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Broad-leaved Pondweed	<i>Potamogeton natans</i>
Silverweed	<i>Potentilla anserina</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa spp.</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.23.3 Bird species recorded from Henry Bridge to 13<sup>th</sup> Lock**

Species	Scientific
<b>Birds</b>	
Woodpigeon	<i>Columba palumbus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Magpie	<i>Pica pica</i>

Species	Scientific
<b>Birds</b>	
Dunnock	<i>Prunella modularis</i>
Goldcrest	<i>Regulus regulus</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.23.4 Other Species recorded from Henry Bridge to 13<sup>th</sup> Lock**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>

Species	Scientific
<b>Odonata</b>	
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>

#### 4.24 13<sup>th</sup> Lock – Aylmer’s Bridge

(Map 29, Section length – 1.0 km)

##### Habitats and Flora

This canal marker forms ESA6 (see Section 5 for detailed description). A gravel path (BL3) runs along the southern side of the canal between the 13<sup>th</sup> Lock and Aylmer’s Bridge. This section is bound on the southern side by the old stone wall (BL1) of the Lyon’s Estate, with certain sections having a narrow treeline (WL2) growing intermittently on either side of the wall.



Plate 4.19 Looking west along the towpath at the 13<sup>th</sup> Lock

The vegetation along this section is species poor with large areas bordering the southern side of the south towpath overgrown by butterbur and nettles. A narrow verge of Reed and large sedge swamp (FS1) can be found growing along the verge on either side of the canal. The northern side of the canal consists of a narrow strip of FS1 with a strip of dry meadows and grassy verge (GS2) habitat in parts that then gives way to a narrow strip of broadleaved woodland (WD1).

Small areas of improved amenity grassland (GA2) which appears to be regularly maintained can be found around the 13<sup>th</sup> Lock and Aylmer’s Bridge.

Table 4.24.1 Habitats recorded from 13<sup>th</sup> Lock to Aylmer’s Bridge

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL1	Stone walls and other stonework
BL3	Buildings and artificial surfaces
BL3/GA2	Buildings and artificial surfaces / Amenity grassland
GA2	Amenity grassland
WD1/WS1	Broadleaved woodland (mixed) / scrub
GA1	Improved agricultural grassland
WD1	Broadleaved woodland (mixed)
ED3	Recolonised bare ground
WL1	Hedgerows
WL2	Treelines
TM	Towpath Mosaic

Table 4.24.2 Vascular plants recorded from 13<sup>th</sup> Lock to Aylmer’s Bridge

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>

Species	Scientific
<b>Vascular Plants</b>	
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool’s Water-cress	<i>Apium nodiflorum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>

Species	Scientific
<b>Vascular Plants</b>	
Daisy	<i>Bellis perennis</i>
Lesser Water-parsnip	<i>Berula erecta</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Glaucous Sedge	<i>Carex flacca</i>
Hairy Sedge	<i>Carex hirta</i>
Black Sedge	<i>Carex nigra</i>
Knapweed	<i>Centaurea nigra</i>
Common Centaury	<i>Centaureum erythraea</i>
Rustyback	<i>Ceterach officinarum</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Hemp Agrimony	<i>Eupatorium cannabinum</i>
Eyebright	<i>Euphrasia</i> spp.
Beech	<i>Fagus sylvatica</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>

Species	Scientific
<b>Vascular Plants</b>	
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Larch	<i>Larix</i> sp.
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Ivy-leaved Duckweed	<i>Lemna trisulca</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Field Woodrush	<i>Luzula campestris</i>
Pineappleweed	<i>Matricaria discoidea</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>
Silverweed	<i>Potentilla anserina</i>
Barren Stawberry	<i>Potentilla sterilis</i>
Cowslip	<i>Primula veris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea</i> subsp. <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>

Species	Scientific
<b>Vascular Plants</b>	
Common Club-rush	<i>Schoenoplectus lacustris</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>

Species	Scientific
<b>Vascular Plants</b>	
Bulrush	<i>Typha latifolia</i>
Gorse	<i>Ulex europaeus</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>

**Table 4.24.3 Bird species recorded from 13<sup>th</sup> Lock to Aylmer's Bridge**

Species	Scientific
<b>Birds</b>	
Long-tailed Tit	<i>Aegithalos caudatus</i>
Woodpigeon	<i>Columba palumbus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>
Coal Tit	<i>Periparus ater hibernicus</i>

Species	Scientific
<b>Birds</b>	
Chiffchaff	<i>Phylloscopus collybita</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Goldcrest	<i>Regulus regulus</i>
Starling	<i>Sturnus vulgaris</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.24.4 Other Species recorded from 13<sup>th</sup> Lock to Aylmer's Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>

Species	Scientific
<b>Lepidoptera</b>	
Meadow Brown	<i>Maniola jurtina</i>
Small White	<i>Pieris rapae</i>
<b>Diptera</b>	
Syrphidae	<i>Melanostomna scalare</i>
Syrphidae	<i>Myathropa florea</i>
Tipulidae	<i>Tipula maxima</i>
<b>Hymenoptera</b>	
	<i>Bombus terrestris</i>

## 4.25 Aylmer's Bridge – Hazelhatch Bridge

(Map 29 & 30, Section length – 1.8 km)

### Habitats and Flora

This canal marker forms ESA6 (see Section 5 for detailed description). The gravel path (BL3) from the previous section extends eastwards along this section of canal. The northern side of the pathway is bordered by reed and tall sedge growth (FS1) on the canal side and dry meadows and grassy verge (GS2) to the southern side of the pathway with a narrow treeline (WL2) along the border to the south. This treeline becomes wider and changes to an area of Broadleaved woodland (WD1) with a steep depression falling away from the pathway on the southern side as one approaches Hazelhatch Bridge.



**Plate 4.20 Gravel pathway (BL3) extending west towards Aylmer's Bridge, Grey Heron visible on pathway verge**



**Plate 4.21 Looking down on northern side of canal side from Aylmer's Bridge with access track visible and treeline to north**

Travelling from Aylmer's Bridge east along the northern side of the canal a narrow graveled path (BL3) exists for approximately half of this section, which terminates in an agricultural field further east (GA1). The northern side of the path is bordered by a narrow line of mature trees (WL2) which widens into an area of broadleaved woodland (WD1) on the approach to Hazelhatch Bridge. The canal vegetation in this section was species poor with a notable amount of butterbur present on the northern bank in sections. Closer to Hazelhatch Bridge, residential properties (BL3/GA2) can be found.

**Table 4.25.1 Habitats recorded from Aylmer's Bridge to Hazelhatch Bridge**

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
BL3/GA2	Buildings and artificial surfaces / Amenity grassland
GA2	Amenity grassland
GA1	Improved agricultural grassland
WD1	Broadleaved woodland (mixed)
WS1	Scrub

**Table 4.25.2 Vascular plants recorded from Aylmer's Bridge to Hazelhatch Bridge**

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Lesser Water-parsnip	<i>Berula erecta</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Marsh Marigold	<i>Caltha palustris</i>
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Common Centaury	<i>Centaureum erythraea</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Traveller's-joy	<i>Clematis vitalba</i>
Pignut	<i>Conopodium majus</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>

Species	Scientific
<b>Vascular Plants</b>	
Water Horsetail	<i>Equisetum fluviatile</i>
Hemp Agrimony	<i>Eupatorium cannabinum</i>
Eyebright	<i>Euphrasia</i> spp.
Beech	<i>Fagus sylvatica</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Mare's-tail	<i>Hippuris vulgaris</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Bulbous Rush	<i>Juncus bulbosus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Larch	<i>Larix</i> sp.
Meadow Vetchling	<i>Lathyrus pratensis</i>
Common Duckweed	<i>Lemna minor</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Fairy Flax	<i>Linum catharticum</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Field Woodrush	<i>Luzula campestris</i>
Pineappleweed	<i>Matricaria discoidea</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Bogbean	<i>Menyanthes trifoliata</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Water Dropwort	<i>Oenanthe aquatica</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>

Species	Scientific
<b>Vascular Plants</b>	
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>
Smooth Meadow Grass	<i>Poa pratensis</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Broad-leaved Pondweed	<i>Potamogeton natans</i>
Silverweed	<i>Potentilla anserina</i>
Tormentil	<i>Potentilla erecta</i>
Barren Stawberry	<i>Potentilla sterilis</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>

Species	Scientific
<b>Vascular Plants</b>	
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Water Figwort	<i>Scrophularia auriculata</i>
Biting Stonecrop	<i>Sedum acre</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Dandelions	<i>Taraxacum</i> spp.
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Gorse	<i>Ulex europaeus</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Pink Water-speedwell	<i>Veronica catenata</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.

**Table 4.25.3 Bird species recorded from 13<sup>th</sup> Lock to Aylmer's Bridge**

Species	Scientific
<b>Birds</b>	
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Coot	<i>Fulica atra</i>
Great tit	<i>Parus major</i>
Coal Tit	<i>Pariparus ater hibernicus</i>
Chiffchaff	<i>Phylloscopus collybita</i>

Species	Scientific
<b>Birds</b>	
Willow Warbler	<i>Phylloscopus trochilus</i>
Magpie	<i>Pica pica</i>
Bullfinch	<i>Pyrrhula pyrrhula</i>
Goldcrest	<i>Regulus regulus</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.25.4 Other Species recorded from 13<sup>th</sup> Lock to Aylmer's Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>

Species	Scientific
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
Green veined White	<i>Pieris napi</i>
Common Blue	<i>Polyommatus icarus</i>
The Cinnabar (larva)	<i>Tyria jacobaeae</i>
<b>Diptera</b>	
Syrphidae	<i>Melanostomna scalare</i>
Tipulidae	<i>Tipula maxima</i>



Species	Scientific
<b>Amphibians</b>	
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
	<i>Catoptria pinella</i>
Peacock	<i>Inachis io</i>

Species	Scientific
<b>Lepidoptera</b>	
<b>Hymenoptera</b>	
	<i>Bombus terrestris</i>
<b>Coleoptera</b>	
7-Spot Ladybird	<i>Coccinella 7-punctata</i>

## 4.26 Hazelhatch Bridge – Gollierstown Bridge

(Map 31, 32 and 33, Section length – 3.2 km)

### Habitats and Flora

This canal marker forms ESA6 (see Section 5 for detailed description). The towpath changes to the northern side of the canal for this section and is comprised of a gravel surface initially (BL3) closer to Hazelhatch changing into a grassy towpath with the surrounding habitats including treeline (WL2) to the north and reed and tall sedge swamp (FS1) to the south on the canal verge.



Plate 4.22 Towpath mosaic visible along the majority of this section

As the pathway continues along the northern side of the canal eastwards the treeline that borders the site expands into areas of broadleaved woodland (WD1) with patches of Riparian woodland (WN5) present in places on both sides of the canal. The species diversity in this section is relatively low with horsetails, common vetch, nettles and brambles common throughout. Several artificial ponds (FL8) are present just outside the towpath area as the pathway comes closer to Gollierstown Bridge.

Table 4.26.1 Habitats recorded from Hazelhatch Bridge to Gollierstown Bridge

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
BL3/GA2	Buildings and artificial surfaces / Amenity grassland
GA2	Amenity grassland
WD1/WS1	Broadleaved woodland (mixed) / scrub
GA1	Improved agricultural grassland
WD1	Broadleaved woodland (mixed)
ED3	Recolonised bare ground
WS1	Scrub
WL2	Treeline
FL8	Artificial Ponds

Table 4.26.2 Vascular plants recorded from Hazelhatch Bridge to Gollierstown Bridge

Species	Scientific
<b>Vascular Plants</b>	
Yarrow	<i>Achillea millefolium</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>

Species	Scientific
<b>Vascular Plants</b>	
Daisy	<i>Bellis perennis</i>
Lesser Water-parsnip	<i>Berula erecta</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Glaucous Sedge	<i>Carex flacca</i>
Hairy Sedge	<i>Carex hirta</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Common Centaury	<i>Centaureum erythraea</i>

Species	Scientific
<b>Vascular Plants</b>	
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Pignut	<i>Conopodium majus</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Water Horsetail	<i>Equisetum fluviatile</i>
Hemp Agrimony	<i>Eupatorium cannabinum</i>
Eyebright	<i>Euphrasia spp.</i>
Beech	<i>Fagus sylvatica</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Hawkweed	<i>Hieracium pilosella</i>
Mare's-tail	<i>Hippuris vulgaris</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Catsear	<i>Hypochaeris radicata</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Rough Hawkbit	<i>Leontodon hispidus</i>

Species	Scientific
<b>Vascular Plants</b>	
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Fairy Flax	<i>Linum catharticum</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Gipsywort	<i>Lycopus europaeus</i>
Field Woodrush	<i>Luzula campestris</i>
Pineappleweed	<i>Matricaria discoidea</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Bogbean	<i>Menyanthes trifoliata</i>
Water-forget-me-not	<i>Myosotis scorpioides</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Hart's-tongue	<i>Phyllitis scolopendrium</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Smooth Meadow Grass	<i>Poa pratensis</i>
Shining Pondweed	<i>Potamogeton lucens</i>
Broad-leaved Pondweed	<i>Potamogeton natans</i>
Silverweed	<i>Potentilla anserina</i>
Tormentil	<i>Potentilla erecta</i>
Barren Stawberry	<i>Potentilla sterilis</i>
Cowslip	<i>Primula veris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Bulbous Buttercup	<i>Ranunculus bulbosus</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa spp.</i>
Bramble	<i>Rubus fruticosus agg.</i>
Common Sorrell	<i>Rumex acetosa</i>
Wood Dock	<i>Rumex sanguineus</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea subsp oleifolia</i>

Species	Scientific
<b>Vascular Plants</b>	
Crack Willow	<i>Salix fragilis</i>
Elder	<i>Sambucus nigra</i>
Burnet	<i>Sanguisorba minor</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Common Figwort	<i>Scrophularia nodosa</i>
Hoary Ragwort	<i>Senecio erucifolius</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Devilsbit Scabious	<i>Succisa pratensis</i>

Species	Scientific
<b>Vascular Plants</b>	
Dandelions	<i>Taraxacum spp.</i>
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Sea Mayweed	<i>Tripleurospermum maritimum</i>
Bulrush	<i>Typha latifolia</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola spp.</i>
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.26.3 Bird species recorded from 13<sup>th</sup> Lock to Aylmer's Bridge**

Species	Scientific
<b>Birds</b>	
Goldfinch	<i>Carduelis carduelis</i>
Woodpigeon	<i>Columba palumbus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>
Chiffchaff	<i>Phylloscopus collybita</i>

Species	Scientific
<b>Birds</b>	
Magpie	<i>Pica pica</i>
Bullfinch	<i>Pyrrhula pyrrhula</i>
Starling	<i>Sturnus vulgaris</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>
Common Frog	<i>Rana temporaria</i>

**Table 4.26.4 Other Species recorded from 13<sup>th</sup> Lock to Aylmer's Bridge**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
Small Tortoiseshell	<i>Aglais urticae</i>
	<i>Catoptria pinella</i>
Meadow Brown	<i>Maniola jurtina</i>

Species	Scientific
<b>Lepidoptera</b>	
Oblique Carpet	<i>Orthonama vittata</i>
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
Green veined White	<i>Pieris napi</i>
Small White	<i>Pieris rapae</i>
Common Blue	<i>Polyommatus icarus</i>
<b>Diptera</b>	
Syrphidae	<i>Myathropa florea</i>
Tipulidae	<i>Tipula maxima</i>
<b>Hymenoptera</b>	
	<i>Bombus lapidarius</i>
	<i>Bombus terrestris</i>

## 4.27 Gollierstown Bridge – 12<sup>th</sup> Lock, Lucan Road Bridge

(Map 33 & 34, Section length – 1.4 km)

### Habitats and Flora

This canal marker forms ESA6 (see Section 5 for detailed description). The canal towpath continues on the northern side of the canal along this section and is comprised of a grassy pathway with some occasional gravel. The southern side of the canal close to Gollierstown shows some signs of poaching by farm animals that may access the canal from the agricultural fields to the south (See Plate 4.23).

The northern side of the canal is bordered by scrub (WS1) and treeline (WL2) with hemp agrimony and *Phragmites australis* frequent along the canal verge throughout this section.

The middle section of this stretch is shaded and sheltered by high treeline (WL2) on either side of the canal.

On the approach to the 12<sup>th</sup> lock the surrounding habitats change and the area becomes more urbanised with commercial units adjacent to the towpath and artificially surfaced areas (BL3) increasing.



Plate 4.23 Looking across the canal to the southern side with evidence of poaching by farm animals



Plate 4.24 Sheltered section of canal with high broadleaved treeline evident on both sides

Table 4.27.1 Habitats recorded from Gollierstown Bridge to 12<sup>th</sup> Lock

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
BL3/GA2	Buildings and artificial surfaces / Amenity grassland
GA2	Amenity grassland
GA1	Improved agricultural grassland
WD1	Broadleaved woodland (mixed)
ED3	Recolonised bare ground
WS1	Scrub
WL2	Treeline
TM	Towpath Mosaic
WL2	Treeline

Table 4.27.2 Vascular plants recorded from Gollierstown Bridge to 12<sup>th</sup> Lock

Species	Scientific
<b>Vascular Plants</b>	
Field Maple	<i>Acer campestre</i>
Yarrow	<i>Achillea millefolium</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>

Species	Scientific
<b>Vascular Plants</b>	
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Lords-and-Ladies	<i>Arum maculatum</i>

Species	Scientific
<b>Vascular Plants</b>	
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Slender Tufted-sedge	<i>Carex acuta</i>
Glaucous Sedge	<i>Carex flacca</i>
Hairy Sedge	<i>Carex hirta</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Common Centaury	<i>Centaureum erythraea</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Traveller's-joy	<i>Clematis vitalba</i>
Pignut	<i>Conopodium majus</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>
Fern Grass	<i>Desmazeria rigida</i>
Common Spike-rush	<i>Eleocharis palustris</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Field Horsetail	<i>Equisetum arvense</i>
Eyebright	<i>Euphrasia</i> spp.
Beech	<i>Fagus sylvatica</i>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Common Fumitory	<i>Fumaria officinalis</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Herb-Robert	<i>Geranium robertianum</i>
Wood Avens	<i>Geum urbanum</i>

Species	Scientific
<b>Vascular Plants</b>	
Reed Sweet Grass	<i>Glyceria maxima</i>
Opposite-leaved Pondweed	<i>Groenlandia densa</i>
Ivy	<i>Hedera helix</i>
Hawkweed	<i>Hieracium pilosella</i>
Mare's-tail	<i>Hippuris vulgaris</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Catsear	<i>Hypochaeris radicata</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Bulbous Rush	<i>Juncus bulbosus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Gipsywort	<i>Lycopus europaeus</i>
Purple-loosestrife	<i>Lythrum salicaria</i>
Field Woodrush	<i>Luzula campestris</i>
Pineappleweed	<i>Matricaria discoidea</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Bogbean	<i>Menyanthes trifoliata</i>
Water-forget-me-not	<i>Myosotis scorpioides</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Water Dropwort	<i>Oenanthe aquatica</i>
Hemlock Water Dropwort	<i>Oenanthe crocata</i>
Poppy	<i>Papaver</i> spp.
Butterbur	<i>Petastes hybridus</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Hart's-tongue	<i>Phyllitis scolopendrium</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>

Species	Scientific
<b>Vascular Plants</b>	
Broad-leaved Pondweed	<i>Potamogeton natans</i>
Silverweed	<i>Potentilla anserina</i>
Barren Stawberry	<i>Potentilla sterilis</i>
Cowslip	<i>Primula veris</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Bulbous Buttercup	<i>Ranunculus bulbosus</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>
Burnet	<i>Sanguisorba minor</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>

Species	Scientific
<b>Vascular Plants</b>	
Biting Stonecrop	<i>Sedum acre</i>
Ragwort	<i>Senecio jacobaea</i>
Bladder Campion	<i>Silene vulgaris</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum</i> spp.
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Bulrush	<i>Typha latifolia</i>
Gorse	<i>Ulex europaeus</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.27.3 Bird species recorded from Gollierstown Bridge to 12<sup>th</sup> Lock**

Species	Scientific
<b>Birds</b>	
Goldfinch	<i>Carduelis carduelis</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Coot	<i>Fulica atra</i>
Blue tit	<i>Parus caeruleus</i>
Great tit	<i>Parus major</i>
Tree Sparrow	<i>Passer montanus</i>

Species	Scientific
<b>Birds</b>	
Willow Warbler	<i>Phylloscopus trochilus</i>
Magpie	<i>Pica pica</i>
Dunnock	<i>Prunella modularis</i>
Starling	<i>Sturnus vulgaris</i>
Whitethroat	<i>Sylvia communis</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.27.4 Other Species recorded from Gollierstown Bridge to 12<sup>th</sup> Lock**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>

Species	Scientific
<b>Odonata</b>	
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
Silver Y	<i>Autographa gamma</i>
Peacock	<i>Inachis io</i>
Meadow Brown	<i>Maniola jurtina</i>
Speckled Wood	<i>Pararge aegeria</i>
Large White	<i>Pieris brassicae</i>
Small White	<i>Pieris rapae</i>

Species	Scientific
<b>Lepidoptera</b>	
The Cinnabar (larva)	<i>Tyria jacobaeae</i>
Painted Lady	<i>Vanessa cardui</i>
Garden Carpet	<i>Xanthorhoe fluctuata</i>

Species	Scientific
<b>Diptera</b>	
Syrphidae	<i>Melanostomna scalare</i>
<b>Hymenoptera</b>	
	<i>Bombus terrestris</i>



#### 4.28 12<sup>th</sup> Lock – 11<sup>th</sup> Lock

(Map 34, 35 and 36, Section length – 3.0 km)

##### Habitats and Flora

This section of the canal is still generally surrounded by rural land-uses. A paved towpath (BL3) exists on both sides of the canal up until the zig zag pedestrian bridge. This section is bordered by treeline (WL2) and scrub (WS1) on the northern side. The canal verge has a thin strip of Reed and large sedge swamp (FS1) on both sides with an adjoining narrow strip of amenity grassland (GA2) which is regularly mown (See Plate 4.25).



Plate 4.25 Looking west on northern side of canal towards 12<sup>th</sup> Lock

East of the pedestrian bridge the paved towpath on the northern side of the canal is replaced by a grassy pathway (GA2) bordered by scrub (WS1) and treeline to the north. The southern side of the canal retains its paved towpath which is utilised by recreational users.



Plate 4.26 Looking east on northern side of canal (tarmac path gives way to grassy towpath)

This section of the canal continues eastwards and travels under the R136 road bridge, from this point on the surroundings become more urban in nature with a large housing estate present on the southern side of the canal. The northern side of the canal is comprised of towpath mosaic with grassy towpath bordered by treeline (WL2).

The southern side of the canal consists of a well developed surfaced towpath with a canal verge comprised of reed and tall sedge swamp (FS1). A narrow treeline (WL2) borders the towpath on the southern side after which a large area of amenity grassland (GA2) can be found to the front of the nearby housing estate.

Japanese knotweed was identified in this section on the northern side of the canal to the immediate west of the 11<sup>th</sup> Lock. A small stream exists down an embankment to the north of the grassy towpath and further evidence of Japanese knotweed was found in this area.

Table 4.28.1 Habitats recorded from 12<sup>th</sup> Lock to 11<sup>th</sup> Lock

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
BL3/GA2	Buildings and artificial surfaces / Amenity grassland
GA2	Amenity grassland
WD1/WS1	Broadleaved woodland (mixed) / scrub
GA1	Improved agricultural grassland
WD1	Broadleaved woodland (mixed)
BC3	Tilled land
ED3	Recolonised bare ground
WS1	Scrub

**Table 4.28.2 Vascular plants recorded from 12<sup>th</sup> Lock to 11<sup>th</sup> Lock**

Species	Scientific
<b>Vascular Plants</b>	
Sycamore	<i>Acer pseudoplatanus</i>
Yarrow	<i>Achillea millefolium</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Lords-and-Ladies	<i>Arum maculatum</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
<b>Butterfly Bush</b>	<b><i>Buddleia davidii</i></b>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Common Centaury	<i>Centaureum erythraea</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Spear Thistle	<i>Cirsium vulgare</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
Common Spotted-orchid	<i>Dactylorhiza fuschii</i>
Tufted Hair Grass	<i>Deschampsia cespitosa</i>
Fern Grass	<i>Desmazeria rigida</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
<b>Nuttall's Waterweed</b>	<b><i>Elodea nutallii</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Field Horsetail	<i>Equisetum arvense</i>

Species	Scientific
<b>Vascular Plants</b>	
Variagated Horsetail	<i>Equisetum variegatum</i>
Hemp Agrimony	<i>Eupatorium cannabinum</i>
Eyebright	<i>Euphrasia</i> spp.
Beech	<i>Fagus sylvatica</i>
<b>Japanese knotweed</b>	<b><i>Fallopia japonica</i></b>
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Common Fumitory	<i>Fumaria officinalis</i>
Cleavers	<i>Galium aparine</i>
Lady's Bedstraw	<i>Galium verum</i>
Hedgerow Crane's-bill	<i>Geranium pyrenaicum</i>
Herb-Robert	<i>Geranium robertianum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Opposite-leaved Pondweed	<i>Groenlandia densa</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Bulbous Rush	<i>Juncus bulbosus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Field Scabious	<i>Knautia arvensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Field Woodrush	<i>Luzula campestris</i>
Pineappleweed	<i>Matricaria discoidea</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Water-forget-me-not	<i>Myosotis scorpioides</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Red Bartsia	<i>Odontites verna</i>
Butterbur	<i>Petastes hybridus</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Common Reed	<i>Phragmites australis</i>

Species	Scientific
<b>Vascular Plants</b>	
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Annual Meadow Grass	<i>Poa annua</i>
Smooth Meadow Grass	<i>Poa pratensis</i>
Silverweed	<i>Potentilla anserina</i>
Blackthorn	<i>Prunus spinosa</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Wood Dock	<i>Rumex sanguineus</i>
Procumbent Pearlwort	<i>Sagina procumbens</i>
Arrowhead	<i>Sagittaria sagittifolia</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>

Species	Scientific
<b>Vascular Plants</b>	
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
English Stonecrop	<i>Sedum aglicum</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
Dandelions	<i>Taraxacum</i> spp.
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Bulrush	<i>Typha latifolia</i>
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.
Horned Pondweed	<i>Zannichellia palustris</i>

**Table 4.28.3 Bird species recorded from 12<sup>th</sup> Lock to 11<sup>th</sup> Lock**

Species	Scientific
<b>Birds</b>	
Long-tailed Tit	<i>Aegithalos caudatus</i>
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>
House Sparrow	<i>Passer domesticus</i>

Species	Scientific
<b>Birds</b>	
Willow Warbler	<i>Phylloscopus trochilus</i>
Magpie	<i>Pica pica</i>
Dunnock	<i>Prunella modularis</i>
Starling	<i>Sturnus vulgaris</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.28.4 Other Species recorded from 12<sup>th</sup> Lock to 11<sup>th</sup> Lock**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Common Hawker	<i>Aeshna juncea</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>

Species	Scientific
<b>Odonata</b>	
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Common Darter	<i>Sympetrum striolatum</i>
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
Small White	<i>Pieris rapae</i>
<b>Diptera</b>	
Syrphidae	<i>Syrphus ribesii</i>

#### 4.29 11<sup>th</sup> Lock – 10<sup>th</sup> Lock

(Map 36, Section length – 0.4 km)

##### Habitats and Flora

This is a very short section consisting of the canal strip between the 11<sup>th</sup> and 10<sup>th</sup> lock. The main habitats present comprise of a very narrow strip of reed and large sedge swamp (FS1) along both sides of the canal edge and an adjacent strip of amenity grassland (GA2). A paved pathway (BL3) exists then on both sides with a narrow treeline (WL2) bordering the northern side and a low stone wall (BL1) with intermittent trees present on the southern boundary.



Plate 4.27 Looking east on southern side of canal adjacent to 11<sup>th</sup> Lock

Table 4.29.1 Habitats recorded from 11<sup>th</sup> Lock to 10<sup>th</sup> Lock

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
BL3/GA2	Buildings and artificial surfaces / Amenity grassland
GA2	Amenity grassland
ED3	Recolonised bare ground
BL1	Stone walls

Table 4.29.2 Vascular plants recorded from 11<sup>th</sup> Lock to 10<sup>th</sup> Lock

Species	Scientific
<b>Vascular Plants</b>	
Yarrow	<i>Achillea millefolium</i>
Horse Chesnut	<i>Aesculus hippocastanum</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>

Species	Scientific
<b>Vascular Plants</b>	
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Hemp Agrimony	<i>Eupatorium cannabinum</i>
Eyebright	<i>Euphrasia</i> spp.
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Common Fumitory	<i>Fumaria officinalis</i>
Cleavers	<i>Galium aparine</i>

Species	Scientific
<b>Vascular Plants</b>	
Hedgerow Crane's-bill	<i>Geranium pyrenaicum</i>
Herb-Robert	<i>Geranium robertianum</i>
Wood Avens	<i>Geum urbanum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Opposite-leaved Pondweed	<i>Groenlandia densa</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Bulbous Rush	<i>Juncus bulbosus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Wild Privet	<i>Ligustrum vulgare</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>

Species	Scientific
<b>Vascular Plants</b>	
Silverweed	<i>Potentilla anserina</i>
Blackthorn	<i>Prunus spinosa</i>
Common Fleabane	<i>Pulicaria dysenterica</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
English Stonecrop	<i>Sedum aglicum</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Dandelions	<i>Taraxacum</i> spp.
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Coltsfoot	<i>Tussilago farfara</i>
Bulrush	<i>Typha latifolia</i>
Gorse	<i>Ulex europaeus</i>
Elm	<i>Ulmus</i> agg.
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.

**Table 4.29.3 Bird species recorded from 11<sup>th</sup> Lock to 10<sup>th</sup> Lock**

Species	Scientific
<b>Birds</b>	
Goldfinch	<i>Carduelis carduelis</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>
Great tit	<i>Parus major</i>

Species	Scientific
<b>Birds</b>	
Coal Tit	<i>Periparus ater hibernicus</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Goldcrest	<i>Regulus regulus</i>
Wren	<i>Troglodytes troglodytes</i>

**Table 4.29.4 Other Species recorded from 11<sup>th</sup> Lock to 10<sup>th</sup> Lock**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>
Large Red Damselfly	<i>Pyrrosoma nymphula</i>

Species	Scientific
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
Small White	<i>Pieris rapae</i>
<b>Diptera</b>	
Tipulidae	<i>Tipula maxima</i>
<b>Hymenoptera</b>	
	<i>Bombus terrestris</i>

#### 4.30 10<sup>th</sup> Lock – 9<sup>th</sup> Lock (Clondalkin Bridge) to M50

(Map 36 & 37, Section length – 0.4 km)

##### Habitats and Flora

The section of canal between the 10<sup>th</sup> and 9<sup>th</sup> lock is comprised of paved towpath (BL3) on both sides with amenity grassland (GA2) and planted treeline (WL2) bordering both the northern and southern sides. The surrounding area is urban in nature and the towpath is heavily utilized in the area by recreational users and commuters.



Plate 4.28 Looking west from the 9<sup>th</sup> Lock on northern side of canal

No paved towpath exists from the 9<sup>th</sup> lock towards the M50 bridge; instead a grassy towpath (GA2) which appears to be maintained by mowing is present along this area. The towpath has recently been disturbed in the area closer to the M50 bridge. *Phragmites australis* is the dominant species along this stretch bordering the northern side of the canal (FS1). To the north of the towpath there is an existing drain running along the boundary (FW4) and an intermittent treeline (WL2).

The southern side of the canal has a well developed surfaced towpath bordered by a narrow strip of amenity grassland (GA2) on either side. A strip of treeline (WL2) is present along the southern boundary of the site.

Table 4.30.1 Habitats recorded from 10<sup>th</sup> Lock to 9<sup>th</sup> Lock

Habitat Code	Habitat Name
FW3	Canals
FS1	Reed and large sedge swamp
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
BL3/GA2	Buildings and artificial surfaces / Amenity grassland
GA2	Amenity grassland
WD1/WS1	Broadleaved woodland (mixed) / scrub
GA1	Improved agricultural grassland
ED3	Recolonised bare ground
WL2	Treeline

Table 4.30.2 Vascular plants recorded from 10<sup>th</sup> Lock to 9<sup>th</sup> Lock

Species	Scientific
<b>Vascular Plants</b>	
Yarrow	<i>Achillea millefolium</i>
Horse Chesnut	<i>Aesculus hippocastanum</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Alder	<i>Alnus glutinosa</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Wild Angelica	<i>Angelica sylvestris</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Fool's Water-cress	<i>Apium nodiflorum</i>

Species	Scientific
<b>Vascular Plants</b>	
False Oat Grass	<i>Arrhenatherum elatius</i>
Wall-Rue	<i>Asplenium ruta-muraria</i>
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>
Daisy	<i>Bellis perennis</i>
Downy Birch	<i>Betula pubescens</i>
Quaking Grass	<i>Briza media</i>

Species	Scientific
<b>Vascular Plants</b>	
Starworts	<i>Callitriche</i> spp.
Hedge Bindweed	<i>Calystegia sepium</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Black Sedge	<i>Carex nigra</i>
Remote Sedge	<i>Carex remota</i>
Knapweed	<i>Centaurea nigra</i>
Rustyback	<i>Ceterach officinarum</i>
Charophytes	<i>Charophyta</i>
Creeping Thistle	<i>Cirsium arvense</i>
Marsh Thistle	<i>Cirsium palustre</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Cock's-foot grass	<i>Dactylis glomerata</i>
<b>Canadian Waterweed</b>	<b><i>Elodea canadensis</i></b>
Rosebay	<i>Epilobium angustifolium</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Field Horsetail	<i>Equisetum arvense</i>
Hemp Agrimony	<i>Eupatorium cannabinum</i>
Eyebright	<i>Euphrasia</i> spp.
Red Fescue	<i>Festuca rubra</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Common Fumitory	<i>Fumaria officinalis</i>
Cleavers	<i>Galium aparine</i>
Hedgerow Crane's-bill	<i>Geranium pyrenaicum</i>
Herb-Robert	<i>Geranium robertianum</i>
Wood Avens	<i>Geum urbanum</i>
Reed Sweet Grass	<i>Glyceria maxima</i>
Opposite-leaved Pondweed	<i>Groenlandia densa</i>
Ivy	<i>Hedera helix</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Square-stalked St John's Wort	<i>Hypericum tetrapterum</i>
Flag Iris	<i>Iris pseudacorus</i>
Sharp-flowered Rush	<i>Juncus acutiflorus</i>
Bulbous Rush	<i>Juncus bulbosus</i>
Soft Rush	<i>Juncus effusus</i>
Hard Rush	<i>Juncus inflexus</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Wild Privet	<i>Ligustrum vulgare</i>

Species	Scientific
<b>Vascular Plants</b>	
Perennial Ryegrass	<i>Lolium perenne</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Black medick	<i>Medicago lupulina</i>
Water Mint	<i>Mentha aquatica</i>
Whorled Water Milfoil	<i>Myriophyllum verticillatum</i>
Watercress	<i>Nasturtium officinale</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Amphibious bistort	<i>Persicaria amphibia</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Timothy	<i>Phleum pratense</i>
Common Reed	<i>Phragmites australis</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Greater Plantain	<i>Plantago major</i>
Silverweed	<i>Potentilla anserina</i>
Blackthorn	<i>Prunus spinosa</i>
Common Fleabane	<i>Pulicaria dysenterica</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Lesser Spearwort	<i>Ranunculus flammula</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Buckthorn	<i>Rhamnus cathartica</i>
Roses	<i>Rosa</i> spp.
Bramble	<i>Rubus fruticosus</i> agg.
Common Sorrell	<i>Rumex acetosa</i>
Rusty Willow	<i>Salix cinerea</i> subsp <i>oleifolia</i>
Elder	<i>Sambucus nigra</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
English Stonecrop	<i>Sedum aglicum</i>
Ragwort	<i>Senecio jacobaea</i>
Smooth Sow Thistle	<i>Sonchus oleraceus</i>
Rowan	<i>Sorbus aucuparia</i>
Dandelions	<i>Taraxacum</i> spp.
Red Clover	<i>Trifolium pratense</i>
White Clover	<i>Trifolium repens</i>
Coltsfoot	<i>Tussilago farfara</i>
Bulrush	<i>Typha latifolia</i>
Gorse	<i>Ulex europaeus</i>
Elm	<i>Ulmus</i> agg.
Nettle	<i>Urtica dioica</i>
Common Valerian	<i>Valeriana officinalis</i>
Tufted Vetch	<i>Vicia cracca</i>
Bush Vetch	<i>Vicia sepium</i>
Violets and Pansies	<i>Viola</i> spp.



**Table 4.30.3 Bird species recorded from 10<sup>th</sup> Lock to 9<sup>th</sup> Lock**

Species	Scientific
<b>Birds</b>	
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>
Long-tailed Tit	<i>Aegithalos caudatus</i>
Woodpigeon	<i>Columba palumbus</i>
Rook	<i>Corvus frugilegus</i>
Jackdaw	<i>Corvus monedula</i>
Robin	<i>Erithacus rubecula</i>

Species	Scientific
<b>Birds</b>	
Pied Wagtail	<i>Motacilla alba yarrellii</i>
Blue tit	<i>Parus caeruleus</i>
Coal Tit	<i>Periparus ater hibernicus</i>
Magpie	<i>Pica pica</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>

**Table 4.30.4 Other Species recorded from 10<sup>th</sup> Lock to 9<sup>th</sup> Lock**

Species	Scientific
<b>Amphibians</b>	
Common Frog	<i>Rana temporaria</i>
<b>Odonata</b>	
Brown Hawker	<i>Aeshna grandis</i>
Variable Damselfly	<i>Coenagrion puella</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Blue tailed Damselfly	<i>Ischnura elegans</i>

Species	Scientific
<b>Odonata</b>	
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
<b>Lepidoptera</b>	
Speckled Wood	<i>Pararge aegeria</i>
Small White	<i>Pieris rapae</i>
<b>Diptera</b>	
Tipulidae	<i>Tipula maxima</i>

## 5. ECOLOGICALLY SENSITIVE AREAS

### 5.1 ESA1 Cloncanon, Offaly to the 20<sup>th</sup> Lock

(Location: Canal Markers)

ESA1 includes both banks of the Grand Canal from the townland boundary of Cloncanon to the 20<sup>th</sup> Lock. The emergent vegetation on both banks is well developed with dense stands of *Phragmites* interspersed with mosaic of *Glyceria* swamp. A *Nuphar lutea* – *Potamogeton natans* community dominates the open channel. The emergent *Phragmites-Glyceria* mosaic along this section of the canal is almost continuous however Common club-rush *Schoenoplectus lacustris* communities can form on the more open margins of the canal.

The canal verge supports a diverse flora, with many species representative of both damp and dry neutral grassland constant such as Meadow Vetch *Lathyrus pratense* and Birds Foot Trefoil *Lotus corniculatus*, Yellow Rattle *Rhinanthus minor* and Common Spotted Orchid *Dactylorhiza fuchsii* abundant. Richer swards of Lady's Bedstraw *Galium verum* and Common Quaking-grass *Briza media* are frequent within the verge.

At the towpath boundary, the grassland type and species composition reflects the slightly increased level of management comparative to the canal verge. Here the herb layer is less diverse and grasses Yorkshire Fog *Holcus lanatus*, Crested Dog's-tail *Cynosurus cristatus*, Common Bent *Agrostis capillaries* and Cocksfoot *Dactylis glomerata* dominate over abundant Black knapweed *Centaurea nigra* and Common Cat's-ear *Hypochaeris radicata*. The towpath boundary grades sharply into a dominant stand of *Pteridium* for long sections. This ESA is also of ecological interest for the diversity and heterogeneity of heath and scrub communities beyond the canal boundary. This area has representative climax vegetation types for both wet and dry heath communities. Beyond the *Pteridium*, a sloping bank zones into *Salix* and *Ulex* scrub with dense and open heath dominated by *Calluna-Vaccinium-Cladonia* sub-community. As the slope grades down to the peatland basin *Molinia* dominates with *Scirpus* and *Erica tetralix*. The shrubby species *Myrica gale* is an important sub community in saturated areas this ESA. Further patchworks of *Pteridium* and *Salix* occur throughout and increasing so in regenerated cut over areas and ditches.



Plate 5.1 ESA1 beyond south canal boundary

### 5.2 ESA2 Shee Bridge to Bond Bridge

This ESA includes the north and south bank of the canal and the high ecological quality habitats beyond the canal boundary within the townland of Allenwood, bordering Derrymullen to the east. The open channel *Nuphar-lutea* community is abundant with a diverse

*Phragmites-Glyceria* fringe zoning into a canal verge *Filipendulo-Iridetum* mosaic with many constant species of neutral grassland frequent through-out.

The habitats within the canal boundary on the north bank comprise a mosaic of neutral to wet grassland with pockets of regenerating *Salix* and *Crateagus-Prunus* scrub subject to low-intensity and infrequent management.

Beyond the canal boundary on the south bank is regenerating *Salix* and broadleaved woodland on cut-over bog with links to a woodland corridor extending south west of the canal. A remnant lowland *Calluna-Scirpus* mire wet heath community occurs in an area of cut over bog adjacent to the canal. The range of habitats from scrub, heath and canal verge make this stretch of ecological interest.



Plate 5.2 ESA2 south of the canal

### 5.3 ESA3 Bond Bridge to 19<sup>th</sup> Lock

The ESA runs from Bond Bridge east including the junction with the New Barrow Line and inclusive of the 19<sup>th</sup> Lock incorporating the Milltown Feeder. This ESA is important in terms of its connectivity function linking three main canal channels. These areas are well trafficked and maintained, however there is a diverse emergent *Phragmites-Glyceria- Schoenoplectus* fringe on both banks and the canal verge is species rich.



Plate 5.3 ESA3 showing the extensive *Phragmites* fringe

#### 5.4 ESA4 Bonynge to Cock Bridge

The ESA includes both embanked sides of the canal boundary which comprise a continuous band of dense woodland/scrub interspersed with semi natural grassland mosaic on the sloped shallow neutral and calcareous soils. The mosaic and verge of the canal towpath are particularly species rich with species typical of dry calcareous and neutral grassland, notably False oat-grass *Arrhenatherum elatius*, Cock's-foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus* and *Festuca rubra* dominant with Common Quaking-grass *Briza media* are abundant. A diverse herb layer with Mouse-ear Hawkweed *Hieracium pilosella*, Creeping Cinquefoil *Potentilla repens*, Field Scabious *Knautia arvensis* and Common Spotted Orchid *Dactylorhiza fuchsii* is frequent.

The canal verge is also species rich with a mixture of wet neutral grassland species zoning into *Filipendula ulmaria*-*Angelica sylvestris* mire community and/or a community typical of *Filipendulo-Iridetum*. Many common and tall herbs are frequent such as Gypsewort *Lycopus europeaus*, *Rumex acetosa*, *Angelica sylvestris* and *Valeriana officianalis*. Other species such as *Stachys palustris*, *Lychnis flos-cuculi* and *Cirsium palustre* are occasional.



Plate 5.4 ESA4 on both sides of the canal

#### 5.5 ESA5 Cock Bridge to 18th Lock

This ESA has been identified for the species rich grassland and scrub mosaic on the embankment running parallel to the north canal boundary and the species rich canal verge on both banks between Cock Bridge to the 18<sup>th</sup> Lock. From the 18<sup>th</sup> Lock due west the raised northern embankment begins as a low and narrow ridge covered in *Crataegus monogyna*-*Prunus spinosa*-*Rubus fruticosus* scrub with a species rich towpath verge typical of a disturbed *Cynosurus cristatus*-*Centaurea nigra* community. A small basin or shallow seepage zone of *Molinia-Anthoxanthum* sub-community occurs at the eastern end of the embankment. Devil's bit Scabious *Succisa pratensis*, Tormentil *Potentilla erecta*, and *Carex spp.* are constants and abundant.

As the top of the embankment slopes gradually upwards the ground becomes more free draining and the tussocky patchwork of Purple Moor Grass-Sweet Vernal Grass *Molinia-Anthoxanthum* grades into semi-natural species rich neutral grassland with Lady's Bedstraw *Galium verum*, Ribwort plantain *Plantago lanceolata*, Bird's-foot trefoil *Lotus corniculatus*, Black knapweed *Centaurea nigra* and Common Cat's-ear *Hypochaeris radicata* becoming more prevalent. Grazing pressure by Rabbits *Oryctolagus cuniculus* maintains a short sward on canal-ward sides of the embankment free of *Crataegus-Prunus* scrub encroachment. Swards are about 20-40 cm tall and composed mainly of Red fescue *Festuca rubra*, Yorkshire Fog *Holcus lanatus*, Crested Dog's-tail *Cynosurus cristatus*, Common Bent *Agrostis capillaris*,

*Anthoxanthum odoratum*, Common Quaking-grass *Briza media* mixed with an abundance of herbs such as Red clover *Trifolium pratense*, White clover *T. repens*, *Centaurea nigra*, Meadow buttercup *Ranunculus acris*, Bulbous buttercup *R. bulbosus*, Selfheal *Prunella vulgaris*, Ox-eye Daisy *Leucanthemum vulgare*, Common sorrel *Rumex acetosa*, Yellow rattle *Rhinanthus minor* and Eyebrights *Euphrasia agg.* Common Spotted Orchid (*Dactylorhiza fuchsii*) is abundant in areas with drier sandier substrates.

As the embankment progresses westward, the *Crataegus-Spinosa* scrub is more dense and mature with little apparent grazing pressure. False oat-grass *Arrhenatherum elatius*, Cock's-foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus* and *Festuca rubra* form tall, thick swards. Hogweed *Heracleum sphondylium*, Wood Sedge *C. sylvatica* and Herb Robert *Geranium robertianum* become more abundant. Within the understorey of mature Ivy covered scrub stands Remote Sedge *C. remota* and Hart's Tongue Fern *Phyllitis scolopendrium* are frequent. The embankment becomes fully dominated by *Crataegus-Prunus-Rubus* scrub at the western end of the embankment before Cock Bridge.

The structural diversity and grading between successional scrub layers and species rich grassland supports a rich terrestrial invertebrate community with 11 butterfly species recorded during the survey within this ESA. The ESA is also rich in Hoverflies (*Syrphidae*). Although of limited size, the *Molinia-Anthoxanthum* sub community patchwork at the east of the embankment had high consistency of Devil's bit Scabious, host plant of the Marsh Fritillary. No larval webs were detected during the survey. The scrub patchwork provides excellent nesting habitat for birds of conservation concern, notably Yellowhammer *Emberiza citrinella* and Linnet *Carduelis cannabina* and important breeding habitat for Whitethroat *Sylvia communis*, Blackcap *Sylvia atricapilla*.



**Plate 5.5 ESA5 beyond north canal embankment**

There are a number of trails through the vegetation on the top and crest of the embankment indicative of low recreational pressure. Future access to this area should be closed to the public using wildlife friendly fencing to limit the disturbance and the denudation of vegetation.

## 5.6 ESA6 13<sup>th</sup> Lock to 12<sup>th</sup> Lock

This ESA is identified for the diverse vegetation within the open channel and the rich diversity and zonation on the canal verge. The aquatic diversity includes *Sagittaria sagittifolia* swamp amongst well developed fringe *Nuphar-Potamogeton* communities. The *Phragmites* swamp is also well developed along the canal margins between Aylmers and Golierstown Bridges.

The south canal verge is also diverse as recorded in ESA5 with Common Spotted Orchid (*Dactylorhiza fuchsii*) and many constant species of neutral and dry calcareous grassland abundant. Beyond the south canal boundary there is a mature species-rich hedgerow/woodland including Oak, Ash, Spindle, Sycamore, Willow and Beech. The scrub and woodland mosaic along the north boundary of the canal between Hazelhatch and Aylmer Bridges is also diverse.



**Plate 5.6 ESA6 along both banks of the canal, with rich swamp habitat on the near bank**

## 6. REFERENCES

Aughney (2008) A bat survey of bridges identified by the All-Ireland Daubenton's Bat Waterway Survey as potential bat roosts, Irish Bat Monitoring Programme, Bat Conservation Ireland.

DoEHG, (2009). Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government.

Eionet (2015) Population status and trends at the EU and Member State levels: 2008-2012. Article 12 Assessments. European Topic Centre on Biological Diversity. <http://bd.eionet.europa.eu/article12/>

European Commission (2000) Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

Hundt, L., (2012) BCT Bat Surveys, Good practice Guidelines — 2nd Edition. Bat Conservation Trust, UK.

NPWS, Irish Wildlife Manuals, No. 25. *Bat Mitigation Guidelines for Ireland*. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Kelly, J., O'Flynn, C., and Maguire, C. 2013. Risk analysis and prioritisation for invasive and non-native species in Ireland and Northern Ireland. <http://invasivespeciesireland.com/wp-content/uploads/2013/03/Risk-analysis-and-prioritization-29032012-FINAL.pdf>

Minchin, D., & Moriarty, C. (1998). Distribution of the zebra mussel *Dreissena polymorpha* (Pallas) in Ireland, 1997. *The Irish Naturalists' Journal*, 38-42.

National Biodiversity Data Centre (2015) 1km Grid Advanced Reporting. Online Mapping System accessed on 28<sup>th</sup> September 2015. <http://maps.biodiversityireland.ie/#/Home>

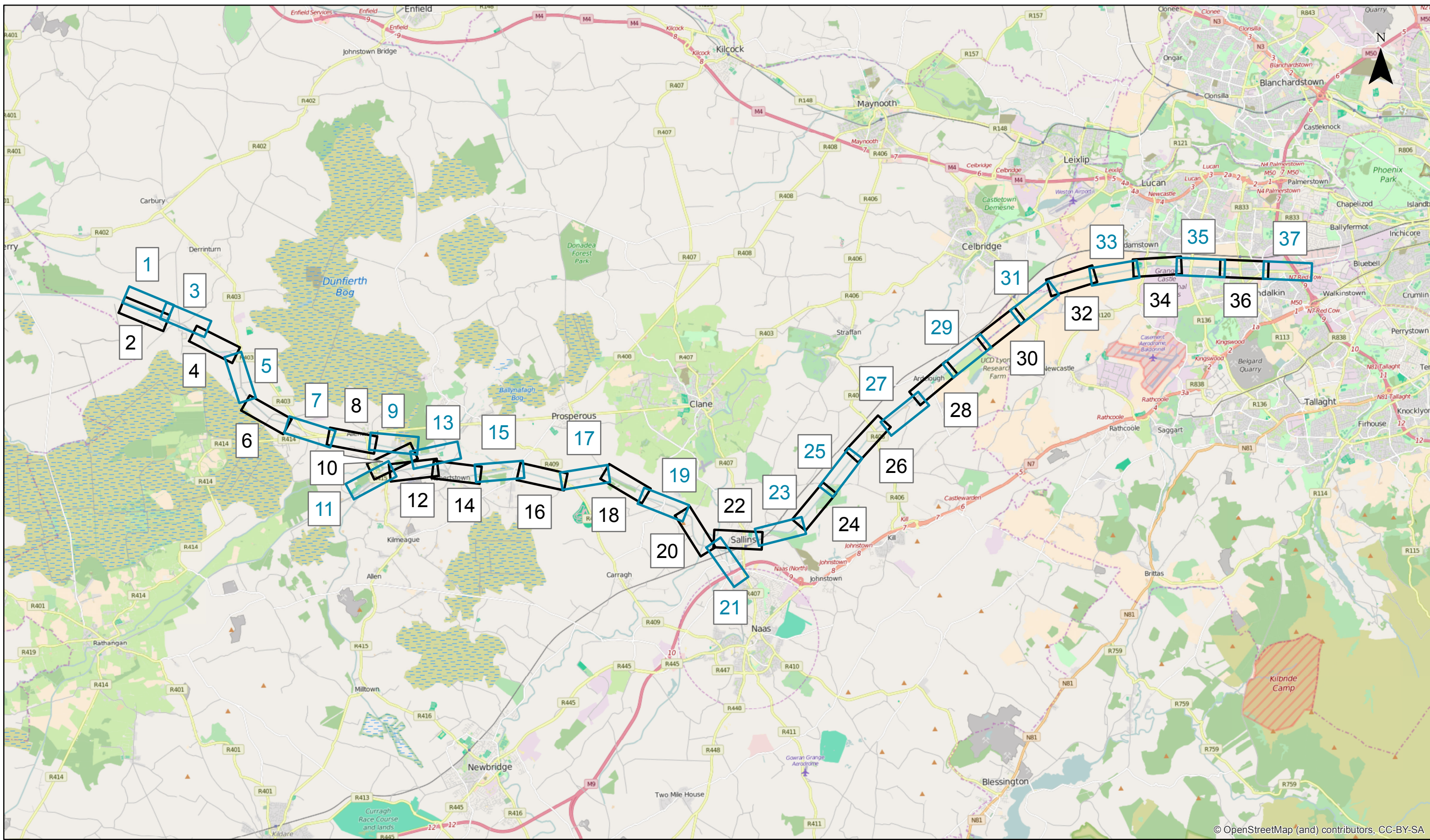
National Parks & Wildlife Service (2013) The Status of EU Protected Habitats and Species in Ireland. Volume 2 & 3: Article 17 Assessments. Department of Arts, Heritage and Gaeltacht.

National Parks & Wildlife Service (2015a) Online Map Viewer accessed 24<sup>th</sup> September 2015 <http://webgis.npws.ie/npwsviewer/> Department of Arts, Heritage and Gaeltacht.

## **APPENDIX A HABITAT MAPS**

### **Grand Canal Main Line 20<sup>th</sup> Lock to 9<sup>th</sup> Lock**

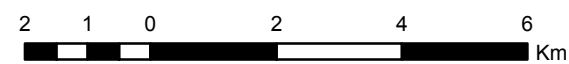




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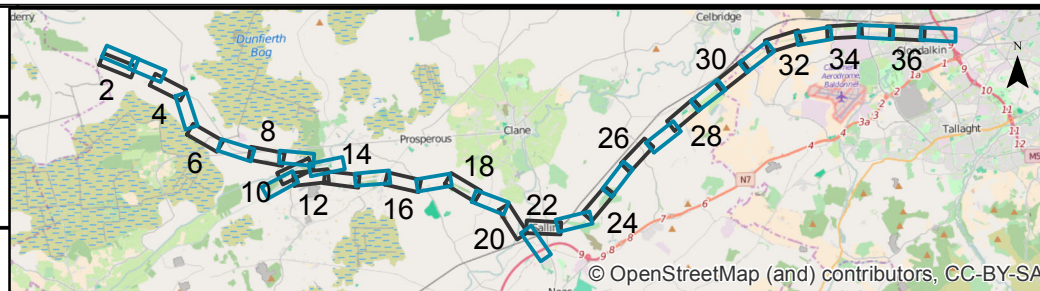
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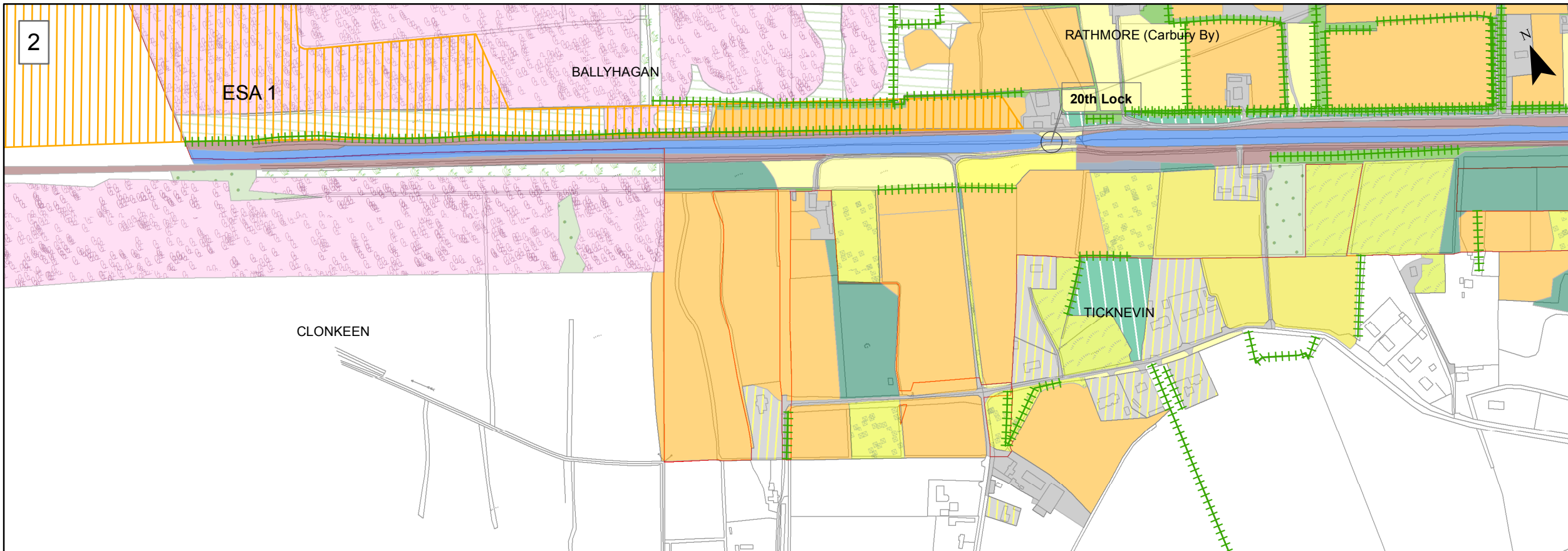
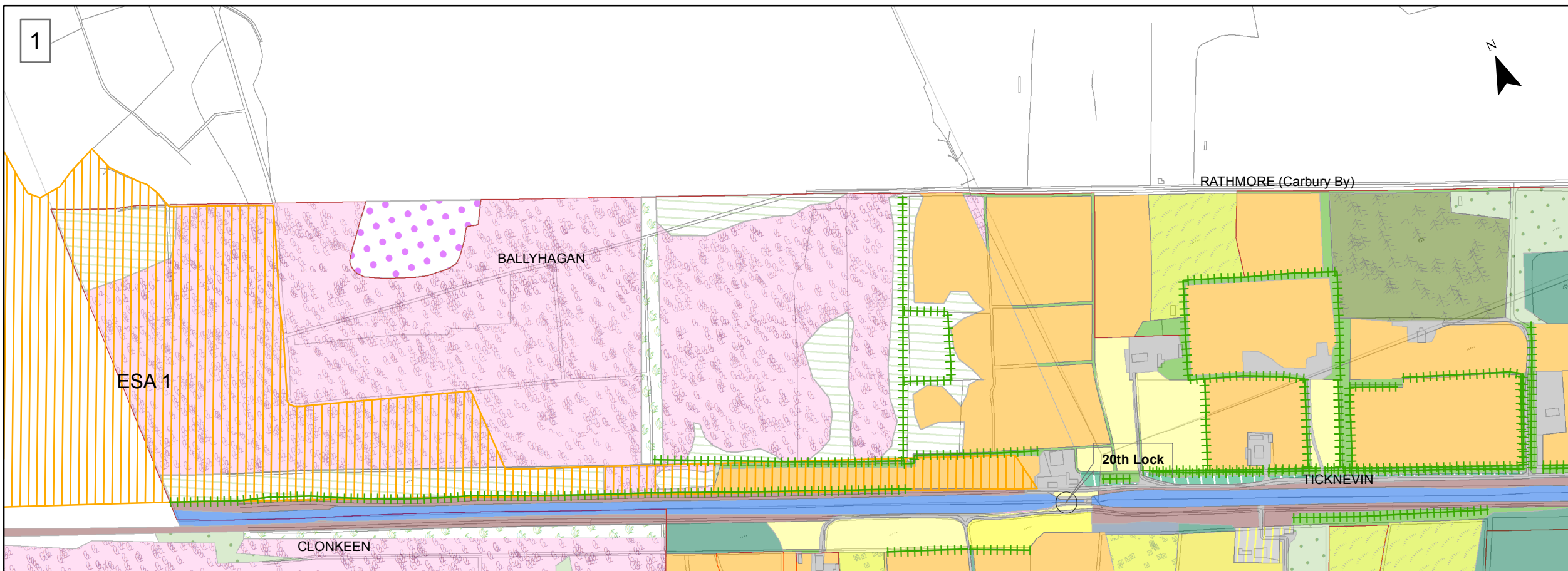
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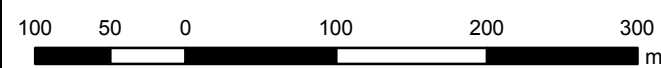
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- Legend**
- Aquatic Macrophyte Sample Locations
  - Protected Mammal Activity
  - IAS - Invasive Plants Species
  - Bridges
  - Property Boundary
  - ESA - Ecologically Sensitive Areas
  - Fossitt Habitat Code Polyines**
  - WL1, Hedgerows
  - BL1, Stone walls
  - WL2, Treelines
  - FW4, Drainage ditch
  - Fossitt Habitat Code Polygons**
  - BC1, Arable crops
  - BC2, Horticultural land
  - BC3, Tilled land
  - BL3, Buildings and artificial surfaces
  - BL3/GA2, Buildings and gardens
  - ED1, Exposed sand gravel or till
  - ED3, Recolonising bare ground
  - ED4, Active quarries and mines
  - FL8, Artificial ponds
  - FS1, Reed and tall sedge swamp
  - FW2, Depositing/lowland rivers
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  - GS4, Wet grassland
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  - HD1, Dense bracken
  - HH1, Dry siliceous heath
  - PB1, Raised Bog
  - PB4, Cutover bog
  - PF1, Rich fen and flush
  - TM, Towpath habitat mosaic
  - WD1, Broadleaved woodland
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  - WD5, Scattered trees and parkland
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  - WN5, Riparian woodland
  - WN6, Wet willow-alder-ash woodland
  - WN7, Bog Woodland
  - WS1, Scrub
  - WS2, Immature woodland

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Civil - Structural - Transportation - Environmental

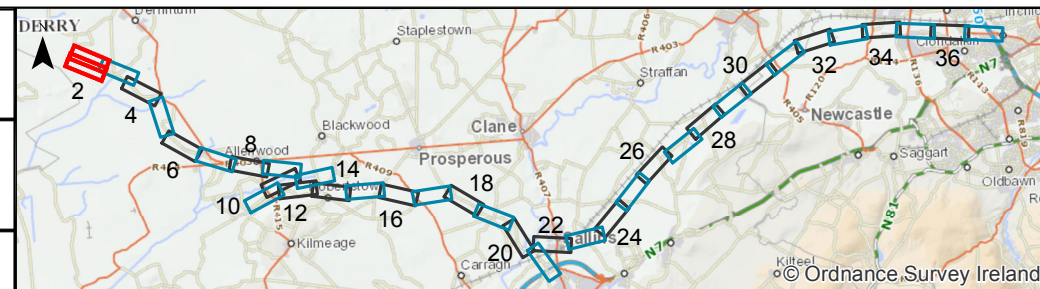
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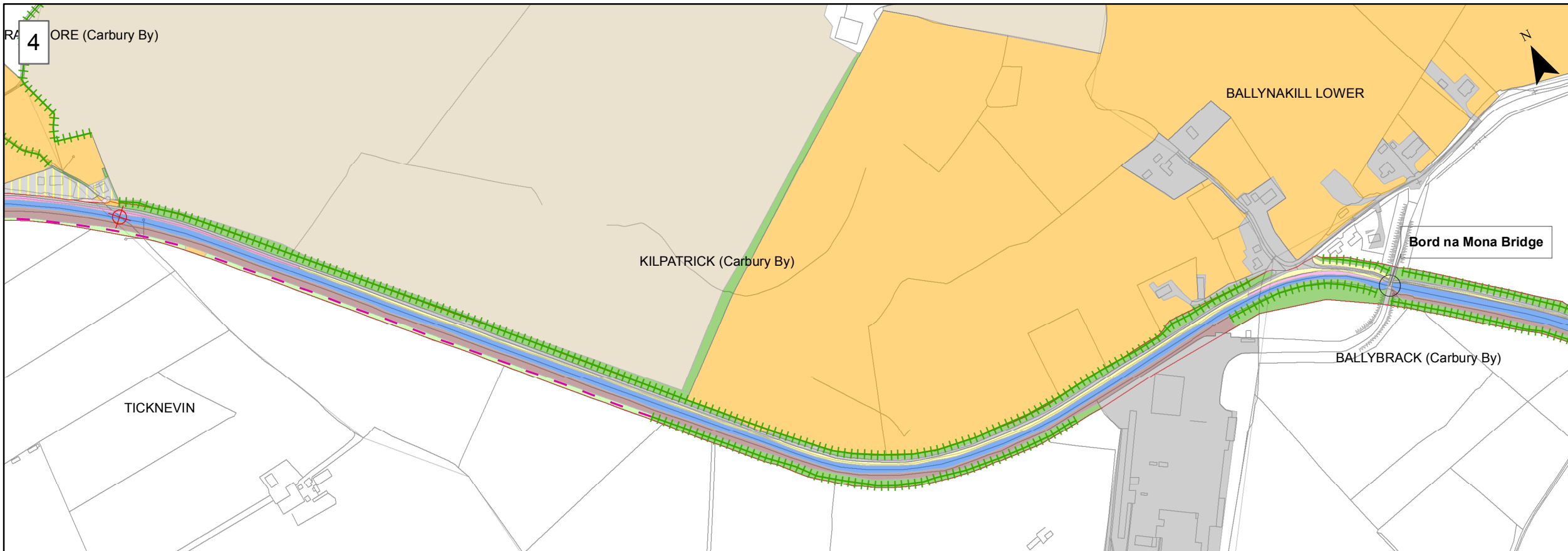
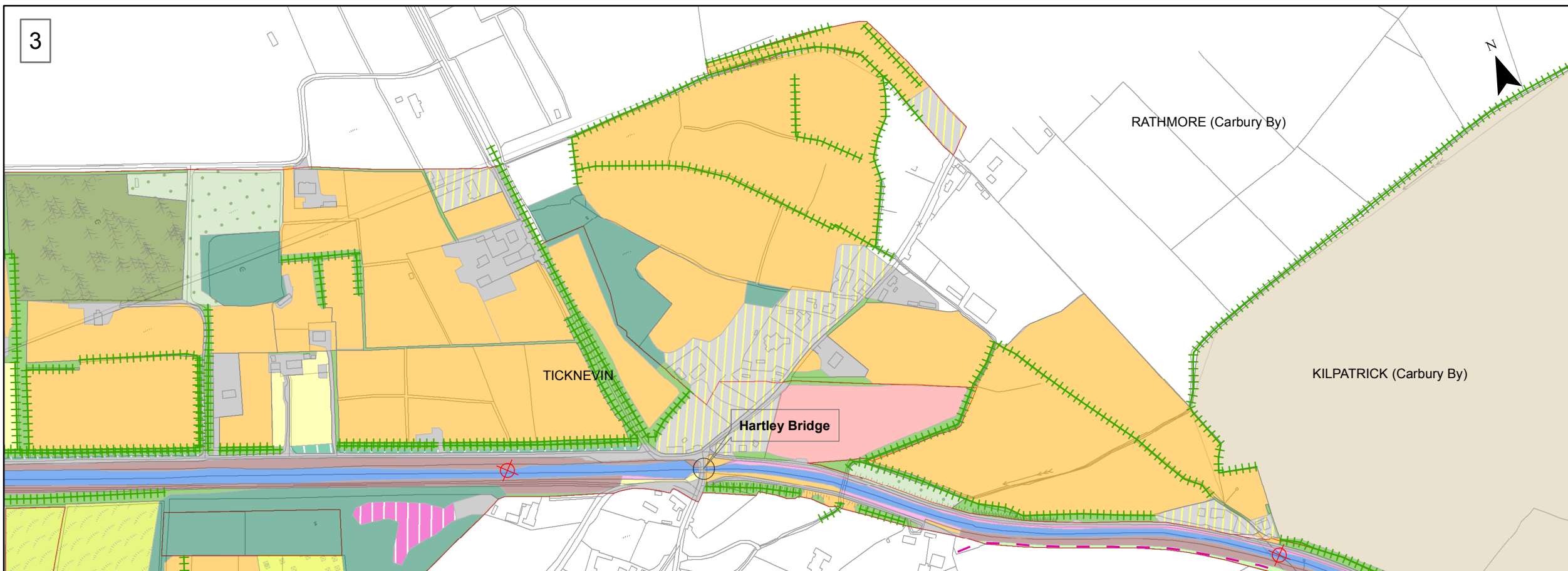
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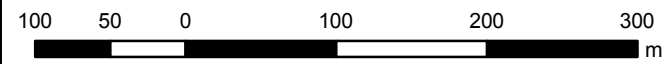
Waterways Ireland  
Uiscebhalaí Éireann Watterweys Airlann



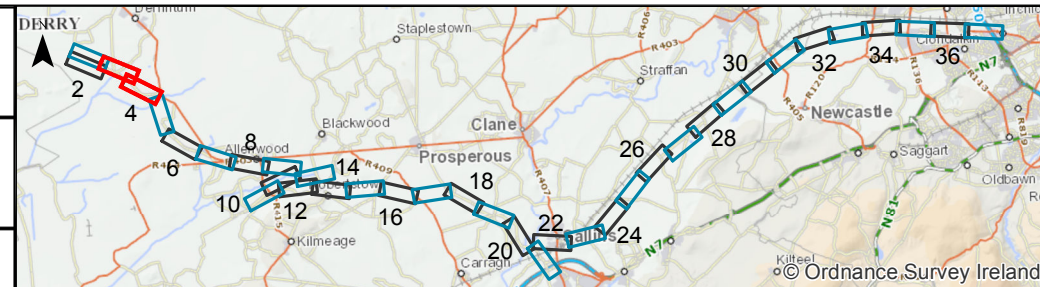
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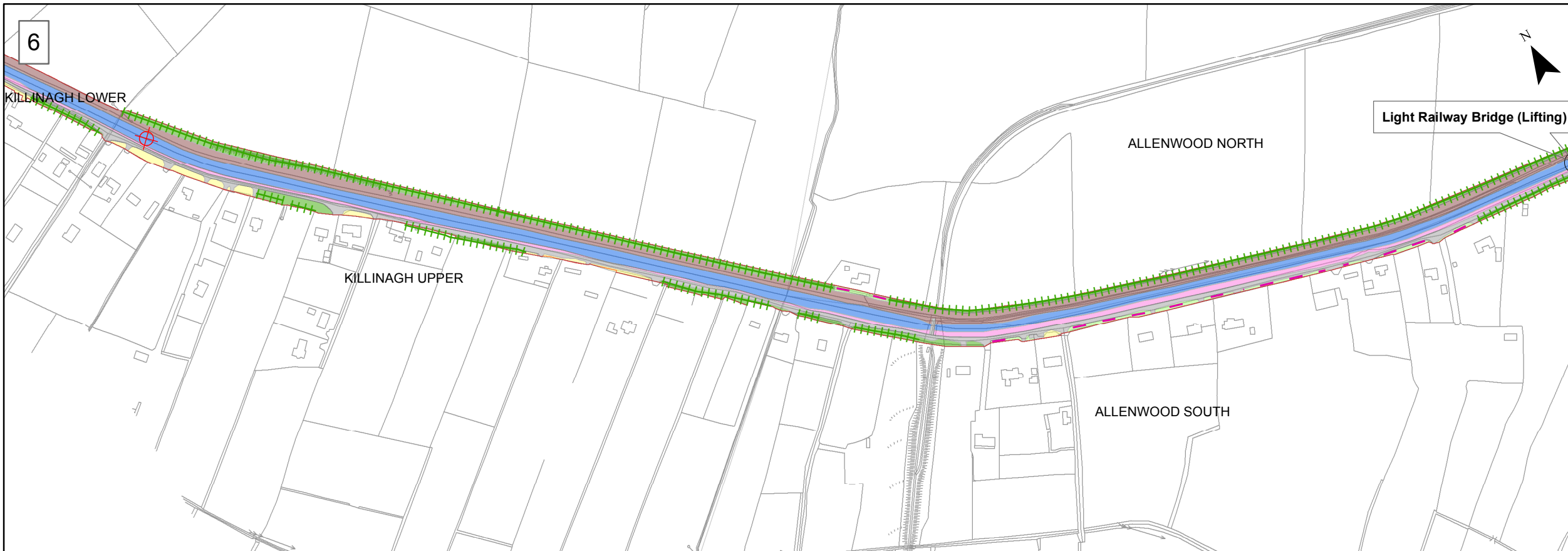
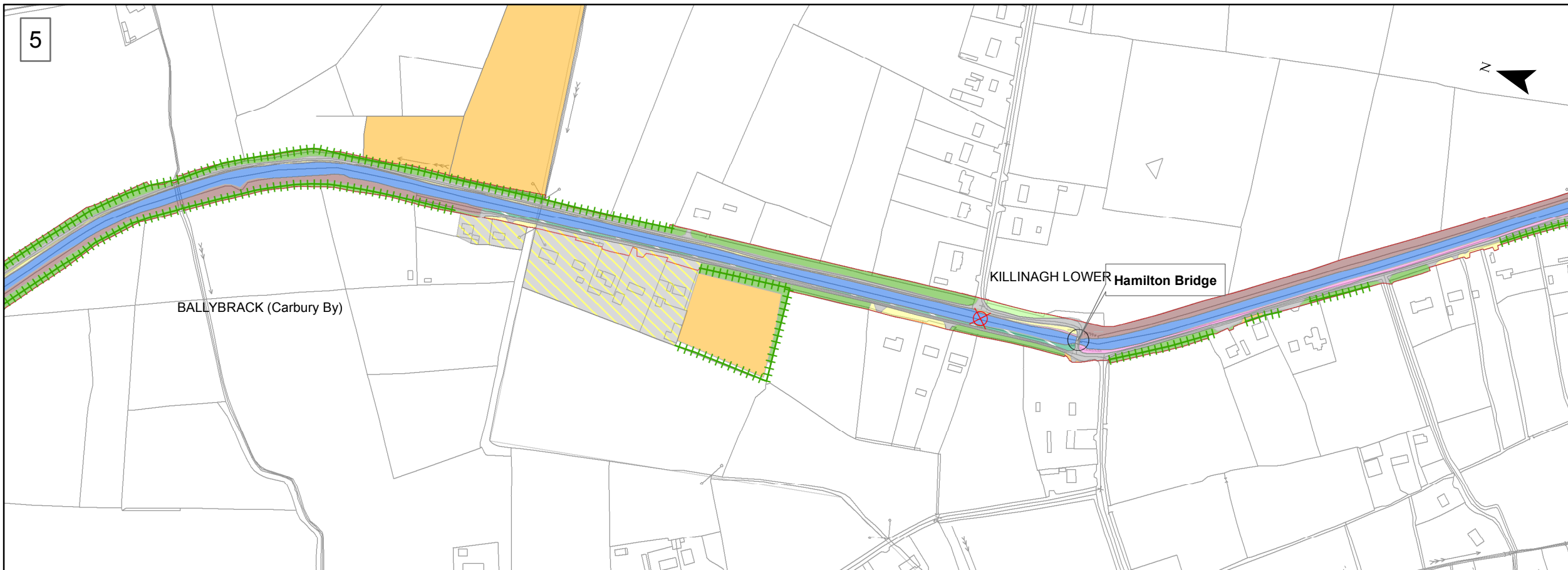


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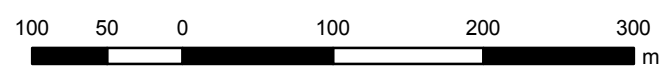
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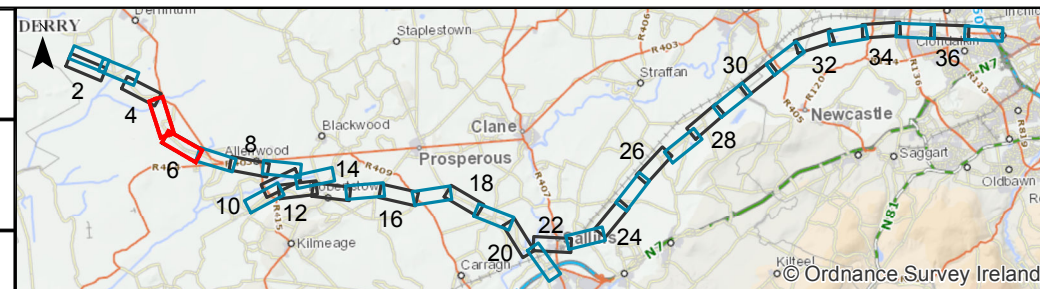
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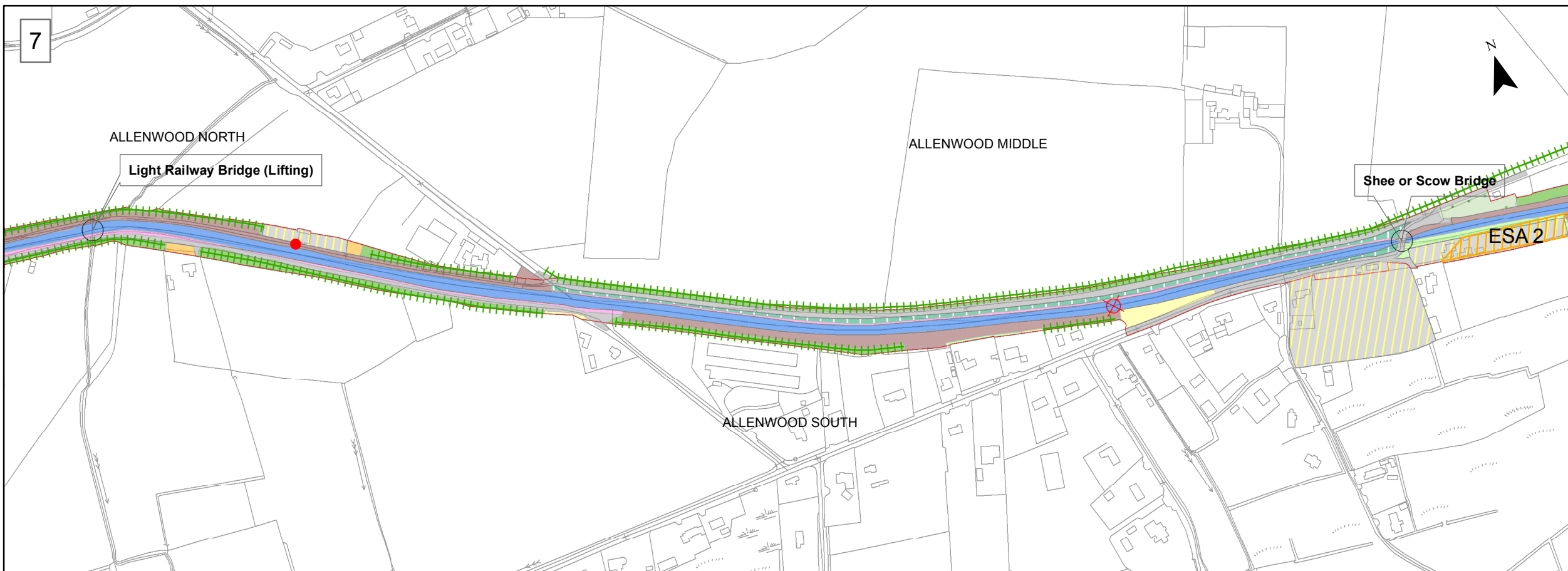
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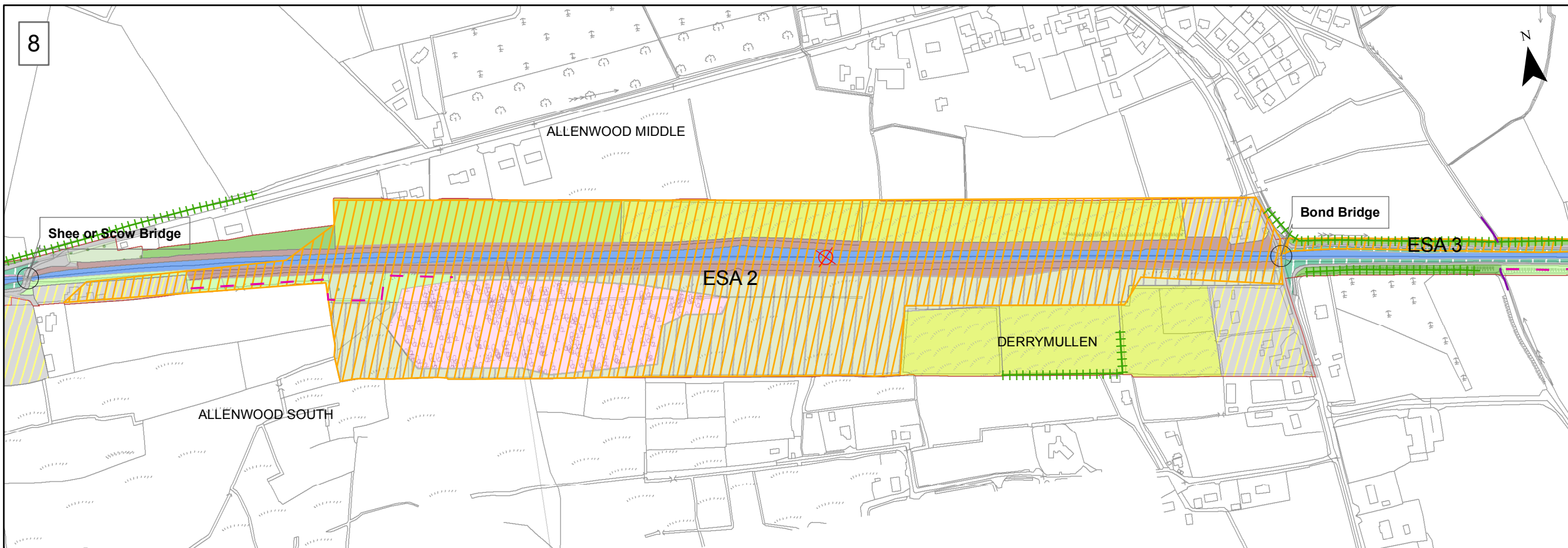
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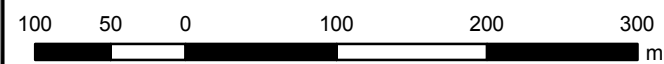
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  - HD1, Dense bracken
  - HH1, Dry siliceous heath
  - PB1, Raised Bog
  - PB4, Cutover bog
  - PF1, Rich fen and flush
  - TM, Towpath habitat mosaic
  - WD1, Broadleaved woodland
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  - WD2, Mixed broadleaved/conifer woodland
  - WD3, (Mixed) conifer woodland
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  - WD5, Scattered trees and parkland
  - WL1, Hedgerows
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  - WN6, Wet willow-alder-ash woodland
  - WN7, Bog Woodland
  - WS1, Scrub
  - WS2, Immature woodland



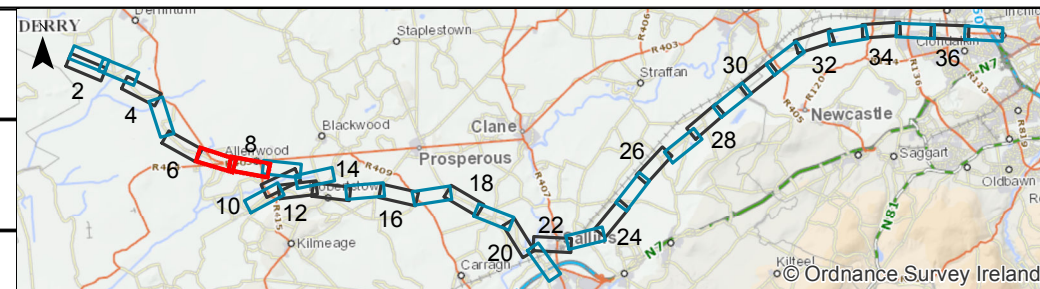
Arena House, Arena Road,  
Sandyford, Dublin 18.  
Tel : +353 1 294 0800  
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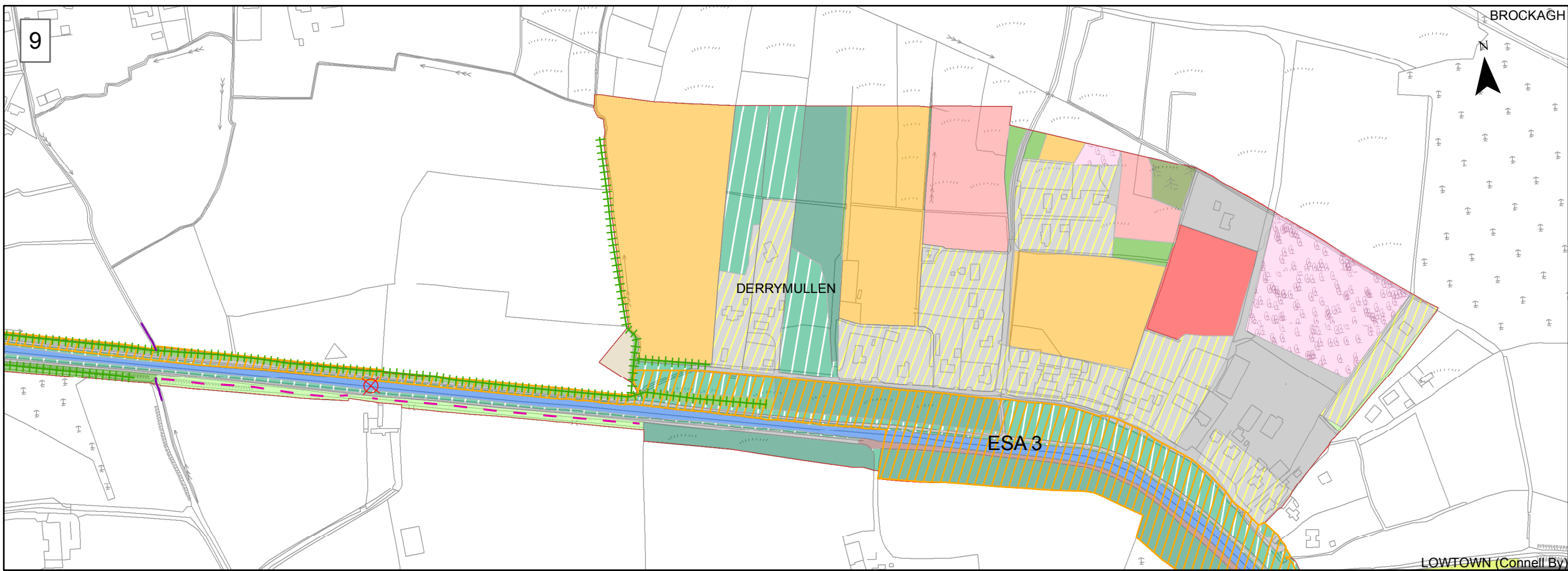


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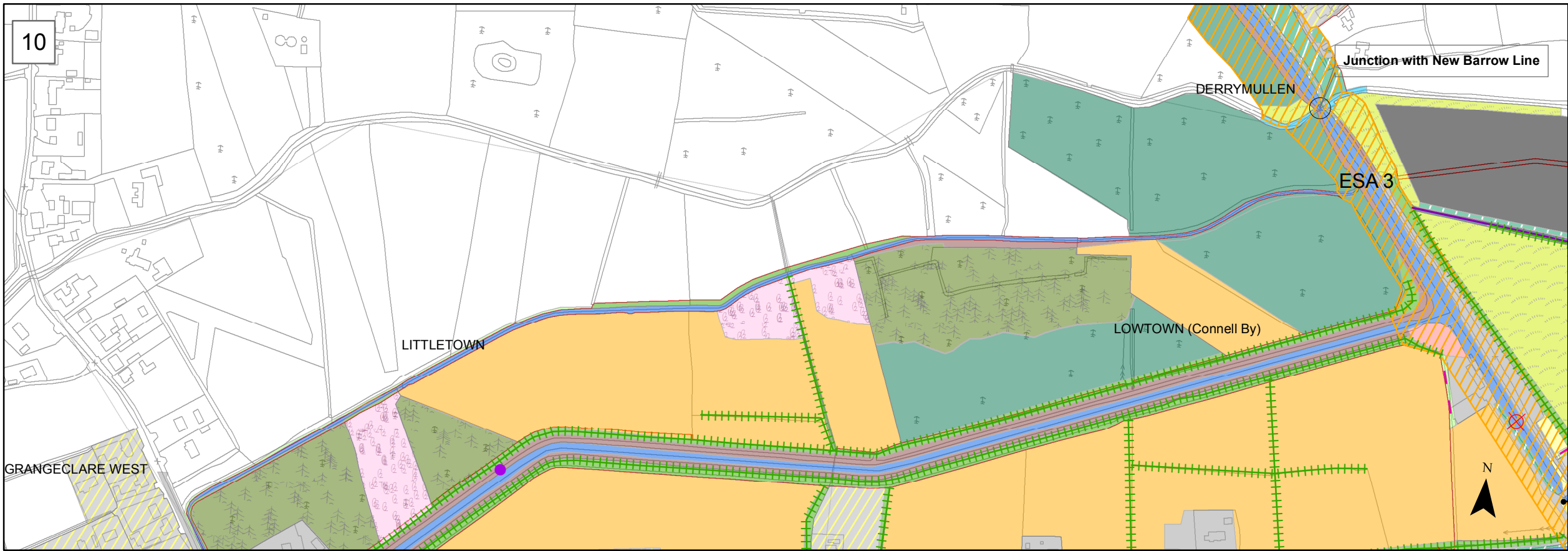
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- Legend**
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  - Protected Mammal Activity
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  - Bridges
  - Property Boundary
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  - BL1, Stone walls
  - WL2, Treelines
  - FW4, Drainage ditch
- Fossitt Habitat Code Polygons**
- BC1, Arable crops
  - BC2, Horticultural land
  - BC3, Tilled land
  - BL3, Buildings and artificial surfaces
  - BL3/GA2, Buildings and gardens
  - ED1, Exposed sand gravel or till
  - ED3, Recolonising bare ground
  - ED4, Active quarries and mines
  - FL8, Artificial ponds
  - FS1, Reed and tall sedge swamp
  - FW2, Depositing/lowland rivers
  - FW3, Canal
  - FW4, Drainage ditches
  - GA1, Improved agricultural grassland
  - GA1/GS4, Improved agricultural grassland/Wet grassland
  - GA2, Improved amenity grassland
  - GM1, Marsh
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  - GS1, Dry calcareous and neutral grassland
  - GS1/GA1, Dry calcareous/Improved agricultural grassland
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  - GS2/WS1, Dry meadows/Scrub
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Consulting Engineers  
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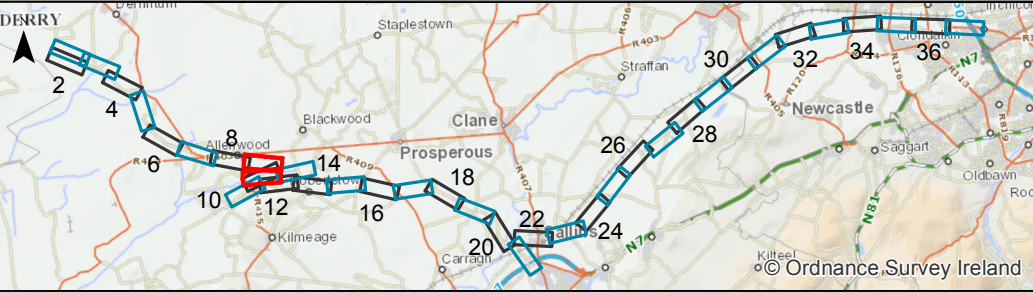
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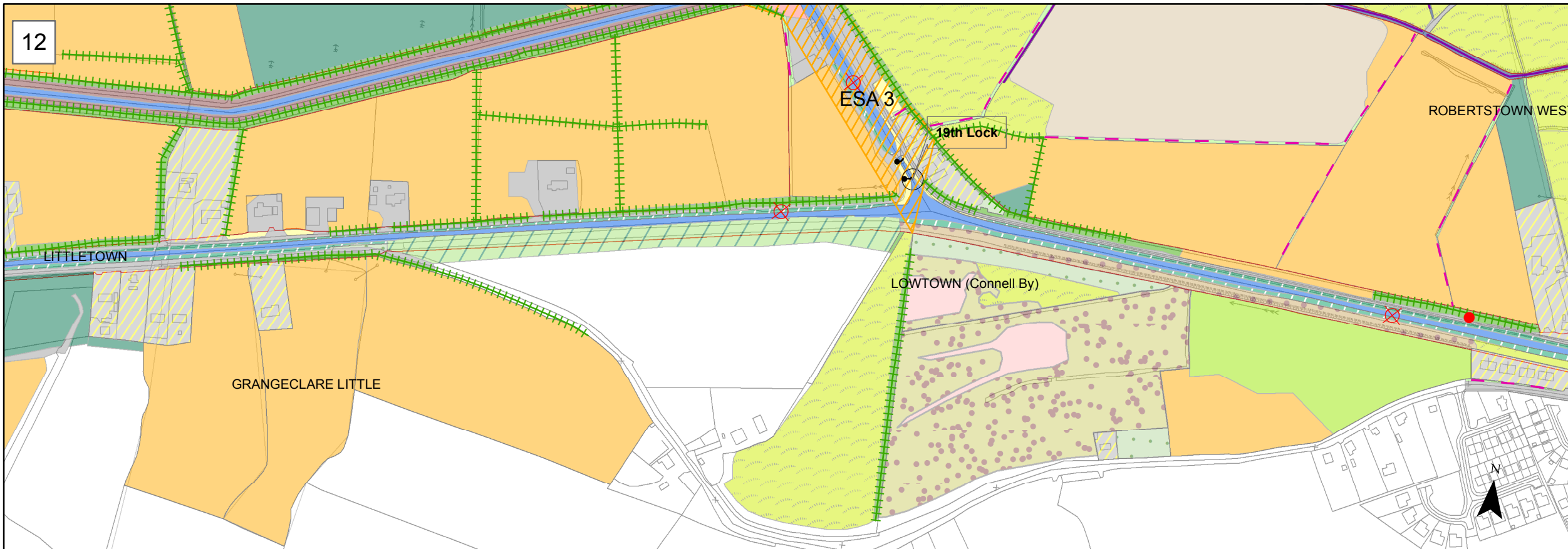
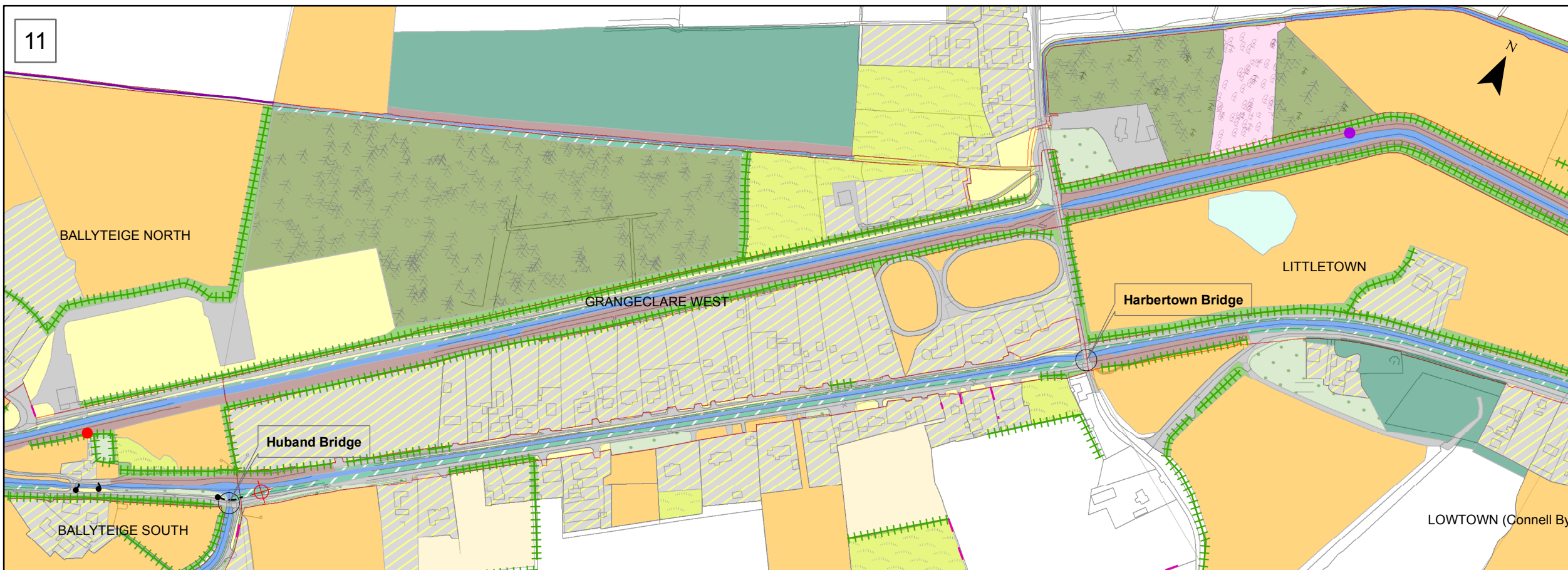
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**GRAND CANAL MAIN LINE**

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Waterways Ireland  
Uiscebealaí Éireann Watterweys Airlann



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Consulting Engineers  
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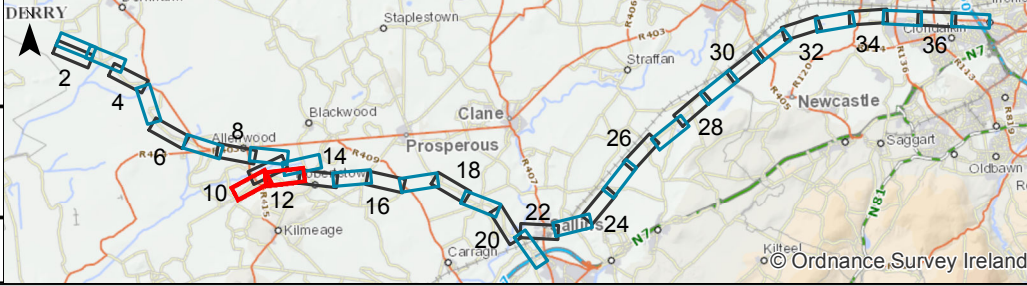
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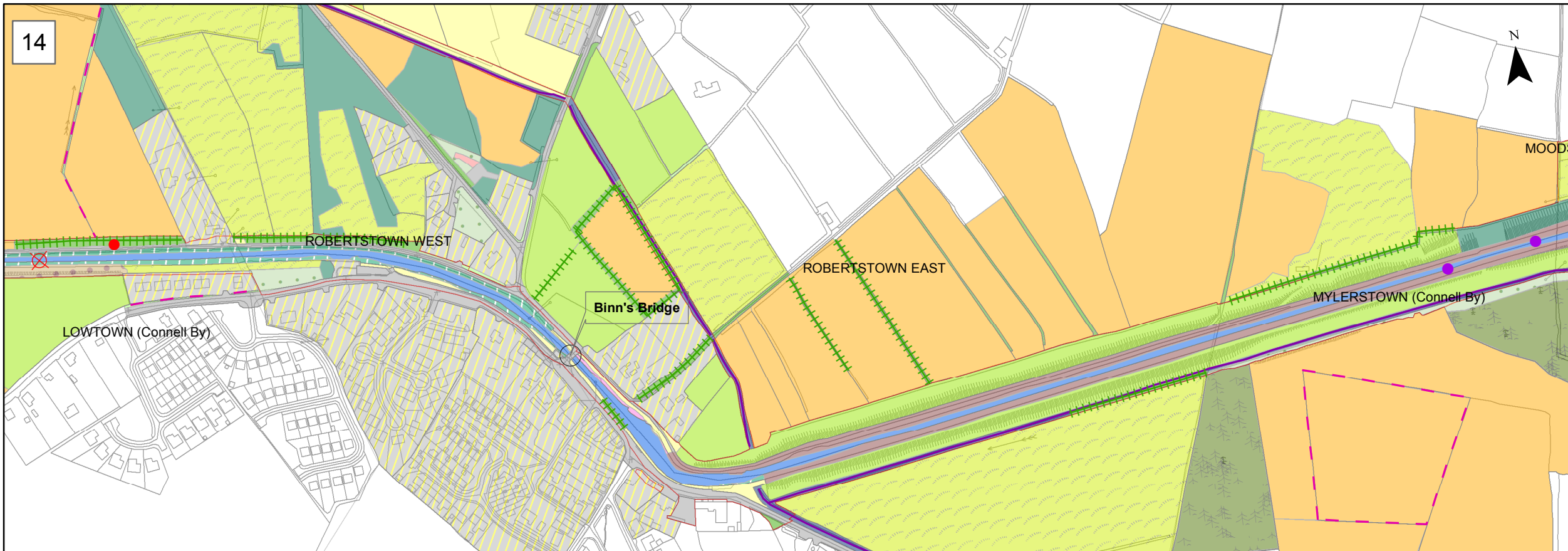
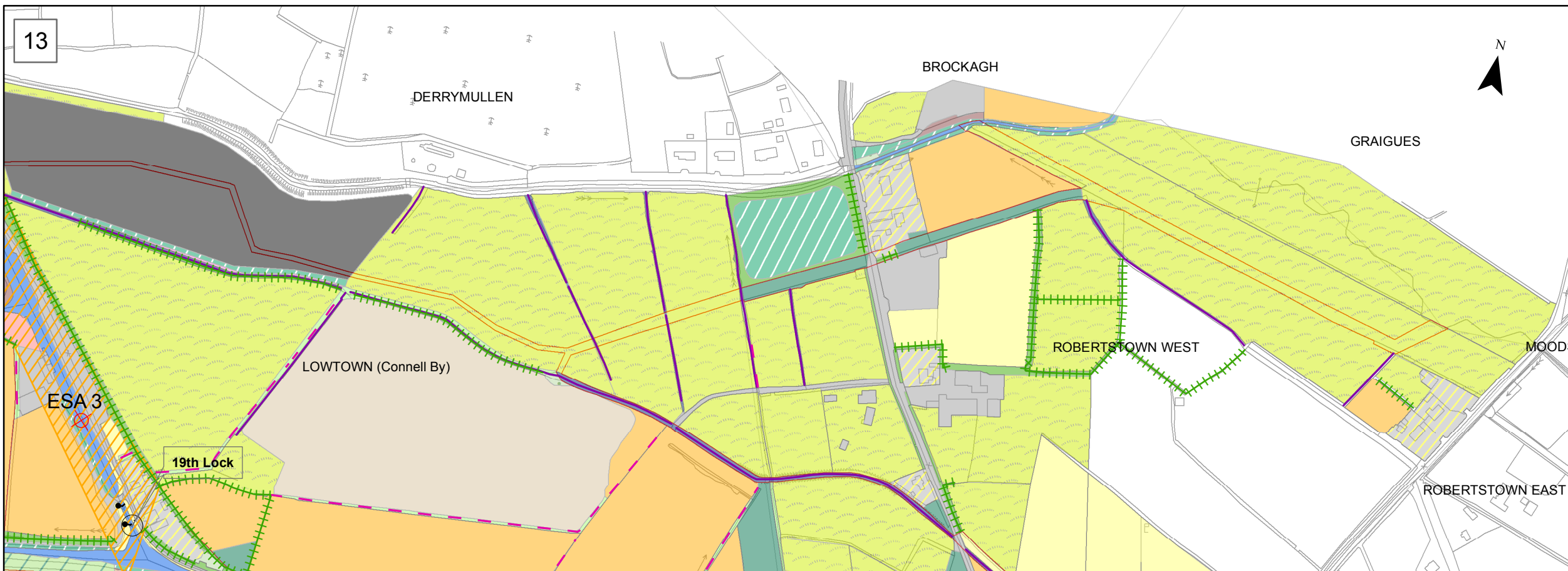
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**GRAND CANAL MAIN LINE**

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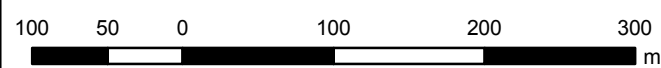
**Waterways Ireland**  
Uiscebhealaí Éireann Watterweys Airlann



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Consulting Engineers  
Civil - Structural - Transportation - Environmental

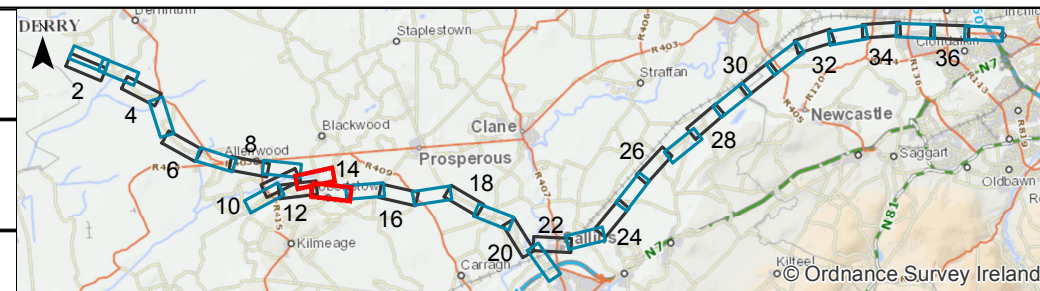
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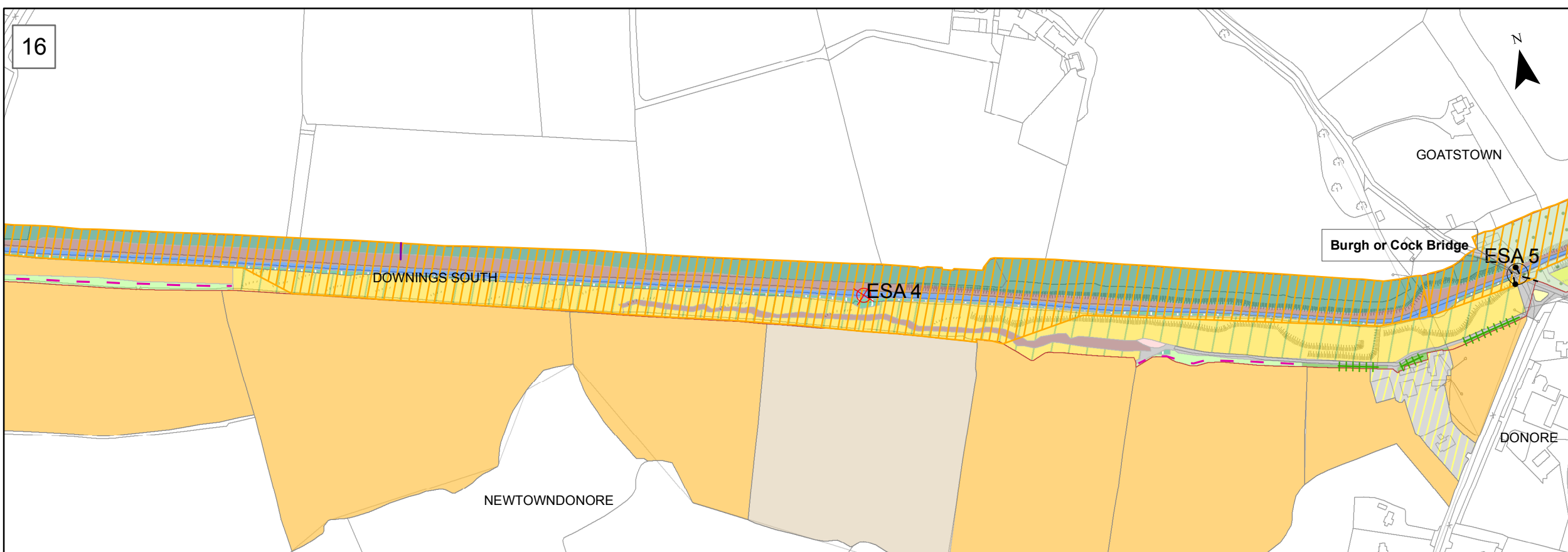
Waterways Ireland  
Uiscebealaí Éireann Watterweys Airlann

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Consulting Engineers  
Civil - Structural - Transportation - Environmental

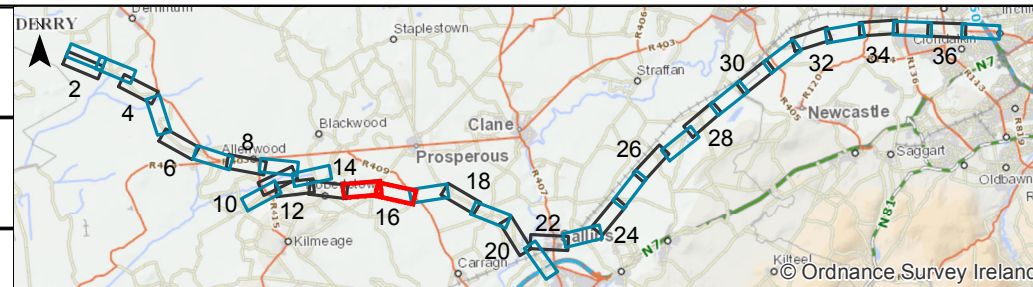
Arena House, Arena Road,  
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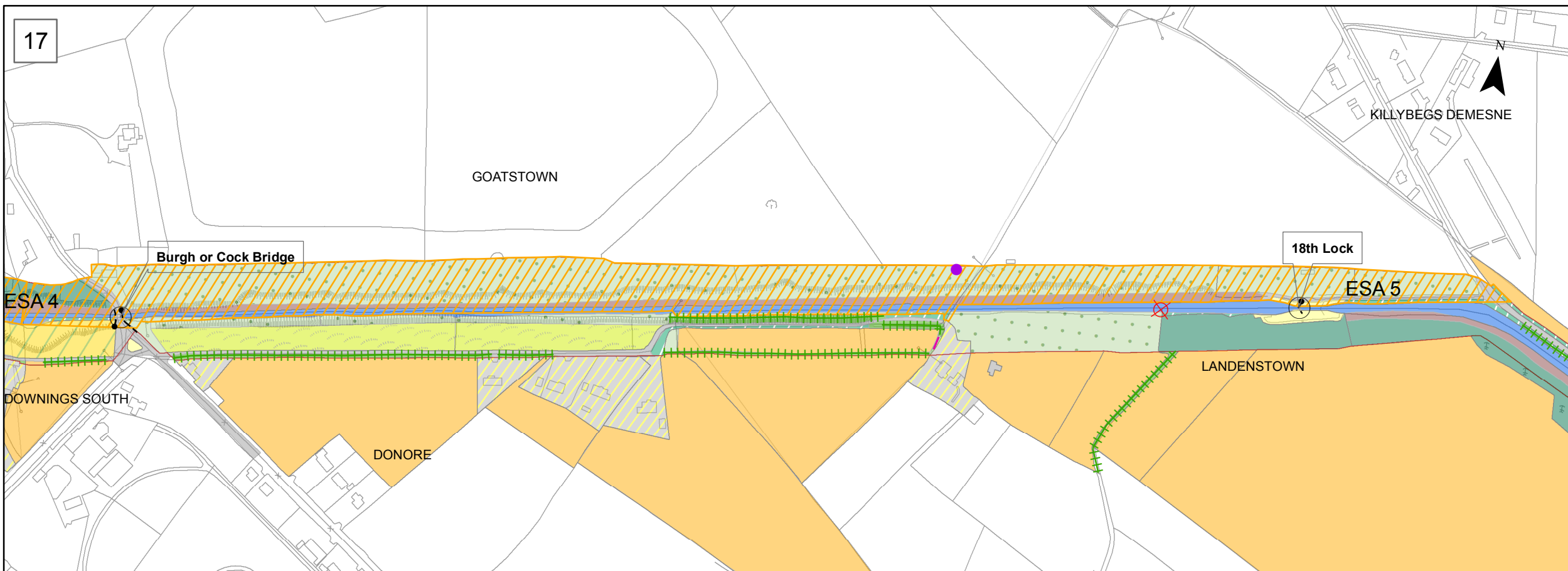
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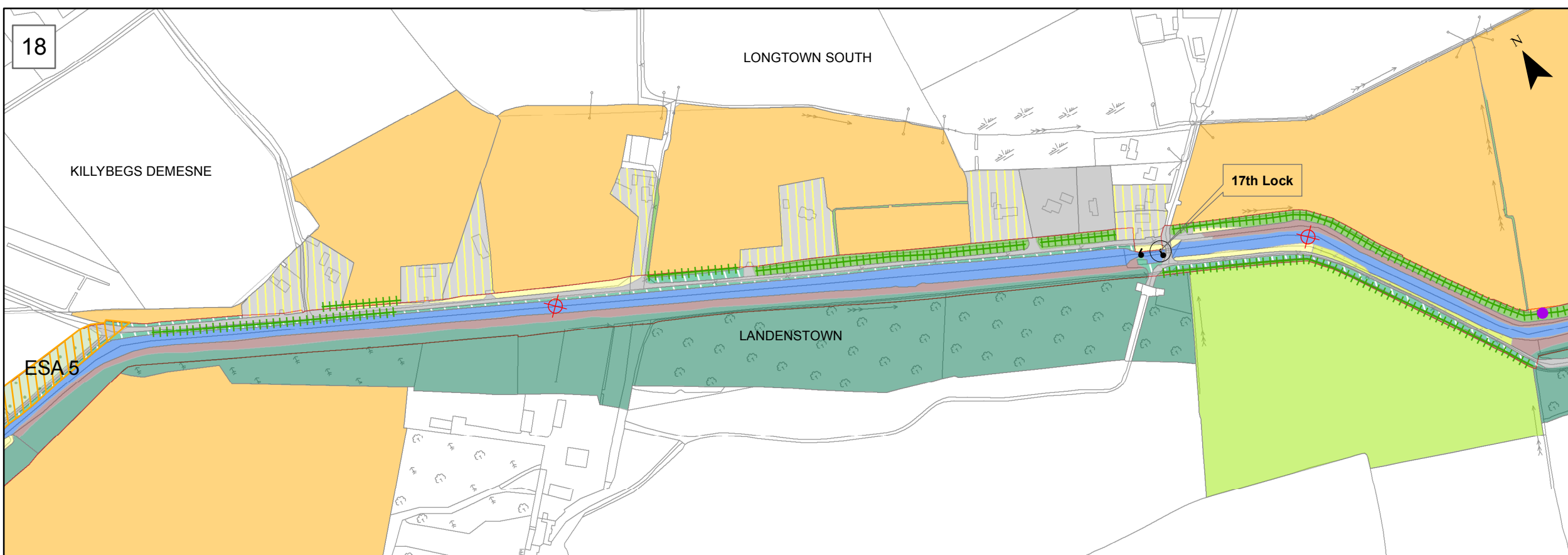
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Waterways Ireland  
Uiscebealaí Éireann Watterweys Airlann



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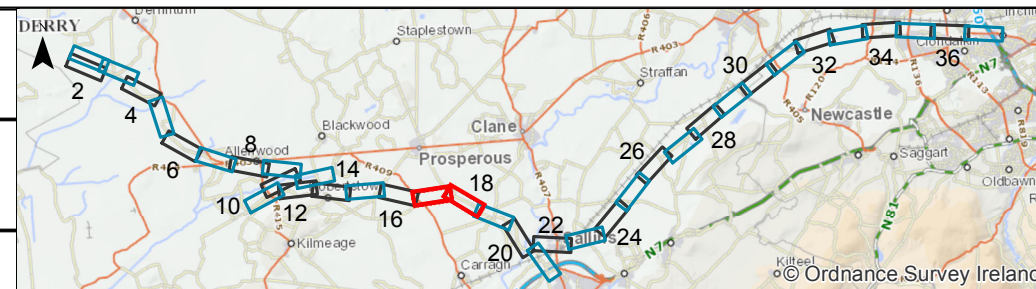
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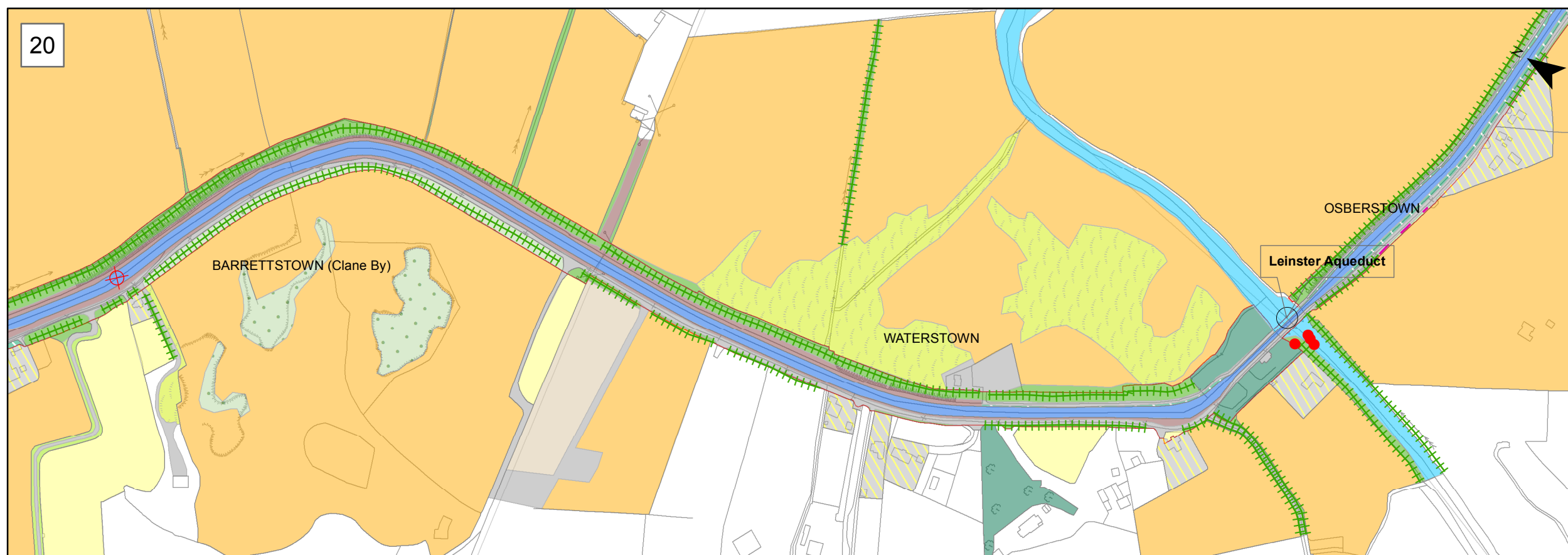
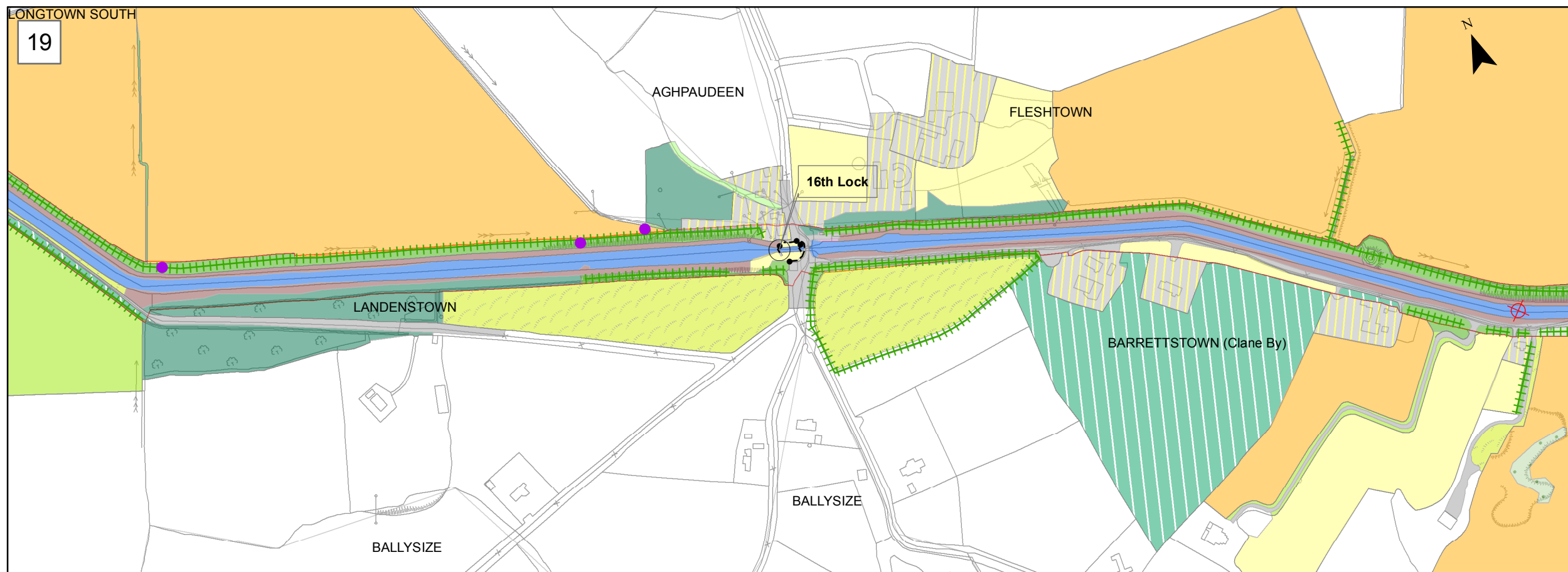
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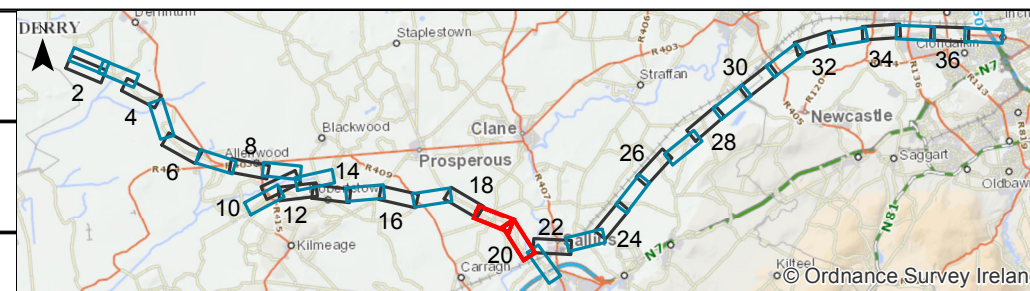
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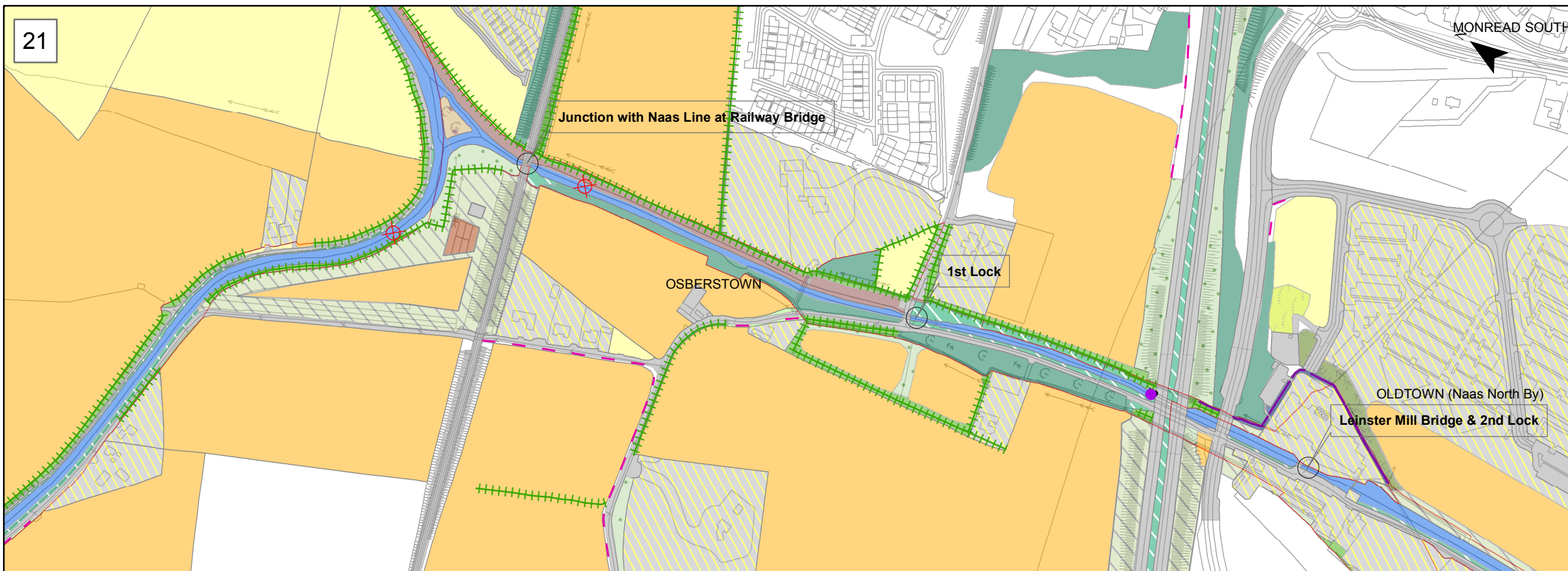
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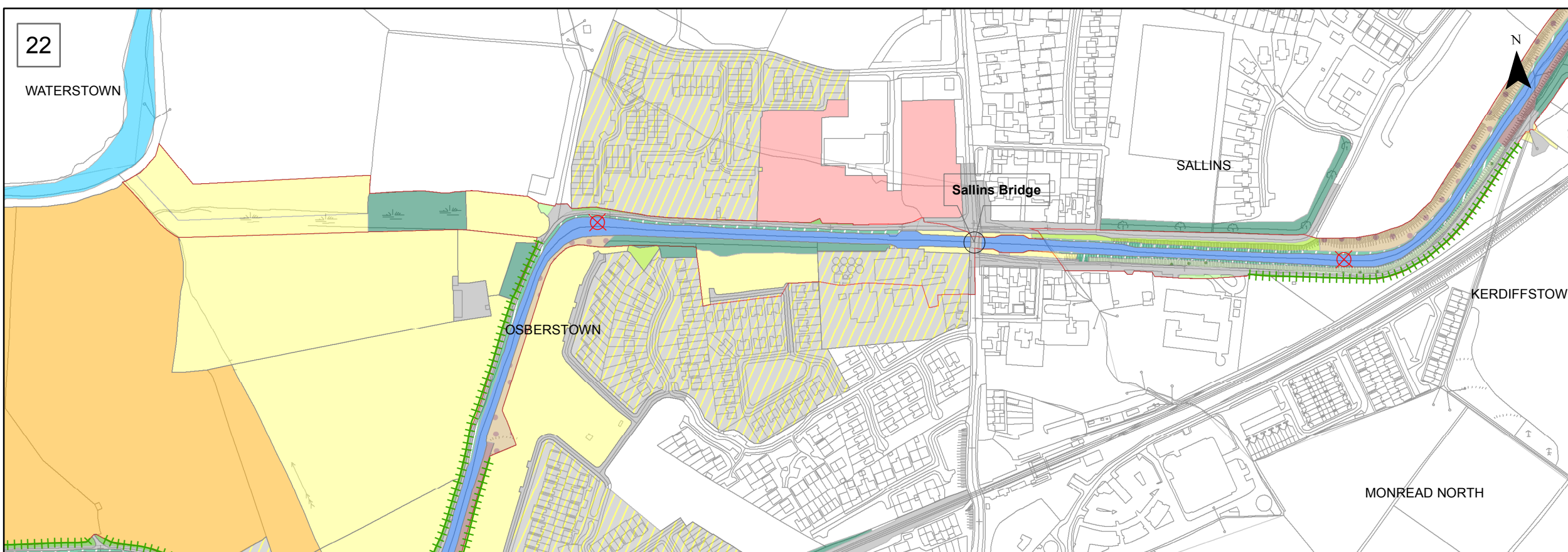
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  - PB4, Cutover bog
  - PF1, Rich fen and flush
  - TM, Towpath habitat mosaic
  - WD1, Broadleaved woodland
  - WD1/WS1, Broadleaved woodland/Scrub
  - WD2, Mixed broadleaved/conifer woodland
  - WD3, (Mixed) conifer woodland
  - WD4, Conifer plantation
  - WD5, Scattered trees and parkland
  - WL1, Hedgerows
  - WL2, Treeline
  - WN5, Riparian woodland
  - WN6, Wet willow-alder-ash woodland
  - WN7, Bog Woodland
  - WS1, Scrub
  - WS2, Immature woodland



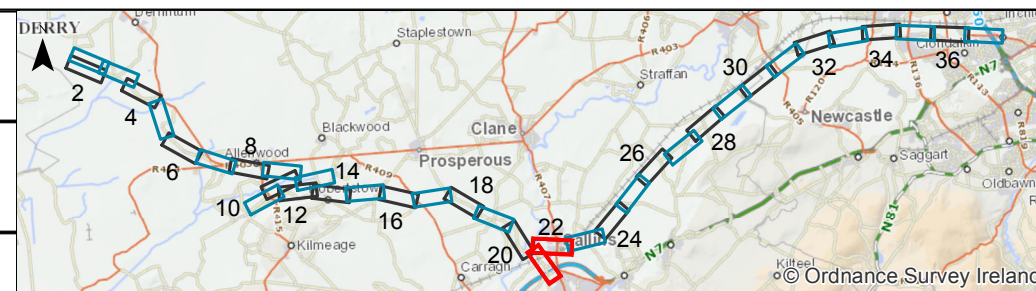
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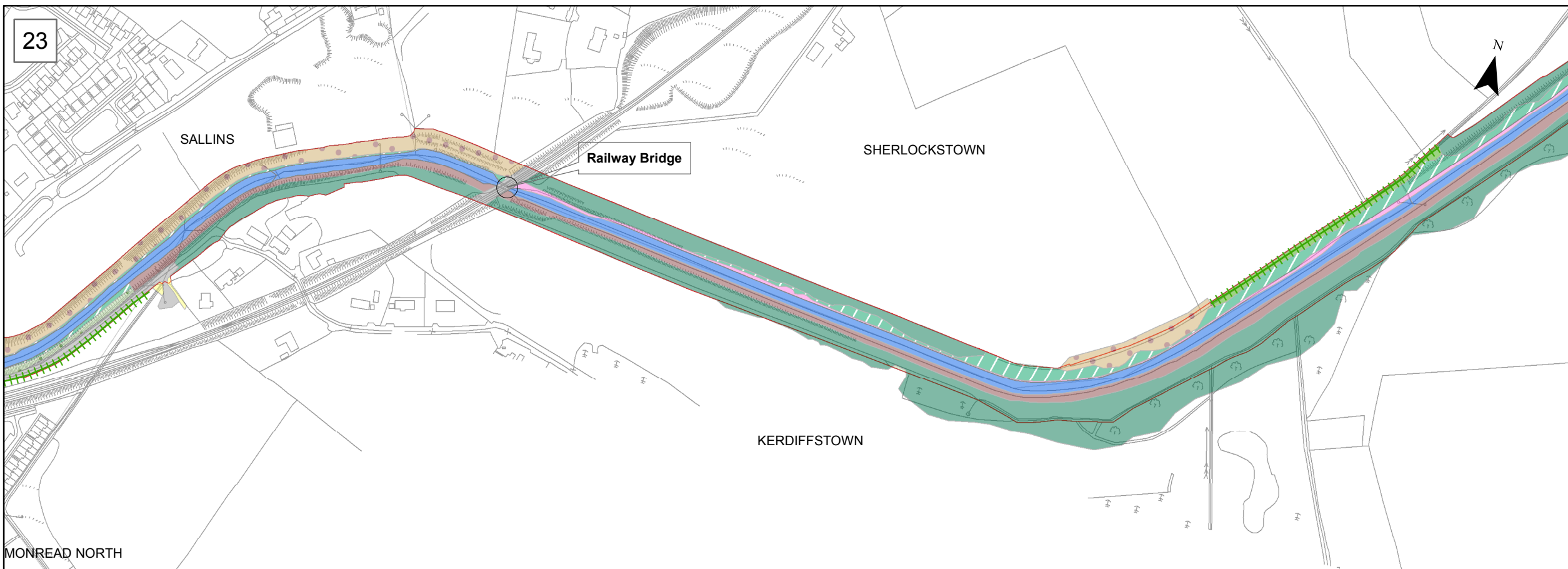
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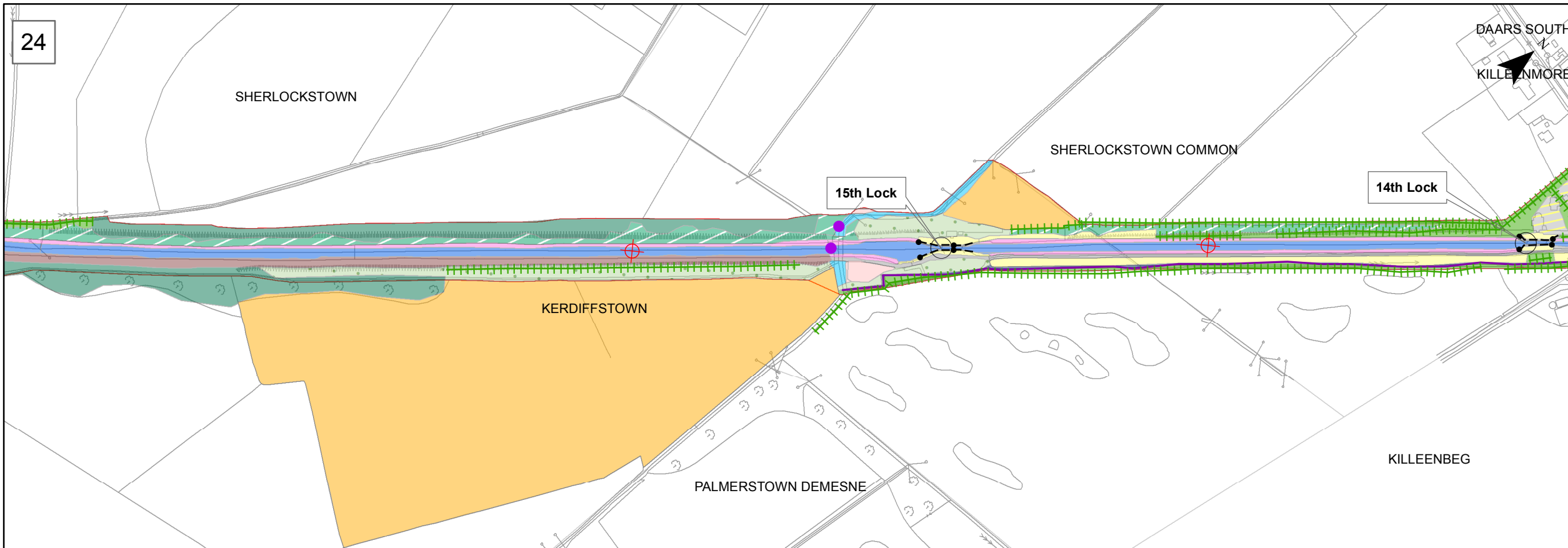


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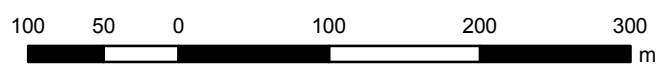


- Legend**
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  - Bridges
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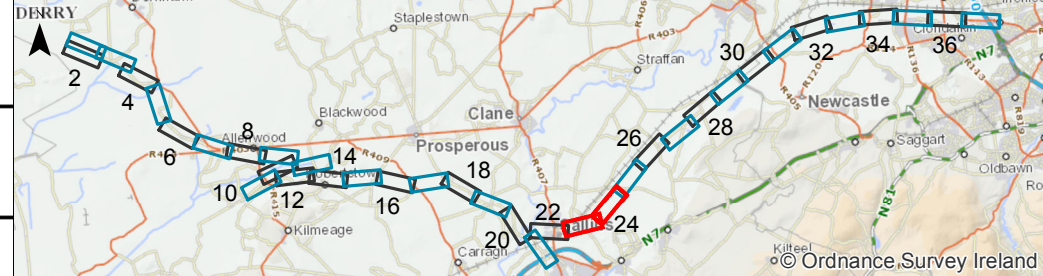


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**GRAND CANAL MAIN LINE**

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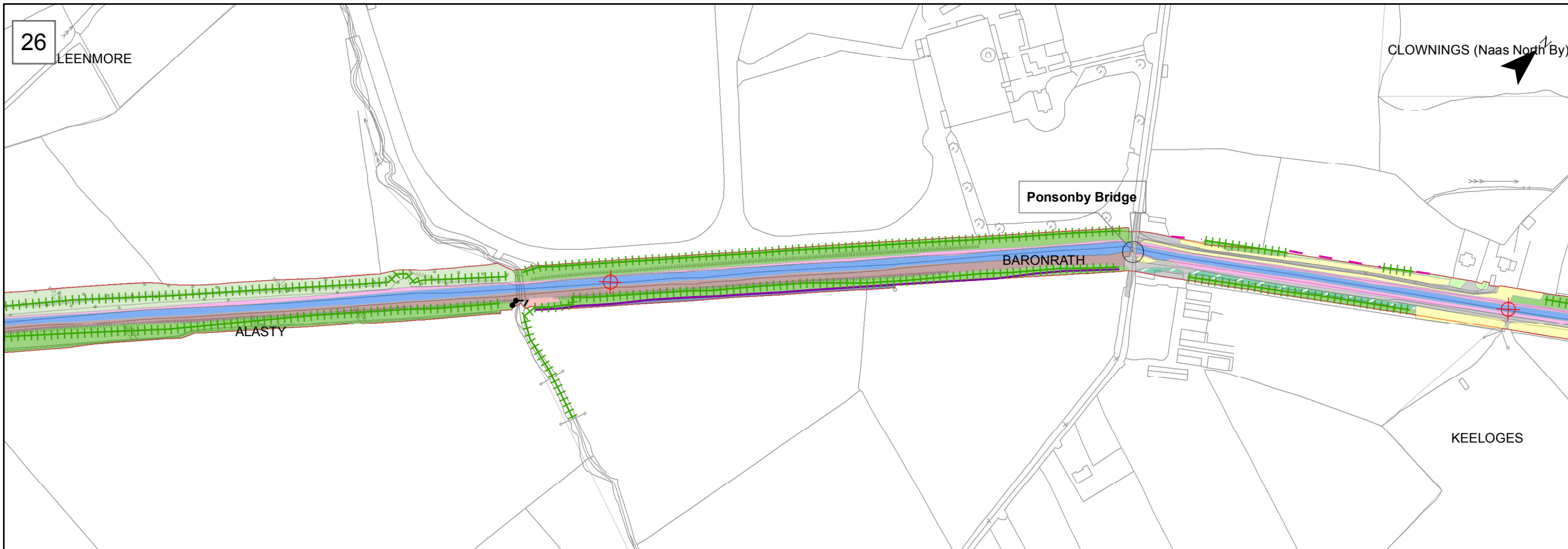
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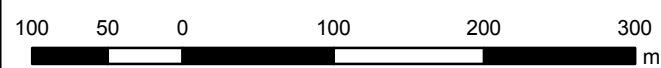
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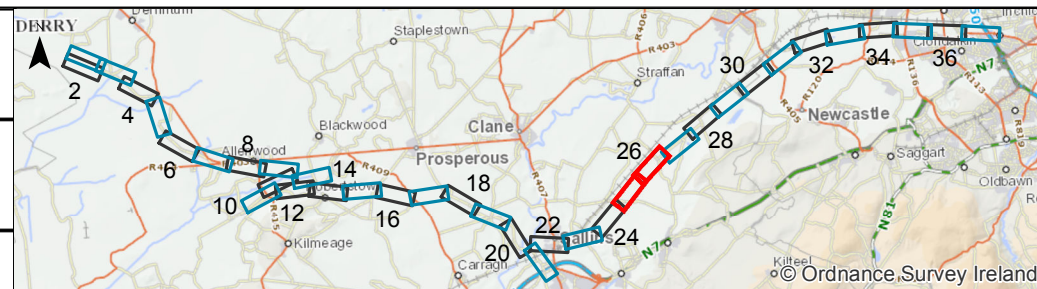
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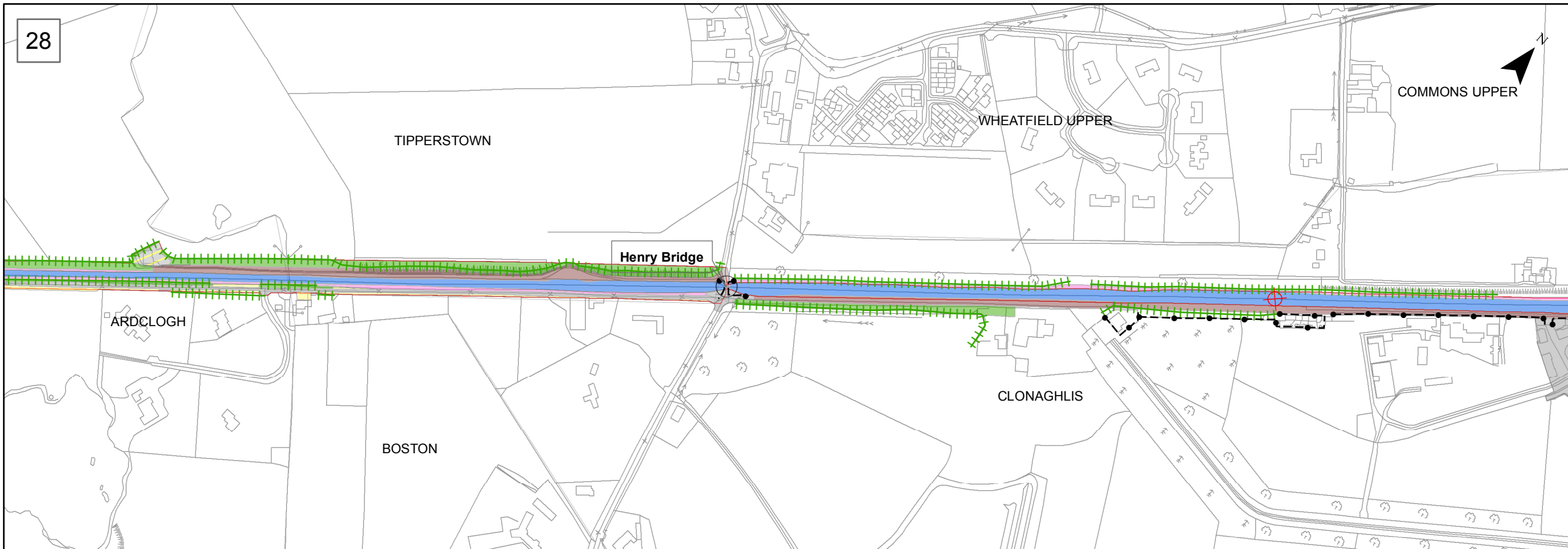
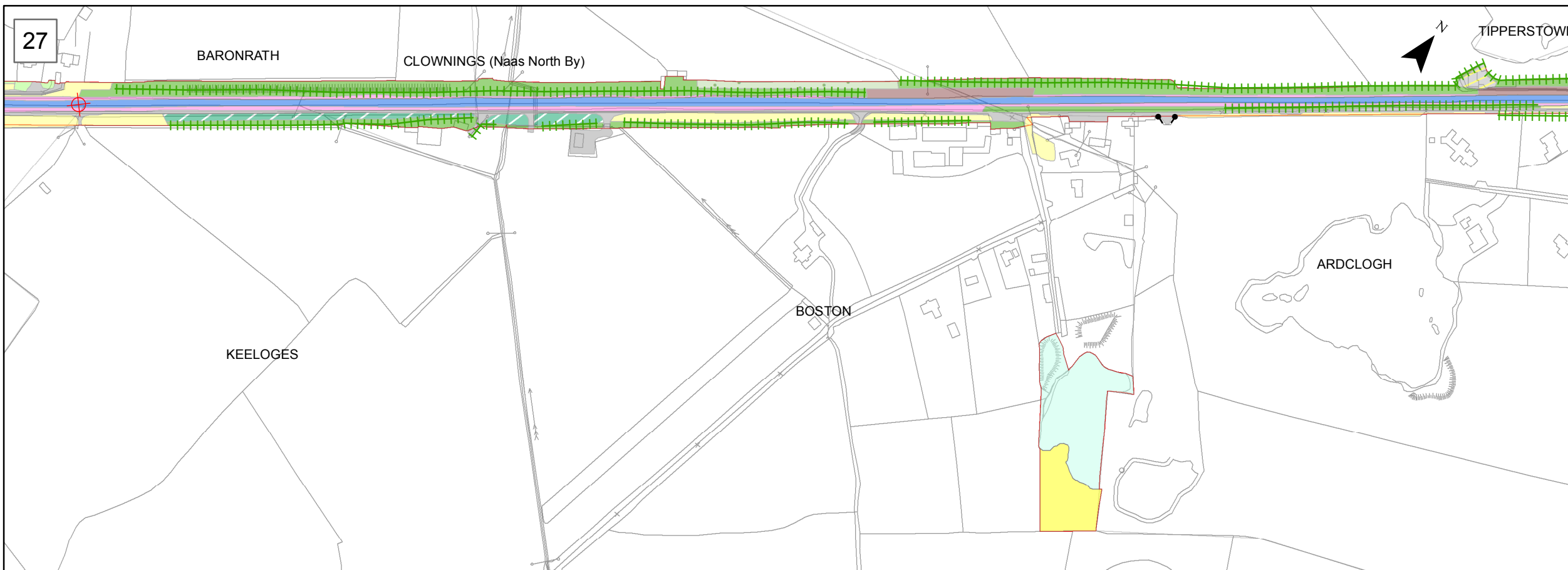
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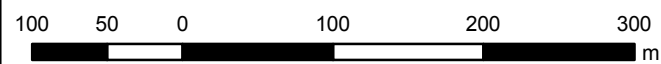
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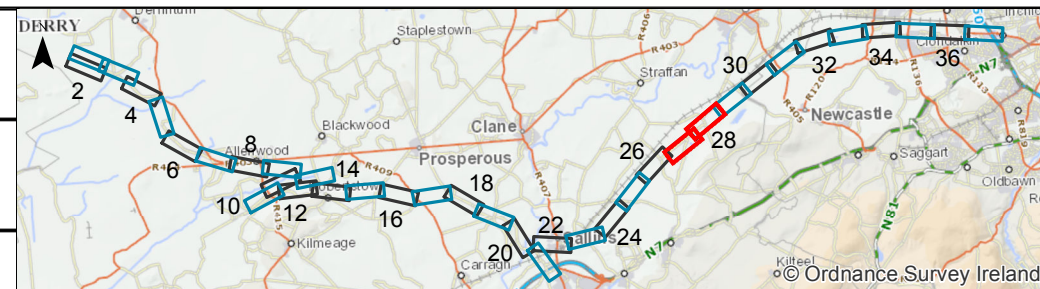
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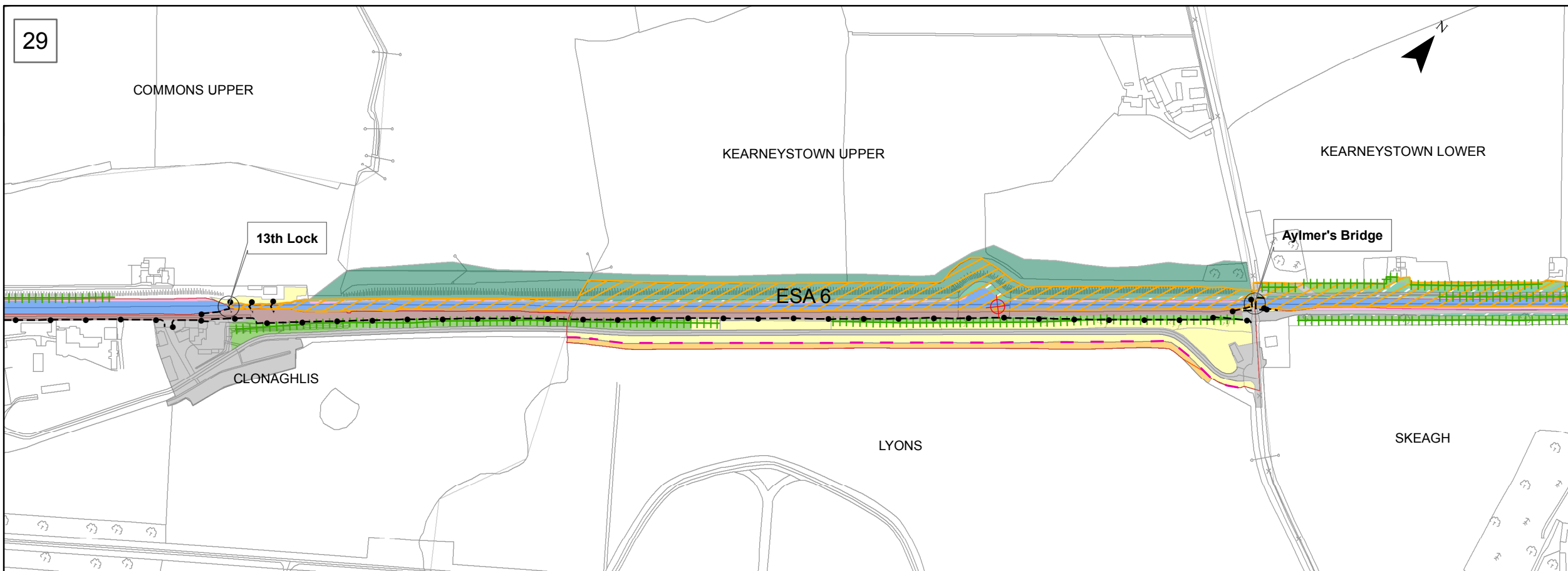
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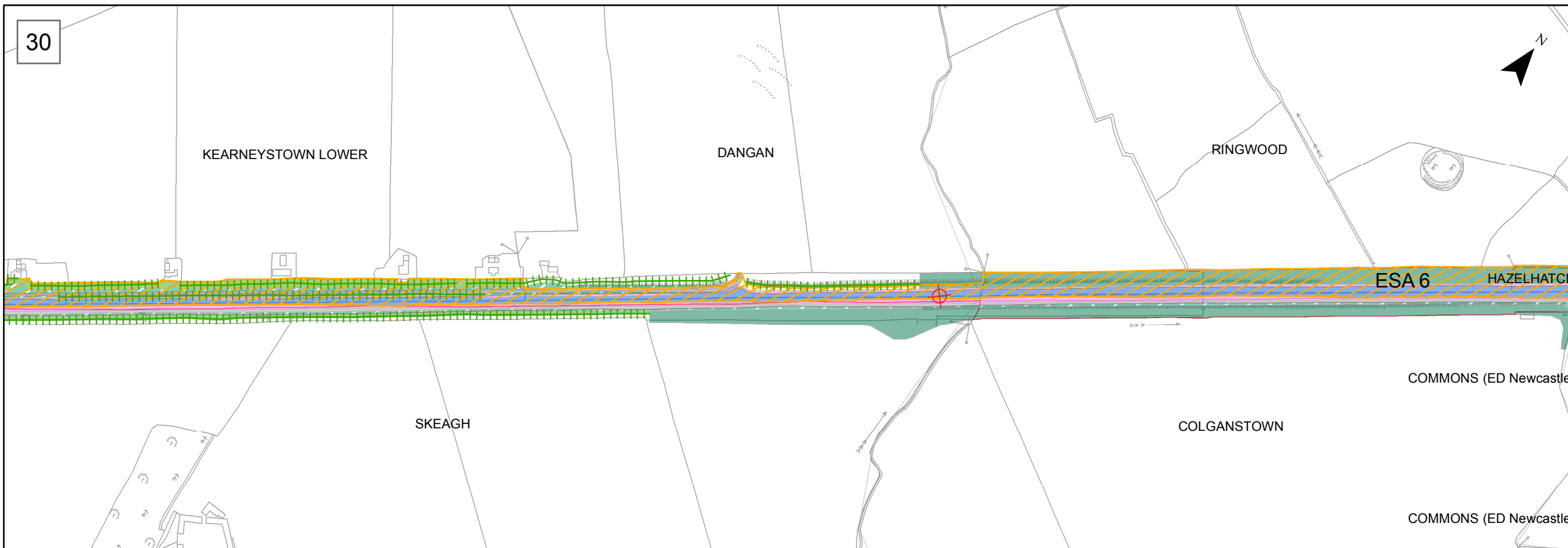
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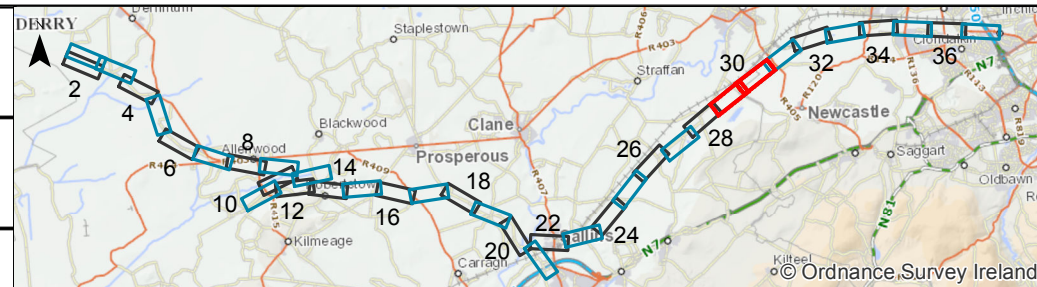
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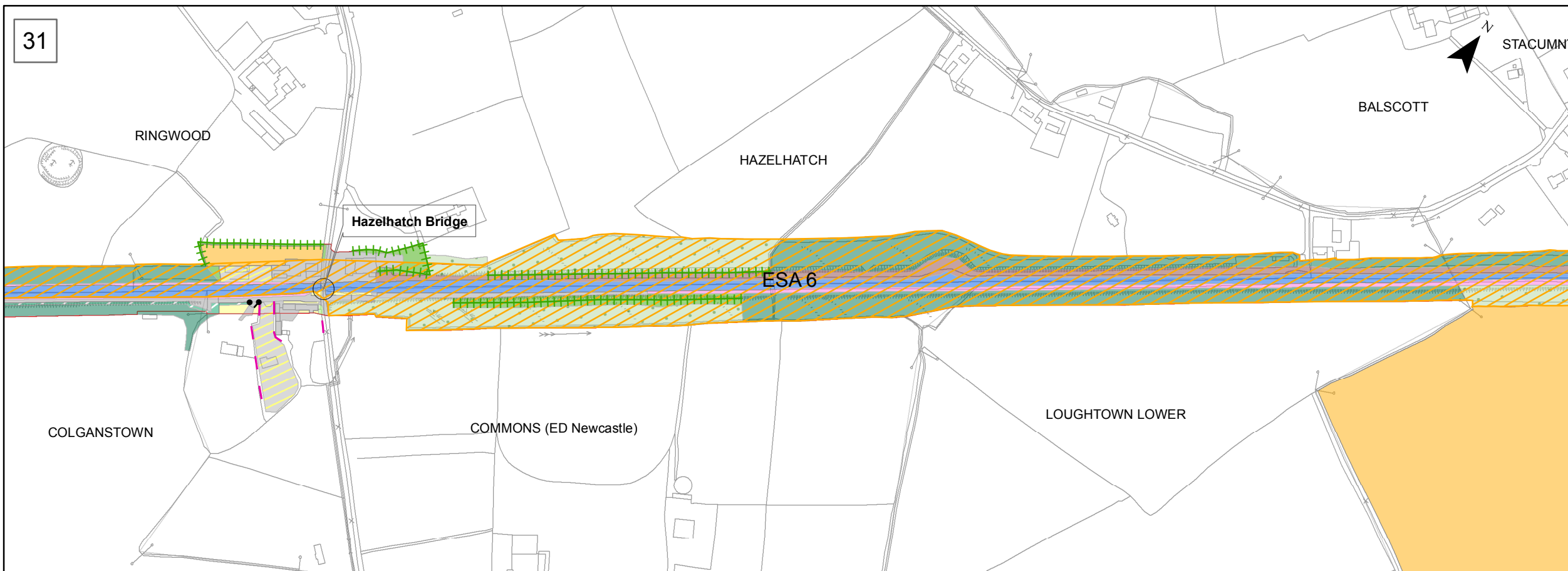
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**GRAND CANAL MAIN LINE**

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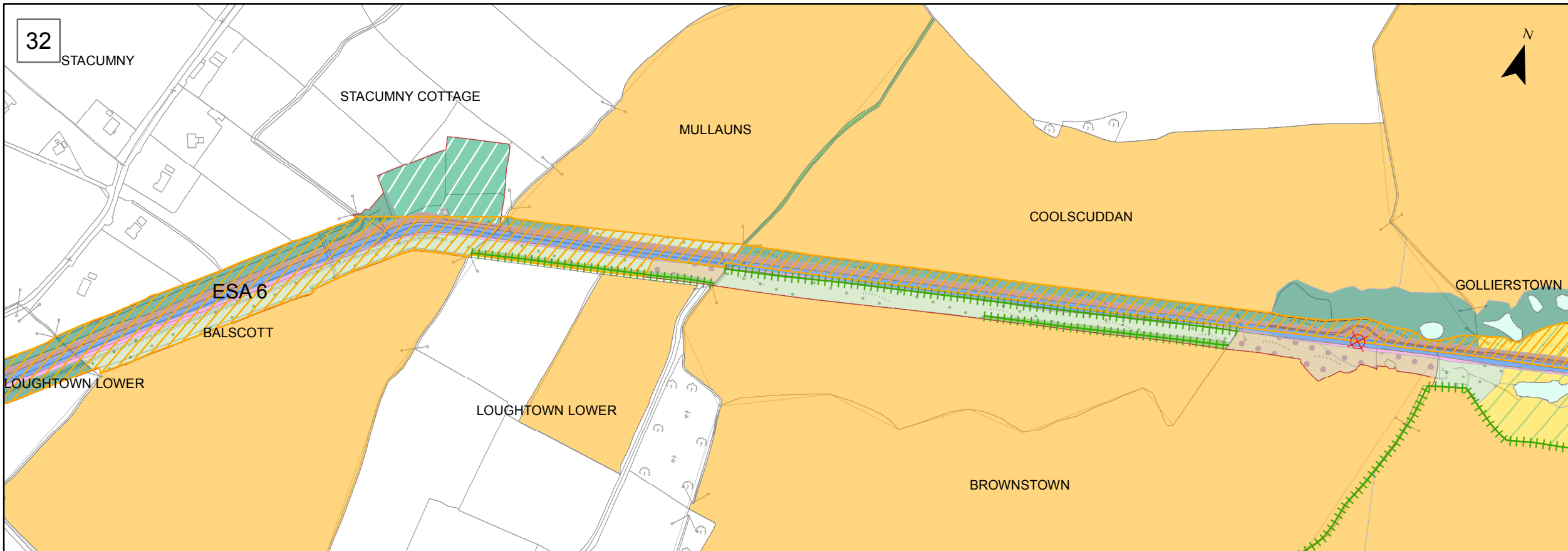


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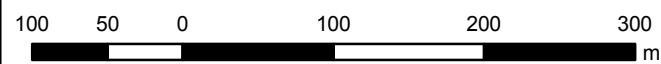




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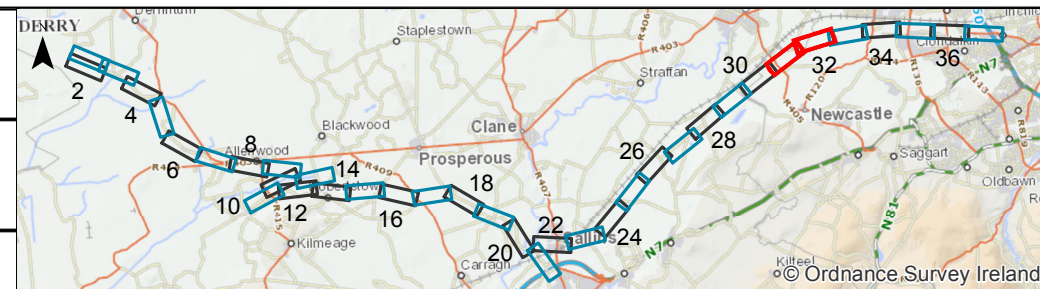
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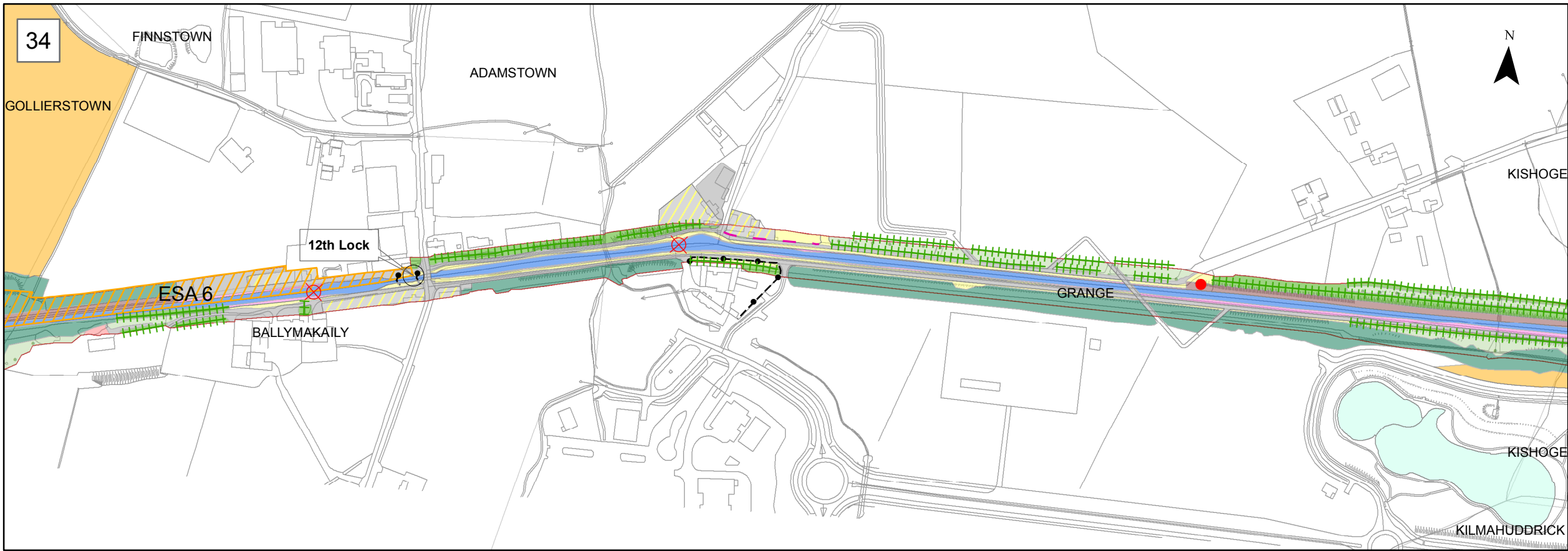
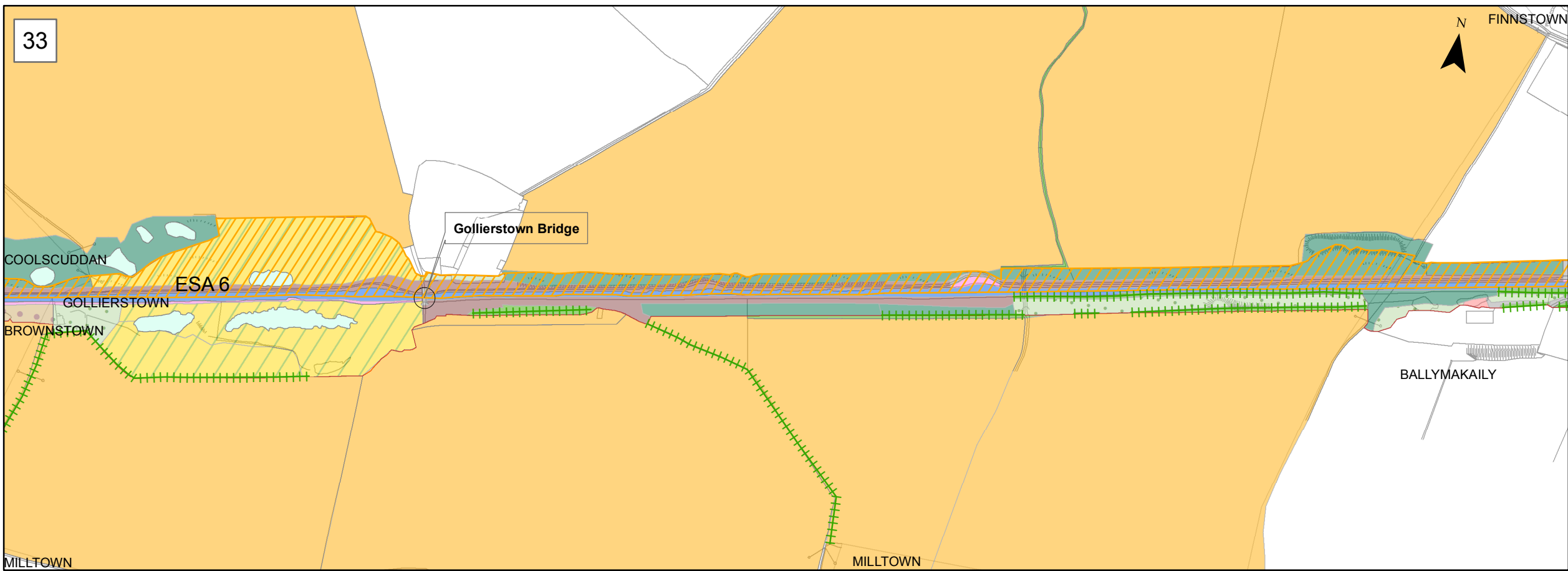


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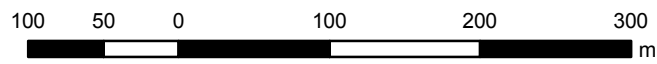




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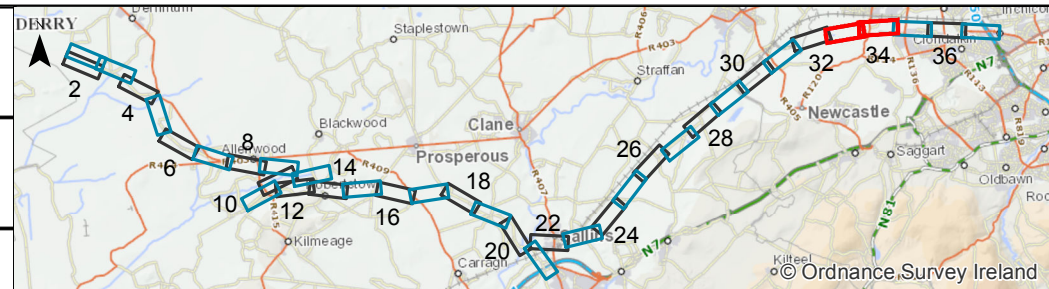
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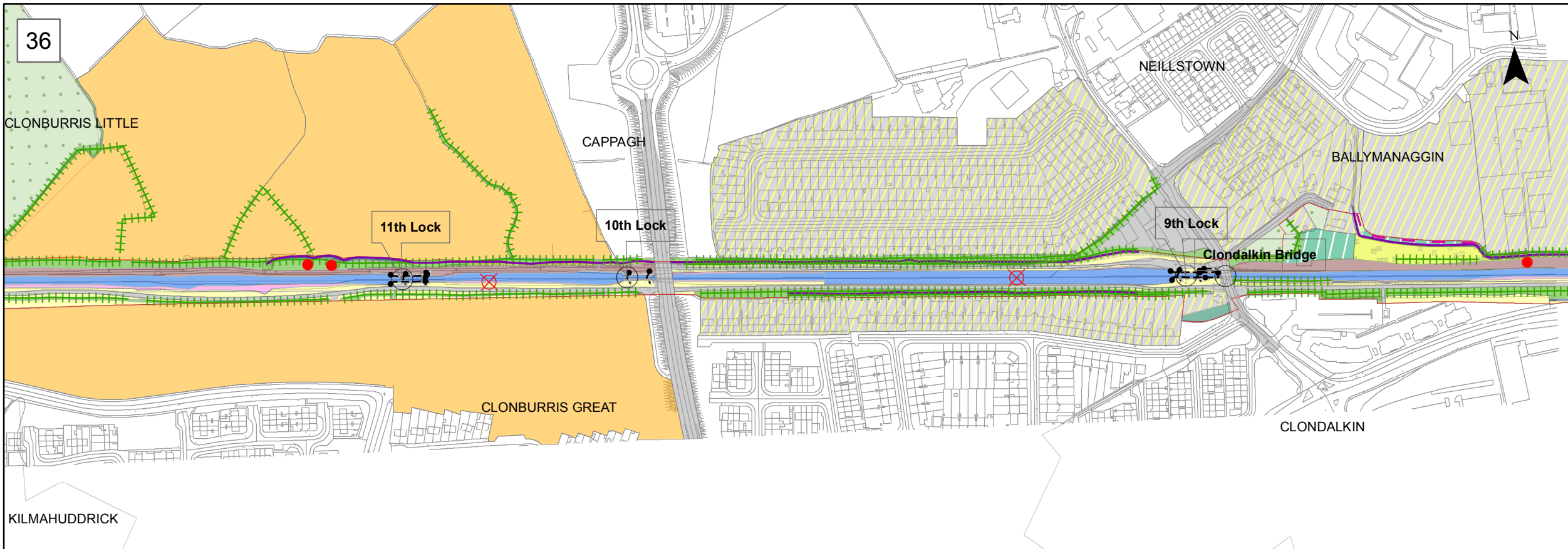
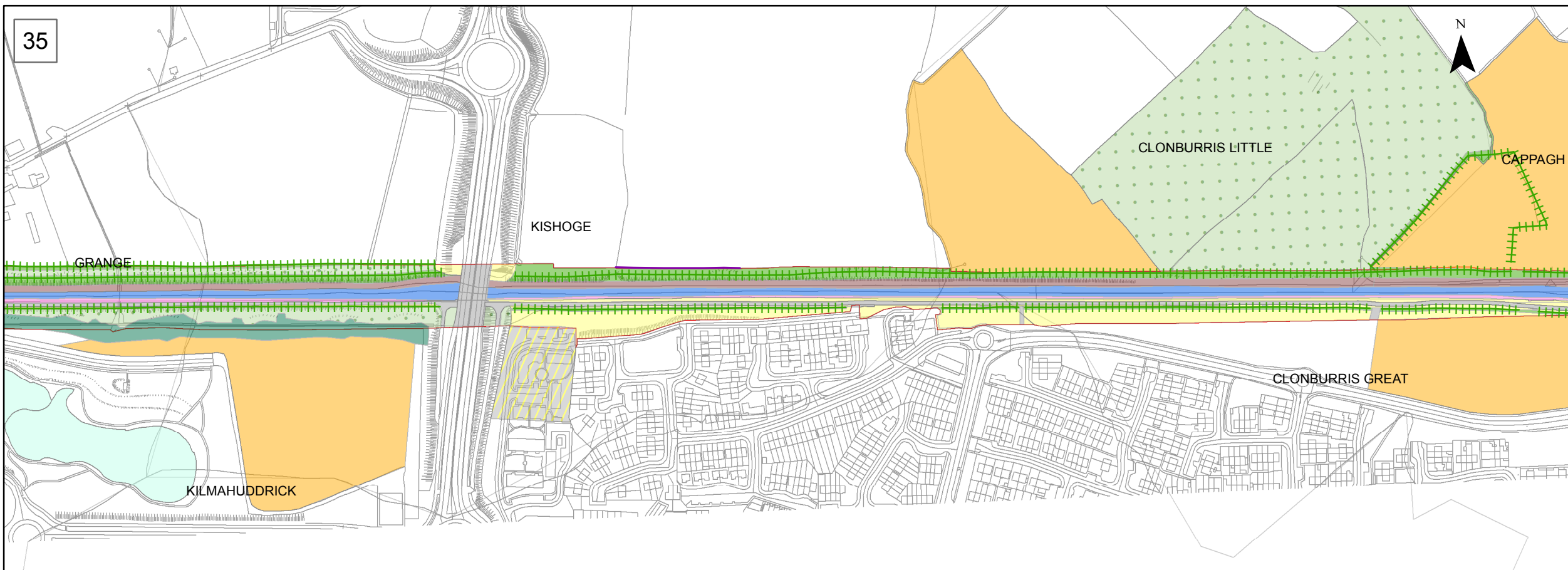
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    - ED4, Active quarries and mines
    - FL8, Artificial ponds
    - FS1, Reed and tall sedge swamp
    - FW2, Depositing/lowland rivers
    - FW3, Canal
    - FW4, Drainage ditches
    - GA1, Improved agricultural grassland
    - GA1/GS4, Improved agricultural grassland/Wet grassland
    - GA2, Improved amenity grassland
    - GM1, Marsh
    - GM1/GS4, Marsh/Wet grassland
    - GS1, Dry calcareous and neutral grassland
    - GS1/GA1, Dry calcareous/Improved agricultural grassland
    - GS1/GA2, Dry calcareous/Improved amenity grassland
    - GS1/GS4, Dry calcareous/Wet grassland
    - GS2, Dry meadows and grassy verges
    - GS2/WS1, Dry meadows/Scrub
    - GS4, Wet grassland
    - GS4/WS1, Wet grassland/Scrub
    - HD1, Dense bracken
    - HH1, Dry siliceous heath
    - PB1, Raised Bog
    - PB4, Cutover bog
    - PF1, Rich fen and flush
    - TM, Towpath habitat mosaic
    - WD1, Broadleaved woodland
    - WD1/WS1, Broadleaved woodland/Scrub
    - WD2, Mixed broadleaved/conifer woodland
    - WD3, (Mixed) conifer woodland
    - WD4, Conifer plantation
    - WD5, Scattered trees and parkland
    - WL1, Hedgerows
    - WL2, Treeline
    - WN5, Riparian woodland
    - WN6, Wet willow-alder-ash woodland
    - WN7, Bog Woodland
    - WS1, Scrub
    - WS2, Immature woodland

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Consulting Engineers  
Civil - Structural - Transportation - Environmental

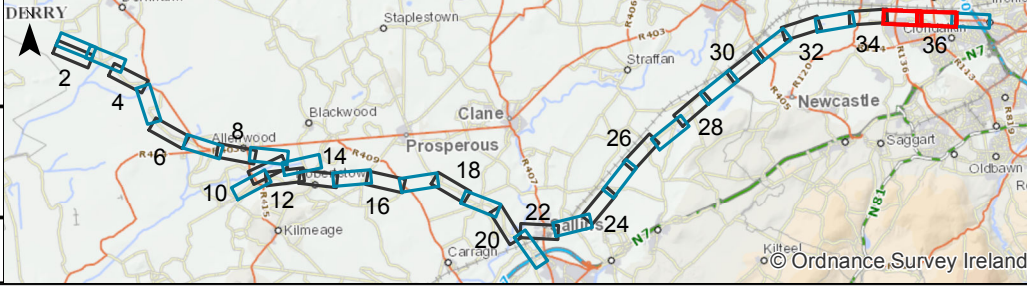
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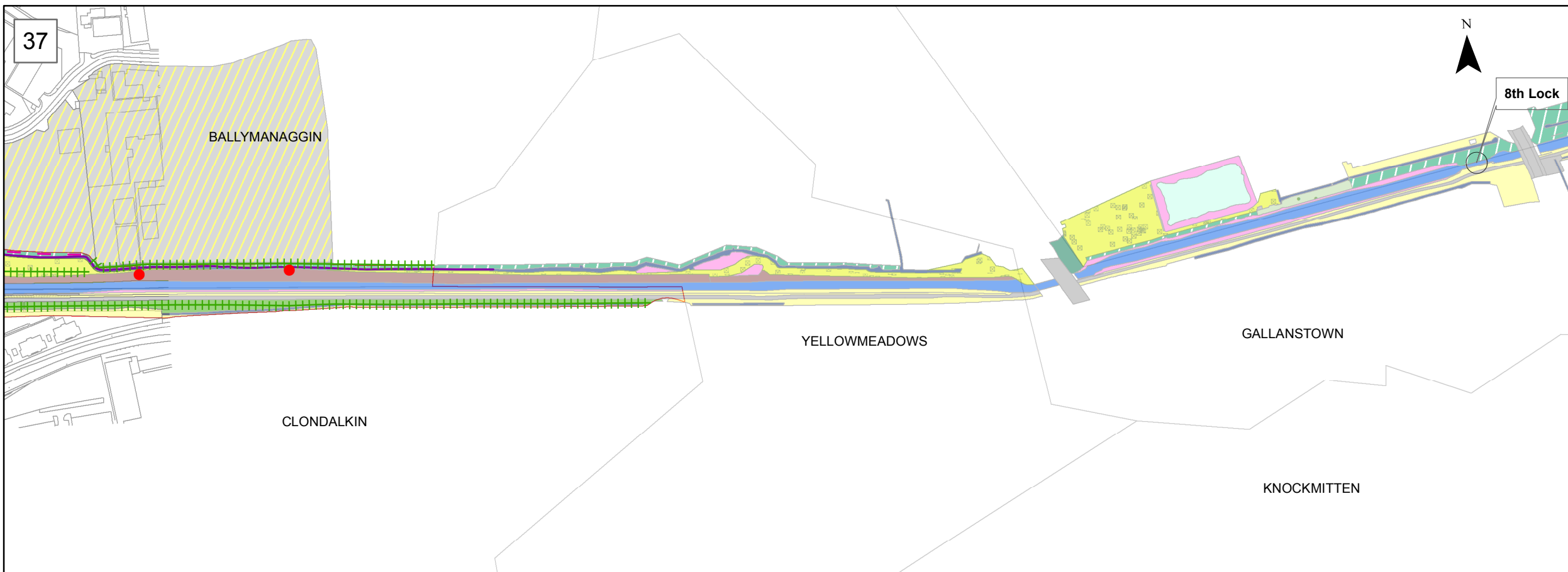
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Project Title  
**GRAND CANAL MAIN LINE**

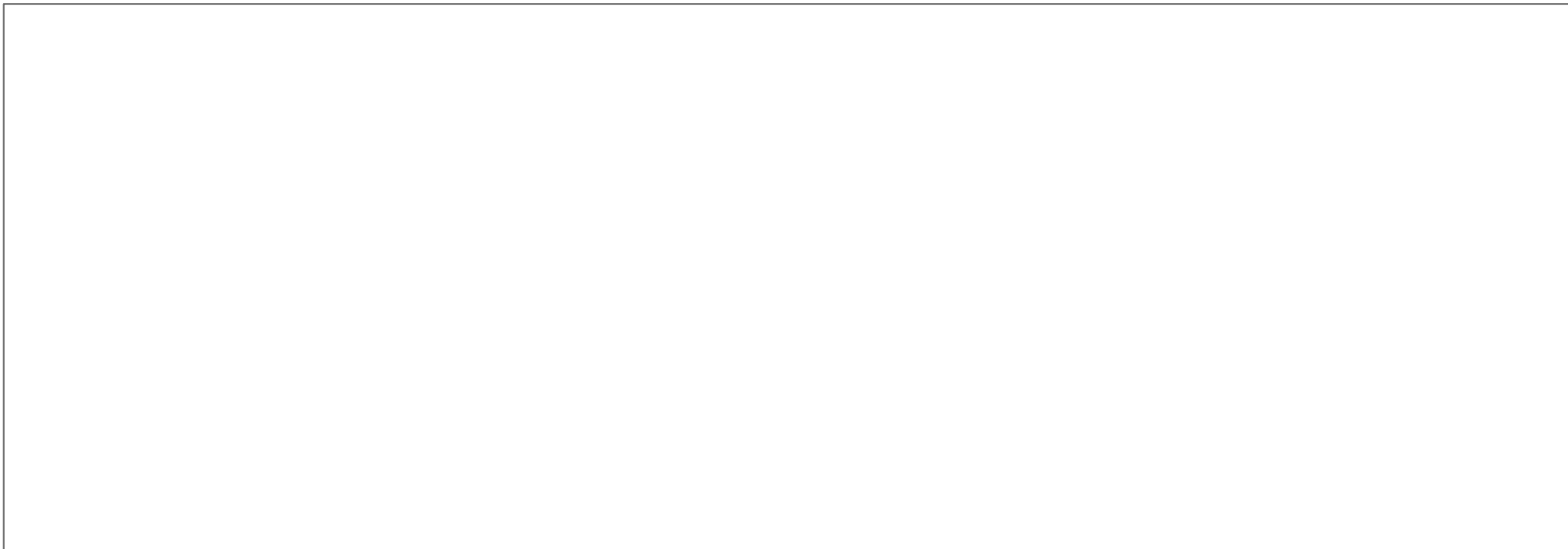
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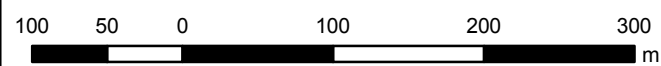


- Legend**
- Aquatic Macrophyte Sample Locations
  - Protected Mammal Activity
  - IAS - Invasive Plants Species
  - Bridges
  - Property Boundary
  - ESA - Ecologically Sensitive Areas
- Fossitt Habitat Code Polyines**
- WL1, Hedgerows
  - BL1, Stone walls
  - WL2, Treelines
  - FW4, Drainage ditch
- Fossitt Habitat Code Polygons**
- BC1, Arable crops
  - BC2, Horticultural land
  - BC3, Tilled land
  - BL3, Buildings and artificial surfaces
  - BL3/GA2, Buildings and gardens
  - ED1, Exposed sand gravel or till
  - ED3, Recolonising bare ground
  - ED4, Active quarries and mines
  - FL8, Artificial ponds
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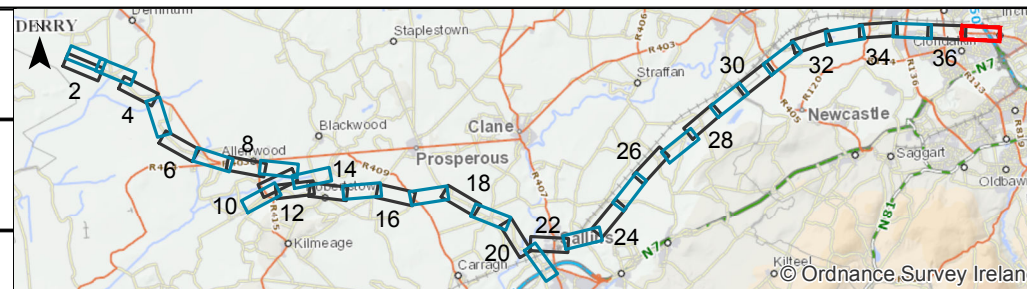
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