

Ecological Survey & Habitat Mapping

**Shannon-Erne Ecological Assessment:
Survey of the Shannon Erne Waterway from
the River Shannon Confluence to Lough Scummog,
Co Leitrim.**



Planning & Environmental Consultants

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1 INTRODUCTION

1.1 General Introduction

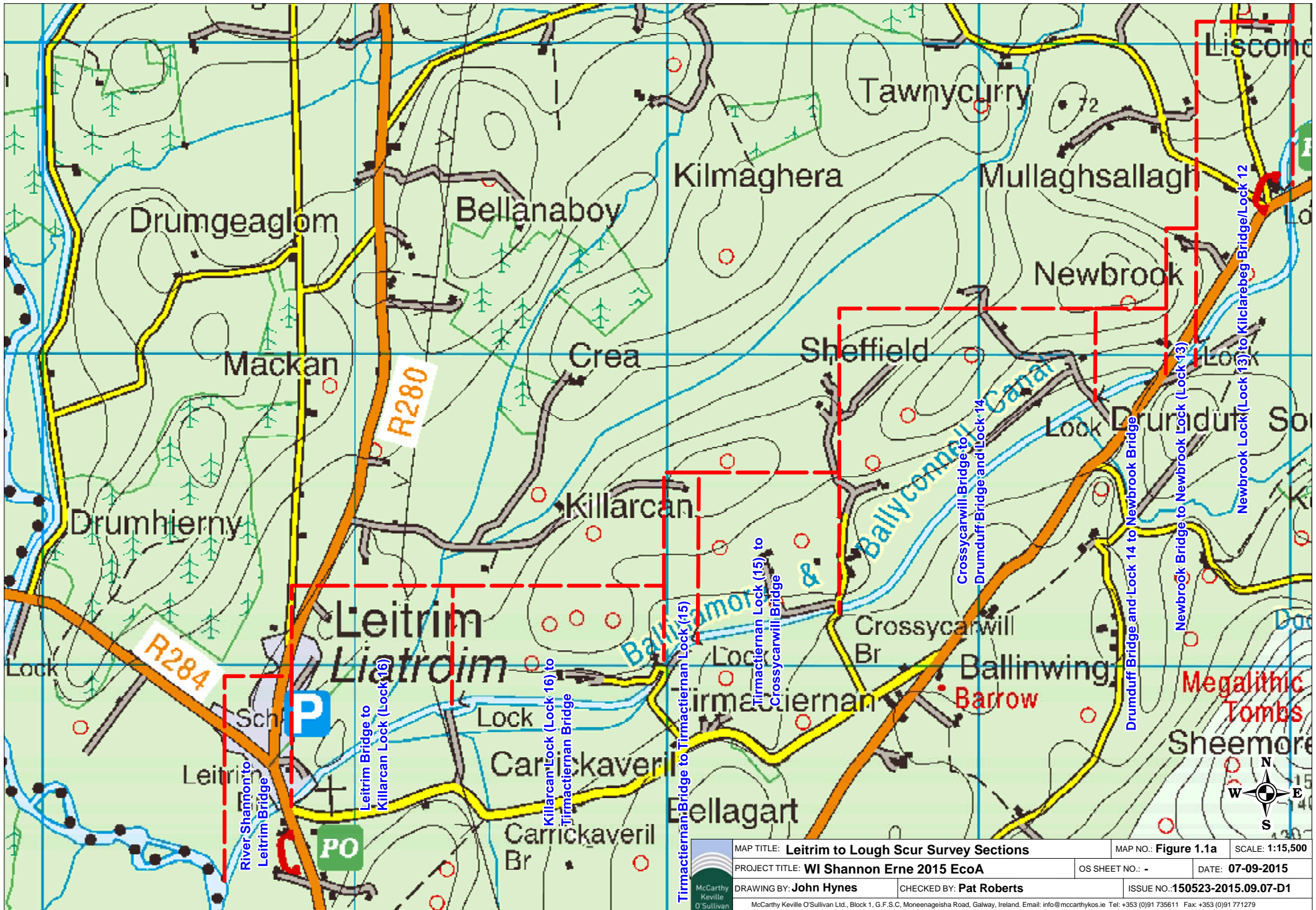
Waterways Ireland have appointed McCarthy Keville O’Sullivan (McCarthyKOS) to undertake an Ecological Survey of approximately 8.4km of the Shannon Erne Waterway from the River Shannon confluence to Lough Scur, Co. Leitrim. Waterways Ireland wish to enhance their knowledge of the local flora fauna and habitats along this section of the canal.

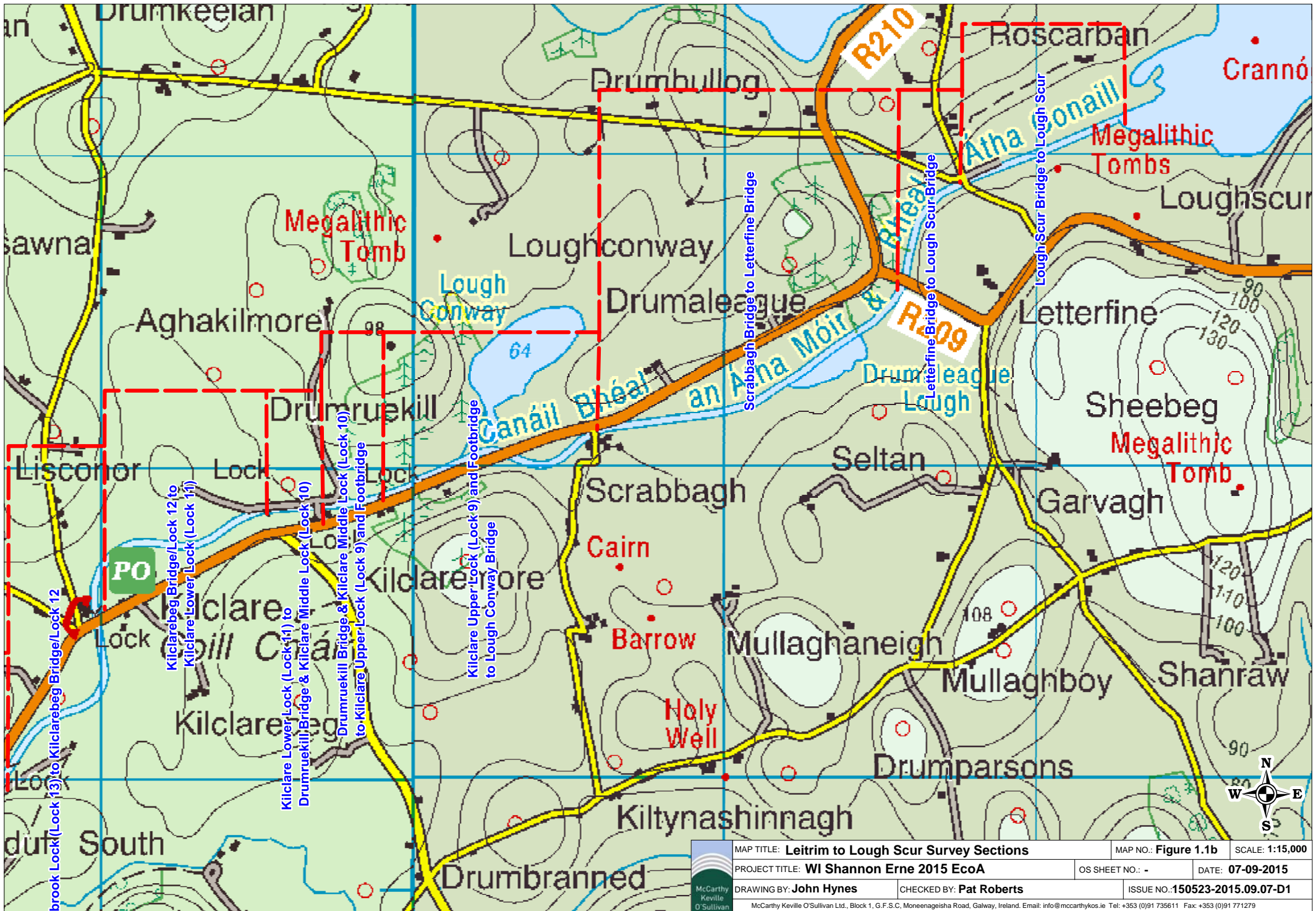
The objectives of the project as set out by Waterways Ireland are as follows:

- Complete a detailed desktop study and consultation exercise regarding the existing information available pertaining to the Study Areas
- Classification of habitats and preparation of habitat maps identifying habitats (according to Level III Fossitt) within the allocated Study Areas adhering to Waterways Ireland GIS Data Standard Guidelines
- Generation of habitat boundary polygons based on OSI mapping
- Identification, mapping and provision of detailed information about habitats, including Annex I habitats and Annex II species within the Study Area.
- Identification of Ecologically Sensitive Areas.
- Preparation of a digital habitat GIS dataset and habitat maps for the allocated Study Area which will be provided in an ArcGIS compatible format.
- Preparation of a report providing written information and photographs about habitats identified, bird, mammal and aquatic survey results, invasive species present and desk study results.

For the purposes of the survey the study site has been split up into 17 sections (see Table 1.1). These sections follow the sequence of bridges and locks encountered along the survey section of the Shannon Erne Waterway. Section 1 is the westernmost section at the junction with the River Shannon, while section 17 is the easternmost section ending at the junction with Lough Scur.

Figure 1.1a and Figure 1.1b shows the location of the study area, showing the Shannon Erne Waterway between the confluence with the River Shannon and Lough Scur and the 17 section divisions. The Habitat Mapping Figures are provided as Appendix I.





	MAP TITLE: Leirrim to Lough Scur Survey Sections	MAP NO.: Figure 1.1b	SCALE: 1:15,000
	PROJECT TITLE: W1 Shannon Erne 2015 EcoA	OS SHEET NO.: -	DATE: 07-09-2015
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Table 1.1 Breakdown of the sections of the study area.

Number	Description	Habitat Map Figures
1	River Shannon to Leitrim Bridge	Figure 3.1
2	Leitrim Bridge to Killarcan Lock (Lock 16)	Figure 3.1
3	Killarcan Lock (Lock 16) to Tirmactiernan Bridge	Figures 3.1–3.2
4	Tirmactiernan Bridge to Tirmactiernan Lock (15)	Figure 3.2
5	Tirmactiernan Lock (15)- Crossycarwill Bridge	Figures 3.2-3.3
6	Crossycarwill Bridge to Drumduff Bridge and Lock 14	Figures 3.3-3.4
7	Drumduff Bridge and Lock 14 to Newbrook Bridge	Figure 3.4
8	Newbrook Bridge to Newbrook Lock (Lock 13)	Figure 3.4
9	Newbrook Lock (Lock 13) to Kilclarebeg Bridge & Lisconnon Lock (12)	Figure 3.4
10	Kilclarebeg Bridge & Lisconnon Lock (12) to Kilclare Lower Lock (Lock 11)	Figure 3.5
11	Kilclare Lower Lock (Lock 11) to Drumruekill Bridge & Kilclare Middle Lock (Lock 10)	Figure 3.5
12	Drumruekill Bridge & Kilclare Middle Lock (Lock 10) to Kilclare Upper Lock (Lock 9) and Footbridge	Figure 3.5
13	Kilclare Upper Lock (Lock 9) and Footbridge to Lough Conway Bridge	Figures 3.5-3.6
14	Lough Conway Bridge to Scrabbagh Bridge	Figure 3.6
15	Scrabbagh Bridge to Letterfine Bridge	Figures 3.6-3.7
16	Letterfine Bridge to Lough Scur Bridge	Figures 3.7-3.8
17	Lough Scur Bridge to Lough Scur	Figure 3.8

1.2 Methodology

The flora and habitats of the site were assessed by means of a desk study of information and literature pertinent to the site and surrounding area, information pertaining to legislation/designations and other notable ecological records. In addition,

a field survey of the site, including a habitat survey, was carried out by a suitably qualified ecologist.

Seasonal factors that affect distribution patterns and habits of species were taken into account when conducting the surveys. The potential of the site to support certain populations (in particular those of conservation importance that may not have been recorded during the field survey due to their seasonal absence or nocturnal/cryptic habits) was assessed.

The field walkover surveys were conducted on the 23rd of June 2015 and 1st of September, which fall within the recognised optimum period for vegetation surveys/habitat mapping i.e. May to September (NRA, 2008; The Heritage Council, 2010). A second visit to the study area in the vicinity of Lough Conway was conducted during September 2015. The site was assessed and the habitats within and adjacent to the site were classified according to the guidelines set out in 'A Guide to Habitats in Ireland' (Fossitt, 2000), which classifies habitats based on the vegetation present and management history. The site was walked systematically and habitats were assessed, classified and sketched onto field maps of the site.

The main channel was surveyed for Otter as per NRA guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes) in order to determine the presence or absence of otter holts in the canal bank. This involved a search for all potential otter signs e.g. spraints, prints, couches and holts along the canal corridor and within adjacent habitats. All bird species observed or heard within the site were recorded and a search for the presence or signs of mammals, amphibians and reptiles was undertaken during the visit.

Summer is possibly the most appropriate time of year for ecological surveys when many plant species are in flower and faunal activity is at its peak. However, summer field visits are limited and may not record all the species that potentially use the site (e.g. wintering wildfowl). Ideally surveys should be carried out in all seasons. It was deemed unnecessary to carry out surveys in all seasons as it was possible to classify each habitat and identify many of the species present, based on the site survey in June/September. Using this information, together with published information on the site and its environs, it is considered that a comprehensive ecological assessment was achieved.

An aquatic plant survey, using a grapnel, was carried out at random locations within each survey section within the Study Area. Species collected were identified and an aquatic species inventory was compiled. Polarised sunglasses were also used to aid in visual observation of fish species within the canal.

On the occasion of the site visit, the weather was sunny, warm and dry with blue skies and a light breeze.

2 DESK STUDY

2.1 Background to Designated Sites

Natural Heritage Areas and proposed Natural Heritage Areas

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) are heritage sites that were designated for the protection of flora, fauna, habitats and geological sites of **national** importance. Management of NHAs/pNHAs is guided by planning policy and the Wildlife (Amendment) Act 2000. It was from these NHAs that the most important sites were selected for international designation as European sites.

European Sites

The Habitats Directive (together with the Birds Directive) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. All in all the directive protects over 1,000 animals and plant species and over 200 so called "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance.

With the introduction of the EU Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC) which were transposed into Irish law as S.I. No. 94/1997 *European Communities (Birds and Natural Habitats) Regulations 1997*, the European Union formally recognised the significance of protecting rare and endangered species of flora and fauna, and also, more importantly, their habitats. The 1997 Regulations and their amendments were subsequently revised and consolidated in S.I. No. 477/2011-*European Communities (Birds and Natural Habitats) Regulations 2011*. This legislation requires the establishment and conservation of a network of sites of particular conservation value that are to be termed 'European Sites'.

Articles 3 – 9 of the EU Habitats Directive (92/43/EEC) provide the EU legislative framework of protecting rare and endangered species of flora and fauna, and habitats. **Annex I** of the Directive lists habitat types whose conservation requires the designation of **Special Areas of Conservation (SAC)**. Priority habitats, such as Turloughs, which are in danger of disappearing within the EU territory are also listed in Annex I. **Annex II** of the Directive lists animal and plant species (e.g. Marsh Fritillary, Salmon, and Killarney Fern) whose conservation also requires the designation of **Special Areas of Conservation**. **Annex IV** lists animal and plant species in need of strict protection such as Lesser Horseshoe Bat and Otter, and **Annex V** lists animal and plant species whose taking in the wild and exploitation may be subject to management measures. In Ireland, species listed under Annex V include Irish Hare, Common Frog and Pine Marten.

Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (Birds Directive) has been substantially amended several times. In the interests of clarity and rationality the said Directive was codified in 2009 and is now cited as Directive 2009/147/EC. The Directive instructs Member States to take measures to maintain populations of all bird species naturally occurring in the wild state in the EU (**Article 2**). Such measures may include the maintenance and/or re-establishment of habitats in order to sustain these bird populations (**Article 3**).

A subset of bird species have been identified in the Directive and are listed in **Annex I** as requiring special conservation measures in relation to their habitats. These species have been listed on account of inter alia: their risk of extinction; vulnerability to specific

changes in their habitat; and/or due to their relatively small population size or restricted distribution. **Special Protection Areas** (SPAs) are to be identified and classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (**Article 4**).

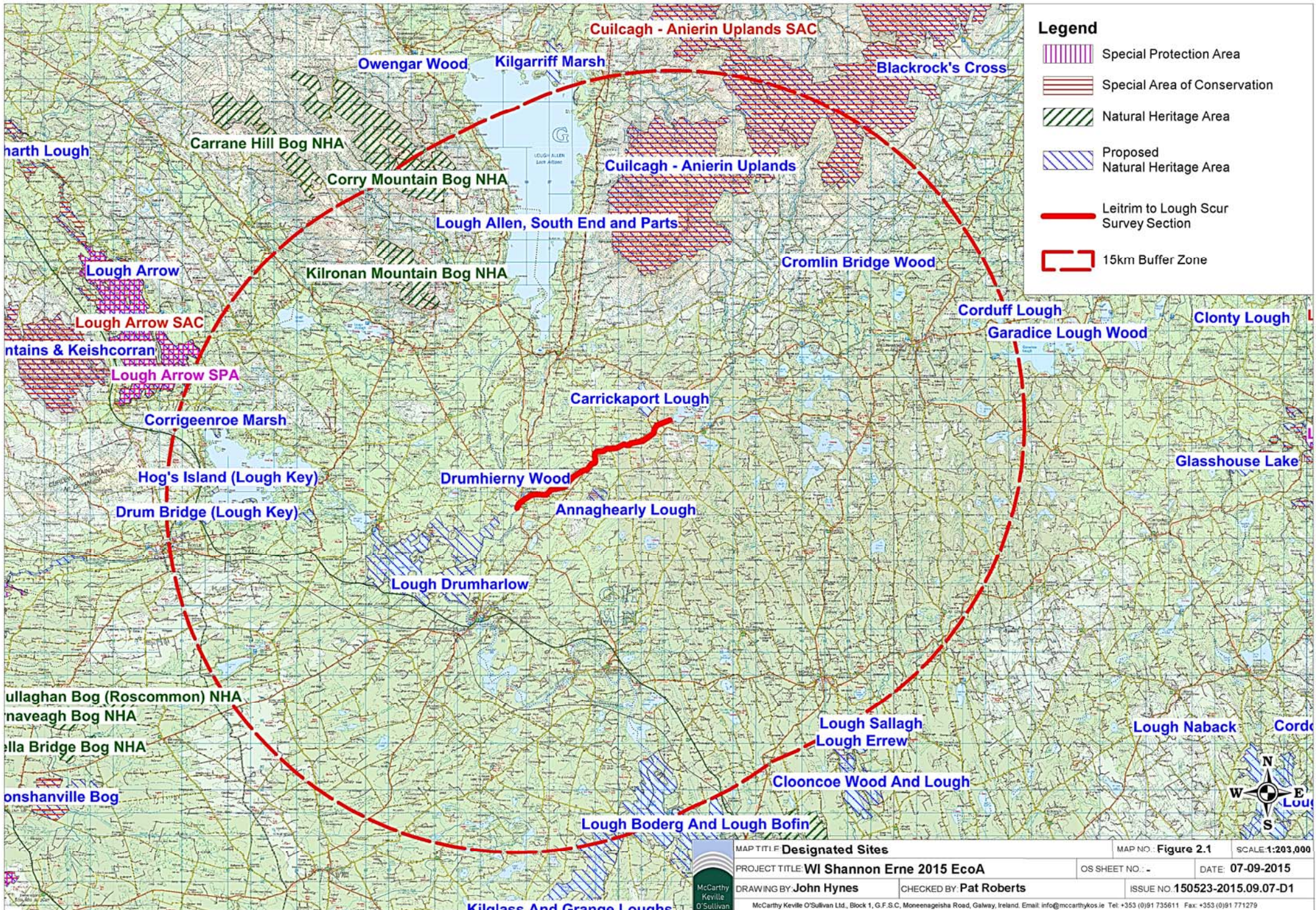
2.2 Designated Sites

Using the GIS software, MapInfo (Version 10.0), designated sites within a 15 kilometre radius of the site of the study area were identified. Details of these sites are provided in Table 2.1 below.

Figure 2.1 shows the site location in relation to the designated sites within 15 km.

Table 2.1 Details of Designated sites within a 15 km radius

Natura 2000 Site	Distance from Proposed Development (km)
Special Areas of Conservation (SAC)	
Cuilcagh-Anierin Uplands SAC (000584)	6.1km
Special Protected Areas (SPA)	
Lough Arrow SPA (004050)	14.9km
Natural Heritage Areas (NHA)	
Kilronan Mountains Bog NHA (000617)	9km
Corry Mountains Bog NHA (002321)	12.7km
Proposed Natural Heritage Areas (pNHA)	
Carrickaport Lough (001920)	0.5km
Sheemore Wood (001421)	0.7km
Lough Drumharlow (001643)	0.8km
Drumhierny Wood (001412)	0.9km
Cromlin Bridge Wood (001409)	10.3km
Drum Bridge (Lough Key) (001631)	11km
Lough Boderg And Lough Bofin (001642)	12.1km
Hog's Island (Lough Key) (001638)	12.2km
Corrigeenroe Marsh (000596)	12.6km
Tawnytaskin Wood (Lough Key) (001651)	12.7km
Kilglass And Grange Loughs (000608)	14.3km
Lough Rinn (001417)	14.8km
Lough Arrow (001673)	14.8km
Annaghealy Lough (001402)	2.2km
Lough Allen, South End and Parts (000427)	5.7km
Cuilcagh - Anierin Uplands (000584)	6.1km
Fin Lough (Roscommon) (001636)	8.5km



Legend

-  Special Protection Area
-  Special Area of Conservation
-  Natural Heritage Area
-  Proposed Natural Heritage Area
-  Leitrim to Lough Scur Survey Section
-  15km Buffer Zone

		MAP TITLE Designated Sites	MAP NO.: Figure 2.1	SCALE: 1:203,000
PROJECT TITLE WI Shannon Erne 2015 EcoA		OS SHEET NO.: -	DATE: 07-09-2015	
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2.3 New Flora Atlas

A search was made in the *New Atlas of the British & Irish Flora* (Preston *et al.*, 2002) to investigate whether any rare or unusual plant species listed under Annex II of the EU Habitats Directive, The Irish Red Data Book. 1. Vascular Plants (Curtis, 1988) or the Flora (Protection) Order, 1999 had been recorded in the relevant 10km squares in which the study site is situated (G90, H00), during the 1987-1999 atlas survey. No Flora Protection Order species were recorded in any of the hectads.

2.4 Bird Atlases

The most recent bird atlas project took place over four winters and four summers between November 2007 and July 2011. The data has been published in *Bird Atlas 2007-11, The breeding and wintering birds of Britain and Ireland*. Distribution map data is also available online from Birdwatch Ireland Map store <http://blx1.bto.org/mapstore/StoreServlet>.

Of the species recorded in the above dataset from the relevant hectads (G90 & H00), 10 are protected under the EU Birds Directive or mentioned on the Birds of Conservation Concern in Ireland (BoCCI) Red List (Table 2.2). Birds listed under Annex I of the EU Birds Directive are offered special legislative protection. Those listed on the BoCCI Red List meet one or more of the following criteria:

- Their breeding population or range has declined by more than 50% in the last 25 years.
- Their breeding population has undergone significant decline since 1900.
- They are of global conservation concern.

It should be noted that breeding was not proven in all instances where birds were recorded during the breeding atlas surveys, and also that the absence of a record does not necessarily imply that the species was absent from that hectad.

Table 2.2 Bird species recorded in hectads G90 & H00 that are protected under the EU Birds Directive or mentioned on the BoCCI Red List.

Common Name	Scientific Name	Breeding		Wintering		Annex I	BoCCI Red List
		G90	H00	G90	H00		
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Non-breed	Conf-breed	Yes	-	-	Yes
Curlew	<i>Numenius arquata</i>	-	Poss-breed	Yes	-	-	Yes
Goldeneye	<i>Bucephala clangula</i>	Non-breed	-	Yes	Yes	-	Yes
Grey Wagtail	<i>Motacillia cinerea</i>	Conf-breed	Non-breed	Yes	-	-	Yes
Lapwing	<i>Vanellus vanellus</i>	Non-breed	-	Yes	-	-	Yes
Meadow Pipit	<i>Anthus pratensis</i>	Conf-breed	Conf-breed	Yes	Yes	-	Yes
Pochard	<i>Aythya ferina</i>	-	-	Yes	Yes	-	Yes
Tufted Duck	<i>Aythya fuligula</i>	Prob-breed	Prob-breed	Yes	Yes	-	Yes
Wigeon	<i>Anas penelope</i>	-	-	Yes	-	-	Yes
Woodcock	<i>Scolopax rusticola</i>	-	-	Yes	-	-	Yes

Common Name	Scientific Name	Breeding		Wintering		Annex I	BoCCI Red List
		G90	H00	G90	H00		
Hen Harrier	<i>Circus cyaneus</i>	-	Non-breed	Yes	-	Yes	-
Kingfisher	<i>Alcedo atthis</i>	Poss-breed	-	-	-	Yes	-
Whooper Swan	<i>Cygnus cygnus</i>	-	Non-breed	Yes	Yes	Yes	-

Conf-breed – Confirmed Breeding

Non-breed - Recorded in hectad but no breeding evidence observed

Poss-breed - Possible breeding behaviour recorded

Prob-breed – Probable breeding behaviour recorded

- Species not recorded

2.5 Water Quality

An assessment of the water quality of Irish canals has been included in the previous four EPA national reports on water quality covering the periods 1995-1997 (Lucey et al., 1999), 1998-2000 (McGarrigle et al., 2002), 2001-2003 (Toner et al., 2005) and 2004-2006 (Clabby et al., 2008). The first systematic water quality survey of the major canals in the Republic of Ireland was undertaken in the 1990-1994 period and sampling has been continued since then by IFI who undertake water sampling 4 times per annum.

The main canal systems, the Royal and Grand Canals and sections of the Shannon-Erne Waterway have been identified as Artificial Water Bodies (AWBs) under the Water Framework Directive (WFD). The Water Framework Directive (WFD) allows for these water bodies to be designated as Artificial Water Bodies (AWB) and they are required to achieve good ecological potential rather than ecological status. Ecological potential means that the water body is managed to achieve the biology that can be attained given its artificial nature. For classification purposes the ecological potential can be maximum, good, moderate, poor or bad.

2.6 NPWS Records

NPWS online records were searched to see if any rare or protected species of flora or fauna were recorded in the 10 kilometre squares, G90 and H00 in which the study area falls. Records for the Annex II/IV species, Otter, was obtained for hectad G90. Otter may use the canal habitats as they are known from the area. An information request was also sent to National Parks and Wildlife Service requesting information on rare and protected species pertaining to the grid squares in the study area. Table 2.3 lists rare and protected species records within the study area. All of these species are protected under the Wildlife Act (1976) and the Wildlife (Amendment) Act (2000).

Table 2.3 Records for rare and protected species, NPWS.

Common Name	Scientific Name	Status	Location
Great White Fronted Goose	<i>Anser albifrons</i>	Annex I, WA 1976/2000	G90
Whooper Swan	<i>Cygnus cygnus</i>	Annex I, WA 1976/2000	G90, H00
Peregrine	<i>Falco peregrinus</i>	Annex I, WA 1976/2000	H00
Freshwater White-clawed Crayfish	<i>Austropotamobius pallipes</i>	Annex II, WA 1976/2000	G90, H00

Common Name	Scientific Name	Status	Location
Brook Lamprey	<i>Lampetra planerii</i>	Annex II, WA 1976/2000	H00
Otter	<i>Lutra lutra</i>	Annex II/IV, WA 1976/2000	G90, H00
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	Annex IV, WA 1976/2000	H00
Brown Long-eared Bat	<i>Plecotus auritus</i>	Annex IV, WA 1976/2000	H00
Common Frog	<i>Rana temporaria</i>	Annex V, WA 1976/2000	G90, H00
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	BOCCI Red List, WA 1976/2000	G90, H00
Curlew	<i>Numenius arquata</i>	BOCCI Red List, WA 1976/2000	G90
Lapwing	<i>Vanellus vanellus</i>	BOCCI Red List, WA 1976/2000	G90
Beaked Beardless Moss	<i>Weissia rostellata</i>	Flora Protection Order	H00
Irish Hare	<i>Lepus timidus subsp. hibernicus</i>	WA 1976/2000 Annex V	G90, H00
Pine Marten	<i>Martes martes</i>	WA 1976/2000 Annex V	G90, H00
Badger	<i>Meles meles</i>	WA 1976/2000	G90, H00

2.7 Biodiversity Ireland Database

The National Biodiversity Database was accessed on 17th July 2015 and the following information was obtained. Table 2.4 lists the rare and protected species recorded within the hectads which overlap with the current study area.

Table 2.4 National Biodiversity Database Records

Common Name	Scientific Name	Status	
Hen Harrier	<i>Circus cyaneus</i>	Annex I, WA 1976/2000	G90
Corncrake	<i>Crex crex</i>	Annex I, WA 1976/2000	H00
Whooper Swan	<i>Cygnus cygnus</i>	Annex I, WA 1976/2000	G90, H00
Common Tern	<i>Sterna hirundo</i>	Annex I, WA 1976/2000	G90, H00
Great White Fronted Goose	<i>Anser albifrons</i>	Annex I, WA 1976/2000	G90
Merlin	<i>Falco columbarius</i>	Annex I, WA 1976/2000	G90, H00
Kingfisher	<i>Alcedo atthis</i>	Annex I, WA 1976/2000	G90

Common Name	Scientific Name	Status	
Otter	<i>Lutra lutra</i>	Annex II, IV, WA 1976/2000	G90, H00
Freshwater White-clawed Crayfish	<i>Austropotamobius pallipes</i>	Annex II, V, WA 1976/2000	G90
Marsh Fritillary	<i>Euphydryas aurinia</i>	Annex II, WA 1976/2000	G90, H00
Desmoulin's Whorl Snail	<i>Vertigo (Vertigo) moulinsiana</i>	Annex II, WA 1976/2000	G90
Daubenton's Bat	<i>Myotis daubentonii</i>	Annex IV, WA 1976/2000	G90, H00
Leisler's Bat	<i>Nyctalus leisleri</i>	Annex IV, WA 1976/2000	G90, H00
Natterer's bat	<i>Myotis natterii</i>	Annex IV, WA 1976/2000	G90
Common Frog	<i>Rana temporaria</i>	Annex V, WA 1976/2000	G90
Pine Marten	<i>Martes martes</i>	Annex V, WA 1976/2000	G90, H00
Irish Hare	<i>Lepus timidus hibernicus</i>	Annex V, WA 1976/2000	G90, H00
Barn Owl	<i>Tyto alba</i>	BOCCI Red List, WA 1976/2000	G90
Curlew	<i>Numenius arquata</i>	BOCCI Red List, WA 1976/2000	H00
Lapwing	<i>Vanellus vanellus</i>	BOCCI Red List, WA 1976/2000	G90, H00
Smooth Newt	<i>Lissotriton vulgaris</i>	WA 1976/2000	G90, H00
Red Deer	<i>Cervus elaphus</i>	WA 1976/2000	G90
Fallow Deer	<i>Dama dama</i>	WA 1976/2000	G90
Hedgehog	<i>Erinaceus europaeus</i>	WA 1976/2000	G90, H00
Badger	<i>Meles meles</i>	WA 1976/2000	G90, H00
Stoat	<i>Mustela hirminea hibernica</i>	WA 1976/2000	G90
Red Squirrel	<i>Sciurus vulgaris</i>	WA 1976/2000	G90, H00
Red Fox	<i>Vulpes vulpes</i>	WA 1976/2000	G90, H00
European Eel	<i>Anguilla anguilla</i>	Council Regulation (EC) No 1100/2007	G90, H00
Beaked Beardless Moss	<i>Weissia rostellata</i>	Flora Protection Order	H00

2.8 Consultation

Scoping for this Ecological Assessment was circulated in June 2015. A scoping pack, which outlined the current study area, was sent to the following consultees requesting relevant ecological data pertaining to the study area:

- Relevant District Conservation Officers and Rangers with the National Parks and Wildlife Service.
- Relevant Biodiversity and Heritage Officers.
- Inland Fisheries Ireland to obtain any relevant fish and WFD monitoring data for the survey area
- Bat Conservation Ireland to see whether there is bat data for the survey area. Birdwatch Ireland.
- Relevant County Recorders and the Tree Council of Ireland.

Inland Fisheries Ireland responded by email on the 01/07/2015 and provided ecological data collected over several years for the canal near Leitrim village (at the 12th lock). Water samples are taken at this location 4 times per annum and macroinvertebrates are samples at this location every three years. The water quality is generally good at the site however there are no aquatic macrophytes and a poor invertebrate community. This is likely a reflection of the canal's box-shape profile. The non-native invasive amphipod *Chelicorophium curvispinum* has been recently recorded by IFI at the site and it is noted that the species has been recorded/observed in Upper Lough Erne and Lough Derg previously.

The Heritage Officer of Leitrim County Council responded by email on the 16th of July 2015 and provided information gathered from the National Biodiversity Data Centre regarding invasive species records in County Leitrim. There are no invasive species records on the database for the current study area. The response also reference the *Leitrim County Development Plan*, the *Leitrim Hedgerow Survey Report 2006* and the *Landscape Assessment of County Leitrim, 2002*.

At the date of finalising this report in November 2015, no response has been received from any additional organisations consulted during the scoping process.

In addition to the above, an Information Request Form was sent to the NPWS requesting records from the NPWS Rare and Protected Species Database and any additional data available for the current study area. A response with relevant information was received on the 29/06/2015 and the data has been incorporated into this report.

3 FIELD STUDY

3.1 Flora

3.1.1 Habitats Present on the Site

Habitats present on the site were classified as part of a habitat classification and mapping exercise completed in June 2015, according to the guidelines set out in 'A Guide To Habitats in Ireland' (Fossitt, 2000), which classifies habitats based on the vegetation present and management history.

The habitats recorded from the study area during the site visits are listed below. The habitat names are followed by their corresponding habitat reference code (in brackets).

- Amenity Grassland (GA2)
- Buildings & Artificial Surfaces (BL3)
- Canals (FW3)
- Depositing Lowland River (FW2)
- Drainage Ditch (FW4)
- Dry Meadows and Grassy Verges (GS2)
- Dry Calcareous & Neutral Grassland (GS1)
- Flower Beds and Borders (BC4)
- Hedgerow (WL1)
- Habitat Mosaic of Dry Meadows and Grassy verges and Scrub (GS2/WS1)
- Habitat Mosaic of Wet Grassland and Scrub (GS4/WS1)
- Mixed Broadleaved Woodland (WD1)
- Ornamental/non-native shrubs (WS3)
- Recolonising Bare Ground (ED3)
- Reed & Large Sedge Swamp (FS1)
- Scattered trees and Parkland (WD5)
- Scrub (WS1)
- Eutrophic Lake (FL5)
- Spoil & Bare Ground (ED2)
- Stone Walls & other Stonework (BL1)
- Treeline (WL2)
- Wet Grassland (GS4)
- Wet Willow-Alder-Ash Woodland (WN6)
- Conifer Plantation (WD4)
- Improved Agricultural grassland (GA1)

The approximate areas and lengths of each habitat recorded within the study area are provided in Tables 3.1 and 3.2. A full species and habitat inventory for each of the 17 canal sections is provided in Section 4 below. No protected botanical species were identified within the study area during the site visits. The Habitat Mapping Figures are provided as Appendix I.

Table 3.1 Area of Habitat Polygons within Study Area

	Area in m ²
Amenity Grassland (GA2)	30997.82 m ²
Buildings & Artificial Surfaces (BL3)	25256.92 m ²
Canals (FW3)	113,800 m ²
Conifer Plantation (WD4)	186.324 m ²
Depositing Lowland River (FW2)	12229.67 m ²
Dry Calcareous & Neutral Grassland (GS1)	530.62 m ²
Dry Meadows And Grassy Verges (GS2)	45838.33 m ²
Eutrophic Lake (FL5)	116175.6 m ²
Flower Beds And Borders (BC4)	32.30 m ²
Habitat Mosaic Of Dry Meadows And Grassy Verges And Scrub (GS2/WS1)	4974.9 m ²
Habitat Mosaic Of Wet Grassland And Scrub (GS4/WS1)	4704.06 m ²
Improved Agricultural Grassland (GA1)	613.872 m ²
Mixed Broadleaved Woodland (WD1)	1053.17 m ²
Ornamental/Non-Native Shrubs (WS3)	45.98 m ²
Recolonizing Bare Ground (ED3)	2182.78 m ²
Reed & Large Sedge Swamp (FS1)	38617.46 m ²
Scattered Trees And Parkland (WD5)	1810.12 m ²
Scrub (WS1)	31641.66 m ²
Spoil & Bare Ground (ED2)	17547.34 m ²
Stone Walls & Other Stonework (BL1)	695.69 m ²
Wet Grassland (GS4)	77748.1 m ²
Wet Willow-Alder-Ash Woodland (WN6)	2622.26 m ²

Table 3.2 Length of Habitat Polygons within Study Area

	Length in metres
Drainage Ditch (FW4)	3566.6m
Hedgerow (WL1)	4558.8m
Reed And Large Sedge Swamp (FS1)	75m
Stone Walls And Other Stonework (BL1)	639.6m
Treeline (WL2)	6778.5m

3.1.1.1 Amenity Grassland (GA2)

Amenity Grassland was most commonly associated with built structures and canal infrastructure such as at locks, bridges, and roads and in the vicinity of houses and towns. The best examples of this habitat type were found in urban areas particularly within Leitrim Village and between Lock 9 and Lock 10 (Plate 3.1). This habitat was actively managed and was characterised by a low sward height and low species diversity. Species recorded from amenity grassland areas included Perennial Ryegrass (*Lolium perenne*), Meadow grasses (*Poa* spp.) Daisy (*Bellis perennis*), Dandelion (*Taraxacum officinale*), Rib-wort plantain (*Plantago lanceolata*) and White Clover (*Trifolium repens*). In most areas (away from locks/towns etc.) Amenity Grassland would soon succeed to other habitats such as Dry Meadows & Grassy Verges (GS2) or in time, Scrub (WS1).



Plate 3.1. Amenity Grassland between Lock 9 and Lock 10

3.1.1.2 Buildings and Artificial Surfaces (BL3)

Throughout the study area the most common forms of this habitat type included domestic dwellings, abandoned buildings, artificial surfaces adjacent to locks, agricultural sheds and yards, tarmac sections of towpath and roadways (Plate 3.2). Generally, built habitats are not considered of high ecological significance and do not offer particularly good floral or faunal habitat. Built structures that were made of natural stone such as the locks and several of the bridges were included under the classification Stone Walls and Other Stonework (BL1).



Plate 3.2. Buildings located adjacent to the canal at Leitrim Village

3.1.1.3 Canal (FW3)

The Shannon Erne Waterway was constructed in the early nineteenth century to allow the transport of freight between the River Shannon in the Republic of Ireland and the River Erne in Northern Ireland (Plate 3.3).

The watercourse was typically 10-15m in width and dominated by slow flowing glide habitat. The waters were turbid along the entire survey section.

The margins of the canal supported varying levels of vegetation from short grassland to occasional reed swamp. Toward the east of the survey section there was no emergent vegetation recorded given the cliff like canal banks (Plate 3.4). Typical species of the canal margins included Reed Canary Grass (*Phalaris arundinacea*), Reed Sweet-grass (*Glyceria maxima*), Common Reed (*Phragmites australis*), Common Clubrush (*Schoenoplectus lacustris*), Angelica (*Angelica sylvestris*), Amphibious Bistort (*Persicaria amphibia*) and Branched Bur-reed (*Sparganium erectum*).

Aquatic flora was sampled using a grapnel at random locations within each canal section of the survey area. The grapnel was tossed several times at each location, in

order to obtain a good sample. Aquatic macrophytes were extremely scarce within the study area and no evidence of macrophytes was recorded from several canal sections. This is most likely attributable to the box-shape nature of the canal profile. Macrophytes were observed from the canal in close proximity to the junction with the River Shannon and Lough Scur and from Lough Conway and Drumaleague Lough. Macrophytes were also recorded from the jetty and marina area located to the east of Leitrim village.

Recorded aquatic macrophytes included Yellow Water Lily (*Nuphar lutea*), Spiked Water-milfoil (*Myriophyllum spicatum*), Broad Leaved Pondweed (*Potamogeton natans*), Aquatic moss (*Fontanalis* sp.), Duckweeds (*Lemna* sp.), Starwort (*Callitriche* sp.), Amphibious Bistort (*Persicaria amphibia*) and the non-native Nuttall's Waterweed (*Elodea nuttallii*). Water Plantain (*Alisma plantago aquatica*) was recorded from the jetty area in Leitrim Village. Unbranched bur-reed (*Sparganium emersum*) was also recorded from the canal close to the junction with the River Shannon.

The canal offers an excellent habitat for coarse fish and Roach (*Rutilus rutilus*), Perch (*Perca fluviatilis*) and Pike (*Esox lucius*) were observed with the aid of polarised glasses, during the field surveys.



Plate 3.3. Canal section between Tiermactiernan Bridge and Lock 15



Plate 3.4. Canal section between Letterfine Bridge and Lough Scur Bridge

3.1.1.4 Conifer Plantation (WD4)

Areas of Conifer Plantation (WD4) dominated by Sitka Spruce (*Picea stichensis*) were recorded to the north and south of Letterfine Bridge, adjacent to the western towpath (Plate 3.5). These areas were generally species poor and considered to be of low ecological value.



Plate 3.5. Conifer Plantation (WD4) adjacent to canal towpath, Letterfine Bridge.

3.1.1.5 Depositing/Lowland River (FW2)

The River Shannon at the Shannon Erne Waterway junction was classified as a Depositing/Lowland River (FW2) (Plate 3.6).

The River Shannon was dominated by 100% glide habitat. The river at this location does not provide suitable spawning habitat for salmonids or lamprey; however lamprey ammocetes may utilise some of the bankside silt accumulations located downstream of the canal junction as a nursery area.

The river at this location is subject to regular anthropogenic disturbance and forms part of the Shannon Erne navigation.

Branched Bur-reed (*Sparganium erectum*) and Lake Clubrush (*Schoenoplectus lacustris*,) were recorded from the emergent vegetation and Un-branched Bur-reed was recorded instream. This habitat was classified as an Ecologically Sensitive Area (ESA) and further described in Section 6.



Plate 3.6. River Shannon Junction

3.1.1.6 Drainage Ditch (FW4)

Over several sections of the study area, the towpath was accompanied by a drainage ditch inland of the path (Plate 3.7). This drain was often on the property boundary and was in many areas associated with a treeline or hedgerow. In some areas the drain was a defined channel with drier lands behind. Over the majority of the study area, the drains varied in width between 0.5 and 1.5m. All of the drains were dominated by a benthic substrate of silt and were invariably choked with vegetation. Typical species recorded from the drainage ditches included Floating Sweet-grass (*Glyceria fluitans*), Fool's Watercress (*Apium nodiflorum*), Reed Canary-grass (*Phalaris arundinacea*), Great Willowherb (*Epilobium hirsutum*), Yellow Iris (*Iris pseudacorus*) and occasional Branched Bur Reed (*Sparganium erectum*). In areas of more open water, species such as Duckweed (*Lemna* spp.) and Water Starwort (*Callitriche* sp.) were observed.



Plate 3.7. Drainage Ditch (FW4) on landward side of Towpath

3.1.1.7 Dry Meadows and Grassy Verges (GS2)

The presence of rank, overgrown grassland dominated by tall tussocky grasses and creeping herbs is generally indicative of the habitat 'Dry Meadows and Grassy Verges' as described in 'A Guide to Habitats in Ireland' (Fossitt, 2000). Unmown strips of tall grassland vegetation within the study area are best described as Dry Meadows and Grassy Verges (Plate 3.8). This habitat was found along the unmown or annually mown bank margins (Plate 3.9) at many locations along the canal towpath and along roadside verges.

Where encountered within the study area, the habitat was dominated by tall grasses and creeping herbs with a reasonable proportion of hydrophilous species along the canal margin and ruderals on the landward side of the towpath. Tall tussocky grasses such as Cocksfoot (*Dactylis glomerata*) and False-oat Grass (*Arrhenatherum elatius*) and creeping herbs such as Bird's-foot Trefoil (*Lotus corniculatus*), Meadow Vetchling

(*Lathyrus pratensis*) and Meadow Buttercup (*Ranunculus acris*) were recorded. Tall herbs such as Cow Parsley (*Anthriscus sylvestris*) were also frequently recorded in this habitat. Other species commonly recorded include Ribwort Plantain (*Plantago lanceolata*), Meadow grasses (*Poa* spp.), Yorkshire Fog (*Holcus lanatus*), Crested Dog's Tail (*Cynosurus cristatus*), Silverweed (*Potentilla anserina*), Sorrel (*Rumex acetosa*), Meadow Buttercup (*Ranunculus repens*) and Greater Willowherb (*Epilobium hirsutum*). The habitat often formed a mosaic with Scrub (WS1) particularly in areas where Bramble (*Rubus fruticosus* agg.) had encroached on the canal bankside (i.e. East of Lock 16)



Plate 3.8. Typical example of unmown Dry Meadows and Grassy Verge Habitat (GS2). (East of Lock 15, North bank)



Plate 3.9. Annual Mowing of a strip of Dry meadow and grassy verge habitat (East of Lock 15, South bank)

3.1.1.8 Dry Calcareous & Neutral Grassland (GS1)

Dry calcareous grassland is defined as ‘*unimproved or semi-improved dry grassland that may be either calcareous or neutral, but not acid*’ (Fossitt, 2000). The bank and towpath along sections of the canal were built originally using imported calcareous material. The majority of the bankside grassland habitat between the towpath and the canal wall along the main line of the canal reflects the calcareous nature of the substrate. In certain areas this habitat was moderately species-rich featuring a number of grasses common in calcareous grassland habitats such as Annual Meadow-grass (*Poa annua*), Crested Dog’s-tail (*Cynosurus cristatus*), Quaking Grass (*Briza media*) and Timothy (*Phleum pratense*). Additional grasses recorded included Cock’s-foot (*Dactylis glomerata*) and Yorkshire Fog (*Holcus lanatus*) (Plate 3.10).

Broadleaved herbs within this habitat included Red and White Clovers (*Trifolium pratense* and *T. repens*), Ladies Bedstraw (*Galium verum*), Tufted Vetch (*Viccia cracca*), Bush Vetch (*Viccia sepium*), Bird’s Foot Trefoil (*Lotus corniculatus*), Self-heal (*Prunella vulgaris*), Yarrow (*Achillea millefolium*), Knapweed (*Centurea nigra*), Eyebright (*Euphrasia* spp.), Yellow Rattle (*Rhinanthus minor*) and Ox-eye Daisy (*Leucanthemum vulgare*). Common Spotted Orchid was recorded from a species rich example of this habitat located to the west of Lock 13.



Plate 3.10. Recently mown Dry Calcareous and Neutral Grassland (GS1) (East of Lock 16).

3.1.1.9 Eutrophic Lakes (FL5)

Two Eutrophic lakes were recorded within the study area, namely Lough Conway and Lough Drumaleague. These lakes were classified as eutrophic given that the watercourses are not achieving good status in line with the requirement of the Water Framework Directive.

Extensive macrophyte and emergent vegetation growth was recorded at both lakes. A fringing strip of Reed and large sedge swamp (FS1) was recorded around the entire lakeside margins.

The dominant macrophytes recorded included Yellow Lilly (*Nuphur lutea*), Amphibious Bistort (*Persicaria amphibia*) and Broad-leaved Pondweed (*Potamogeton natans*). The linear fringes were dominated by Common Reed (*Phragmites australis*), Lake Clubrush (*Schoenoplectus lacustris*), Bottle Sedge (*Carex rostrata*), Reed Canary-grass (*Phalaris arundinacea*) and occasional Bulrush (*Typha latifolia*) and Tussock Sedge (*Carex paniculata*). The most commonly recorded broadleaved herbs included Watermint (*Mentha aquatica*), Wild Angelica (*Angelica sylvestris*), and Meadowsweet (*Filipendula ulmaria*). Water Horsetail (*Equisetum fluviatile*), and Hemp-agrimony (*Eupatorium cannabinum*) were occasionally recorded.

The lakes are likely to be important for coarse fish. Moorhen, Mallard, Teal and Cormorant were recorded during the field visit. The fringing reed swamp provides suitable nesting habitat for a range of waterfowl. It is also likely that Otter may utilise the lacustrine and adjacent habitats. The lake habitats do not correspond to any habitat listed on Annex I of the EU habitats Directive however were classified as ESAs given their uniqueness within the study area.



Plate 3.11. Drumaleague Lough

3.1.1.10 Improved Agricultural Grassland (GA1)

Much of the land in the vicinity of the Shannon Erne Waterway study area is of high agricultural quality with much of it being managed for grass and beef production. Commonly occurring species recorded from the agricultural fields adjacent to the towpath included Perennial Ryegrass (*Lolium perenne*), White Clover (*Trifolium repens*), Dandelion (*Taraxacum officinale*), Silverweed (*Potentilla anserina*), Yorkshire Fog (*Holcus lanatus*), Cocksfoot (*Dactylis glomerata*), Creeping Buttercup (*Ranunculus repens*), Annual Meadow Grass (*Poa annual*), Creeping Thistle (*Cirsium arvense*), Nettle (*Urtica dioica*), Spear Thistle (*Cirsium vulgare*) and Mouseear (*Cerastium fontanum*).

Whilst much of this quality agricultural land is set back from the canal and buffered from it by wetter grasslands, scrub or woodlands, there are large sections of the study area where the improved lands border the canal directly or are separated from it only by the trackway with its associated back drain/hedgerow/treelines as is the case between Crossycarwill Bridge and Lock 14 (Plate 3.12).



Plate 3.12. Agricultural Grassland (GA1), between Crossycarwill Bridge and Lock 14

3.1.1.11 Mixed Broadleaved Woodland (WD1)

A small area of Mixed broadleaved woodland was recorded to the east of Drumaleague Lough adjacent to the southern canal bank. This area was not accessed as there was no towpath present along the southern canal bank. The habitat area was mapped using aerial photography. Dominant species recorded from the canopy layer included Ash (*Fraxinus excelsior*) and Sycamore (*Acer pseudoplatanus*).

3.1.1.12 Ornamental/non-native Shrub (WS3) & Flower Beds & Borders (BC4)

Occasional areas of flower beds and borders were recorded. These often occurred in conjunction with villages and housing as was the case in Leitrim village. These areas were planted for decoration and landscaping and were well maintained and managed. Typically where they occurred they featured a range of non-native ornamental bedding species such as Marigolds, Dahlias, and Petunias.

As with the flowerbeds and borders, ornamental/non-native shrubs often occurred in conjunction with housing or along built up areas of the canal. This habitat was typically recorded in close proximity to canal locks (Plate 3.13).



Plate 3.13. Ornamental/non-native shrubs (WS3), Lock 9.

3.1.1.13 Recolonising Bare Ground (ED3)

A number of areas of recolonising bare ground were recorded along the canal. These areas were heavily trampled and dominated by bare soil and ruderal plant species. These areas included species such as Ribwort Plantain (*Plantago lanceolata*), Annual Meadow-grass (*Poa annua*), Creeping Bent Grass (*Agrostis stolonifera*) and occasionally Creeping Thistle (*Cirsium arvense*) (Plate 3.14).



Plate 3.14. Towpath consisting of Recolonising Bare Ground (ED3), West of Lough Scur.

3.1.1.14 Reed and Large Sedge Swamp (FS1)

This habitat is classified as being a species poor stand of herbaceous vegetation that is dominated by reeds and other large grasses or sedges. This habitat was found in various scattered isolated locations throughout the study area and was most commonly recorded as a fringe along the canal bank (Plate 3.15). The habitat was recorded surrounding Loughs Conway and Drumaleague. The dominant species recorded from linear fringes included Common Reed (*Phragmites australis*) and Reed Canary-grass (*Phalaris arundinacea*). The most commonly recorded broadleaved herbs included Watermint (*Mentha aquatica*), Wild Angelica (*Angelica sylvestris*), and Meadowsweet (*Filipendula ulmaria*). Water Horsetail (*Equisetum fluviatile*), and Hemp-grimony (*Eupatorium cannabinum*) were occasionally recorded.

Common Reed (*Phragmites australis*) was the dominant species recorded from areas where the habitat extended landward of the canal.



Plate 3.15. Fringing Common Reed dominated FS1 habitat. (East of Lock 16)

3.1.1.15 Scattered trees and parkland (WD5)

This habitat consists of either stand-alone trees or trees of small clusters covering less than 30% of the total area. Within the study area Scattered Trees and Parkland occurred in association with Amenity Grassland (GA2). The best example of the habitat, from the study area, was recorded in Leitrim Village, to the east of Leitrim Bridge. This area been planted with Ornamental *Acer* trees (Plate 3.16)



Plate 3.16. Scattered Trees and Parkland (WD5), Leitrim Village

3.1.1.16 Scrub (WS1)

An abundance of Scrub (WS1) was recorded along the Canal corridor. The habitat varied substantially in species composition and management. The main species recorded in this habitat included Willow (*Salix* spp), Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Bramble (*Rubus fruticosus* agg.), Elder (*Sambucus nigra*) and Gorse (*Ulex europaeus*) (Plate 3.17)

Bramble (*Rubus fruticosus* agg.) Scrub (WS1) also formed intimate mosaics with areas of Dry Meadows and Grassy Verges (GS2) where the grassland had not been mown annually. Such a habitat mosaic was recorded between Lock 16 and Tirmactiernan Br and between Lough Scur Bridge and Lough Scur (Plate 3.18).

Linear strips of Scrub were also recorded adjacent to the canal side of the towpath particularly where the towpath was located on an elevated embankment such as was recorded east of Crossycarwill Bridge.



Plate 3.17. Bramble, Willow and Hawthorn Scrub (WS1), Lough Conway Bridge.



Plate 3.18. Bramble, Willow and Hawthorn Scrub/ Dry meadows and grassy verge Mosaic (WS1/GS4), Lock 16 to Tirmactiernan Bridge, North bank.

3.1.1.17 Spoil and Bare Ground (ED2)

The existing canal towpath along some survey sections within the study area was dominated by paved trackways classified as Spoil and bare ground (ED2) (Plate 3.19). The trackways were mainly constructed from carboniferous Clause 804. The paved towpath occurred in areas that were actively utilised for recreation.

This habitat generally supported little vegetation cover except for common grasses and herbs growing up through the road gravel, e.g. Yorkshire Fog (*Holcus lanatus*), Annual Meadow-grass (*Poa annua*), Common Mouse-ear (*Cerastium fontanum*), Red Bartsia (*Odontites vernus*) and Rib-wort Plantain (*Plantago lanceolata*). This habitat type often graded into Dry meadows and grassy verges (GS2) where the towpath was less frequently utilised and vegetation recolonization was occurring.



Plate 3.19. Spoil and Bare Ground habitat (ED2) towpath, west of Lock 14.

3.1.1.18 Stone Walls and Other Stonework (BL1)

The habitat Stone walls and other stonework (BL1) was recorded in many locations within the study area. This habitat includes stone walls, other than those of intact buildings. In the case of the study area, the habitat occurred on bridges, walls in locks and along other parts of the canal bank (Plate 3.20).

Stone walls and other stonework of this type provide habitat for a number of specialised species, including ferns, lichens and mosses. Plant species recorded growing on stonework within the study area included Common Ivy (*Hedera helix*), Wall-rue (*Asplenium ruta-muraria*), Maidenhair Spleenwort (*Asplenium trichomanes*), Ivy-leaved Toadflax (*Cymbalaria muralis*) and occasional Brambles (*Rubus fruticosus* agg.) (Plate 3.21).



Plate 3.20. Example of Stone Walls and Other Stonework at Lock 12



Plate 3.21. Ivy-leaved Toadflax (*Cymbalaria muralis*) growing on Leitrim Bridge.

3.1.1.19 Hedgerow (WL1)/Treeline (WL2)

An abundance of treeline and hedgerow habitats was recorded along the Canal (Plates 3.22 & 3.23). These habitats varied in species composition and management. The dominant species recorded from hedgerow habitats included Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Dog Rose (*Rosa canina*), Bramble (*Rubus fruticosus* agg.), Willow (*Salix* spp.), Elder (*Sambucus nigra*) and Gorse (*Ulex europaeus*).

Guelder Rose (*Viburnum opulus*) was recorded from more species rich hedgerow examples recorded at Section 09 Newbrook Lock (Lock 13) to Kilclarebeg Bridge/Lock 12 and Section 12 Drumruekill Bridge & Kilclare Middle Lock (Lock 10) to Kilclare Upper Lock (Lock 9) and Footbridge

Treelines were recorded throughout the study area and were dominated by Ash, (*Fraxinus excelsior*), Sycamore (*Acer pseudoplatanus*) and Alder (*Alnus glutinosa*) with Copper Beech (*Fagus purpurea*) and Pedunculate Oak (*Quercus robur*) recorded occasionally. Mature treelines recorded to the east of the survey area were classified as Ecologically Sensitive Areas.



Plate 3.22. Hedgerow (WL1) as typically found along the Waterways Ireland Property Boundary.

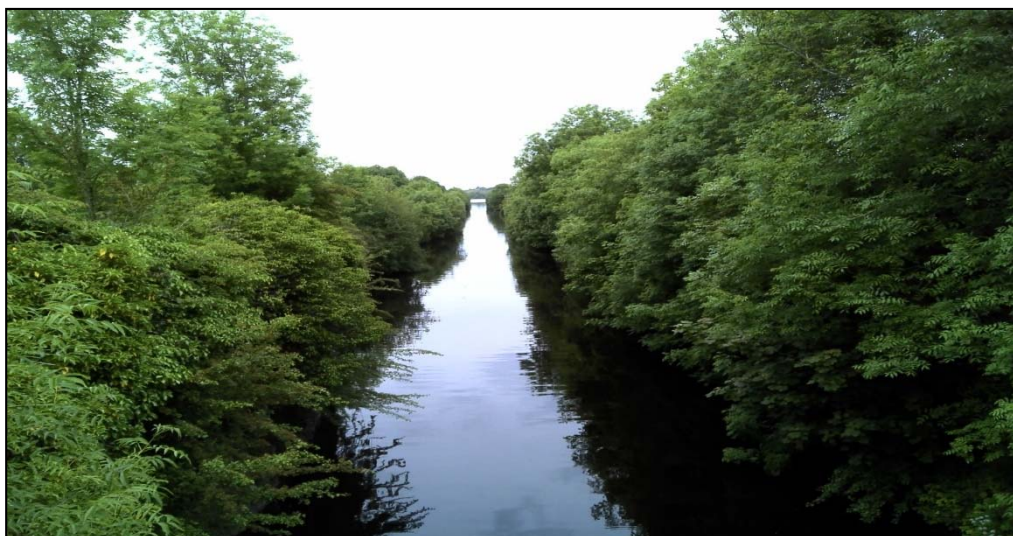


Plate 3.23. Fringing Treelines (WL2) on the approach to Lough Scur

3.1.1.20 Wet Grassland (GS4)

Large areas of wet grassland were recorded within and adjacent to the study area (Plate 3.24). Some of these areas were dominated by rushes such as Soft Rush (*Juncus effusus*) and Sharp Flowered Rush (*Juncus acutiflorus*). Additional frequently recorded species included Marsh Foxtail (*Alopecurus geniculatus*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Creeping Bent (*Agrostis stolonifera*), Silverweed (*Potentilla anserina*), Common Bent (*Agrostis capillaris*), Yorkshire Fog (*Holcus lanatus*), Devilsbit Scabious (*Succisa pratensis*), Watermint (*Mentha aquatica*), Rib-wort Plantain (*Plantago lanceolata*), Meadow Buttercup (*Ranunculus acris*), Creeping Buttercup (*Ranunculus repens*), Lesser Spearwort (*Ranunculus flammula*) and Ragged Robin (*Lychnis flos-cuculi*). Twayblade (*Listera ovata*) was recorded from a small patch of disturbed wet grassland, located to the east of Drumaleague Lough, on the northern canal bank (Plate 25).

On the landward side of the towpath, this habitat often graded into Improved agricultural grassland (GA1), as was the case between Crossycarwill bridge and Lock 14. In some areas, it had a high proportion of tall herbs such as Great Willowherb (*Epilobium hirsutum*) and Meadowsweet (*Filipendula ulmaria*) and the habitat graded into Reed and Large Sedge Swamp (FS1) surrounding Lough Conway and Lough Drumaleague. The habitat also formed intimate mosaics with scrub and rank grassland where there was a lack of regular management adjacent to the canal towpath.

An area of Wet grassland, located to the east of Lough Conway outside the WI property boundary, was found to correspond to the Annex I habitat Molinia Meadows. This habitat was classified as an ESA and is further discussed in Section 6.



Plate 3.24. Wet Grassland (GS4) adjacent to towpath, West of Lough Scur Bridge.



Plate 3.25. Twayblade (*Listera ovata*), East of Drumaleague Lough.

3.1.1.21 Wet willow-alder-ash Woodland (WN6)

A small isolated stand of this habitat was recorded to the west of Drumduff Bridge and Lock 14 on the northern canal bank (Plate 3.26). The woodland was dominated by Willow (*Salix* spp.) and Alder (*Alnus glutinosa*) and the ground flora was dominated by Brambles (*Rubus fruticosus* agg.) with occasional Nettles (*Urtica dioica*). This habitat type was rare throughout the study area and was therefore reclassified as an Ecologically Sensitive Area (ESA) and is further discussed in Section 6.



Plate 3.26. Wet Woodland (WN6), West of Lock 14.

3.2 Aquatic Flora

Aquatic flora was sampled using a grapnel at random locations within each canal section of the survey area. The grapnel was tossed several times at each location, in order to obtain a good sample. Aquatic macrophytes were extremely scarce within the study area and no evidence of macrophytes was recorded from several canal sections. This is most likely attributable to the box-shape nature of the canal profile. Macrophytes were observed in the areas in close proximity to the River Shannon, Lough Conway and Drumaleague Lough. Macrophytes were also recorded from the jetty and marina area located to the east of Leitrim village. Table 3.3 below shows the locations of the grapnel samples and a full inventory of the species recorded from each section is provided in Appendix II. At several grapnel location no aquatic macrophytes were retrieved.

The most commonly recorded species from the grapnel samples included Yellow Water Lily (*Nuphar lutea*), Water Plantain (*Alisma plantago-aquatica*) Unbranched Bur-reed (*Sparganium emersum*) and the non-native invasive Nuttall's Waterweed (*Elodea nuttallii*).

The margins of the canal supported varying levels of vegetation from short grassland to reed swamp. The canal edge was typically clearly defined and for the most part lacked the instream and emergent vegetation typically recorded from canal habitats. The canal banks were generally sheer and lacked the gradation of wet to terrestrial grassland. The canal along several sections including the canal corridor to the north and south of Letterfine Bridge was evidently carved out from the rock face and offered no potential for riparian vegetation.

Typical species from vegetated canal margins included Reed Canary Grass (*Phalaris arundinacea*) and Common Reed (*Phragmites australis*), Common Clubrush (*Schoenoplectus lacustris*), Angelica (*Angelica sylvestris*) and Branched Bur-reed (*Sparganium erectum*).

Table 3.3 Grapnel Sample Locations along the Shannon Erne Waterway

Number	Description	Grid Ref
1	River Shannon to Leitrim Bridge	195655, 304454
2	Leitrim Bridge to Killarcan Lock (Lock 16)	195861, 304652
3	Killarcan Lock (Lock 16) to Tirmactiernan Bridge	196642, 304874
4	Tirmactiernan Bridge to Tirmactiernan Lock (15)	197026, 305056
5	Tirmactiernan Lock (15)- Crossycarwill Bridge	197510, 305173
6	Crossycarwill Bridge to Drumduff Bridge and Lock 14	197799, 305400
7	Drumduff Bridge and Lock 14 to Newbrook Bridge	198442, 305905
8	Newbrook Bridge to Newbrook Lock (Lock 13)	198673, 306001
9	Newbrook Lock (Lock 13) to Kilclarebeg Bridge/Lock 12	198981, 306450
10	Kilclarebeg Bridge/Lock 12 to Kilclare Lower Lock (Lock 11)	199056, 306728

Number	Description	Grid Ref
11	Kilclare Lower Lock (Lock 11) to Drumruekill Bridge & Kilclare Middle Lock (Lock 10)	199615, 306863
12	Drumruekill Bridge & Kilclare Middle Lock (Lock 10) to Kilclare Upper Lock (Lock 9) and Footbridge	199754, 306874
13	Kilclare Upper Lock (Lock 9) and Footbridge to Lough Conway Bridge	200177, 307012
14	Lough Conway Bridge to Scrabbagh Bridge	Sheer Banks. No grapnel survey.
15	Scrabbagh Bridge to Letterfine Bridge	Sheer Banks. No grapnel survey.
16	Letterfine Bridge to Lough Scur Bridge	Sheer Banks. No grapnel survey
17	Lough Scur Bridge to Lough Scur	201957, 307995

3.3 Fauna

3.3.1 Birds

Table 3.4 shows the bird species recorded during the site visits. Records were taken of bird species seen or heard. The bird species recorded were typical of the habitat types found within the study area and typical of the survey effort. It is likely that a greater range of species utilise the study area. Kingfisher were observed during the site visits and a breeding site consisting of a nest hole on the bankside was observed to the east of the study area. Kingfisher, is mentioned on Annex I of the E.U. Birds Directive. Six species – Mute Swan, Skylark, Mistle Thrush, House Martin, Swallow and Starling - are on the Amber BoCCI list indicating that they are birds of medium conservation concern (Amber-list species are those with an unfavourable conservation status in Europe; those whose population or range has declined moderately in recent years; those whose population has declined historically but made a substantial recent recovery; rare breeders; and those with internationally important or localised populations). The remainder recorded during the fieldwork were green listed, i.e. they are common birds with favourable conservation status.

Table 3.4 Birds species recorded during the site visits and their conservation status

Common Name	Scientific Name	Conservation Status (Colhoun & Cummins 2013)
Blackbird	<i>Turdus merula</i>	Green-listed
Black-headed Gull	<i>Larus ridibundus</i>	Red-listed
Chaffinch	<i>Fringilla coelebs</i>	Green-listed
Chiffchaff	<i>Phylloscopus collybita</i>	Green-listed
Goldcrest	<i>Regulus regulus</i>	Green-listed
Cormorant	<i>Phalacrocorax carbo</i>	Green-listed
Grasshopper Warbler	<i>Locustella naevia</i>	Green-listed
Grey Heron	<i>Ardea cinera</i>	Green-listed
Grey Wagtail	<i>Motacilla cinerea</i>	Red-listed

Common Name	Scientific Name	Conservation Status (Colhoun & Cummins 2013)
Hooded Crow	<i>Corvus corone cornix</i>	Green-listed
House Martin	<i>Delichon urbicum</i>	Amber-listed
House Sparrow	<i>Passer domesticus</i>	Amber-listed
Jackdaw	<i>Corvus monedula</i>	Green-listed
Kingfisher	<i>Alcedo atthis</i>	Annex I
Lesser Black-backed Gull	<i>Larus fuscus</i>	Amber-listed
Magpie	<i>Pica pica</i>	Green-listed
Mallard	<i>Anas platyrhynchos</i>	Green-listed
Meadow Pipit	<i>Anthus pratensis</i>	Red-listed
Mistle Thrush	<i>Turdus viscivorus</i>	Amber-listed
Moorhen	<i>Gallinula chloropus</i>	Green-listed
Mute Swan	<i>Cygnus olor</i>	Amber-listed
Pheasant	<i>Phasianus colchicus</i>	Green-listed
Pied Wagtail	<i>Motacilla alba yarrellii</i>	Green-listed
Reed Bunting	<i>Emberiza schoeniclus</i>	Green-listed
Robin	<i>Erithacus rubecula</i>	Green-listed
Rook	<i>Corvus frugilegus</i>	Green-listed
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	Green-listed
Skylark	<i>Alauda arvensis</i>	Amber-listed
Song Thrush	<i>Turdus philomelos</i>	Green-listed
Starling	<i>Sturnus vulgaris</i>	Amber-listed
Swallow	<i>Hirundo rustica</i>	Amber-listed
Teal	<i>Anas crecca</i>	Green-listed
Willow Warbler	<i>Phylloscopus trochilus</i>	Green-listed
Wood Pigeon	<i>Columba palumbus</i>	Green-listed
Wren	<i>Troglodytes troglodytes</i>	Green-listed

3.3.2 Mammals

Evidence of two species of mammal was recorded along the route of the Canal within the study area; Otter (*Lutra lutra*) and Fox (*Vulpes vulpes*). Otter is listed under Annex II and IV of the EU Habitat Directive. Several potential mammal paths, which may have been otter slides were recorded during the survey. Otter spraints, containing White-clawed Crayfish remains, were recorded between Crossycarwill Bridge and Lock 14. White-clawed Crayfish (*Austropotamobius pallipes*) are protected under Annex II of the EU Habitats Directive. Fox are protected under the Wildlife Act (1976) and the Wildlife Amendment Act (2000). As mentioned above, several mammal paths were noted throughout the study area.

The study area is likely to be used by a variety of species due to cover provided by the tall bankside vegetation along the canal and the hedgerow and treelines and scrub which were abundant along the course of the canal. It is probable that common small mammal species such as Wood Mouse (*Apodemus sylvaticus*), Pygmy Shrew (*Sorex minutus*) and Brown Rat (*Rattus norvegicus*) use the site. In addition, it is also likely that Foxes (*Vulpes vulpes*), Hare (*Lepus timidus*), Rabbit (*Oryctolagus cuniculus*), Stoat

(*Mustela erminea*), Badger (*Meles meles*) and Hedgehog (*Erinaceus europaeus*) are found on the site, at least on occasion.

The study site is likely to support a variety of species of bats including Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Leisler's Bat (*Nyctalus leisleri*), Brown Long Eared Bat (*Plecotus auritus*) and several species of *Myotis* Bats, including Daubenton's Bat. The presence of large areas of scrub, treeline and hedgerows along the canal provide ample suitable foraging and commuting habitat for bats. In addition, the canal itself is a linear feature in the environment, which bats will use to commute along into adjacent foraging habitats. It is possible that mature trees and some old buildings adjacent to the canal may host bat roosts.

The study area was not considered suitable for Lesser Horseshoe Bats (*Rhinolophus hipposideros*), which is confined to the western counties and has a preference for closed canopy scrub woodland as foraging habitat. The canal appears to provide good habitat for Daubenton's Bat in particular with slow flowing water, which would be ideal for hunting insects. All bats are listed under Annex IV of the EU Habitats Directive and afforded protection under the Wildlife Act (1976) and the Wildlife Amendment Act (2000).

3.3.3 Significant species that potentially use the site

Although it is likely that mammal species such as Wood Mouse (*Apodemus sylvaticus*), Pygmy Shrew (*Sorex minutus*), Brown Rat (*Rattus norvegicus*) and Otter (*Lutra lutra*) may use the site, it is unlikely that the site hosts a significant faunal population of mammals. Bats may use the Canal as a foraging area as there are suitable commuting routes in the vicinity of the site and there were some potential roosting locations observed during survey.

Otter is protected under the Wildlife Acts 1976 to 2012 and are listed under Annex II and Annex IV of the Habitats Directive (92/43/EEC), which was transposed into Irish law by Irish law as S.I. No. 94/1997 *European Communities (Birds and Natural Habitats) Regulations 1997*. The 1997 Regulations and their amendments were subsequently revised and consolidated in S.I. No. 477/2011- *European Communities (Birds and Natural Habitats) Regulations 2011*. Annex II lists species of community interest whose conservation requires the designation of Special Areas of Conservation (SACs), while those species listed under Annex IV are those in need of strict protection wherever they occur.

All bat species in Ireland are protected under both national legislation – (Wildlife Act, 1976, as amended in 2000) and European legislation – (Habitats Directive (92/43/EEC). There is additional protection for Lesser Horseshoe Bats because of their inclusion in Annex II of the Habitats Directive. The Habitats Directive is transposed into Irish law in the European Communities (Natural Habitats) Regulations (G.I. 94 of 1997). The Irish Government is also a signatory to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979)) and the Bern Convention, 1982 (The Convention on the Conservation of European Wildlife and Natural Habitats) and has a commitment to the "Eurobats" Agreement (Agreement on the Conservation of Bats in Europe, 1991).

4 HABITAT & FLORA INFORMATION BY SECTION

The following chapter provides the information on habitats and species recorded in each of the sections within the study area. These are displayed in tabular form in Tables 4.1 – 4.46. Species listed on the Invasive Species Ireland “Most unwanted” list such as Nuttall’s Waterweed are highlighted in bold in the tables below.

4.1 Section 1: Shannon Junction - Leitrim Bridge

Table 4.1. Habitats Classified in Section 1

Habitats	Habitat Code
Amenity Grassland	GA2
Buildings And Artificial Surfaces	BL3
Canals	FW3
Depositing/Lowland River	FW2
Flowerbeds And Borders	BC4
Scrub	WS1
Stone Walls And Other Stone Work	BL1
Treeline	WL2
Wet Grassland	GS4

Table 4.2 Species Recorded in Section 1

Scientific name	Common Name
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus geniculatus</i>	Marsh Foxtail
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Asplenium. ruta-muraria</i>	Wall-rue
<i>Asplenium. trichomanes</i>	Maidenhair Spleenwort
<i>Bellis perennis</i>	Daisy
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex remota</i>	Remote Sedge
<i>Catapodium rigidum</i>	<i>Fern Grass</i>
<i>Cerstium fontanum</i>	Mouse Ear
<i>Cirsium arvense</i>	Creeping Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Cymbalaria muralis</i>	Ivy-leaved Toadflax
<i>Cynosurus cristatus</i>	Crested Dog’s Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Elodea nuttallii</i>	Nuttall’s Waterweed
<i>Elytrigia repens</i>	Couch
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Festuca spp.</i>	Fescue spp.
<i>Filipendula ulmaria</i>	Meadowsweet

Scientific name	Common Name
<i>Fraxinus excelsior</i>	Ash
<i>Geranium robertianum</i>	Herb Robert
<i>Glyceria fluitans</i>	Floating Sweet Grass
<i>Hedera helix</i>	Ivy
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effusus</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow vetchling
<i>Lemna minor</i>	Lesser Duckweed
<i>Leontodon sp.</i>	Hawkbit
<i>Leylandii sp.</i>	Cypress
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Mentha aquatica</i>	Water Mint
<i>Myriophyllum spicatum</i>	Spiked Water Milfoil
<i>Nuphar lutea</i>	Yellow Lily
<i>Persicaria maculosa</i>	Redshank
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Populus sp.</i>	Poplar
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus sp.</i>	Ornamental Cherry
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Salix cinerea</i>	Grey Willow
<i>Salix viminalis</i>	Osier
<i>Schoenoplectus lacustris (River Shannon)</i>	Common Club Rush
<i>Senecio vulgaris</i>	Groundsel
<i>Sonchus asper</i>	Prickly Sowthistle
<i>Sparganium emersum</i>	Floating Bur-reed
<i>Sparganium erectum (River Shannon)</i>	Branched Bur-Reed
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium repens</i>	White Clover
<i>Typha latifolia</i>	Bulrush
<i>Urtica dioica</i>	Nettle

4.2 Section 2: Leitrim Bridge –Killarcan Lock (Lock 16)

Table 4.3 Habitats Classified in Section 2

Habitats	Habitat Code
Amenity Grassland	GA2
Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditches	FW4
Dry Meadows and Grassy Verges	GS2
Hedgerow	WL2
Reed and large Sedge Swamp	FS1
Scattered Trees and Parkland	WD5
Scrub	WS1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Wet Grassland	GS4

Table 4.4 Species Recorded in Section 2

Scientific name	Common Name
<i>Acer sp.</i>	Maple
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alisma plantago-aquatica</i>	Water Plantain
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium. ruta-muraria</i>	Wall-rue
<i>Asplenium. trichomanes</i>	Maidenhair Spleenwort
<i>Bellis perennis</i>	Daisy
<i>Betula pubescens</i>	Birch
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex paniculata</i>	Greater Tussock Sedge
<i>Carex remota</i>	Remote Sedge
<i>Catapodium rigidum</i>	<i>Fern Grass</i>
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cortaderia selloana</i>	Pampas Grass
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Cymbalaria muralis</i>	Ivy-leaved Toadflax
<i>Cynosurus cristatus</i>	Crested Dog's Tail

Scientific name	Common Name
<i>Dactylis glomerata</i>	Cocks Foot
<i>Elodea nuttallii</i>	Nuttall's Waterweed
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Fagus purpurea</i>	Copper Beech
<i>Fagus sylvatica</i>	Beech
<i>Festuca rubra</i>	Red Fescue
<i>Festuca spp.</i>	Fescue spp.
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Galium palustre</i>	Marsh Bedstraw
<i>Geranium robertianum</i>	Herb Robert
<i>Glyceria fluitans</i>	Floating Sweet Grass
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow vetchling
<i>Lemna trisulca</i>	Ivy-leaved Duckweed
<i>Linum catharticum</i>	Fairy Flax
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Lycopus europaeus</i>	Gipsywort
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Mentha aquatica</i>	Water Mint
<i>Nuphar lutea</i>	Yellow Lilly
<i>Persicaria amphibia</i>	Amphibious Bistort
<i>Persicaria maculosa</i>	Redshank
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Phragmites australis</i>	Common Reed
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Potentilla palustris</i>	Marsh Cinquefoil
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus sp.</i>	Ornamental Cherry
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose

Scientific name	Common Name
<i>Rosa rugosa</i>	Japanese Rose
<i>Rubus fruticosus</i> agg.	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex obtusifolius</i>	Broad Dock
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Salix cinerea</i>	Grey Willow
<i>Salix viminalis</i>	Osier
<i>Schoenoplectus lacustris</i>	Common Club Rush
<i>Senecio vulgaris</i>	Groundsel
<i>Solanum dulcamara</i>	Woody Nightshade
<i>Sonchus asper</i>	Prickly Sowthistle
<i>Sorbus aucuparia</i>	Mountain Ash
<i>Sparganium emersum</i>	Floating Bur-reed
<i>Sparganium erectum</i>	Branched Bur-reed
<i>Taraxicum officinalis</i> agg	Dandelion
<i>Tilia</i> sp.	Lime
<i>Trifolium repens</i>	White Clover
<i>Urtica dioica</i>	Nettle
<i>Valeriana officinalis</i>	Valerian
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Vicia cracca</i>	Tufted vetch
<i>Vicia sepium</i>	Bush Vetch

4.3 Section 3: Killarcan Lock (Lock 16) – Tiermactiernan Bridge

Table 4.5. Habitats Classified in Section 3

Habitats	Habitat Code
Amenity Grassland	GA2
Wet Grassland	GS4
Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditches	FW4
Dry Meadows and Grassy Verges	GS2
Hedgerows	WL1
Dry Calcareous and Neutral Grassland	GS4
Mosaic: Dry meadows and grassy verges/Scrub	GS2/WS1
Reed and Large Sedge Swamp	FS1
Scrub	WS1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Treelines	WL2

Table 4.6. Species Recorded in Section 3

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Achillea millefolium</i>	Yarrow
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent

Scientific name	Common Name
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium. ruta-muraria</i>	Wall-rue
<i>Asplenium. trichomanes</i>	Maidenhair Spleenwort
<i>Bellis perennis</i>	Daisy
<i>Brachypodium sylvaticum</i>	Wood False Brome
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex paniculata</i>	Greater Tussock Sedge
<i>Carex remota</i>	Remote Sedge
<i>Catapodium rigidum</i>	<i>Fern Grass</i>
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Cirsium arvense</i>	Creeping Thistle
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Deschampsia cespitosa</i>	Tufted Hair Grass
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Festuca rubra</i>	Red Fescue
<i>Festuca spp.</i>	Fescue spp.
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Galium palustre</i>	Marsh Bedstraw
<i>Geranium robertianum</i>	Herb Robert
<i>Glyceria fluitans</i>	Floating Sweet Grass
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow vetchling
<i>Leontodon sp.</i>	Hawkbit
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Linum catharticum</i>	Fairy Flax
<i>Lolium perenne</i>	Perennial Ryegrass

Scientific name	Common Name
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Medicago lupulina</i>	Black Medic
<i>Mentha aquatica</i>	Water Mint
<i>Oenanthe sp.</i>	Water-dropwort
<i>Persicaria maculosa</i>	Redshank
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Phleum pratense</i>	Timothy
<i>Phragmites australis</i>	Common Reed
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potamogeton natans</i>	Broad-leaved Pondweed
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rhinanthus minor</i>	Yellow Rattle
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex crispus</i>	Curled Dock
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Salix cinerea</i>	Grey Willow
<i>Senecio vulgaris</i>	Groundsel
<i>Sonchus asper</i>	Prickly Sowthistle
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Tussilago farfara</i>	Coltsfoot
<i>Urtica dioica</i>	Nettle
<i>Valeriana officinalis</i>	Valerian
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Vicia cracca</i>	Tufted vetch
<i>Vicia sepium</i>	Bush Vetch

4.4 Section 4 Tiermactiernan Bridge - Tiermactiernan Lock (15)

Table 4.7 Habitats Classified in Section 4

Habitats	Habitat Code
Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditches	FW4
Hedgerow	WL1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1

Table 4.8 Species Recorded in Section 4

Scientific name	Common Name
<i>Achillea millefolium</i>	Yarrow
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium. ruta-muraria</i>	Wall-rue
<i>Asplenium. trichomanes</i>	Maidenhair Spleenwort
<i>Bellis perennis</i>	Daisy
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Carex remota</i>	Remote Sedge
<i>Catapodium rigidum</i>	Fern Grass
<i>Cerastium fontanum</i>	Mouse Ear
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Cirsium palustre</i>	Spear Thistle
<i>Cirsium arvense</i>	Creeping Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Festuca rubra</i>	Red Fescue
<i>Festuca spp.</i>	Fescue spp.
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Geranium robertianum</i>	Herb Robert
<i>Hedera helix</i>	Ivy
<i>Hesperis martonalis</i>	Dame's-violet
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Lapsana communis</i>	Nipplewort
<i>Lathyrus pratensis</i>	Meadow vetchling
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Medicago lupulina</i>	Black Medic
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Ranunculus repens</i>	Creeping Buttercup

Scientific name	Common Name
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Sagina sp.</i>	Pearlwort
<i>Salix cinerea</i>	Grey Willow
<i>Sambucus nigra</i>	Elder
<i>Senecio jacobea</i>	Ragwort
<i>Senecio vulgaris</i>	Groundsel
<i>Solanum dulcamara</i>	Woody Nightshade
<i>Sonchus asper</i>	Prickly Sowthistle
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Urtica dioica</i>	Nettle
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Vicia cracca</i>	Tufted vetch

4.5 Section 5: Tiermactiernan Lock (15) – Crossycarwill Bridge

Table 4.9. Habitats Classified in Section 5

Habitats	Habitat Code
Amenity Grassland	GA2
Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditches	FW4
Dry Meadows and Grassy Verges	GS2
Hedgerows	WL1
Scrub	WS1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Treelines	WL2
Improved Agricultural Grassland	GA1

Table 4.10 Species Recorded in Section 5.

Scientific name	Common Name
<i>Achillea millefolium</i>	Yarrow
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium. ruta-muraria</i>	Wall-rue
<i>Asplenium. trichomanes</i>	Maidenhair Spleenwort

Scientific name	Common Name
<i>Bellis perennis</i>	Daisy
<i>Brachypodium sylvaticum</i>	Wood False Brome
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex nigra</i>	Common Sedge
<i>Carex remota</i>	Remote Sedge
<i>Catapodium rigidum</i>	Fern Grass
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Elodea nuttallii</i>	Nuttall's Waterweed
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Festuca rubra</i>	Red Fescue
<i>Festuca spp.</i>	Fescue spp.
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Geranium robertianum</i>	Herb Robert
<i>Glyceria fluitans</i>	Floating Sweet Grass
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Hesperis matronalis</i>	Dame's-violet
<i>Hirschfeldia incana</i>	Hoary Mustard
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow vetchling
<i>Leontodon sp.</i>	Hawkbit
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Linum catharticum</i>	Fairy Flax
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Medicago lupulina</i>	Black Medic
<i>Mentha aquatica</i>	Water Mint
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Phleum pratense</i>	Timothy
<i>Picea sitchensis</i>	Sitka Spruce
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass

Scientific name	Common Name
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus spinosa</i>	Blackthorn
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus</i> agg.	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Sagina</i> sp.	Pearlwort
<i>Salix cinerea</i>	Grey Willow
<i>Salix viminalis</i>	Osier
<i>Sambucus nigra</i>	Elder
<i>Senecio aquaticus</i>	Marsh Ragwort
<i>Senecio jacobea</i>	Ragwort
<i>Senecio vulgaris</i>	Groundsel
<i>Solanum dulcamara</i>	Woody Nightshade
<i>Sonchus asper</i>	Prickly Sowthistle
<i>Sparganium erectum</i> (Drainage ditch)	Branched Bur-reed
<i>Taraxicum officinalis</i> agg	Dandelion
<i>Torilis japonica</i>	Upright Hedge-Parsley
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Tussilago farfara</i>	Coltsfoot
<i>Urtica dioica</i>	Nettle
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Vicia cracca</i>	Tufted vetch
<i>Vicia sepium</i>	Bush Vetch

4.6 Section 6: Crossycarwill Bridge – Drumduff Bridge and Lock (14)

Table 4.11. Habitats Classified in Section 6

Habitats	Habitat Code
Amenity Grassland	GA2
Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditches	FW4
Dry Meadows and Grassy Verges	GS2
Habitat Mosaic: Wet Grassland/Scrub	GS4/WS1
Hedgerow	WL1
Scrub	WS1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Treelines	WL2
Wet- Willow-alder-ash Woodland	WN6

Table 4.12. Species Recorded in Section 6

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Achillea millefolium</i>	Yarrow
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium. ruta-muraria</i>	Wall-rue
<i>Asplenium. trichomanes</i>	Maidenhair Spleenwort
<i>Bellis perennis</i>	Daisy
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Capsella bursa-pastoris</i>	Shepherd's Purse
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex nigra</i>	Common Sedge
<i>Carex paniculata</i>	Greater Tussock Sedge
<i>Carex remota</i>	Remote Sedge
<i>Catapodium rigidum</i>	Fern Grass
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Fagus sylvatica</i>	Beech
<i>Festuca rubra</i>	Red Fescue
<i>Festuca spp.</i>	Fescue spp.
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Galium palustre</i>	Marsh Bedstraw
<i>Geranium robertianum</i>	Herb Robert
<i>Glyceria fluitans</i>	Floating Sweet Grass
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Hirschfeldia incana</i>	Hoary Mustard
<i>Holcus lanatus</i>	Yorkshire Fog

Scientific name	Common Name
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Leontodon sp.</i>	Hawkbit
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Linum catharticum</i>	Fairy Flax
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Matricaria discoidea</i>	Pineapple Weed
<i>Mentha aquatica</i>	Water Mint
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Phleum pratense</i>	Timothy
<i>Phragmites australis</i>	Common Reed
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Prunus spinosa</i>	Blackthorn
<i>Quercus robur</i>	Oak
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex crispus</i>	Curled Dock
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Salix cinerea</i>	Grey Willow
<i>Salix sp.</i>	Willow
<i>Salix viminalis</i>	Osier
<i>Senecio aquaticus</i>	Marsh Ragwort
<i>Sonchus oleraceus</i>	Smooth Sowthistle
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Torilis japonica</i>	Upright Hedge-Parsley
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Tussilago farfara</i>	Coltsfoot
<i>Urtica dioica</i>	Nettle
<i>Vicia cracca</i>	Tufted vetch

4.7 Drumduff Bridge and Lock (14) – Newbrook Bridge

Table 4.13. Habitats Classified in Section 7

Habitats	Habitat Code
Amenity Grassland	GA2

Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditches	FW4
Dry Meadows and Grassy Verges	GS2
Habitat Mosaic: Dry Meadows and Grassy Verges/Scrub	GS2/WS1
Hedgerows	WL1
Scrub	WS1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Treelines	WL2

Table 4.14. Species Recorded in Section 7

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort
<i>Bellis perennis</i>	Daisy
<i>Betula pubescens</i>	Birch
<i>Brachypodium sylvaticum</i>	Wood False Brome
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Capsella bursa-pastoris</i>	Shepherd's Purse
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex nigra</i>	Common Sedge
<i>Carex paniculata</i>	Greater Tussock Sedge
<i>Carex remota</i>	Remote Sedge
<i>Catapodium rigidum</i>	Fern Grass
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Cortaderia selloana</i>	Pampas Grass
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Crococsmia x crocosmiflora</i>	Montbretia
<i>Dactylis glomerata</i>	Cocks Foot
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Festuca rubra</i>	Red Fescue

Scientific name	Common Name
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Hedera helix</i>	Ivy
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Medicago lupulina</i>	Black Medic
<i>Mentha aquatica</i>	Water Mint
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex crispus</i>	Curled Dock
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Salix cinerea</i>	Grey Willow
<i>Salix viminalis</i>	Osier
<i>Scrophularia auriculata</i>	Water Figwort
<i>Scrophularia nodosa</i>	Common Figwort
<i>Senecio jacobea</i>	Ragwort
<i>Senecio vulgaris</i>	Groundsel
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Symphoricarpos alba</i>	Snowberry
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Urtica dioica</i>	Nettle
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Vicia cracca</i>	Tufted vetch

4.8 Newbrook Bridge - Newbrook Lock (13)

Table 4.15. Habitats Classified in Section 8

Habitats	Habitat Code
Amenity Grassland	GA2
Buildings and Artificial Surfaces	BL3
Canals	FW3
Dry Meadows and Grassy Verges	GS2
Hedgerows	WL1
Scrub	WS1

Habitats	Habitat Code
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Treelines	WL2

Table 4.16 Species Recorded in Section 8

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort
<i>Bellis perennis</i>	Daisy
<i>Betula sp.</i>	Birch
<i>Brachypodium sylvaticum</i>	Wood False Brome
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Capsella bursa-pastoris</i>	Shepherd's Purse
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex nigra</i>	Common Sedge
<i>Carex panicea</i>	Carnation sedge
<i>Carex paniculata</i>	Greater Tussock Sedge
<i>Carex remota</i>	Remote Sedge
<i>Catapodium rigidum</i>	Fern Grass
<i>Centaurea nigra</i>	Black Knapweed
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Cortaderia selloana</i>	Pampas Grass
<i>Corylus avellana</i>	Hazel
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Crocsmia x crocosmiflora</i>	Montbretia
<i>Dactylis glomerata</i>	Cocks Foot
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Fagus sylvatica</i>	Beech
<i>Festuca rubra</i>	Red Fescue

Scientific name	Common Name
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Medicago lupulina</i>	Black Medic
<i>Mentha aquatica</i>	Water Mint
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex crispus</i>	Curled Dock
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Salix cinerea</i>	Grey Willow
<i>Salix viminalis</i>	Osier
<i>Scrophularia auriculata</i>	Water Figwort
<i>Scrophularia nodosa</i>	Common Figwort
<i>Senecio jacobea</i>	Ragwort
<i>Senecio vulgaris</i>	Groundsel
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Symphoricarpos alba</i>	Snowberry
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Urtica dioica</i>	Nettle
<i>Valeriana officinalis</i>	Valerian
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Vicia cracca</i>	Tufted vetch

4.9 Section 9: Newbrook Lock (13) - Lisconor Lock (12)/Kilclarebeg Bridge

Table 4.17. Habitats Classified in Section 9

Habitats	Habitat Code
Amenity Grassland	GA2
Buildings and Artificial Surfaces	BL3
Canals	FW3

Dry Calcareous and Neutral Grassland	GS1
Dry Meadows and Grassy Verges	GS2
Habitat Mosaic: Dry Meadows and Grassy Verges/Scrub	GS2/WS1
Hedgerows	WL1
Reed and Large Sedge Swamp	FS1
Scrub	WS1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Treelines	WL2
Wet Grassland	GS4

Table 4.18 Species Recorded in Section 9

Scientific name	Common Name
<i>Acer sp.</i>	Ornamental Tree
<i>Achillea millefolium</i>	Yarrow
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Bellis perennis</i>	Daisy
<i>Brachypodium sylvaticum</i>	Wood False Brome
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Capsella bursa-pastoris</i>	Shepherd's Purse
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex nigra</i>	Common Sedge
<i>Carex paniculata</i>	Greater Tussock Sedge
<i>Carex remota</i>	Remote Sedge
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Chenopodium album</i>	Fat Hen
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Dactylorhiza fuchsii</i>	Common Spotted Orchid
<i>Dacus carota</i>	Wild Carrot
<i>Deschampsia cespitosa</i>	Tufted Hair Grass
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb

Scientific name	Common Name
<i>Equisetum sp.</i>	Horsetail
<i>Fagus purpurea</i>	Copper Beech
<i>Fagus sylvatica</i>	Beech
<i>Festuca rubra</i>	Red Fescue
<i>Festuca spp.</i>	Fescue spp.
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Galium palustre</i>	Marsh Bedstraw
<i>Geranium robertianum</i>	Herb Robert
<i>Glyceria fluitans</i>	Floating Sweet Grass
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Leontodon sp.</i>	Hawkbit
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Linum catharticum</i>	Fairy Flax
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Medicago lupulina</i>	Black Medic
<i>Mentha aquatica</i>	Water Mint
<i>Persicaria maculosa</i>	Redshank
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Phleum pratense</i>	Timothy
<i>Phragmites australis</i>	Common Reed
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Potentilla reptans</i>	Creeping cinquefoil
<i>Primula veris</i>	Cowslip
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex crispus</i>	Curled Dock
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Sagina sp.</i>	Pearlwort
<i>Salix cinerea</i>	Grey Willow
<i>Scrophularia nodosa</i>	Common Figwort

Scientific name	Common Name
<i>Sonchus asper</i>	Prickly Sowthistle
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Torilis japonica</i>	Upright Hedge-Parsley
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Urtica dioica</i>	Nettle
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Viburnum opulus</i>	Guelder Rose
<i>Vicia cracca</i>	Tufted vetch
<i>Vicia sepium</i>	Bush Vetch

4.10 Section 10 Lisconor Lock (12)/Kilclarebeg Bridge – Kilclare Lower Lock (11)

Table 4.19 Habitats Classified in Section 10

Habitats	Habitat Code
Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditch	FW4
Dry Meadows and Grassy Verges	GS2
Habitat Mosaic: Dry Meadows and Grassy Verges/Scrub	GS2/WS1
Hedgerows	WL1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Treelines	WL2
Wet Grassland	GS4

Table 4.20. Species Recorded in Section 10

Scientific name	Common Name
<i>Achillea millefolium</i>	Yarrow
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alisma plantago-aquatica</i>	Water Plantain
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Apium nodiflorum</i>	Fools Water-cress
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Asplenium scolopendrium</i>	Heart's Tongue fern
<i>Bellis perennis</i>	Daisy
<i>Bromus hordeaceus</i>	Soft Brome
<i>Calystegia sepium</i>	Hedge Bindweed

<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex nigra</i>	Common Sedge
<i>Carex paniculata</i>	Greater Tussock Sedge
<i>Carex remota</i>	Remote Sedge
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Chenopodium album</i>	Fat Hen
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Dacus carota</i>	Wild Carrot
<i>Deschampsia cespitosa</i>	Tufted Hair Grass
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Fagus sylvatica</i>	Beech
<i>Festuca rubra</i>	Red Fescue
<i>Festuca spp.</i>	Fescue spp.
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Galium palustre</i>	Marsh Bedstraw
<i>Geranium robertianum</i>	Herb Robert
<i>Glyceria fluitans</i>	Floating Sweet Grass
<i>Glyceria maxima (Drainage ditch)</i>	Reed-sweet Grass
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Leontodon sp.</i>	Hawkbit
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lotus corniculatus</i>	Birds-foot Trefoil
<i>Medicago lupulina</i>	Black Medic
<i>Mentha aquatica</i>	Water Mint
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Potentilla reptans</i>	Creeping cinquefoil
<i>Prunella vulgaris</i>	Selfheal

<i>Prunus spinosa</i>	Blackthorn
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex crispus</i>	Curled Dock
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Sagina sp.</i>	Pearlwort
<i>Salix cinerea</i>	Grey Willow
<i>Sambucus nigra</i>	Elder
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Tussilago farfara</i>	Coltsfoot
<i>Typha latifolia</i>	BulrushBulrush
<i>Urtica dioica</i>	Nettle
<i>Valeriana officinalis</i>	Valerian
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Vicia cracca</i>	Tufted vetch
<i>Vicia sepium</i>	Bush Vetch

4.11 Section 11 Kilclare Lower Lock (11) - Drumruekill Bridge & Kilclare Middle Lock (10)

Table 4.21. Habitats Classified in Section 11

Habitats	Habitat Code
Amenity Grassland	GA2
Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditch	FW4
Dry Meadows and Grassy Verges	GS2
Hedgerows	WL1
Scrub	WS1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Treelines	WL2

Table 4.22. Species Recorded in Section 11

Scientific name	Common Name
<i>Achillea millefolium</i>	Yarrow
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Ajuga reptans</i>	Bugle
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Bellis perennis</i>	Daisy
<i>Betula sp.</i>	Birch

Scientific name	Common Name
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex paniculata</i>	Greater Tussock Sedge
<i>Catapodium rigidum</i>	Fern Grass
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Cirsium vulgare</i>	Spear Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Festuca rubra</i>	Red Fescue
<i>Fraxinus excelsior</i>	Ash
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lonicera nitida</i>	Wilson's Honeysuckle
<i>Petasites fragrans</i>	Winter Heliotrope
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Primula veris</i>	Cowslip
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus laurocerasus</i>	Laurel
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex crispus</i>	Curled Dock
<i>Sagina sp.</i>	Pearlwort
<i>Salix cinerea</i>	Grey Willow
<i>Senecio jacobea</i>	Ragwort
<i>Sonchus asper</i>	Prickly Sowthistle
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Urtica dioica</i>	Nettle

Scientific name	Common Name
<i>Valeriana officinalis</i>	Valerian
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Vicia cracca</i>	Tufted vetch

4.12 Section 12 Drumruekill Bridge & Kilclare Middle Lock (10) – Kilclare Upper Lock 9 & Footbridge

Table 4.23 Habitats Classified in Section 12

Habitats	Habitat Code
Amenity Grassland	GA2
Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditches	FW4
Dry Meadows and Grassy Verges	GS2
Wet Grassland	GS4
Hedgerows	WL1
Scrub (WS1)	WS1
Stone Walls and Other Stone Work	BL1
Treelines	WL2

Table 2.24. Species Recorded in Section 12

Scientific name	Common Name
<i>Achillea millefolium</i>	Yarrow
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alisma plantago-aquatica</i>	Water Plantain
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Apium nodiflorum</i>	Fools Water-cress
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Bellis perennis</i>	Daisy
<i>Betula sp.</i>	Birch
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex nigra</i>	Common Sedge
<i>Carex paniculata</i>	Greater Tussock Sedge
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Cirsium arvense</i>	Creeping Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Dactylorhiza fuchsii</i>	Common Spotted Orchid
<i>Deschampsia cespitosa</i>	Tufted Hair Grass
<i>Elodea nuttallii</i>	Nuttall's Waterweed
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Equisetum sp.</i>	Horsetail

Scientific name	Common Name
<i>Fagus sylvatica</i>	Beech
<i>Festuca rubra</i>	Red Fescue
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Galium palustre</i>	Marsh Bedstraw
<i>Geranium molle</i>	Doves-foot Crane's-bill
<i>Geranium robertianum</i>	Herb Robert
<i>Hedera helix</i>	Ivy
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Luzula campestris</i>	Field Wood-rush
<i>Mentha aquatica</i>	Water Mint
<i>Nuphar lutea</i>	Yellow Lilly
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus laurocerasus</i>	Laurel
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex crispus</i>	Curled Dock
<i>Salix cinerea</i>	Grey Willow
<i>Sambucus nigra</i>	Elder
<i>Sparganium emersum</i>	Floating Bur-reed
<i>Sparganium erectum</i>	Branched Bur-reed
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Torilis japonica</i>	Upright Hedge-Parsley
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Viburnum opulus</i>	Guelder Rose
<i>Vicia cracca</i>	Tufted vetch

4.13 Section 13 Kilclare Upper Lock 9 & Footbridge – Lough Conway Bridge

Table 4.25. Habitats Classified in Section 13

Habitats	Habitat Code
Amenity Grassland	GA2
Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditches	FW4
Eutrophic Lake	FL5
Reed and Large Sedge Swamp	FS1
Scrub	WS1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Treelines	WL2
Wet Grassland	GS4

Table 4.26. Species Recorded in Section 13

Scientific name	Common Name
<i>Achillea millefolium</i>	Yarrow
<i>Aesculus hippocastanum</i>	Horse Chestnut
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alisma plantago-aquatica</i>	Water Plantain
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Apium nodiflorum</i>	Fools Water-cress
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Bellis perennis</i>	Daisy
<i>Betula sp.</i>	Birch
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex nigra</i>	Common Sedge
<i>Carex paniculata</i>	Greater Tussock Sedge
<i>Carex rostrata</i>	Bottle Sedge
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Cirsium arvense</i>	Creeping Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Cupressus leylandii</i>	Leyland Cypress
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Deschampsia cespitosa</i>	Tufted Hair Grass
<i>Elodea nuttallii</i>	Nuttall's Waterweed
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Equisetum sp.</i>	Horsetail

Scientific name	Common Name
<i>Fagus sylvatica</i>	Beech
<i>Festuca rubra</i>	Red Fescue
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Galium palustre</i>	Marsh Bedstraw
<i>Geranium robertianum</i>	Herb Robert
<i>Hedera helix</i>	Ivy
<i>Hippuris vulgaris</i>	Mare's-tail
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Larix sp.</i>	Larch
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lonicera nitida</i>	Wilson's Honeysuckle
<i>Mentha aquatica</i>	Water Mint
<i>Nuphar lutea</i>	Yellow Lilly
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Phragmites australis</i>	Common Reed
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus laurocerasus</i>	Laurel
<i>Quercus sp.</i>	Oak
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Rumex crispus</i>	Curled Dock
<i>Salix cinerea</i>	Grey Willow
<i>Salix viminalis</i>	Osier
<i>Sambucus nigra</i>	Elder
<i>Sparganium emersum</i>	Floating Bur-reed
<i>Sparganium erectum</i>	Branched Bur-reed
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Urtica dioica</i>	Nettle
<i>Vicia cracca</i>	Tufted vetch

4.14 Section 14 Lough Conway Bridge – Scrabbagh Bridge

Table 4.27 Habitats Classified in Section 14

Habitats	Habitat Code
Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditches	FW4
Dry Meadows and Grassy Verges	GS2
Scrub	WS1
Stone Walls and Other Stone Work	BL1
Treelines	WL2
Wet Grassland	GS4

It was not possible to access the Canal bankside at this located given the steep banks and dense Scrub. It is likely that additional species other than those listed below occur within this canal section; however only the species observed and accurately identified are included in Table 4.28

Table 4.28. Species Recorded in Section 14

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Asplenium scolopendrium</i>	Heart's Tongue fern
<i>Bellis perennis</i>	Daisy
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Crataegus monogyna</i>	Hawthorn
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Festuca rubra</i>	Red Fescue
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Geranium robertianum</i>	Herb Robert
<i>Hedera helix</i>	Ivy
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Juncus effuses</i>	Soft Rush
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Plantago lanceolata</i>	Ribwort Plantain

Scientific name	Common Name
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Prunus spinosa</i>	Blackthorn
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Salix cinerea</i>	Grey Willow
<i>Sambucus nigra</i>	Elder
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium repens</i>	White Clover
<i>Vicia cracca</i>	Tufted vetch

4.15 Section 15 Scrabbagh Bridge - Letterfine Bridge

Table 4.29. Habitats Classified in Section 15

Habitats	Habitat Code
Mixed Broadleaved Woodland	WD1
Buildings and Artificial Surfaces	BL3
Canals	FW3
Drainage Ditches	FW4
Eutrophic Lake	FL5
Reed and Large Sedge Swamp	FS1
Scrub	WS1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Treelines	WL2
Wet Grassland	GS4

Table 4.30. Species Recorded in Section 15

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alisma plantago-aquatica</i>	Water Plantain
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Apium nodiflorum</i>	Fools Water-cress
<i>Arctium minus</i>	Lesser Burdock
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Asplenium scolopendrium</i>	Heart's Tongue fern
<i>Bellis perennis</i>	Daisy

Scientific name	Common Name
<i>Brachypodium sylvaticum</i>	Wood False Brome
<i>Caltha palustris</i>	Marsh-marigold
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex nigra</i>	Common Sedge
<i>Carex paniculata</i>	Greater Tussock Sedge
<i>Carex remota</i>	Remote Sedge
<i>Carex rostrata</i>	Bottle Sedge
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Elytrigia repens</i>	Couch
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Equisetum sp.</i>	Horsetail
<i>Festuca rubra</i>	Red Fescue
<i>Festuca spp.</i>	Fescue spp.
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Galium palustre</i>	Marsh Bedstraw
<i>Geranium robertianum</i>	Herb Robert
<i>Glyceria fluitans</i>	Floating Sweet Grass
<i>Glyceria maxima</i>	Reed-sweet Grass
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Hippuris vulgaris</i>	Mare's-tail
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Listera ovata</i>	Common Twayblade
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Mentha aquatica</i>	Water Mint
<i>Nuphar lutea</i>	Yellow Lilly
<i>Persicaria amphibia</i>	Amphibious Bistort
<i>Persicaria maculosa</i>	Redshank
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Phragmites australis</i>	Common Reed
<i>Picea sitchensis</i>	Sitka Spruce

Scientific name	Common Name
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Potentilla palustris</i>	Marsh Cinquefoil
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus spinosa</i>	Blackthorn
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrell
<i>Salix cinerea</i>	Grey Willow
<i>Sambucus nigra</i>	Elder
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Tussilago farfara</i>	Coltsfoot
<i>Urtica dioica</i>	Nettle
<i>Valeriana officinalis</i>	Valerian
<i>Vicia cracca</i>	Tufted vetch
<i>Vicia sepium</i>	Bush Vetch

4.16 Section 16 Letterfine Bridge – Lough Scur Bridge

Table 4.31. Habitats Classified in Section 16

Habitats	Habitat Code
Buildings and Artificial Surfaces	BL3
Canals	FW3
Conifer Plantation	WD4
Drainage Ditches	FW4
Dry Meadows and Grassy Verges	GS2
Recolonising Bare Ground	ED3
Scrub	WS1
Spoil and Bare Ground	ED2
Stone Walls and Other Stone Work	BL1
Treelines	WL2
Wet Grassland	GS4

Table 4.32. Species Recorded in Section 16

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail

Scientific name	Common Name
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Bellis perennis</i>	Daisy
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex nigra</i>	Common Sedge
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Elytrigia repens</i>	Couch
<i>Equisetum sp.</i>	Horsetail
<i>Euphrasia officinalis agg.</i>	Eyebright
<i>Fagus purpurea</i>	Copper Beech
<i>Festuca rubra</i>	Red Fescue
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Galium palustre</i>	Marsh Bedstraw
<i>Geranium robertianum</i>	Herb Robert
<i>Glyceria fluitans</i>	Floating Sweet Grass
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Leontodon sp.</i>	Hawkbit
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Linum catharticum</i>	Fairy Flax
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Medicago lupulina</i>	Black Medic
<i>Mentha aquatica</i>	Water Mint
<i>Picea sitchensis</i>	Sitka Spruce
<i>Picea stichensis</i>	Lodgepole Pine
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass

Scientific name	Common Name
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus spinosa</i>	Blackthorn
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Salix cinerea</i>	Grey Willow
<i>Scrophularia nodosa</i>	Common Figwort
<i>Senecio aquaticus</i>	Marsh Ragwort
<i>Senecio vulgaris</i>	Groundsel
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Vicia cracca</i>	Tufted vetch

4.17 Section 17 Lough Scur Bridge – Lough Scur

Table 4.33. Habitats Classified in Section 17

Habitats	Habitat Code
Buildings and Artificial Surfaces	BL3
Canals	FW3
Dry Meadows and Grassy Verges	GS2
Eutrophic Lake (Lough Scur)	FL5
Recolonising Bare Ground	ED3
Reed and Large Sedge Swamp	FS1
Scrub	WS1
Stone Walls and Other Stone Work	BL1
Treelines	WL2

Table 4.34. Species Recorded in Section 17

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Apium nodiflorum</i>	Fool's-water-cress
<i>Arrhenatherum elatius</i>	False-oat Grass
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort
<i>Asplenium ruta-muraria</i>	Wall-rue

Scientific name	Common Name
<i>Bellis perennis</i>	Daisy
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex nigra</i>	Common Sedge
<i>Centaurea nigra</i>	Black Knapweed
<i>Cerastium fontanum</i>	Mouse Ear
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Crocosmia x crocosmiflora</i>	Montbretia
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Dactylis glomerata</i>	Cocks Foot
<i>Deschampsia cespitosa</i>	Tufted Hairgrass
<i>Elytrigia repens</i>	Couch
<i>Equisetum sp.</i>	Horsetail
<i>Euphrasia officinalis agg.</i>	Eyebright
<i>Festuca rubra</i>	Red Fescue
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Galium palustre</i>	Marsh Bedstraw
<i>Geranium robertianum</i>	Herb Robert
<i>Glyceria fluitans</i>	Floating Sweet Grass
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus effuses</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Leontodon sp.</i>	Hawkbit
<i>Leucanthemum vulgare</i>	Ox-eye Daisy
<i>Linum catharticum</i>	Fairy Flax
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Medicago lupulina</i>	Black Medic
<i>Mentha aquatica</i>	Water Mint
<i>Nuphar lutea</i>	Yellow Lilly (Lough Scur)
<i>Phragmites australis</i>	Common Reed (Lough Scur)
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow Grass
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus spinosa</i>	Blackthorn
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus flammula</i>	Lesser Spearwort

Scientific name	Common Name
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus agg.</i>	Bramble
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Salix cinerea</i>	Grey Willow
<i>Scrophularia nodosa</i>	Common Figwort
<i>Senecio aquaticus</i>	Marsh Ragwort
<i>Senecio vulgaris</i>	Groundsel
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Taraxicum officinalis agg</i>	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Urtica dioica</i>	Nettle
<i>Veronica beccabunga</i>	Brooklime
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Vicia cracca</i>	Tufted vetch

5 TARGET NOTES

During the field survey, a number of significant observations were made in relation to ecologically sensitive or unusual species. Target notes refer to notable flora and fauna records. These include a list of invasive terrestrial plants and their location as well as any rare or protected fauna.

5.1 Terrestrial Invasive Species

No high risk invasive alien species and listed on the Invasive Species Ireland “Most unwanted” list were recorded during the study period. Amber listed invasive species as per Invasive Species Ireland are

“Those that could represent a significant impact on native species or habitats causing significant decline or loss; or species that could impact either/both Natura 2000 sites and the goals of the Water Framework Directive”

The amber listed species, Winter heliotrope (*Petasites fragrans*) was recorded east of Lock 10 at Grid Ref: 199668, 306855.

5.2 Aquatic Non-native/Invasive Species

The non-native species Nuttall’s Waterweed (*Elodea nuttallii*) was recorded at several locations (See Table 5.1). Additional aquatic invasive species were not recorded.

Table 5.1 Invasive Aquatic Plants and their sample location along the Shannon Erne Waterway

Scientific Name	Common Name	Section	Grid Reference
<i>Elodea nuttallii</i>	Nuttall’s Waterweed	Section 01 : River Shannon to Leitrim Bridge	195655, 304454
		Section 02: Leitrim Bridge to Killarcan Lock (Lock 16)	195861, 304652
		Section 5: Tirmactiernan Lock (15)- Crossycarwill Bridge	197510, 305173
		Section 12: Drumruekill Bridge & Kilclare Middle Lock (Lock 10) to Kilclare Upper Lock (Lock 9) and Footbridge	199754, 306874

5.3 Fauna

Otter signs including spraints and potential slides were observed within the study area. Otters are protected under the Wildlife Acts 1976 to 2012 and are listed under Annex II and Annex IV of the Habitats Directive (92/43/EEC), which is incorporated into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011).

The remains of the Annex II species White-clawed Crayfish (*Austropotamobius pallipes*) were recorded from Otter spraint and the species is likely to occur in the Shannon Erne Waterway (Plate 5.1).

Annex II lists species of community interest whose conservation requires the designation of Special Areas of Conservation (SACs), while those species listed under Annex IV are those in need of strict protection. Fox signs were observed and it is likely the species uses the canal corridor for hunting and commuting. Kingfisher (*Alcedo atthis*) was observed at two locations within the study area and a nest site was recorded between Letterfine bridge and Lough Scur Bridge. Kingfisher is a species listed in Annex I of the EU Birds Directive. The faunal observation data is presented in Table 5.2 below.



Plate 5.1. Otter spraint with crayfish remains and associated slide.

Table 5.2. Target Notes on Fauna recorded during fieldwork.

Species	Description	Photo No.	Grid Ref
Otter	Numerous potential Otter slides, Section 3. Killarcan Lock (Lock 16) to Tirmactiernan Bridge	DSC00038	196394, 304884
			196836, 304864
			196924, 304894
Otter	Numerous potential Otter slides, Section 5. Tirmactiernan Lock (15)- Crossycarwill Bridge	DSC00063	197325, 305124
			197449, 305160
	Slide and Spraint (Crayfish remains) Section 6. Crossycarwill Bridge to Drumduff Bridge and Lock 14	DSC00077	197782, 305373
	Potential Otter Slide, Section 10. Kilclarebeg Bridge/Lock 12 to Kilclare Lower Lock (Lock 11)	DSC00132	199262, 306737
Freshwater White-clawed Crayfish	Remains found in Otter spraint, Section 6. Crossycarwill Bridge to Drumduff Bridge and Lock 14	DSC00077	197782, 305373
Kingfisher	Commuting Kingfisher Observed, Section 5. Tirmactiernan Lock (15)- Crossycarwill Bridge	-	197127, 305096
	Nest site observed to the east of the study area	-	201579, 307659

6 ECOLOGICALLY SENSITIVE AREAS

Areas within the study area that were considered to be of particular ecological significance were identified. Criteria for identifying Ecologically Sensitive Areas (ESAs) included the following:

- Links with EU Habitats Directive Annex I habitats
- Species diversity
- Rare or unusual species present
- Rarity within the study area

Table 6.1 and in general, throughout the study area, these habitats should be considered as sensitive.

Table 6.1 ESAs noted within the study area

Number	Description	Location
ESA1	Depositing Lowland River	The River Shannon at the junction with the Shannon Erne Waterway
ESA2	Wet Willow-Ash-Alder Woodland	A small Isolated stand of this habitat was recorded to the west of Drumduff Bridge and Lock 14 on the northern canal bank
ESA3	Dry Calcareous Neutral Grassland	Pockets of this habitat throughout the study area. The pocket to the west of Lock 13, which contained Common Spotted Orchid, was classified as an ESA.
ESA4	Eutrophic Lakes	Lough Conway and Drumaleague Lough
ESA5	Wet Grassland (Annex I habitat (Molinia Meadows 6410) Outside WI property boundary	This habitat was located outside the property boundary to the east of Lough Conway.
ESA6	Treelines	Mature treelines throughout the study area.
ESA7	Canal banks utilised by Kingfisher for nesting	A Kingfisher nesting site was observed to the east of the study area.

6.1 ESA 1 Depositing Lowland River (FW2)

The River Shannon where it joins with the Shannon Erne Waterway was classified as a Depositing/Lowland River (FW2) (Plate 6.1).

The River Shannon was dominated by 100% glide habitat with no riffles located within close proximity to the junction with the canal. The river at this location does not provide suitable spawning habitat for salmonids or lamprey; however lamprey ammocetes may utilise some of the bankside silt accumulations located downstream of the canal junction as a nursery area.

The River at this location is subject to regular anthropogenic disturbance and forms part of the Shannon Erne navigation.

Branched Bur-reed (*Sparganium erectum*) and Lake Clubrush (*Schoenoplectus lacustris*,) were recorded from the emergent vegetation and Un-branched Bur-reed was the only instream macrophyte recorded.

The River Shannon provides an important commuting corridor for fish species and is likely to be utilised by Salmonids, Lamprey species and European Eel. Coarse fish including a shoal of Roach, Perch and a juvenile Pike were observed at the confluence with the Shannon Erne Waterway. The watercourse is likely to be utilised by bat species, particularly Daubenton's Bat for foraging and commuting. The red listed species Black-headed Gull was recorded from the banks of the River Shannon and it is also likely a greater range of waterbirds utilise the site. Kingfisher, a species listed on Annex I of the EU Birds Directive is likely to utilise the river Shannon for foraging and commuting. No banks providing suitable kingfisher nest sites were observed in the vicinity of the junction point.

Otter, a species listed on Annex II and Annex IV of the EU habitats directive is likely to utilise the River Shannon for foraging and commuting; however no evidence of the species was observed during dedicated surveys of the river bank.



Plate 6.1. River Shannon

6.2 ESA2 – Wet willow-alder-ash Woodland (WN6)

A small isolated stand of this habitat was recorded to the west of Drumduff Bridge and Lock 14 on the northern canal bank (Plate 6.2). The woodland was dominated by Willow (*Salix* spp.) and Alder (*Alnus glutinosa*) and the ground flora was dominated by Brambles (*Rubus fruticosus* agg.) with occasional Nettles (*Urtica dioica*). Reed canary grass (*Phalaris arundinacea*) and Meadowsweet (*Filipendula ulmaria*) were recorded closer to the banks of the canal. The woodland was bordered by a gravelled track on the landward side. This habitat was rare within the current study area.

The ground conditions were dry and firm underfoot and the soils (as described by the Soil Association (The Irish Soil Information System Project 2008-2014 available at gis.teagasc.ie and accessed on the 07/09/2015) were described as 'River (5RIV) River alluvium'.

The woodland covers and approximate area of 0.26ha. This area is below the minimum reference area detailed in the woodland assessment criteria set out in the National Survey of Native Woodlands 2003 – 2008 (Perrin et al, 2008). The habitat was subject to drainage and a drain was recorded running along the western habitat edge. The woodland does not have connectivity with woodlands in the wider area. This habitat has links to the Annex I habitat 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* [91E0]':



Plate 6.2. Wet Woodland (WN6), West of Lock 14.

6.3 ESA3 – Dry Calcareous Neutral Grassland (GS1)

Dry calcareous grassland is defined as '*unimproved or semi-improved dry grassland that may be either calcareous or neutral, but not acid*' (Fossitt, 2000). The bank and towpath along the canal were built originally using imported calcareous material. The majority of the bankside grassland habitat between the towpath and the canal wall along the main line of the canal reflects the calcareous nature of the substrate. In certain areas this habitat was moderately species-rich featuring a number of grasses common in calcareous grassland habitats such as Annual Meadow-grass (*Poa annua*), Crested Dog's-tail (*Cynosurus cristatus*), Quaking Grass (*Briza media*) and Timothy (*Phleum pratense*). Additional grasses recorded included Cock's-foot (*Dactylis glomerata*) and Yorkshire Fog (*Holcus lanatus*)

Broadleaved herbs within this habitat included Red and White Clovers (*Trifolium pratense* and *T. repens*), Ladies Bedstraw (*Galium verum*), Tufted Vetch (*Viccia cracca*), Bush Vetch (*Viccia sepium*), Bird's Foot Trefoil (*Lotus corniculatus*), Self-heal (*Prunella vulgaris*), Yarrow (*Achillea millefolium*), Knapweed (*Centurea nigra*), Eyebright (*Euphrasia* spp.), Yellow Rattle (*Rhinanthus minor*) and Ox-eye Daisy (*Leucanthemum vulgare*). Common Spotted Orchid was recorded from a species rich example of this habitat located to the west of Lock 13 (Plate 6.3).

Although this habitat type is linked to the priority Annex I habitat ‘semi-natural dry grassland and scrubland facies on calcareous substrates (Festuco-Brometea) (*important orchid sites) (6210)’, the calcareous grasslands within the study area do not correspond to the description of this Annex I habitat presented in the *Interpretation Manual of European Union Habitats* (European Commission, 2003). As per the Interpretation Manual, important orchid sites (i.e. priority habitat) should be interpreted as sites that are important on the basis of one or more of the following three criteria:

- a) the site hosts a rich suite of orchid species
- b) the site hosts an important population of at least one orchid species considered not very common on the national territory
- c) the site hosts one or several orchid species considered to be rare, very rare or exceptional on the national territory.

As per O’Neill (2013) *The Irish semi-natural grasslands survey 2007-2012*. Irish Wildlife Manuals, No. 78 “If the 6210 grassland has a population of any orchid species other than the relatively common *Dactylorhiza fuchsii* and *Dactylorhiza maculata* it should be considered for the orchid-rich priority habitat *6210. No such grasslands were recorded within the current study area and none of the habitats contained a rich suite of orchids.



Plate 6.3. Narrow strip of Dry Calcareous and Neutral Grassland (GS1) (West of Lock 13).

6.4 ESA 4 – Eutrophic Lakes (FL5)

Two Eutrophic lakes were recorded within the study area namely Lough Conway (Plate 6.4) and Lough Drumaleague. These lakes were classified as eutrophic given that the watercourses are not achieving good status in line with the requirement of the Water Framework Directive.

Extensive macrophyte and emergent vegetation growth was recorded at both lake sites. A fringing strip of Reed and large sedge swamp (FS1) was recorded around the entire lakeside margins.

The dominant macrophytes included Yellow Lilly (*Nuphar lutea*), Amphibious Bistort (*Persicaria amphibia*) and Broad-leaved Pondweed (*Potamogeton natans*). The linear fringes were dominated by Common Reed (*Phragmites australis*), Lake clubrush (*Schoenoplectus lacustris*), Bottle Sedge (*Carex rostrata*), Reed Canary-grass (*Phalaris arundinacea*) and occasional Bulrush (*Typha latifolia*) and Tussock Sedge (*Carex paniculata*). The most commonly recorded broadleaved herbs included Watermint (*Mentha aquatica*), Wild Angelica (*Angelica sylvestris*), and Meadowsweet (*Filipendula ulmaria*). Water Horsetail (*Equisetum fluviatile*), and Hemp-agrimony (*Eupatorium cannabinum*) were occasionally recorded.

The lakes are likely to be important for coarse fish. Moorhen, Mallard, Teal and Cormorant were recorded during the field visit. The fringing reed swamp provides suitable nesting habitat for a range of waterfowl. It is also likely that Otter may utilise the lacustrine and adjacent habitats. The lake habitats do not correspond to any habitat listed on Annex I of the EU habitats Directive.

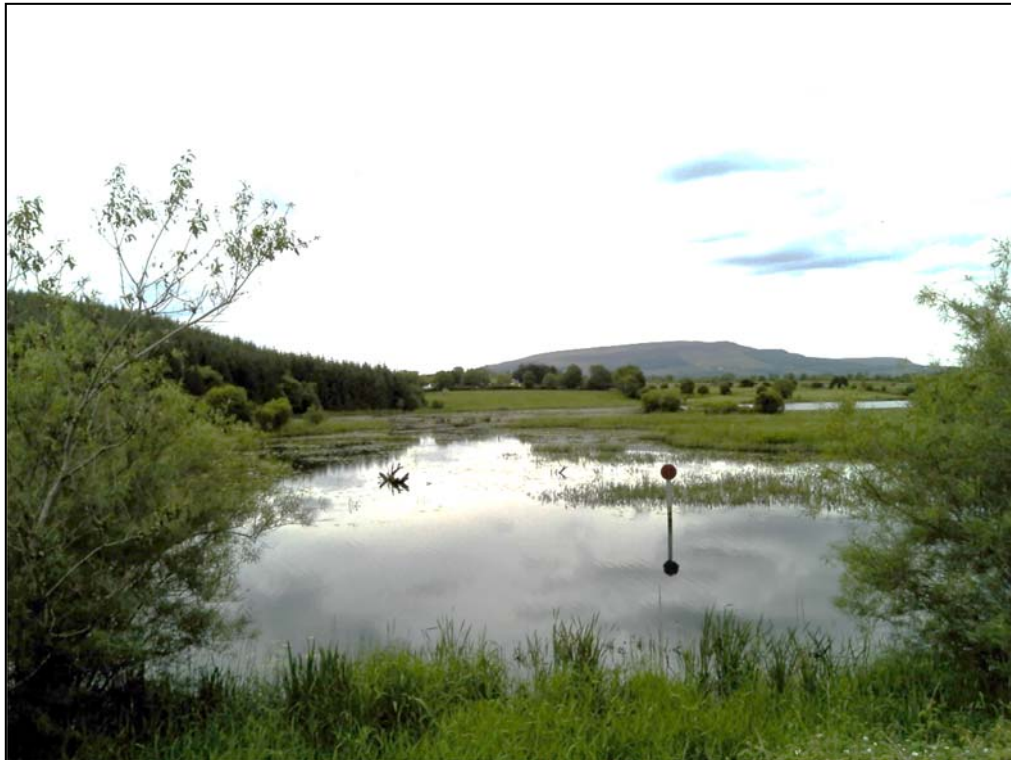


Plate 6.4 Lough Conway

6.5 ESA5 – Wet Grassland (GS4)

An area of Wet grassland which corresponded to the Annex I habitat Molinia Meadows on Calcareous or Clayey-silt Laden Soils (Molinion caeruleae [6410] was recorded to the east of Lough Conway outside but adjoining the Waterway Ireland property boundary.

The grassland was assessed as per the criteria outlined in O'Neill (2013) *The Irish semi-natural grasslands survey 2007-2012*. Irish Wildlife Manuals, No. 78.

A 2m x 2m releve assessment was conducted at Grid Reference 20386, 307181 (Plate 6.5). The grassland contained the required suite of 7+ positive indicator species including *Luzula multiflora*, *Carex flacca*, *Carex nigra*, *Ranunculus flammula*, *Potentilla erecta*, *Juncus acutiflorus/articulatus*, *Carex panicea*, *Succisa pratensis* and the high quality indicator species *Juncus conglomeratus* and *Cirsium dissectum*. While the negative indicator species *Trifolium repens* was recorded it did not surpass the threshold of 10% cover. The forb to graminoid ratio was between 40 -90 % and there was no cover of bare soil.

Occasional Orchid spikes were also recorded throughout the grassland. The site was subject to light levels of grazing. The site was revisited in September 2015 and a dedicated search for Marsh Fritillary (*Eurodryas aurinia*) larval webs was undertaken but no evidence of the species was recorded within the area surveyed.

This area was classified as an ESA given that it corresponds to an Annex I habitat and provides potential habitat for the Annex II species Marsh Fritillary.



Plate 6.5 Wet Grassland corresponding to the Annex I habitat Molinia Meadows

6.6 ESA6 – Mature Treelines

The network of mature treelines located to the east of the survey section were classified as an ESA (Plate 6.6). The treelines provide a linear landscape corridor that may be utilised by a variety of species including bats. The mature tree may provide potential bat roosting sites and are likely to provide suitable nesting habitat for a range of bird species. The treelines are likely to provide a refuge for additional fauna (e.g. Pine martin, Wood mouse, Stoat) and have a vital function in maintaining habitat connectivity in the wider area. These mature treelines are of high ecological value and should be maintained and preserved.

It is widely acknowledged that habitat fragmentation is an existing and growing cause of habitat degradation and biodiversity loss in the EU and elsewhere. The fragmentation of habitats by infrastructure developments, urbanisation and land-use changes etc. leads to habitat loss and degradation (e.g. by creating smaller habitat patches that are dominated by edge-habitats, and greatly affected by disturbance and other external influences). Small habitat patches may also be insufficient for species that require large areas of habitat (such as many higher predators) or may only be able to support small populations that are susceptible to extinction as a result of chance events. Fragmentation also restricts the natural movement of species, e.g. for foraging, breeding, migration and dispersal.



Plate 6.6. Mature treeline located to the west of Scrabbagh Bridge.

6.7 ESA7 – Kingfisher Nesting Bank

Kingfisher (*Alcedo atthis*) is a bird species listed on Annex I of the EU Birds Directive. A Kingfisher nesting site was observed to the east of the study area. The nest site was located above the sheer cliff like canal bank where there is a moderate layer of dry soil. The nest site was watched for a short period of time and Kingfisher were observed continually entering and exiting the nest site. The canal banks in this area provide ideal nesting habitat for Kingfisher given the stone-free sandy nature of the soil and the vertical bank, clear of vegetation, which has the advantage of providing protection from predators. Low overhanging branches from the treelines located on the southern canal bank provide suitable perching and foraging sites for Kingfisher.

Kingfishers breed in their first year, and pair-formation usually starts in February. If the male and the female have neighbouring territories, these may merge for the breeding season. Both birds excavate the nest burrow into the low stream bank, usually about 0.5m from the top. The nest tunnel is usually 60-90 cm long, and the 6 cm diameter is only a little wider than the bird. The nest chamber at the end has a slight depression to prevent eggs rolling out, but no material is brought to the nest. 2-3 broods are raised in quick succession, normally in the same nest.

The first clutch of 6-7 eggs is laid late in March or early in April. Both adults incubate the eggs, and the chicks hatch 19-21 days later. Each chick can eat 12-18 fish a day, and they are fed in rotation once a chick is fed, it moves to the back of the nest to digest its meal, causing the others to move forward. The chicks are normally ready to leave the nest when they are 24-25 days old, but if the fish supply is poor, they can take up to 37 days. Once out of the nest, the young are fed for only four days before the adults drive them out of the territory and start the next brood.

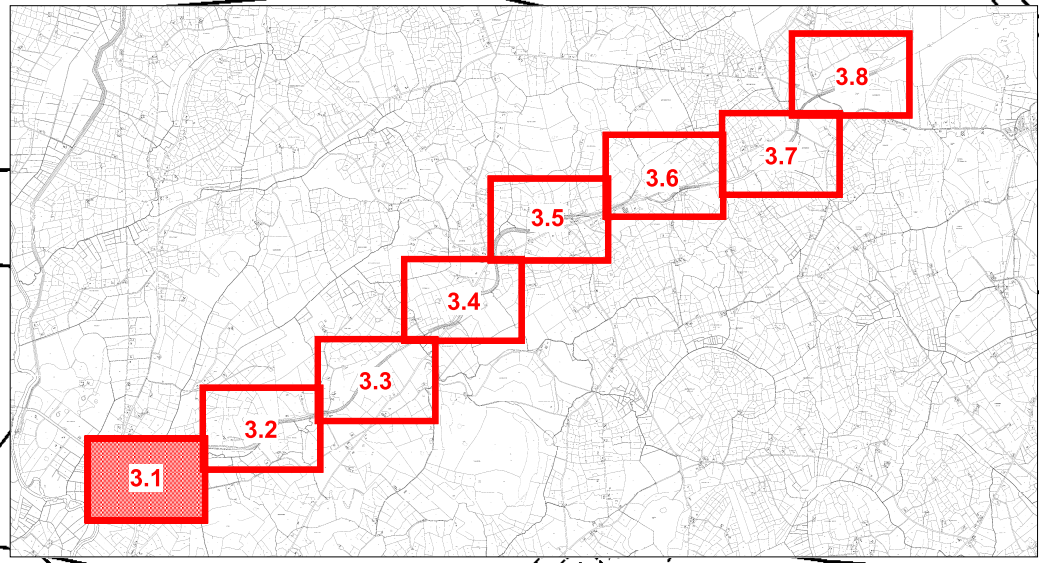
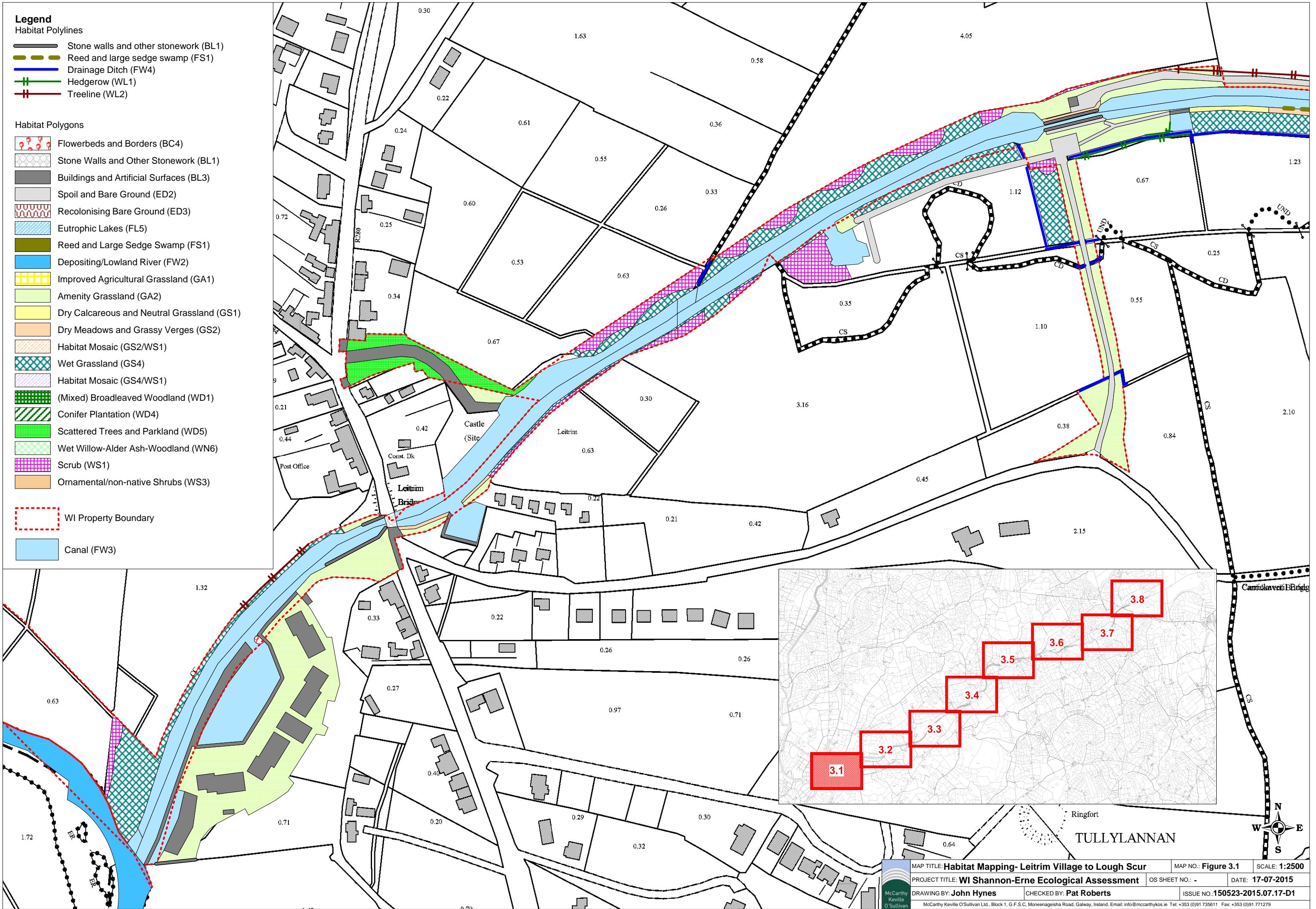
Appendix I

Habitat Mapping

- Legend**
- Habitat Polylines**
- Stone walls and other stonework (BL1)
 - Reed and large sedge swamp (FS1)
 - Drainage Ditch (FW4)
 - Hedgerow (WL1)
 - Treeline (WL2)

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 - Stone Walls and Other Stonework (BL1)
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 - Scrub (WS1)
 - Ornamental/non-native Shrubs (WS3)

- WI Property Boundary
- Canal (FW3)



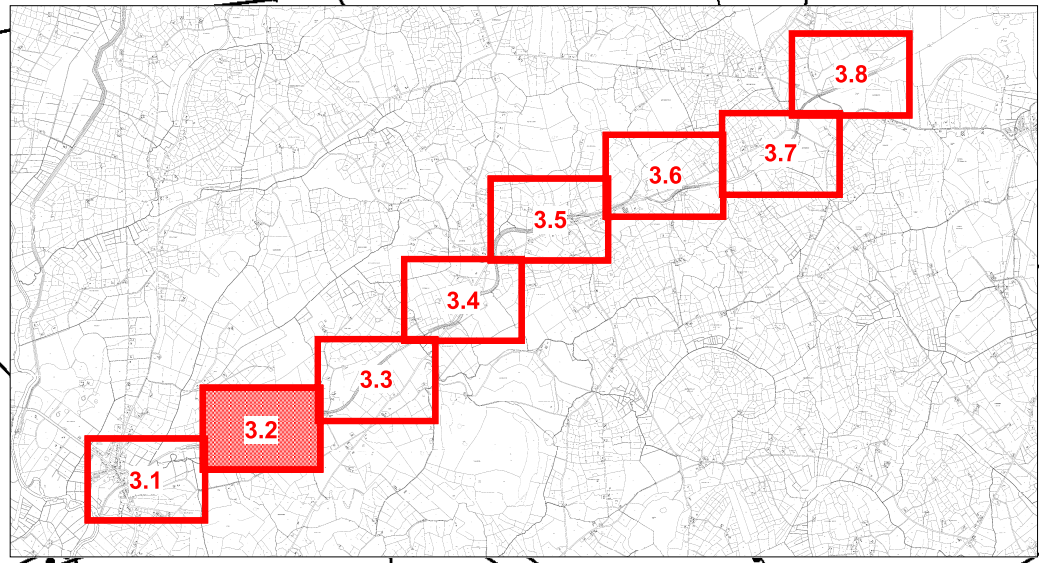
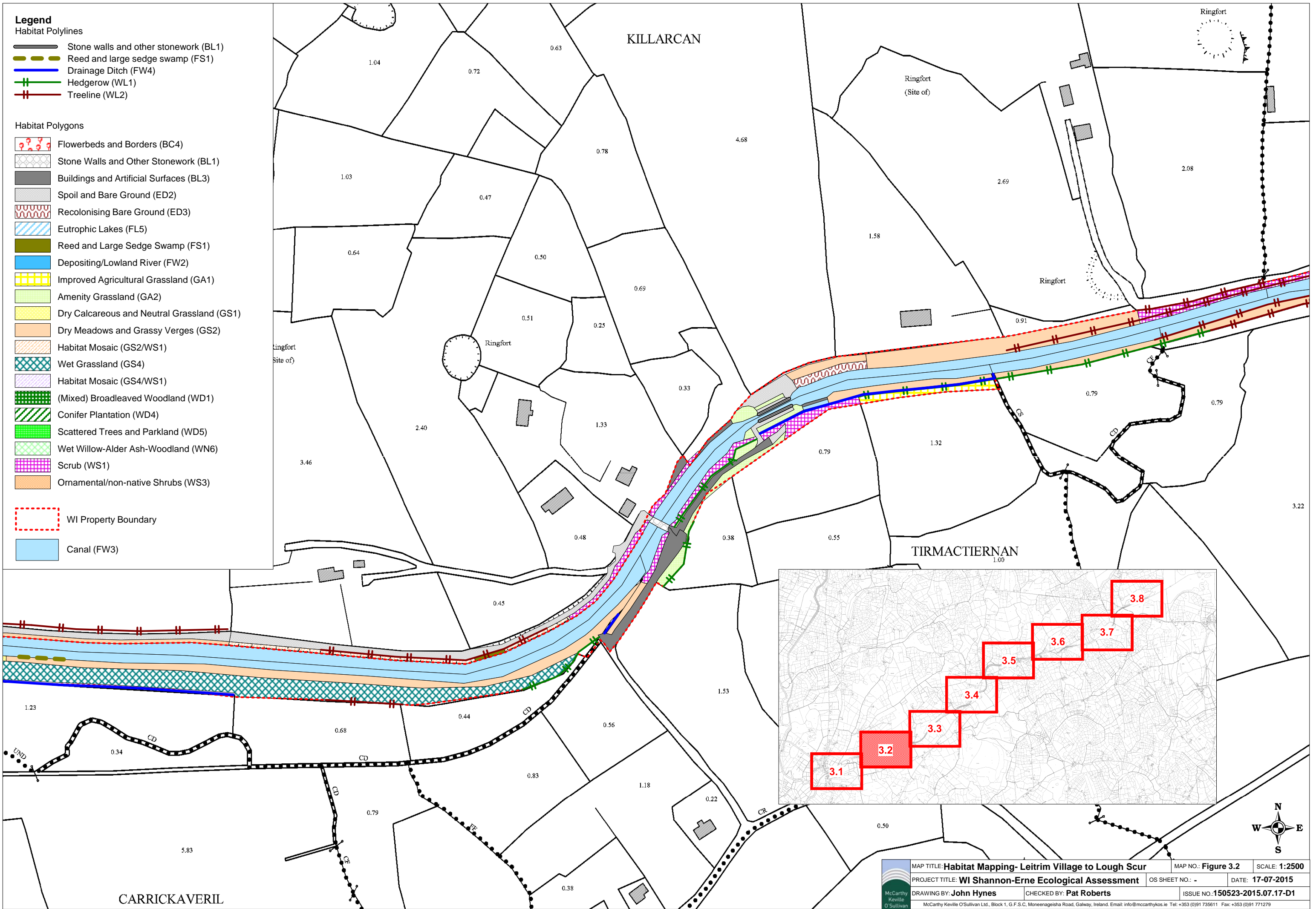
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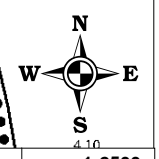
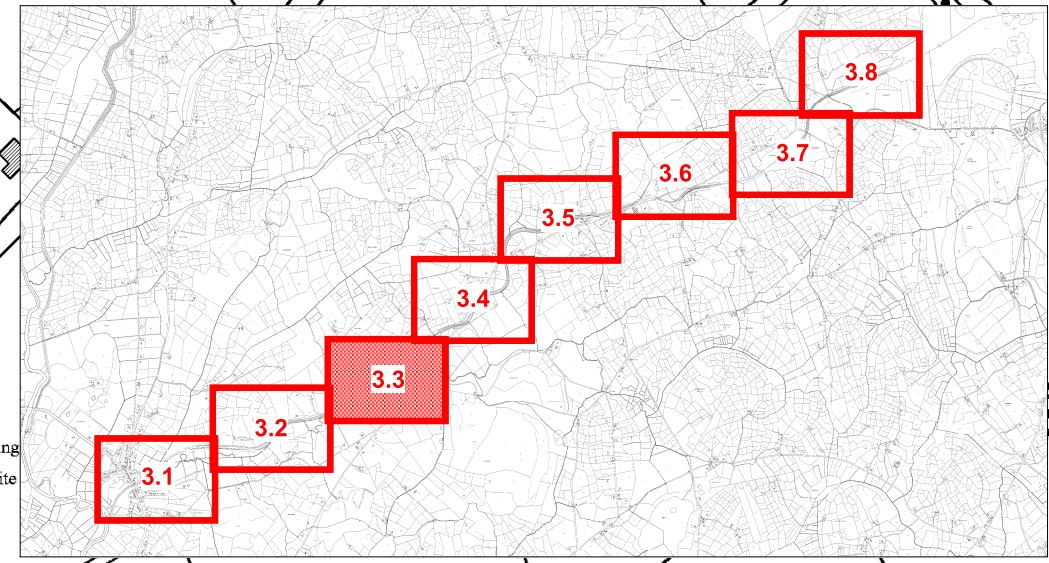
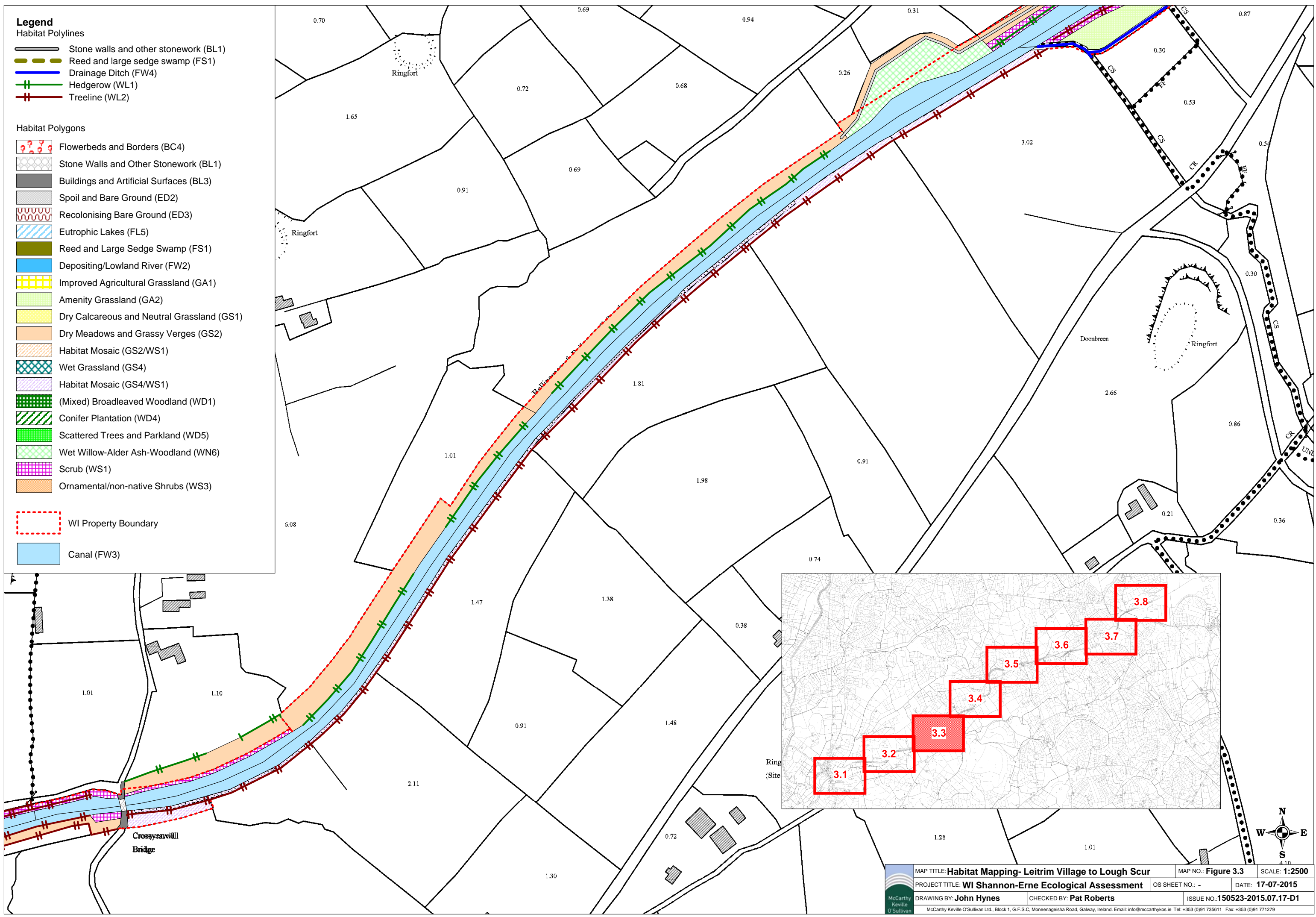
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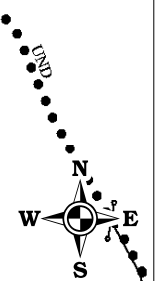
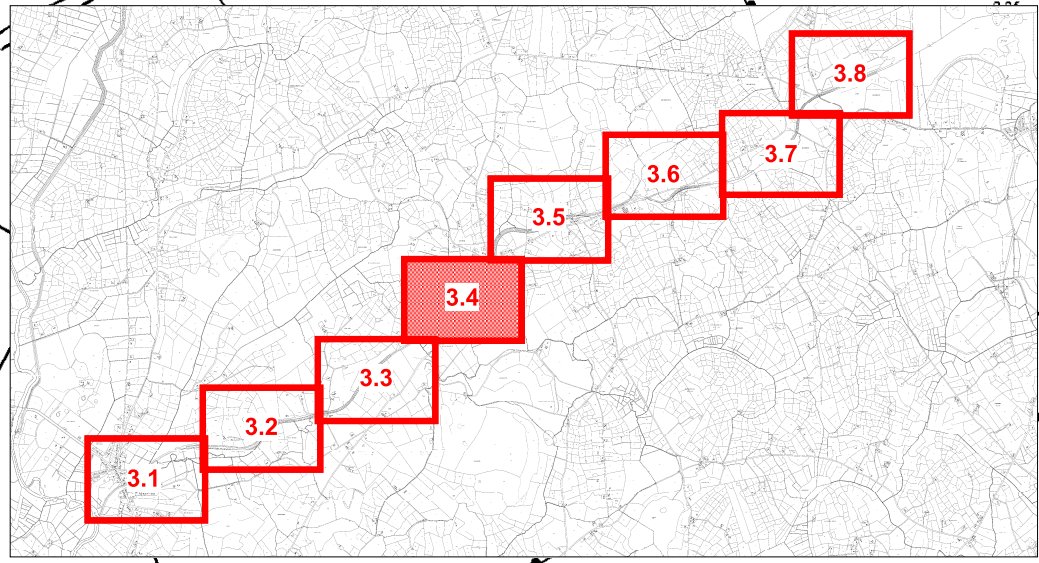
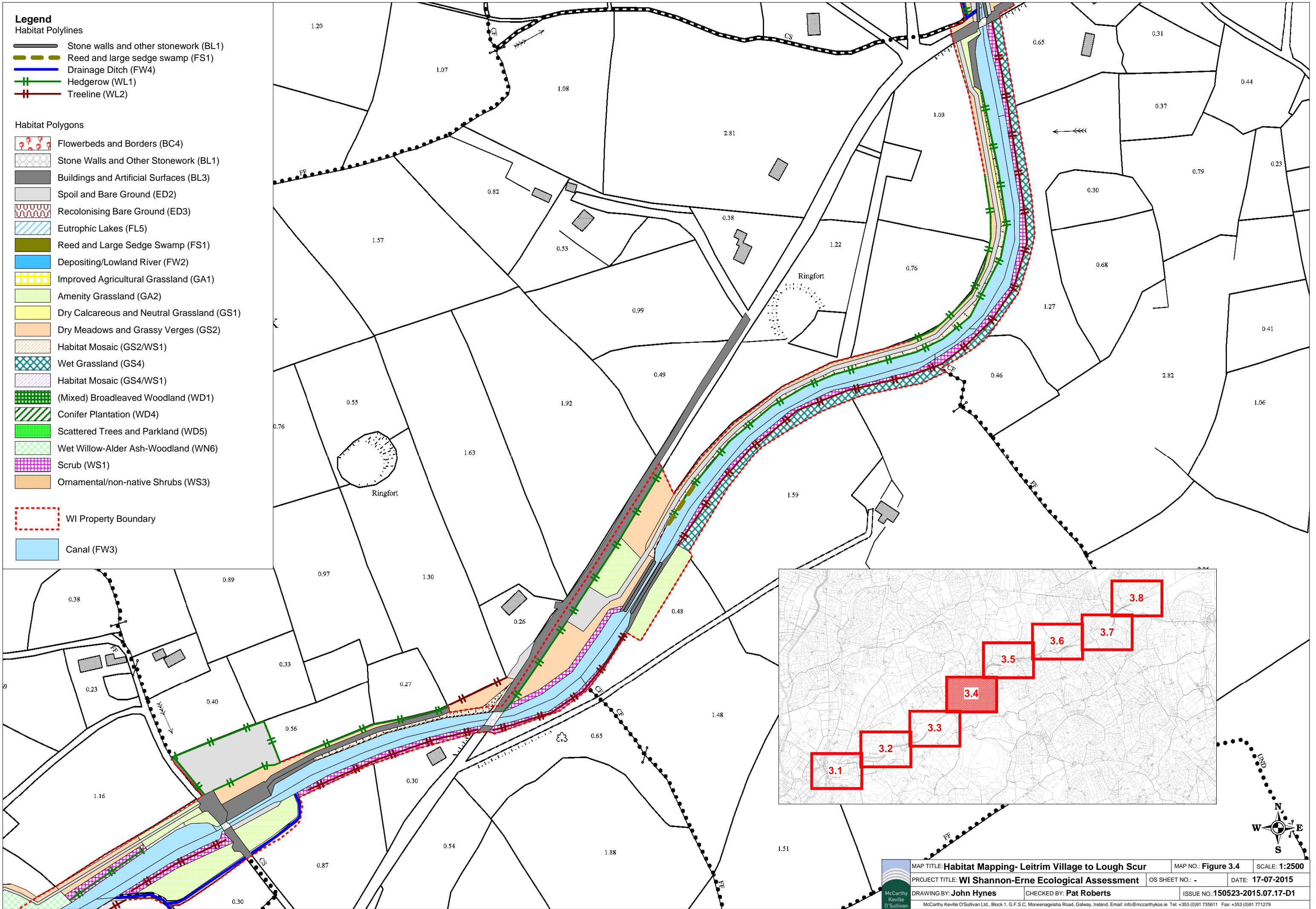
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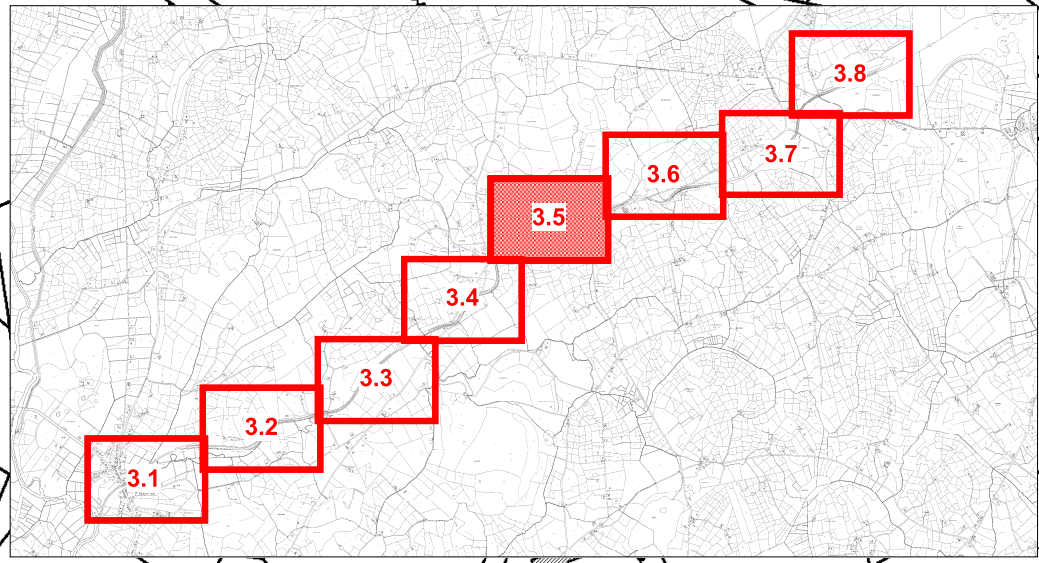
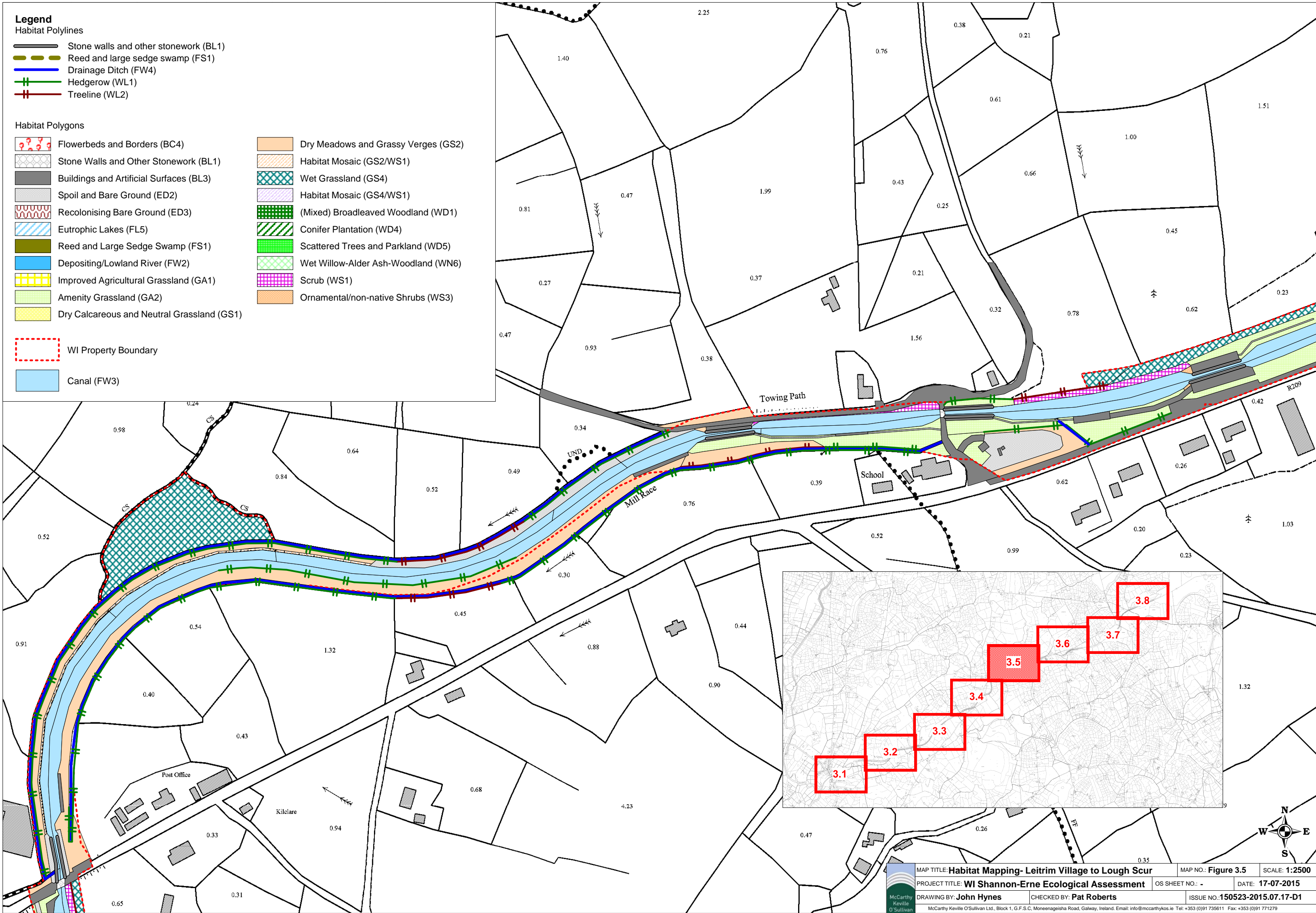


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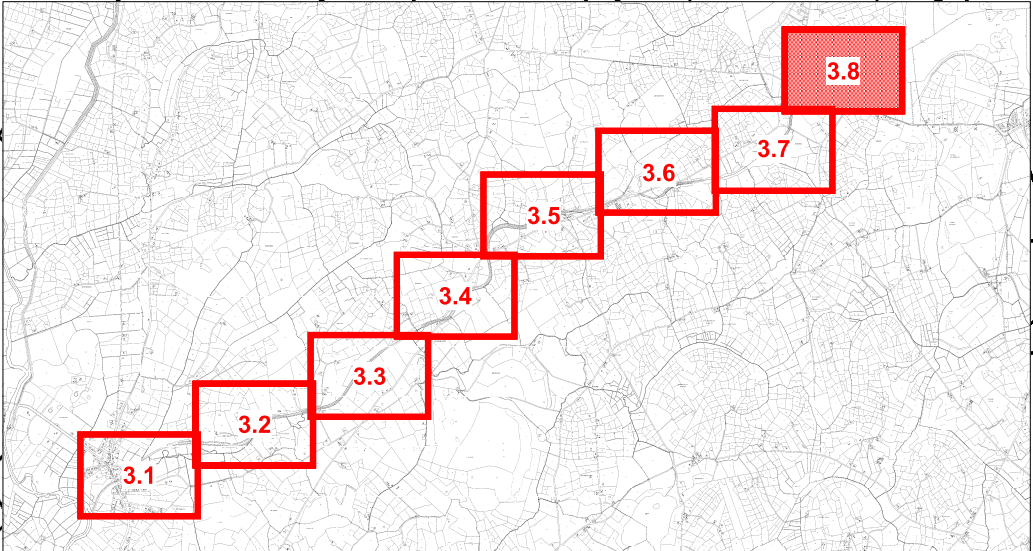
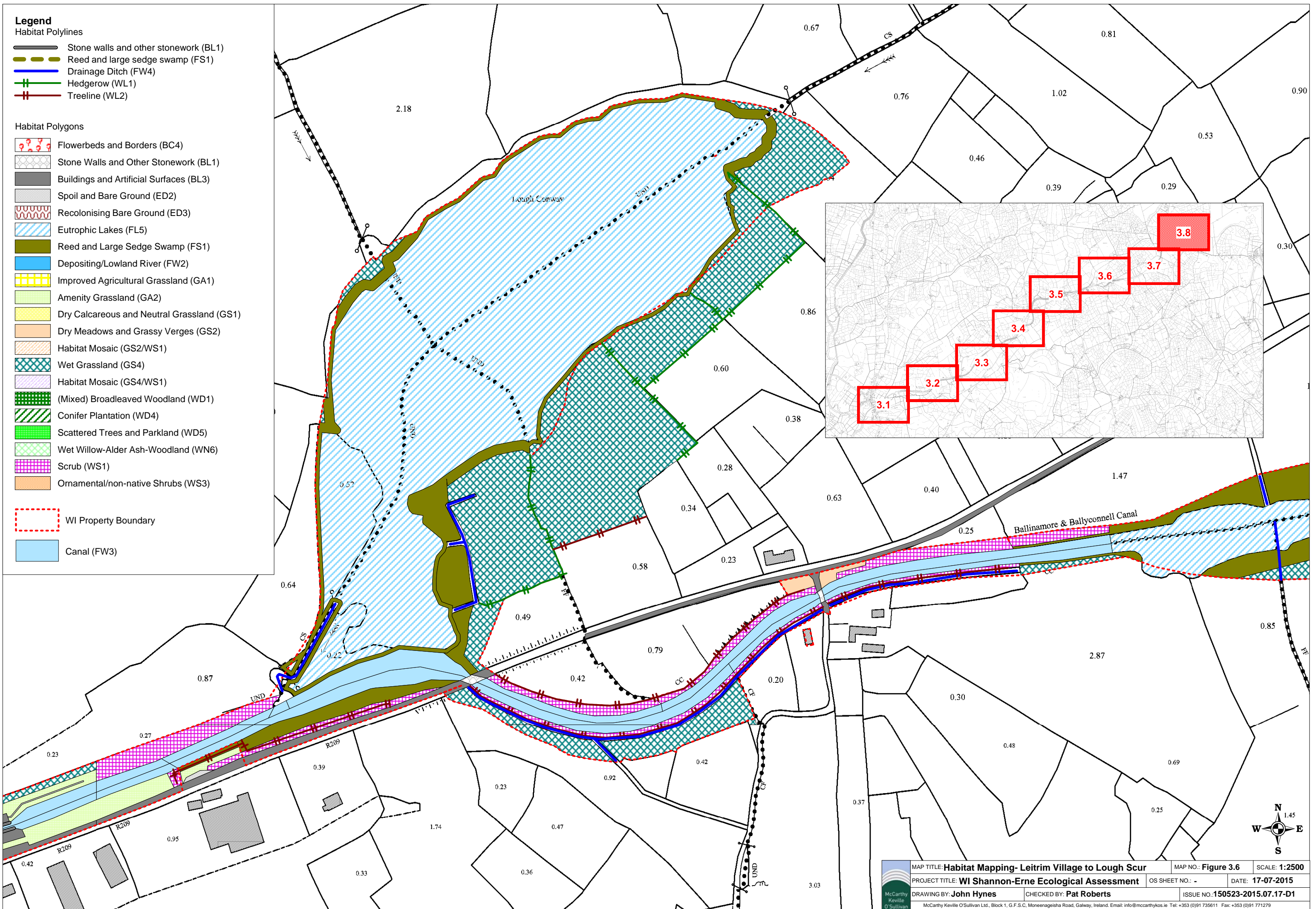
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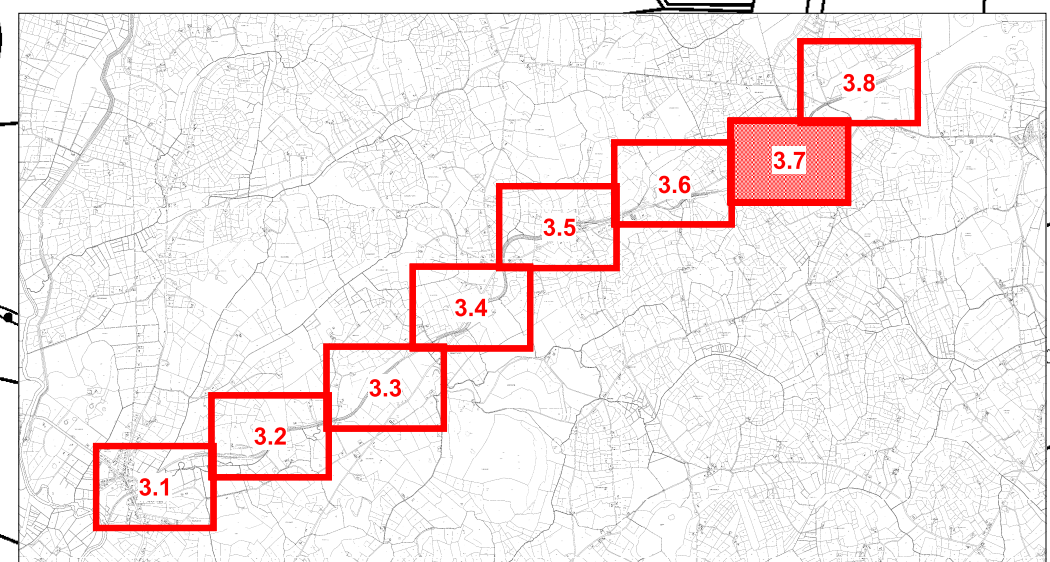
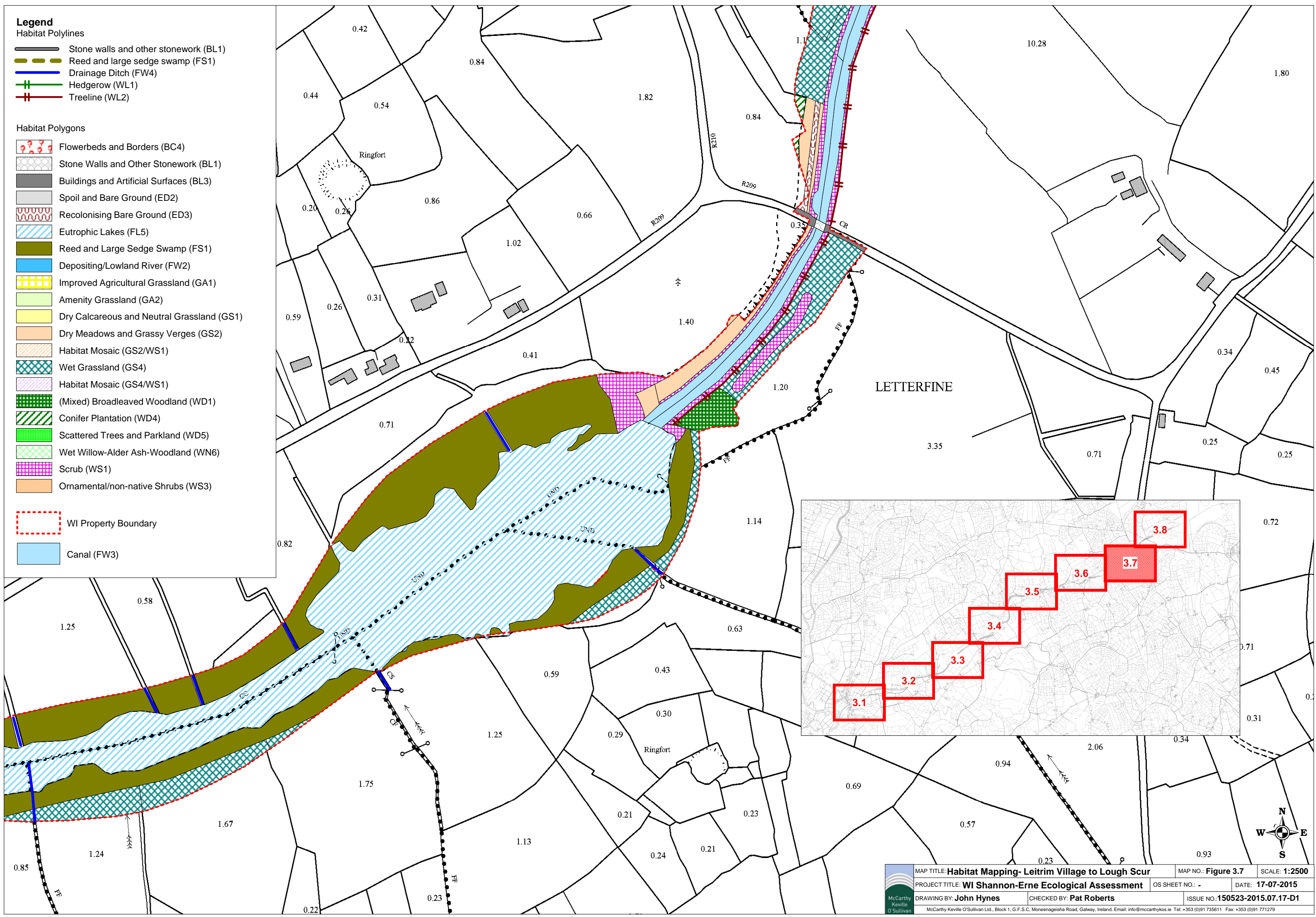


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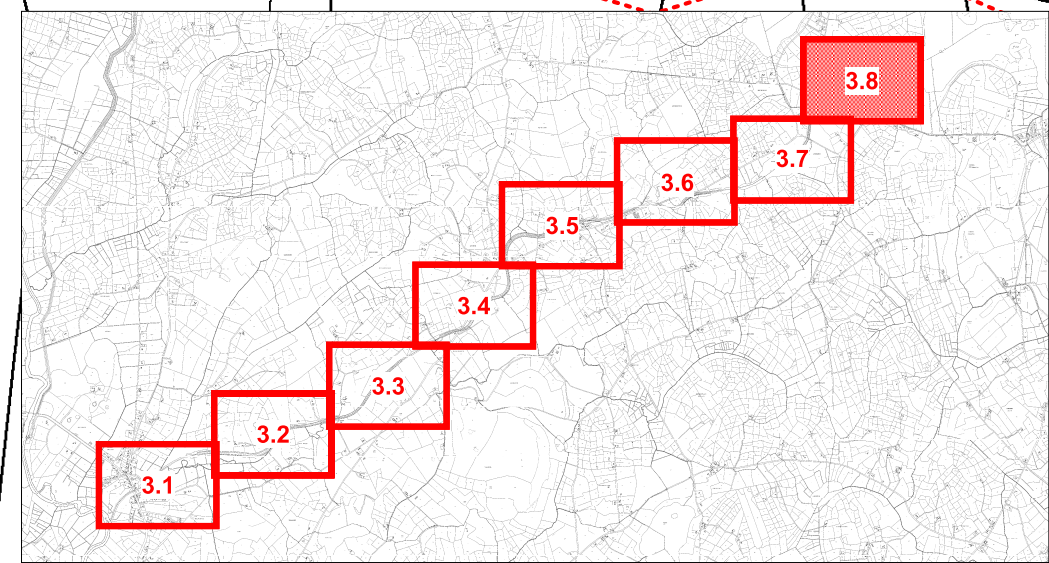
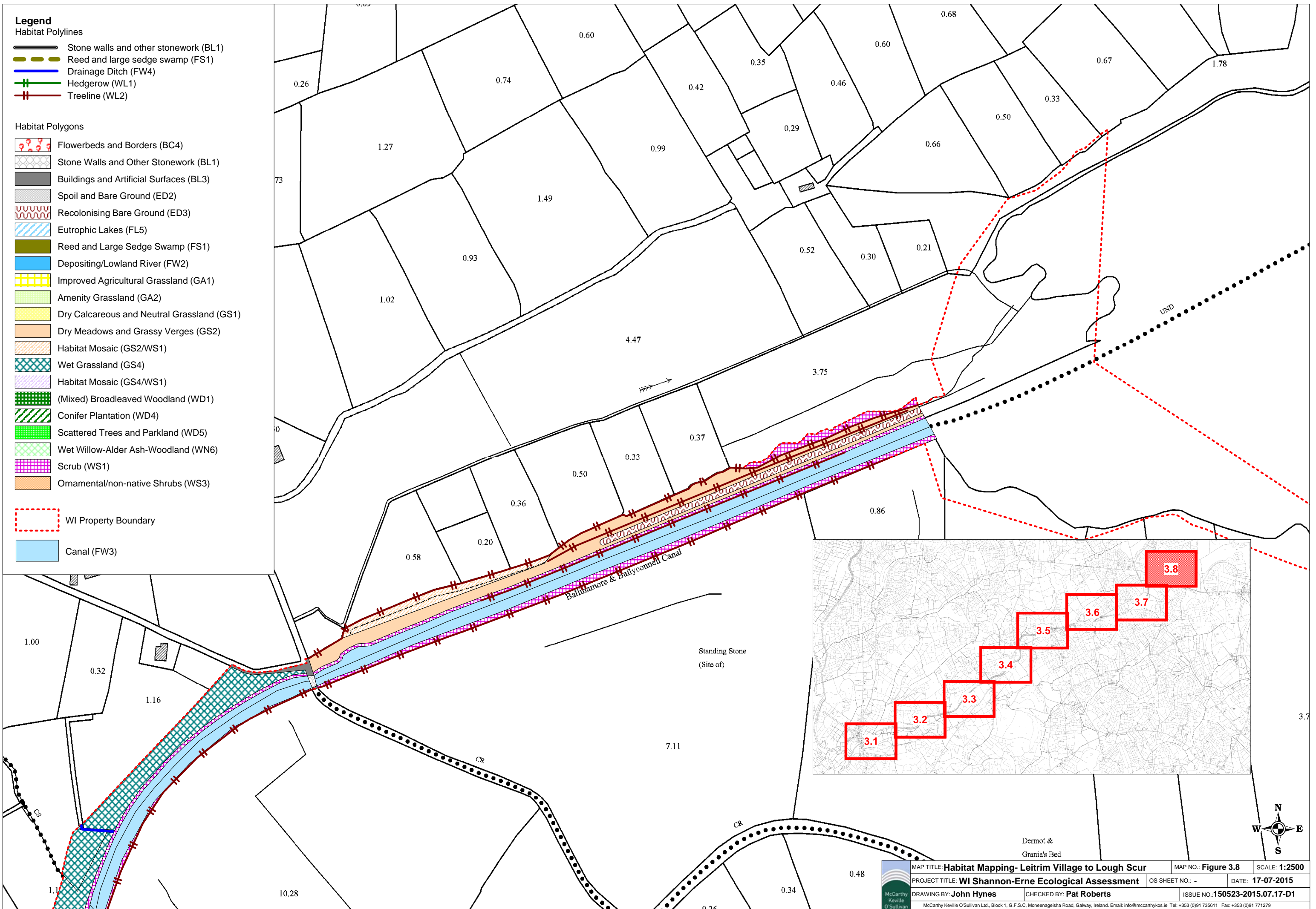
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 - (Mixed) Broadleaved Woodland (WD1)
 - Conifer Plantation (WD4)
 - Scattered Trees and Parkland (WD5)
 - Wet Willow-Alder Ash-Woodland (WN6)
 - Scrub (WS1)
 - Ornamental/non-native Shrubs (WS3)

- WI Property Boundary
- Canal (FW3)



	MAP TITLE: Habitat Mapping- Leitrim Village to Lough Scur	MAP NO.: Figure 3.8	SCALE: 1:2500
	PROJECT TITLE: WI Shannon-Erne Ecological Assessment	OS SHEET NO.: -	DATE: 17-07-2015
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Appendix II

Aquatic Sampling Results

Table IV.I Grapnel sample locations and species recorded along the Ballinamore Canal

Number	Description	Grid Ref	Species Recorded
1	River Shannon to Leitrim Bridge	195655, 304454	Yellow Water Lily (<i>Nuphar lutea</i>), Spiked Water-milfoil (<i>Myriophyllum spicatum</i>), Broad Leaved Pondweed (<i>Potamogeton natans</i>), Aquatic moss (<i>Fontanalis</i> sp.), Duckweeds (<i>Lemna</i> sp.), Nuttall's Waterweed (<i>Elodea nuttallii</i>)
2	Leitrim Bridge to Killarcan Lock (Lock 16)	195861, 304652	Yellow Water Lily (<i>Nuphar lutea</i>), Duckweeds (<i>Lemna</i> sp.), Nuttall's Waterweed (<i>Elodea nuttallii</i>) , Starwort (<i>Callitriche</i> sp.), Amphibious Bistort (<i>Persicaria amphibia</i>), Water Plantain (<i>Alisma plantago-aquatic</i>)
3	Killarcan Lock (Lock 16) to Tirmactiernan Bridge	196642, 304874	Broad Leaved Pondweed (<i>Potamogeton natans</i>)
4	Tirmactiernan Bridge to Tirmactiernan Lock (15)	197026, 305056	No macrophytes recorded from sample station.
5	Tirmactiernan Lock (15)- Crossycarwill Bridge	197510, 305173	Nuttall's Waterweed (<i>Elodea nuttallii</i>)
6	Crossycarwill Bridge to Drumduff Bridge and Lock 14	197799, 305400	No macrophytes recorded from sample station.
7	Drumduff Bridge and Lock 14 to Newbrook Bridge	198442, 305905	No macrophytes recorded from sample station.
8	Newbrook Bridge to Newbrook Lock (Lock 13)	198673, 306001	No macrophytes recorded from sample station.
9	Newbrook Lock (Lock 13) to Kilclarebeg Bridge/Lock 12	198981, 306450	No macrophytes recorded from sample station.
10	Kilclarebeg Bridge/Lock 12 to Kilclare Lower Lock (Lock 11)	199056, 306728	No macrophytes recorded from sample station.

Number	Description	Grid Ref	Species Recorded
11	Kilclare Lower Lock (Lock 11) to Drumruekill Bridge & Kilclare Middle Lock (Lock 10)	199615, 306863	No macrophytes recorded from sample station.
12	Drumruekill Bridge & Kilclare Middle Lock (Lock 10) to Kilclare Upper Lock (Lock 9) and Footbridge	199754, 306874	Yellow Water Lily (<i>Nuphar lutea</i>), Branched Bur-reed (<i>Sparganium erectum</i>), Unbranched Bur-reed (<i>Sparganium emersum</i>), Nuttall's Waterweed (<i>Elodea nuttallii</i>) , Water Plantain (<i>Alisma plantago-aquatic</i>)
13	Kilclare Upper Lock (Lock 9) and Footbridge to Lough Conway Bridge	200177, 307012	Yellow Water Lily (<i>Nuphar lutea</i>), Marestalk (<i>Hippuris vulgaris</i>), Broad Leaved Pondweed (<i>Potamogeton natans</i>)
14	Lough Conway Bridge to Scrabbagh Bridge	Sheer Banks. No grapnel survey.	–
15	Scrabbagh Bridge to Letterfine Bridge	Sheer Banks. No grapnel survey.	–
16	Letterfine Bridge to Lough Scur Bridge	Sheer Banks. No grapnel survey	–
17	Lough Scur Bridge to Lough Scur	201957, 307995	Yellow Water Lily (<i>Nuphar lutea</i>),