

Ecological Survey & Habitat Mapping

**Shannon-Erne Ecological Assessment:
Survey of the Shannon Erne Waterway from
Garadice Lough to Ballyconnell,
Co Leitrim & Cavan.**



Planning & Environmental Consultants

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Prepared By: McCarthy Keville O’Sullivan Ltd.
Planning & Environmental Consultants
Block 1, G.F.S.C.
Moneenageisha Road, Galway



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1 INTRODUCTION

1.1 General Introduction

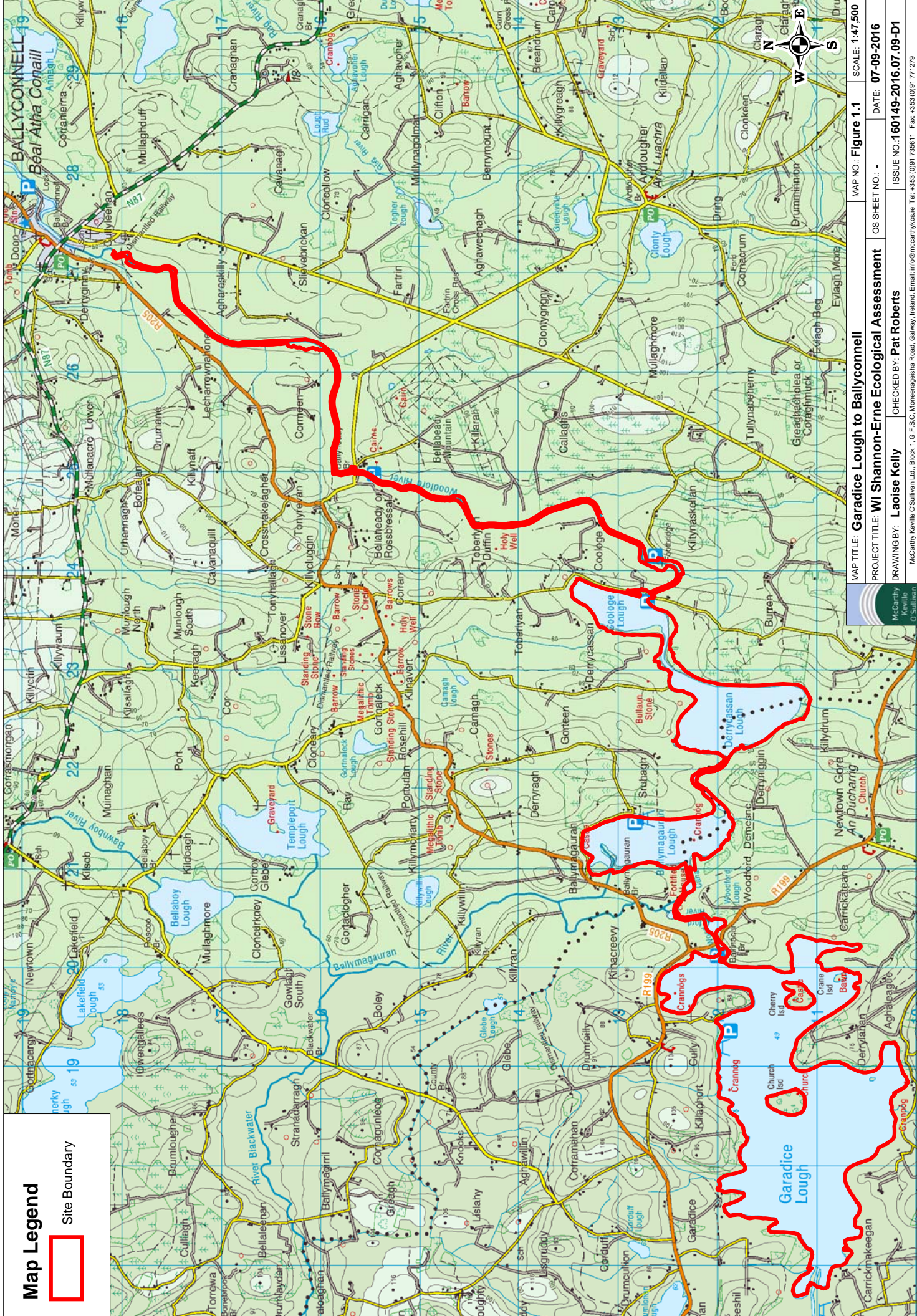
Waterways Ireland have appointed McCarthy Keville O’Sullivan (McCarthyKOS) to undertake an Ecological Survey of approximately 18km of the Shannon Erne Waterway from Garadice Lough to Ballyconnell. Waterways Ireland wish to enhance their knowledge of the local flora fauna and habitats along this section of the waterway.

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 6 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 Garadice Lough, while section 6 is the easternmost section ending at a private marina in Ballyconnell.

An overview of the site between Garadice Lough and Ballyconnell is shown in Figure 1.1. Figure 1.1a and Figure 1.1b show the location of the study area, and the 6 section divisions. The Habitat Mapping Figures are provided as **Appendix I**.



Map Legend

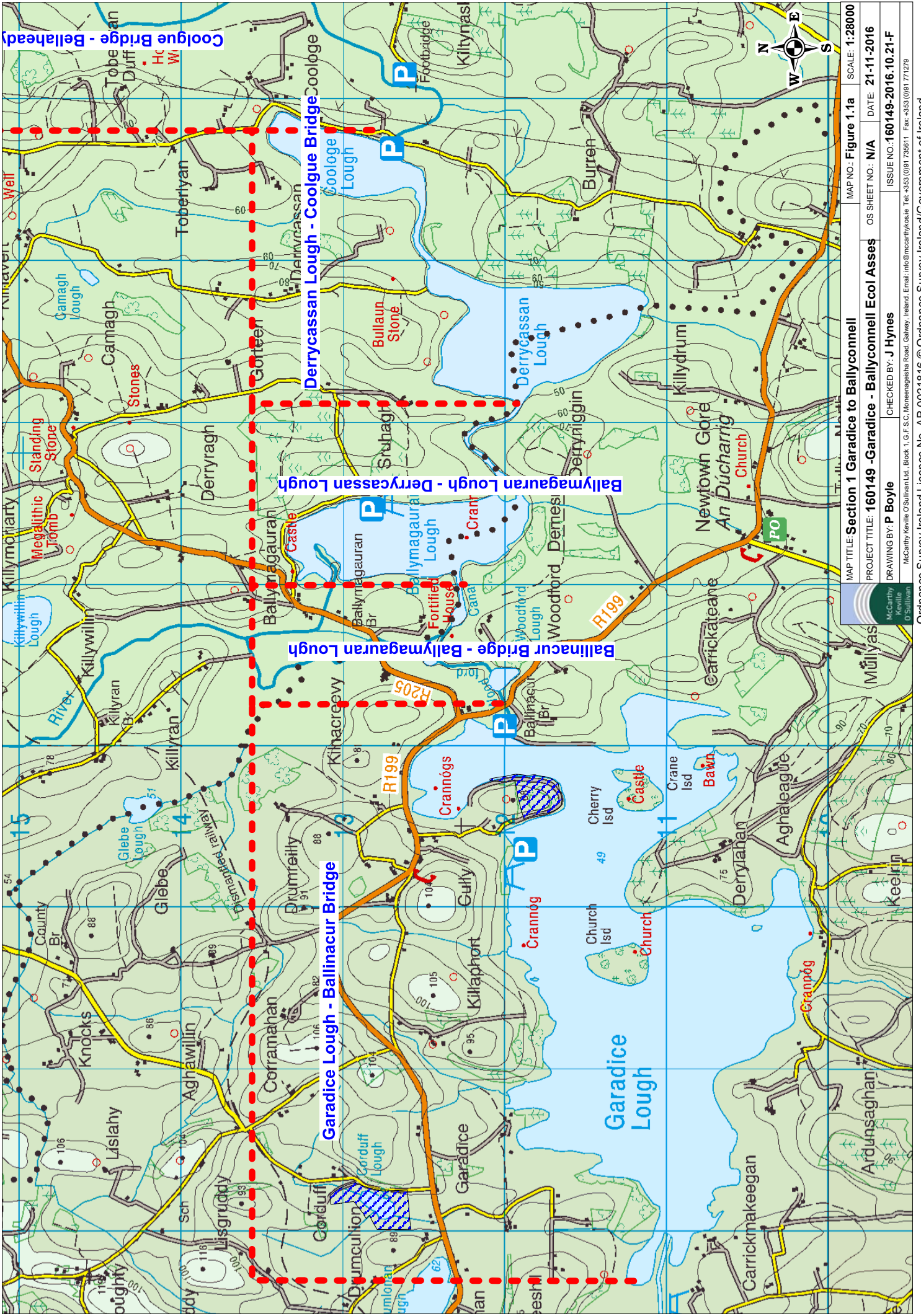


Site Boundary

MAP NO.: Figure 1.1	SCALE: 1:47,500
PROJECT TITLE: Garadice Lough to Ballyconnell	OS SHEET NO.: -
DRAWING BY: Laoise Kelly	CHECKED BY: Pat Roberts
<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Monaghan Road, Galway, Ireland. Email: info@mcCarthyKeville.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279</small>	



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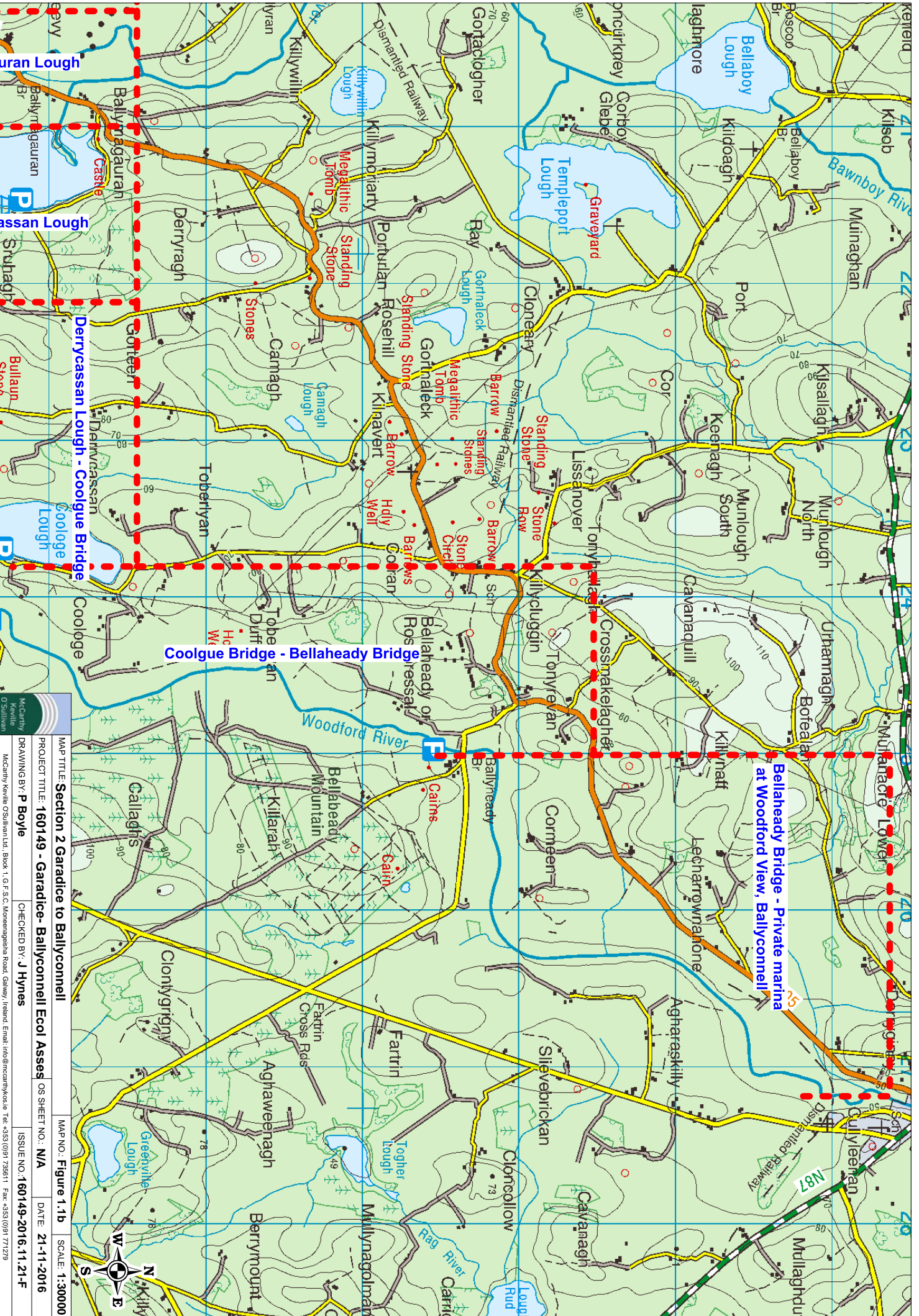


MAP NO: Figure 1.1a	SCALE: 1:28000
PROJECT TITLE: Section 1 Garadice to Ballyconnell	OS SHEET NO: N/A
DRAWING BY: P Boyle	CHECKED BY: J Hynes
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McCarthy Keville O'Sullivan Ltd, Block 1, G.F.S.C. Monaghan Road, Galway, Ireland. Email: info@mcCarthyKeville.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279

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		MAP TITLE: Section 2 Gardagee to Ballyconnell		MAP NO: Figure 1.1b		SCALE: 1:30000	
PROJECT TITLE: 160149 - Gardagee- Ballyconnell Ecol Asses		OS SHEET NO: NA		DATE: 21-11-2016			
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<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S. Mooreganish Road, Galway, Ireland. Email: info@mcCarthyKeville.com Tel: +353 (0)91 728611 Fax: +353 (0)91 772729</small>							

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Table 1.1 Breakdown of the sections of the study area

Number	Description	Habitat Map Figures
1	Garadice Lough – Ballinacur Bridge	3.1 – 3.12
2	Ballinacur Bridge – Ballymagauran Lough	3.12 – 3.13
3	Ballymagauran Lough – Derrycassan Lough	3.13 – 3.17
4	Derrycassan Lough – Coolgue Bridge	3.17 – 3.19
5	Coolgue Bridge – Bellaheady Bridge	3.19 – 3.22
6	Bellaheady Bridge – Private marina at Woodford View, Ballyconnell	3.22 – 3.66

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.

A multidisciplinary ecological walkover and boat survey of the study area was conducted on the 11th, 12th, 18th and 19th of August 2016. The survey was undertaken by John Hynes B.Sc. (Env.) M.Sc (Eco) GradCIEEM, with assistance from Dr. Pamela Boyle B.Sc. (Env.) M.Sc (Eco), PhD and Laoise Kelly B.Sc. (Env.). The multidisciplinary survey was designed to detect the presence, or likely presence, of a range of protected habitats and species. Given that a large portion of the study area is occupied by lacustrine habitats, a boat was provided by Waterways Ireland to facilitate the study.

Habitats were identified in accordance with the Heritage Council’s ‘*Guide to Habitats in Ireland*’ (Fossitt, 2000) which classifies habitats based on the vegetation present and management history. Habitat mapping was undertaken with regard to guidance set out in ‘*Best Practice Guidance for Habitat Survey and Mapping*’ (Smith *et al.*, 2011). The site was assessed and the habitats within the Waterways Ireland property boundary were classified and mapped in accordance with these documents. Plant nomenclature for vascular plants follows ‘*New Flora of the British Isles*’ (Stace, 2010), while mosses and liverworts nomenclature follows ‘*Mosses and Liverworts of Britain and Ireland - a field guide*’ (British Bryological Society, 2010).

An Otter survey was conducted as per NRA (2009) 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 signs within study area. This involved a search for all Otter signs e.g. spraints, prints, slides, trails, couches and holts. In addition to the watercourses, a 10m riparian buffer was considered to comprise part of the Otter habitat (NPWS 2009. *Threat Response Plan: Otter* (2009-2011).

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.

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 river.

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.

During the multi-disciplinary walkover survey the presence of non-native invasive species was recorded. The survey focused on the identification of invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2015).

The ecological survey was undertaken during the optimal time of year to undertake a habitat and flora survey (Smith *et. al* 2011). A full and comprehensive survey was achieved.

2 DESK STUDY

2.1 Designated Areas

2.1.1 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 animal and plant species and over 200 "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'.

Habitats Directive/Special Areas of Conservation

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, Atlantic Salmon, and Killarney Fern) whose conservation also requires the designation of **SAC**. **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.

Species can be listed in more than one Annex, as is the case with Otter and Lesser Horseshoe Bat which are listed on both **Annex II** and **Annex IV**.

Birds Directive/Special Protection Areas

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**).

2.1.2 Nationally Designated Sites

Natural Heritage Areas (NHAs) are sites that are designated for the protection of flora, fauna, habitats and geological sites of national importance. Management of NHAs is guided by planning policy and the Wildlife Acts, 1976-2012.

Proposed NHAs (pNHAs) were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. These sites are of significance for wildlife and habitats.

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, including their distance from the study area, are provided in Table 2.1 below.

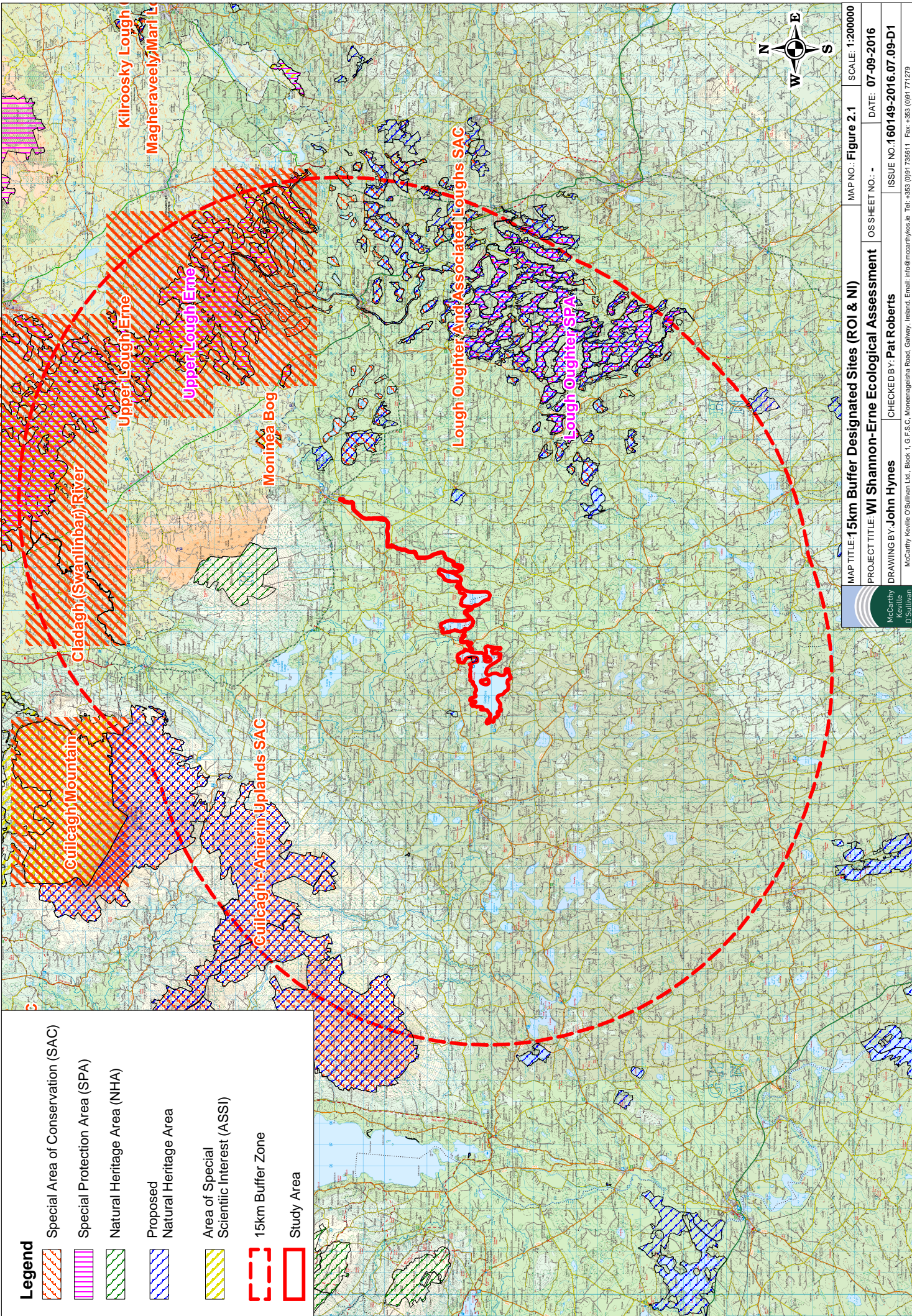
Figure 2.1 shows the site location in relation to the designated sites within 15km radius.

Table 2.1 Details of designated sites within a 15 km radius of the target site

Designated Site Name	Distance from study area (km)
Special Areas of Conservation (SAC)	
Lough Oughter And Associated Loughs SAC (000007)	1.6km
Moninea Bog (UK0030212) [NI]	3.8km
Upper Lough Erne (UK0016614) [NI]	5.8km
Cuilcagh - Anierin Uplands SAC (000584)	9.6km
Cladagh (Swanlinbar) Rive (UK0030116) [NI]	11.5km
Special Protected Areas (SPA)	
Upper Lough Erne (UK9020071) [NI]	5.8km
Lough Oughter SPA (004049)	7.4km
Natural Heritage Areas (NHA)	
Slieve Rushen Bog NHA (000009)	3.7km
Proposed Natural Heritage Area (pNHA)	
Garadice Lough Wood (001413)	0km
Corduff Lough (001407)	0.7km
Annagh Lough (Ballyconnell) (000974)	1.4km
Lough Oughter And Associated Loughs (000007)	1.6km
Clonty Lough (000977)	2.3km
Glasshouse Lake (000983)	5.6km
Cromlin Bridge Wood (001409)	7km
Cuilcagh - Anierin Uplands (000584)	9.5km
Blackrock's Cross (000976)	11.6km
Bruse Hill (000002)	14.8km
Areas of Special Scientific Interest (ASSI)	
There are no ASSIs located within 15km of the study area.	

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 (H11 & H21), during the 1987-1999 atlas survey. One species was recorded from hectad H21 that is listed in the Flora Protection Order 2015, Small Cudweed (*Filago minima*). One species was recorded from hectad H11 that is



Legend

	Special Area of Conservation (SAC)
	Special Protection Area (SPA)
	Natural Heritage Area (NHA)
	Proposed Natural Heritage Area
	Area of Special Scientific Interest (ASSI)
	15km Buffer Zone
	Study Area

MAP NO.: Figure 2.1	SCALE: 1:200000
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DRAWING BY: John Hynes	CHECKED BY: Pat Roberts
McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Monaghan/Sligo Road, Galway, Ireland. Email: info@mccarthys.ie Tel: +353 (0)91 775611 Fax: +353 (0)91 771279	



MAP TITLE: 15km Buffer Designated Sites (ROI & NI)	MAP NO.: Figure 2.1	SCALE: 1:200000
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listed as *vulnerable* under the Irish Red Data Book List; Green-flowered Helleborine (*Epipactis phyllanthes*). No Annex II species were recorded.

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 (H11 &21), eleven 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. Of the species recorded in the relevant hectads, three are listed under Annex I. Birds 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.

Table 2.2 Bird species recorded in hectads H10 and H11 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
		H11	H21	H11	H21		
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	-	Poss-breed	-		-	Yes
Curlew	<i>Numenius arquata</i>	-		-		-	Yes
Goldeneye	<i>Bucephala clangula</i>	Non-breed		Yes	Yes	-	Yes
Grey Wagtail	<i>Motacilla cinerea</i>	Prob-breed	Conf-breed	-	Yes	-	Yes
Lapwing	<i>Vanellus vanellus</i>	-	Prob-breed	Yes	Yes	-	Yes
Meadow Pipit	<i>Anthus pratensis</i>	Poss-breed	Prob-breed	Yes	Yes	-	Yes
Tufted Duck	<i>Aythya fuligula</i>	-		Yes		-	Yes
Woodcock	<i>Scolopax rusticola</i>	Poss-breed	Poss-breed	Yes	Yes	-	Yes
Kingfisher	<i>Alcedo atthis</i>	Poss-breed		-		Yes	-
Whooper Swan	<i>Cygnus cygnus</i>	-	--	Yes		Yes	-
Hen Harrier	<i>Circus cyaneus</i>	Prob-breed	-		-	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 (EPA & WFD web-mappers)

The EPA Envision web-mapper was consulted regarding the water quality status of the Woodford River. There are no current EPA Surface water quality assessment points on the Shannon-Erne waterway between Garadice Lough and Ballyconnell. Prior to 2004 there were three water quality assessment points on the Woodford River Between Garadice Lough and Ballyconnell: Point 1) Bridge u/s Woodford river confluence, Point 2) Woodford (Cavan) – Bellaheady Br. and Point 3) Woodford (Cavan) – Br d/s Coologue Lough. The water quality at locations 1 and 2 was assigned *Good Status Q4*. The surface water quality at point 3 was assigned *Poor Status Q2-3*.

River Basin Management Plans (RBMPs) have been published for all River Basin Districts in Ireland in accordance with the requirements of the Water Framework Directive. The online WaterMaps viewer (<http://watermaps.wfdireland.ie>) is an integral part of the River Basin Management Plan and provides access to information at individual waterbody level and at Water Management Unit level for all the River Basin Districts in Ireland. Waterbodies can relate to surface waters (these include rivers, lakes, estuaries [transitional waters], and coastal waters), or to groundwaters.

The Woodford system is classified as River Waterbody and it lies within the Water Management Unit IE_NE_ErneMid. The waterbody codes in the study area are IE_Xb_36_east_5 and IE_WN_36_541. In accordance with the requirement of the Water Framework Directive the status of a waterbody is defined by its chemical status and its ecological status, whichever is worse. Waters are ranked in one of 5 status classes:

High, Good, Moderate, Poor, Bad. The overall status of the Woodford waterbodies within the study area is “*High*” based on their overall ecological status.

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 relevant hectads H11 and H21 in which the study area falls. 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 recorded within the study area that are protected under Annex I of the Birds Directive, under Annex II, IV or V of the Habitats Directive, under the Flora Protection Order 2015 or that are red listed in published national red lists.

Table 2.3 Records for rare and protected species, NPWS

Common Name	Scientific Name	Status	Location
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	BOCCI Red List, WA 1976/2000	H11
Curlew	<i>Numenius arquata</i>	BoCCI Red List, WA 1976/2000	H21, H11
Pochard	<i>Aythya ferina</i>	BOCCI Red List, WA 1976/2000	H11
Tufted Duck	<i>Aythya fuligula</i>	BOCCI Red List, WA 1976/2000	H11
Green-flowered Helleborine	<i>Epipactis phyllanthes</i>	Irish Red Data Book	H11
Kingfisher	<i>Alcedo atthis</i>	Annex I EU BD, WA 1976/2000	H21
Lapwing	<i>Vanellus vanellus</i>	BoCCI Red List BoCCI, WA 1976/2000	H21, H11
Whooper Swan	<i>Cygnus cygnus</i>	Annex I EU BD, WA 1976/2000	H21, H11
Common Frog	<i>Rana temporaria</i>	Annex V EU HD, WA 1976/2000	H21, H11
White-clawed Crayfish	<i>Austropotamobius pallipes</i>	Annex II, Annex V EU HD, WA 1976/2000	H21, H11
Brown Long-eared Bat	<i>Plecotus auritus</i>	Annex IV EU HD, WA 1976/2000	H21
Red Deer	<i>Cervus elaphus</i>	WA 1976/2000	H11
Otter	<i>Lutra lutra</i>	Annex II, Annex IV EU HD, WA 1976/2000	H21, H11
Pine Marten	<i>Martes martes</i>	Annex V EU HD, WA 1976/2000	H21, H11
Meadow Crane's-bill	<i>Geranium pratense</i>	Vulnerable PRDB	H21
Irish Hare	<i>Lepus timidus subsp. hibernicus</i>	WA 1976/2000 Annex V	H11
European Hedgehog	<i>Erinaceus europaeus</i>	WA 1976/2000	H11
Badger	<i>Meles meles</i>	WA 1976/2000	H11
Stoat	<i>Mustela erminea hibernica</i>	WA 1976/2000	H11
Smooth Newt	<i>Lissotriton vulgaris</i>	WA 1976/2000	H11

2.7 Biodiversity Ireland Database

The National Biodiversity Database was accessed on 10th October 2016 and the following information was obtained. Table 2.4 lists designated and protected species and species of conservation concern recorded within the hectads which overlap with the current study area.

Table 2.4 National Biodiversity Database Records

Common Name	Scientific Name	Status	Location
Corn Crake	<i>Crex crex</i>	Annex I EU BD, BoCCI Red List, WA 1976/2000	H21, H11
European Golden Plover	<i>Pluvialis apricaria</i>	Annex I EU BD, BoCCI Red List, WA 1976/2000	H21
Common Tern	<i>Sterna hirundo</i>	Annex I EU BD, WA 1976/2000	H21, H11
Kingfisher	<i>Alcedo atthis</i>	Annex I EU BD, WA 1976/2000	H21
Merlin	<i>Falco columbarius</i>	Annex I EU BD, WA 1976/2000	H21, H11
Whooper Swan	<i>Cygnus cygnus</i>	Annex I EU BD, WA 1976/2000	H21, H11
European Otter	<i>Lutra lutra</i>	Annex II, Annex IV EU HD, WA 1976/2000	H21, H11
Freshwater White-clawed Crayfish	<i>Austropotamobius pallipes</i>	Annex II, Annex V EU HD, WA 1976/2000	H21, H11
Brown Long-eared Bat	<i>Plecotus auritus</i>	Annex IV EU HD, WA 1976/2000	H21
Daubenton's Bat	<i>Myotis daubentonii</i>	Annex IV EU HD, WA 1976/2000	H21
Leisler's Bat	<i>Nyctalus leisleri</i>	Annex IV EU HD, WA 1976/2000	H21
Pipistrelle	<i>Pipistrellus pipistrellus</i>	Annex IV EU HD, WA 1976/2000	H21
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	Annex IV EU HD, WA 1976/2000	H21
Whiskered Bat	<i>Myotis mystacinus</i>	Annex IV, WA 1976/2000	H11
Common Frog	<i>Rana temporaria</i>	Annex V EU HD, WA 1976/2000	H21, H11
Pine Marten	<i>Martes martes</i>	Annex V EU HD, WA 1976/2000	H21, H11
Black-headed Gull	<i>Larus ridibundus</i>	BoCCI Red List, WA 1976/2000	H21, H11
Black-necked Grebe	<i>Podiceps nigricollis</i>	BoCCI Red List, WA 1976/2000	H21
Common Scoter	<i>Melanitta nigra</i>	BoCCI Red List, WA 1976/2000	H21
Eurasian Curlew	<i>Numenius arquata</i>	BoCCI Red List, WA 1976/2000	H21, H11
Herring Gull	<i>Larus argentatus</i>	BoCCI Red List, WA 1976/2000	H21
Northern Lapwing	<i>Vanellus vanellus</i>	BoCCI Red List, WA 1976/2000	H21, H11
Woodcock	<i>Scolopax rusticola</i>	BOCCI Red List, WA 1976/2000	H11
Yellowhammer	<i>Emberiza citrinella</i>	BoCCI Red List, WA 1976/2000	H21

Common Name	Scientific Name	Status	Location
European Eel	<i>Anguilla anguilla</i>	Council Regulation (EC) No 1100/2007	H11
Small Cudweed	<i>Filago minima</i>	FPO, PRDB Vulnerable	H21
Badger	<i>Meles meles</i>	WA 1976/2000	H11
Hedgehog	<i>Erinaceus europaeus</i>	WA 1976/2000	H11
Pygmy Shrew	<i>Sorex minutus</i>	WA 1976/2000	H11
Red Squirrel	<i>Sciurus vulgaris</i>	WA 1976/2000	H11
Smooth Newt	<i>Lissotriton vulgaris</i>	WA 1976/2000	H11
Stoat	<i>Mustela erminea hibernica</i>	WA 1976/2000	H11

2.8 Consultation

Scoping for this Ecological Assessment was circulated in June 2016. 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
- Bat Conservation Ireland Birdwatch Ireland.
- Relevant County Recorders and the Tree Council of Ireland.

Robert Northbridge, the county recorder for Cavan, responded in an email dated the 05/08/2016. Robert has only recently begun surveying plants in Co. Cavan with a view to obtaining records for the Atlas 2020 by the Botanical Society of Britain and Ireland. Mr Northbridge has not undertaken any survey work within the study area to date.

Leitrim County council responded in an email dated the 05/08/2016 and provided a recommended suite of data sources relevant to the current study area. The relevant data sources have been considered and included in this report.

At the date of finalising this report in October 2016 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 08/08/2016 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 August 2016, 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).

- Eutrophic Lake (FL5)
- Wet Willow-Alder-Ash Woodland (WN6)
- Wet Grassland (GS4)
- Improved Agricultural grassland (GA1)
- Dry Meadows and Grassy Verges (GS2)
- Scrub (WS1)
- Buildings and Artificial Surfaces (BL3)
- Amenity Grassland (GA2)
- Habitat Mosaic of Reed and large Sedge Swamp and Scrub (FS1/WS1)
- Depositing/lowland rivers (FW2)
- Reed & Large Sedge Swamp (FS1)
- Mixed Broadleaved Woodland (WD1)
- Habitat Mosaic of Wet Grassland and Scrub (GS4/WS1)
- Freshwater Marsh (GM1)
- Stone walls and other stonework (BL1)
- Drainage Ditches (FW4)

The approximate areas and lengths of each habitat recorded within the study area (Republic of Ireland) are provided in Tables 3.1 and 3.2. A full species and habitat inventory for each of the 17 river 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

Habitat	Area (ha)
Eutrophic Lake (FL5)	546.47
Depositing/lowland River (FW2)	24.51
Wet Willow-Alder-Ash Woodland (WN6)	11.94
Wet Grassland (GS4)	8.67
Improved Agricultural Grassland (GA1)	6.32
Dry Meadows And Grassy Verges (GS2)	4.55
Scrub (WS1)	2.15
Buildings & Artificial Surfaces (BL3)	0.93
Habitat Mosaic of Reed and Large Sedge Swamp and Scrub (FS1/WS1)	0.72
Reed & Large Sedge Swamp (FS1)	0.31
Mixed Broadleaved Woodland (WD1)	0.27
Habitat Mosaic Of Wet Grassland And Scrub (GS4/WS1)	0.05
Freshwater Marsh (GM1)	0.03

Table 3.2 Length of Habitat Polylines within Study Area

Habitat	Length in kilometres
Treeline (WL2)	3.46
Stone Walls & Other Stonework (BL1)	0.43
Drainage Ditch (FW4)	0.34

3.1.1.1 Eutrophic Lake (FL5)

Five eutrophic lakes occur within this area (example in Plate 3.1). These lakes range in size from 377.1 hectares to 1.7 hectares. The lakes surveyed within the study area from west to east are provided in Table 3.3 below.

Table 3.3 Lakes surveyed during the field study

Lake	Area (ha)
Garadice	377.1
Woodford	1.7
Ballymagauran	61.6
Derrycassan§	71.3
Coologue	31.6

§Forms Derrycassan Lough Complex

The lakes supported similar fringing habitats (described in relevant sections below) throughout but varied in depth and cover of aquatic vegetation. The lakes and fringe habitats were surveyed using a rigid inflatable boat provided and operated by Waterways Ireland staff. This habitat type was classified as an Ecologically Sensitive Area and is further discussed in Section 6.



Plate 3.1 Example of Eutrophic Lake (Garadice Lough)

3.1.1.2 Depositing/Lowland River (FW2)

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 3.2).

The main watercourse associated with the study area (i.e. Woodford River) has been categorised as Depositing/lowland River (FW2) but does display some features consistent with canals such as straight embanked channels. This watercourse is approximately 5m – 8m wide and were found to be free flowing with little macrophyte growth. Overhanging vegetation along these areas was common. A number of smaller, unmodified watercourses drain into the rivers or lakes. These natural watercourses have also been classified as Depositing/lowland River (FW2).

The Woodford River is a highly modified watercourse, typically 10-15m in width and dominated by slow flowing glide habitat. The margins of the watercourse supported varying levels of vegetation from short grassland to occasional reed swamp. Typical species of the margins included 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 marker section of the survey area. The grapnel was deployed several times at each location, in order to obtain a good sample. Aquatic macrophytes were relatively scarce within the study area and no evidence of macrophytes was recorded from several watercourse sections. Macrophytes were typically associated with man-made structures including jetties, the edges of wide meanders and lakes.

Recorded aquatic macrophytes included Yellow Water Lily (*Nuphar lutea*), Broad Leaved Pondweed (*Potamogeton natans*), Perfoliate Pondweed (*Potamogeton perfoliatus*), Duckweeds (*Lemna* sp.), Starwort (*Callitriche* sp.), Amphibious Bistort (*Persicaria amphibia*), Water Forget-me-not (*Myosotis scorpioides*), Unbranched bur-reed (*Sparganium emersum*) and Water-cress (*Rorippa nasturtium-aquatica*).

The Woodford River offers an excellent habitat for coarse fish and anglers were observed at various locations along the watercourses.



Plate3.2 Example of Depositing/lowland river (Woodford River)

3.1.1.3 Wet Willow/Alder/Ash Woodland (WN6)

This habitat was recorded frequently along the margins of the lakes and dominated the islands within the larger lakes (Plate 3.3). The habitat was typically dominated by Ash (*Fraxinus excelsior*) with significant cover of Sycamore (*Acer pseudoplatanus*). The shrub layer was dominated by Willow species (*Salix* spp.) and ground flora included species such as Yellow Iris (*Iris pseudacorus*), Purple Loosestrife (*Lythrum salicaria*), Meadowsweet (*Filipendula ulmaria*) and Creeping Buttercup (*Ranunculus repens*). This habitat was classified as an ESA. The habitat is described in greater detail in Section 6.



Plate 3.3 Example of Wet Willow/Alder/Ash Woodland (WN6) along the margins of Garadice Lough

3.1.1.4 Wet Grassland (GS4)

Large areas of wet grassland were recorded within and adjacent to the study area (Plate 3.4). 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*).

On the landward side, this habitat often graded into Improved agricultural grassland (GA1). In some areas, it had a high proportion of tall herbs such as Great Willowherb (*Epilobium hirsutum*) and Meadowsweet (*Filipendula ulmaria*). The habitat occasionally graded into Reed and Large Sedge Swamp (FS1) particularly surrounding the lakes. The habitat also formed mosaics with scrub and rank grassland where there was a lack of regular management.



Plate 3.4 Example of Wet Grassland (GS4) identified within the study area

3.1.1.5 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/sheep production. Agricultural grassland in the vicinity of the study area generally had a wet grassland influence with Soft Rush (*Juncus effusus*) commonly recorded from the improved sward (Plate 3.5). Commonly occurring species recorded from the agricultural fields included Perennial Ryegrass (*Lolium perenne*), White Clover (*Trifolium repens*), Dandelion (*Taraxacum agg.*), Silverweed (*Potentilla anserina*), Yorkshire Fog (*Holcus lanatus*), Cocksfoot (*Dactylis glomerata*), Creeping Buttercup (*Ranunculus repens*), Annual Meadow Grass (*Poa annua*), Creeping Thistle (*Cirsium arvense*), Nettle (*Urtica dioica*), Spear Thistle (*Cirsium vulgare*) and Mouseear (*Cerastium fontanum*).



Plate 3.5 Example of Improved Agricultural Grassland (GA1) adjacent to Coologue Lough

3.1.1.6 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 3.6). This habitat was found along the unmown or annually mown bank margins at many locations along the rivers 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 river margin and ruderals on the landward side. 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. 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 occasionally formed a mosaic with Scrub (WS1) particularly in areas where Bramble (*Rubus fruticosus* agg.) had encroached on the bankside.



Plate 3.6 Example of Dry Meadows and Grassy Verge Habitat (GS2)

3.1.1.7 Scrub (WS1)

Scrub (WS1) was recorded frequently along the waterway 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 3.7)

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. In wetter areas, Scrub often formed mosaics with Wet grassland habitats and occasionally formed mosaics with Reed and large sedge swamp (FS1).



Plate 3.7 Example of Bramble and Hawthorn Dominated Scrub along Woodford River

3.1.1.8 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 pathways and roadways (Plate 3.8). 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 3.8 Example of footpath classified as Buildings and Artificial Surfaces at Skellan Lock 3, east of Coologue Lough

3.1.1.9 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 frequently encountered along the margins of all five lake systems and in various scattered isolated locations along the rivers (Plate 3.9).

The dominant species recorded from linear fringes included Clubrush (*Schoenoplectus lacustris*) 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 Amphibious Bistort (*Persicaria amphibia*) were occasionally recorded.



Plate 3.9 Example of Reed and Large Sedge Swamp (FS1) habitat on St. Johns Lough Upper

3.1.1.10 Mixed Broadleaf Woodland (WD1)

Small areas of Mixed broadleaved woodland was recorded throughout the study area. The woodland areas were dominated by Ash (*Fraxinus excelsior*) and Sycamore (*Acer pseudoplatanus*) with occasional occurrences of Pedunculate Oak (*Quercus petraea*). The shrub layer comprised of Hazel (*Corylus avellana*) and Holly (*Ilex aquifolium*), Blackthorn (*Prunus spinosa*) and Hawthorn (*Crataegus monogyna*) and a ground flora which included Bramble (*Rubus fruticosus* agg.), Ivy (*Hedera helix*) and Remote Sedge (*Carex remota*).

3.1.1.11 Freshwater Marsh (GM1)

Freshwater Marsh (GM1) was encountered along the fringes of the lakes (Plate 3.10). Plant species commonly recorded in these areas include Purple Loosestrife (*Lythrum salicaria*), Water Mint (*Mentha aquatic*), Meadowsweet (*Filipendula ulmaria*), Creeping Bent (*Agrostis stolonifera*), Horsetail sp (*Equisetum* sp.) and Marsh Thistle (*Cirsium palustre*). This habitat frequently graded into wet grassland or improved agricultural grassland on the landward side.



Plate 3.10 Example of Freshwater marsh (GM1) along Lake Margin

3.1.1.12 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 river bank (Plate 3.11).

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*) and occasional Brambles (*Rubus fruticosus* agg.).



Plate 3.11 Example of Stone Walls and Other Stonework along Woodford River

3.1.1.13 Drainage Ditches (FW4)

Drainage ditches occurred frequently throughout the study area. These water features frequently drained into the lake and river systems and were variable in depth, width and macrophyte vegetation growth (Plate 3.12). Over the majority of the study area, the drains varied in width between 0.5 and 2.5m. 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 3.12 Example of Drainage Ditch (FW4) within the study area

3.2 Fauna

3.2.1 Birds

The bird species recorded during the site visits are listed in Table 3.4. 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 visit. Kingfisher, is listed on Annex I of the E.U. Birds Directive. Two BoCCI Red-listed species were recorded including Grey Wagtail and Meadow Pipit. Eight species – Coot, Cormorant, House Martin, Kingfisher, Mistle Thrush, Mute Swan, Snipe, Starling and Swallow - 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
Bull Finch	<i>Pyrrhula pyrrhula</i>	Green-listed
Buzzard	<i>Buteo buteo</i>	Green-listed
Canada Goose	<i>Branta canadensis</i>	Green-listed
Chaffinch	<i>Fringilla coelebs</i>	Green-listed
Chiffchaff	<i>Phylloscopus collybita</i>	Green-listed
Coot	<i>Fulica atra</i>	Amber-listed
Cormorant	<i>Phalacrocorax carbo</i>	Amber-listed
Goldcrest	<i>Regulus regulus</i>	Green-listed
Goldfinch	<i>Carduelis carduelis</i>	Green-listed
Great tit	<i>Parus major</i>	Green-listed
Grey Wagtail	<i>Motacilla cinerea</i>	Red-listed
Hooded Crow	<i>Corvus corone cornix</i>	Green-listed
House Martin	<i>Delichon urbicum</i>	Amber-listed
Jackdaw	<i>Corvus monedula</i>	Green-listed
Kingfisher	<i>Alcedo atthis</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
Mute Swan	<i>Cygnus olor</i>	Amber-listed
Pied Wagtail	<i>Motacilla alba yarrellii</i>	Green-listed
Raven	<i>Corvus corax</i>	Green-listed
Reed Bunting	<i>Emberiza schoeniclus</i>	Green-listed
Robin	<i>Erithacus rubecula</i>	Green-listed
Snipe	<i>Gallinago gallinago</i>	Amber-listed
Starling	<i>Sturnus vulgaris</i>	Amber-listed
Stonechat	<i>Saxicola torquata</i>	Green-listed
Swallow	<i>Hirundo rustica</i>	Amber-listed
Willow Warbler	<i>Phylloscopus trochilus</i>	Green-listed
Wood Pigeon	<i>Columba palumbus</i>	Green-listed
Wren	<i>Troglodytes troglodytes</i>	Green-listed

3.2.2 Mammals

No evidence of mammal species were recorded along the route of the watercourse within the study area. However; it is likely that species including Badger (*Meles meles*), Mustelid species (Stoat or Mink) and Fox (*Vulpes vulpes*) utilise the area at least on occasion. Otter are likely to be present but no Otter (*Lutra lutra*) spraint was observed. 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. Badger Fox and Stoat are protected under the Wildlife Act (1976) and the Wildlife Amendment Act (2000).

The study area is likely to be used by a variety of species due to cover provided by the tall bankside vegetation along the river and scrub which were abundant along the course of the navigation. 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 Hare (*Lepus timidus hibernicus*), Rabbit (*Oryctolagus cuniculus*), 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 and woodland within the study area provide ample suitable foraging and commuting habitat for bats. In addition, the navigation 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 navigation 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 navigation 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).

3.2.3 Significant species that potentially use the site

Although it is likely that mammal species such as Wood Mouse (*Apodemus sylvaticus*), Pygmy Shrew (*Sorex minutus*) 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 waterway 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 the European Communities (Birds and Natural Habitats) Regulations 2011 (G.I. 477/2011). 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.

Otters in Northern Ireland are a European Protected Species, and are protected under The Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995 (as amended) (also known as the Habitat Regulations), which transposes the Habitats Directive. It is therefore an offence to deliberately capture, injure or kill an otter. It is

also an offence to deliberately disturb an otter in any way, or to disturb, damage or destroy an otter's breeding site or resting place unless a licence has been obtained.

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). In Northern Ireland, bats are protected under the Wildlife (Northern Ireland) Order 1985 as well as European legislation.

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 – 4.18. Species listed on the Invasive Species Ireland “Most unwanted” list are highlighted in bold in the tables below.

4.1 Section 1 Garadice Lough to Ballinacur Bridge

Table 4.1 Habitats Classified in Section 1 Garadice Lough to Ballinacur Bridge

Habitats	Habitat Code
Eutrophic Lakes	FL5
Reed and Large Sedge Swamp	FS1
Depositing/lowland Rivers	FW2
Buildings & Artificial Surfaces	BL3
Scrub	WS1
Improved Agricultural Grassland	GA1
Amenity Grassland	GA2
Dry Meadows and Grassy Verges	GS2
Wet Grassland	GS4
Freshwater Marsh	GM1
Wet Willow/Alder/Ash Woodland	WN6
Habitat Mosaic of Wet Grassland and Scrub	GS4/WS1
Drainage Ditch	FW4
Stone Walls and other stone work	BL1

Table 4.2 Plant Species Recorded in Section 1 Garadice Lough to Ballinacur Bridge

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Arrhenatherum elatius</i>	False Oat-grass
<i>Bellis perennis</i>	Daisy
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Cladium mariscus</i>	Saw Sedge
<i>Crataegus monogyna</i>	Hawthorn
<i>Dactylis glomerata</i>	Cocksfoot
<i>Equisetum</i> spp.	Horsetail
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Geranium robertianum</i>	Herb Robert
<i>Glyceria fluitans</i>	Floating Sweet Grass
<i>Hedera helix</i>	Ivy
<i>Holcus lanatus</i>	Yorkshire Fog

Scientific name	Common Name
<i>Hydrocotyle vulgaris</i>	Marsh Pennywort
<i>Iris pseudacorus</i>	Yellow Iris
<i>Jacobaea vulgaris</i>	Ragwort
<i>Juncus effusus</i>	Soft Rush
<i>Larix</i> sp	Larch
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Mentha aquatica</i>	Water Mint
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Potentilla anserina</i>	Silverweed
<i>Pteridium aquilinum</i>	Bracken
<i>Quercus robur</i>	Pedunculate Oak
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rubus fruticosus</i> agg.	Bramble
<i>Rumex</i> spp	Dock species
<i>Salix</i> spp.	Willow species
<i>Schoenoplectus lacustris</i>	Common Club Rush
<i>Sorbus aucuparia</i>	Rowan
<i>Stellaria media</i>	Common Chickweed
<i>Taraxacum</i> agg.	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Ulex europaeus</i>	Gorse
<i>Urtica dioica</i>	Nettle
<i>Vicia cracca</i>	Tufted Vetch

Table 4.3 Aquatic Plant Species Recorded in Section 1 Garadice Lough to Ballinacur Bridge

Scientific name	Common Name
<i>Potamogeton natans</i>	Broad-leaved Pondweed
<i>Nuphar lutea</i>	Yellow Water-lily
<i>Persicaria amphibian</i>	Amphibious Bistort
<i>Phalaris arundinacea</i>	Reed-canary Grass

4.2 Section 2 Ballinacur Bridge to Ballymagauran Lough

Table 4.4 Habitats Classified in Section 2 Ballinacur Bridge to Ballymagauran Lough

Habitats	Habitat Code
Eutrophic Lakes	FL5
Depositing/Lowland River	FW2
Improved Agricultural Grassland	GA1
Amenity Grassland	GA2
Wet Grassland	GS4
Mixed Broadleaf Woodland	WD1
Wet Willow/Alder/Ash Woodland	WN6
Stone Walls and other stone work	BL1

Table 4.5 Plant Species Recorded in Section 2 Ballinacur Bridge to Ballymagauran Lough

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Angelica sylvestris</i>	Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Arrhenatherum elatius</i>	False Oat-grass
<i>Asplenium scolopendrium</i>	Hart's-tongue Fern
<i>Bellis perennis</i>	Daisy
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Carex nigra</i>	Common Sedge
<i>Carex panicea</i>	Carnation Sedge
<i>Centaurea nigra</i>	Knapweed
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Cirsium palustre</i>	Marsh Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Dactylis glomerata</i>	Cocksfoot
<i>Equisetum</i> spp.	Horsetail
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<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>Juncus effusus</i>	Soft Rush
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Mentha aquatica</i>	Water Mint
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rubus fruticosus</i> agg.	Bramble
<i>Salix</i> spp.	Willow species
<i>Sorbus aucuparia</i>	Rowan
<i>Taraxacum</i> agg.	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Ulex europaeus</i>	Gorse
<i>Urtica dioica</i>	Nettle
<i>Vicia cracca</i>	Tufted Vetch

Table 4.6 Aquatic Plant Species Recorded in Section 2 Ballinacur Bridge to Ballymagauran Lough

Scientific name	Common Name
<i>Potamogeton natans</i>	Broad-leaved Pondweed
<i>Nuphar lutea</i>	Yellow Water-lily

4.3 Section 3 Ballymagauran Lough to Derrycassan Lough

Table 4.7 Habitats Classified in Section 3 Ballymagauran Lough to Derrycassan Lough

Habitats	Habitat Code
Eutrophic Lakes	FL5
Reed and Large Sedge Swamp	FS1
Depositing/lowland Rivers	FW2
Buildings & Artificial Surfaces	BL3
Scrub	WS1
Improved Agricultural Grassland	GA1
Wet Grassland	GS4
Wet Willow/Alder/Ash Woodland	WN6
Drainage Ditch	FW4

Table 4.8 Plant Species Recorded in Section 3 Ballymagauran Lough to Derrycassan Lough

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<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 scolopendrium</i>	Hart's-tongue Fern
<i>Bellis perennis</i>	Daisy
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Carex rostrata</i>	Bottle Sedge
<i>Centaurea nigra</i>	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>Crataegus monogyna</i>	Hawthorn
<i>Dactylis glomerata</i>	Cocksfoot
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Equisetum</i> spp.	Horsetail
<i>Fallopia japonica</i>	Japanese Knotweed
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Geranium robertianum</i>	Herb Robert
<i>Hedera helix</i>	Ivy

Scientific name	Common Name
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Hydrocotyle vulgaris</i>	Marsh Pennywort
<i>Hypericum elodes</i>	Marsh St. John's-wort
<i>Ilex aquifolium</i>	Holly
<i>Impatiens glandulifera</i>	Himalayan Balsam
<i>Juncus acutiflorus</i>	Sharp-flowered Rush
<i>Juncus effusus</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lotus corniculatus</i>	Bird's-foot-trefoil
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Mentha aquatica</i>	Water Mint
<i>Persicaria maculosa</i>	Redshank
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Polygonum aviculare</i>	Knotgrass
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Pteridium aquilinum</i>	Bracken
<i>Ranunculus flammula</i>	Lesser Spearwort
<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 crispus</i>	Curled Dock
<i>Salix</i> spp	Willow species
<i>Sambucus nigra</i>	Elder
<i>Schoenoplectus lacustris</i>	Common Club Rush
<i>Senecio vulgaris</i>	Groundsel
<i>Stachys palustris</i>	Marsh Woundwort
<i>Taraxacum</i> agg.	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Ulex europaeus</i>	Gorse
<i>Urtica dioica</i>	Nettle
<i>Vicia cracca</i>	Tufted Vetch

Table 4.9 Aquatic Plant Species Recorded in Section 3 Ballymagauran Lough to Derrycassan Lough

Scientific name	Common Name
<i>Alisma plantago-aquatica</i>	Water plantain
<i>Nuphar lutea</i>	Yellow Water-lily
<i>Phalaris arundinacea</i>	Reed Canarygrass
<i>Phragmites australis</i>	Common Reed
<i>Potamogeton natans</i>	Broad-leaved Pondweed
<i>Typha latifolia</i>	Reedmace

4.4 Section 4 Derrycassan Lough to Coologue Bridge

Table 4.10 Habitats Classified in Section 4 Derrycassan Lough to Coologue Bridge

Habitats	Habitat Code
Eutrophic Lakes	FL5
Depositing/Lowland River	FW2
Buildings & Artificial Surfaces	BL3
Scrub	WS1
Improved Agricultural Grassland	GA1
Wet Grassland	GS4
Wet Willow/Alder/Ash Woodland	WN6
Drainage Ditch	FW4

Table 4.11 Plant Species Recorded in Section 4 Derrycassan Lough to Coologue Bridge

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Arrhenatherum elatius</i>	False Oat-grass
<i>Bellis perennis</i>	Daisy
<i>Cladium mariscus</i>	Saw Sedge
<i>Crataegus monogyna</i>	Hawthorn
<i>Dactylis glomerata</i>	Cocksfoot
<i>Equisetum</i> spp.	Horsetail
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aperine</i>	Cleavers
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Juncus effusus</i>	Soft Rush
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Mentha aquatica</i>	Water Mint
<i>Phalaris arundinaceae</i>	Reed Canary-grass
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rubus fruticosus</i> agg.	Bramble
<i>Salix</i> spp	Willow species
<i>Schoenoplectus lacustris</i>	Common Club Rush
<i>Senecio jacobaea</i>	Ragwort
<i>Sorbus aucuparia</i>	Rowan
<i>Taraxacum</i> agg.	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Ulex europaeus</i>	Gorse
<i>Urtica dioica</i>	Nettle

Table 4.12 Aquatic Plant Species Recorded in Section 4 Derrycassan Lough to Coologue Bridge

Scientific name	Common Name
<i>Alisma plantago-aquatica</i>	Water-plantain
<i>Potamogeton natans</i>	Broad-leaved Pondweed
<i>Nuphar lutea</i>	Yellow Water-lily
<i>Persicaria amphibian</i>	Amphibious Bistort
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Rorippa nasturtium-aquatica</i>	Water-cress

4.5 Section 5 Coologue Bridge to Bellaheady Bridge

Table 4.13 Habitats Classified in Section 5 Coologue Briidge to Bellaheady Bridge

Habitats	Habitat Code
Depositing/Lowland River	FW2
Buildings & Artificial Surfaces	BL3
Scrub	WS1
Improved Agricultural Grassland	GA1
Amenity Grassland	GA2
Dry Meadows and Grassy Verges	GS2
Wet Grassland	GS4
Wet Willow/Alder/Ash Woodland	WN6
Drainage Ditch	FW4

Table 4.14 Plant Species Recorded in Section 5 Coologue Briidge to Bellaheady Bridge

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 scolopendrium</i>	Hart's-tongue Fern
<i>Bellis perennis</i>	Daisy
<i>Callitriche</i> spp	Starwort species
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Carex nigra</i>	Common Sedge
<i>Carex panicea</i>	Carnation Sedge
<i>Centaurea nigra</i>	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>Crataegus monogyna</i>	Hawthorn
<i>Dactylis glomerata</i>	Cocksfoot

Scientific name	Common Name
<i>Digitalis purpurea</i>	Foxglove
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Equisetum</i> spp.	Horsetail
<i>Festuca</i> spp.	Fescue
<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>Holcus lanatus</i>	Yorkshire Fog
<i>Hypericum tetrapterum</i>	Square-stalked St. John's-wort
<i>Juncus effusus</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Ligustrum vulgare</i>	Privet
<i>Linum</i> sp.	Flax
<i>Loentodon</i> sp.	Hawkbit
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lotus pedunculatus</i>	Greater Bird's-foot-trefoil
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Medicago lupulina</i>	Black Medic
<i>Odontites vernus</i>	Red Bartisa
<i>Petasites hybridus</i>	Butterbur
<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>Polygonum aviculare</i>	Knotgrass
<i>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus spinosa</i>	Blackthorn
<i>Pteridium aquilinum</i>	Bracken
<i>Quercus</i> sp	Oak
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rubus fruticosus</i> agg.	Bramble
<i>Rumex acetosa</i>	Common Sorrel
<i>Rumex crispus</i>	Curled Dock
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Sagina procumbens</i>	Procumbent Pearlwort
<i>Salix</i> sp	Willow
<i>Sambucas nigra</i>	Elder
<i>Senecio jacobaea</i>	Ragwort

Scientific name	Common Name
<i>Senecio vulgaris</i>	Groundsel
<i>Sorbus aucuparia</i>	Rowan
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Stellaria graminea</i>	Lesser Stitchwort
<i>Taraxacum agg.</i>	Dandelion
<i>Torilis japonica</i>	Hedge Parsley
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Ulex europaeus</i>	Gorse
<i>Urtica dioica</i>	Nettle
<i>Veronica beccabunga</i>	Brooklime
<i>Vicia cracca</i>	Tufted Vetch
<i>Vicia spp.</i>	Vetch

Table 4.15 Aquatic Plant Species Recorded in Section 5 Cooogue Briidge to Bellaheady Bridge

Scientific name	Common Name
<i>Potamogeton natans</i>	Broad-leaved Pondweed
<i>Callitriche stagnalis</i>	Water-starwort
<i>Lemna trisulca</i>	Ivy-leaved Duckweed
<i>Mysotis scorpioides</i>	Water Forget-me-not
<i>Nuphar lutea</i>	Yellow Water-lily
<i>Phalaris arundinacea</i>	Reed-canary Grass

4.6 Section 6 Bellaheady Bridge to Private Marina at Woodford View, Ballyconnell

Table 4.16 Habitats Classified in Section 6 Bellaheady Bridge to Private Marina at Woodford View, Ballyconnell

Habitats	Habitat Code
Depositing/lowland Rivers	FW2
Buildings & Artificial Surfaces	BL3
Scrub	WS1
Improved Agricultural Grassland	GA1
Dry Meadows and Grassy Verges	GS2
Wet Grassland	GS4
Wet Willow/Alder/Ash Woodland	WN6
Drainage Ditch	FW4

Table 4.17 Plant Species Recorded in Section 6 Bellaheady Bridge to Private Marina at Woodford View, Ballyconnell

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>Arrhenatherum elatius</i>	False Oat-grass
<i>Asplenium scolopendrium</i>	Hart's-tongue Fern
<i>Bellis perennis</i>	Daisy
<i>Callitriche</i> spp	Starwort species
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Carex nigra</i>	Common Sedge
<i>Centaurea nigra</i>	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>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Dactylis glomerata</i>	Cocksfoot
<i>Deschampsia cespitosa</i>	Tufted Hair-grass
<i>Digitalis purpurea</i>	Foxglove
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Equisetum</i> spp.	Horsetail
<i>Festuca</i> spp.	Fescue
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash

Scientific name	Common Name
<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>Holcus lanatus</i>	Yorkshire Fog
<i>Hydrocotyle vulgaris</i>	Marsh Pennywort
<i>Hypericum tetrapterum</i>	Square-stalked St. John's-wort
<i>Ilex aquifolium</i>	Holly
<i>Juncus effusus</i>	Soft Rush
<i>Juncus inflexus</i>	Hard Rush
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Ligustrum vulgare</i>	Privet
<i>Loentodon sp.</i>	Hawkbit
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Lotus pedunculatus</i>	Greater Bird's-foot-trefoil
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Mentha aquatica</i>	Water Mint
<i>Menyanthes trifoliata</i>	Bog Bean
<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>Potentilla anserina</i>	Silverweed
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus spinosa</i>	Blackthorn
<i>Pteridium aquilinum</i>	Bracken
<i>Ranunculus flammula</i>	Lesser Spearwort
<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 crispus</i>	Curled Dock
<i>Rumex hydrolapathum</i>	Water Dock
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Sagina procumbens</i>	Procumbent Pearlwort
<i>Salix</i> spp	Willow
<i>Sambucus nigra</i>	Elder
<i>Senecio jacobaea</i>	Ragwort
<i>Sorbus aucuparia</i>	Rowan
<i>Sparganium erectum</i>	Branched Bur-reed
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Stellaria graminea</i>	Lesser Stitchwort
<i>Taraxacum</i> agg.	Dandelion
<i>Torilis japonica</i>	Hedge Parsley

Scientific name	Common Name
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Ulex europaeus</i>	Gorse
<i>Urtica dioica</i>	Nettle
<i>Veronica beccabunga</i>	Brooklime
<i>Vicia cracca</i>	Tufted Vetch

Table 4.18 Aquatic Plant Species Recorded in Section 6 Bellaheady Bridge to Private Marina at Woodford View, Ballyconnell

Scientific name	Common Name
<i>Alisma plantago-aquatica</i>	Water-plantain
<i>Apium nodiflorum</i>	Fool's Water-cress
<i>Potamogeton natans</i>	Broad-leaved Pondweed
<i>Callitriche stagnalis</i>	Water-starwort
<i>Lemna trisulca</i>	Ivy-leaved Duckweed
<i>Nuphar lutea</i>	Yellow Water-lily
<i>Persicaria amphibian</i>	Amphibious Bistort
<i>Phalaris arundinacea</i>	Reed-canary Grass
<i>Rorippa nasturtium-aquatica</i>	Water-cress

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

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 non-native invasive species Japanese Knotweed (*Fallopia japonica*) and Himalayan Balsam (*Impatiens glandulifera*) were recorded on the north-eastern shore of Ballymagauran Lough. These species are listed in **Part 1** of the **Third Schedule** of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). Regulations 49 and 50 of aforementioned Statutory Instrument include legislative measures to deal with the dispersal and introduction of invasive alien species:

Regulation 49. Prohibition on introduction and dispersal of certain species

- (1) *‘any person who breeds, reproduces or releases or allows or causes to disperse or escape from confinement, any animal which*
 - a) *is not*
 - i. *ordinarily resident in or is not a regular visitor to the State in a wild state, or*
 - ii. *of a kind that is domesticated or that is in the normal course the subject of human husbandry,*
 - b) *is included in Part 2A of the Third Schedule in any place specified in relation to such animal in the third column of Part 2A of the Third Schedule, or*
 - c) *is included in Part 2B of the Third Schedule in any place specified in relation to such animal in the third column of Part 2B of the Third Schedule,**shall be guilty of an offence.’*

- (2) *‘any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to such plant in the third column of Part 1 of the Third Schedule, any plant which is included in Part 1 of the Third Schedule, shall be guilty of an offence.’*

Regulation 50. Prohibition on dealing in and keeping certain species

1. *‘a person shall be guilty of an offence if he or she has in his or her possession for sale, or for the purposes of breeding, reproduction or propagation, or offers or exposes for sale, transportation, distribution, introduction or release—*
 - a) *an animal or plant listed in Part 1 or Part 2 of the Third Schedule*
 - b) *anything from which an animal or plant referred to in subparagraph (a) can be reproduced or propagated, or*

- c) *a vector material listed in Part 3 of the Third Schedule in any place in the State specified in the third column of the Third Schedule in relation to such an animal, plant or vector material'*
2. *'a person shall be guilty of an offence if he or she imports or transports*
- a) *an animal or plant listed in Part 1 or Part 2 of the Third Schedule,*
 - b) *anything from which an animal or plant referred to in Part 2 of the Third Schedule can be reproduced or propagated, or*
 - c) *a vector material listed in Part 3 of the Third Schedule*
- into or in or to any place in the State specified in relation to such an animal or plant or vector material in relation to that animal or plant or vector material in the third column of the Third Schedule.'*
3. *'a person shall be guilty of an offence if he or she publishes or causes to be published by any means, including on the internet, any advertisement, catalogue, circular or price list likely to be understood as conveying that such person imports into the State, buys, sells, distributes or provides for the introduction or release, or intends to buy or sell or distribute or introduce or release, in any place in the State as specified in the third column of the Third Schedule,*
- a) *an animal or plant listed in Part 1 or Part 2 of the Third Schedule,*
 - b) *anything from which such an animal or plant can be reproduced or propagated, or*
 - c) *a vector material listed in Part 3 of the Third Schedule.'*

The locations of the identified infestations are outlined below in Table 5.1

Table 5.1 Invasive species Infestation details

Species Name	Location	Grid Reference (ITM)
Japanese Knotweed (<i>Fallopia japonica</i>)	North-eastern boundary of Ballymagauran Lough	621332,813324 & 621304,813369
Himalayan Balsam (<i>Impatiens glandulifera</i>)	North-eastern boundary of Ballymagauran Lough	621327,813342

5.2 Fauna

Kingfisher (*Alcedo atthis*) was observed commuting along the Woodford River. Kingfisher is a species listed in Annex I of the EU Birds Directive. The Annex V species Common Frog was also observed along the Woodford River. The faunal observation data is presented in Table 5.2 below.

Table 5.2 Target Notes on Fauna recorded during fieldwork

Species	Description	Grid Ref (ITM)
Kingfisher	Specimens observed commuting.	621974, 812057 & 620616, 812396
Common Frog	Specimen observed	626260, 816862

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
ESA 1	Wet Willow-Ash-Alder Woodland
ESA 2	Eutrophic Lakes

6.1 ESA1 – Wet willow-alder-ash Woodland (WN6)

This habitat was recorded frequently throughout the study area, however, this habitat is infrequent in the region. Therefore, Wet Willow-Alder-Ash Woodland has been categorised as an ESA in all locations encountered within the study area. This habitat was typically encountered along lake margins and on islands within the lake systems. This habitat contained areas which was subject to occasional flooding from rising water levels in the lake and it is likely that these areas transition to Mixed broadleaved woodland (WD1) where dryer ground conditions prevail further inland.

The woodland canopy was dominated by Ash (*Fraxinus excelsior*) and Alder (*Alnus glutinosa*). Sycamore (*Acer pseudoplatanus*) also occurred occasionally within the canopy. The understory was dominated Willow (*Salix* sp.) and occasional Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*). Species recorded from the ground flora included Brambles (*Rubus fruticosus* agg.), Ivy (*Hedera helix*), Tutsan (*Hypericum androsaemum*), Herb Robert (*Geranium robertianum*), Angelica (*Angelica sylvestris*), False Brome (*Brachypodium sylvaticum*) and Creeping Buttercup (*Ranunculus repens*).

This habitat type was categorised as an ESA for its naturalness and, although it is encountered frequently throughout the study area, it is rare in the wider region. Table 6.2 provides a location and description of where this habitat was encountered throughout the study area.

Table 6.2 Wet Willow alder ash woodland ESAs

Code	Habitat	ESA Name	ESA Description
WN6	Wet willow-alder-ash woodland	Derrylahan ESA	Island, south Garadice Lough
WN6	Wet willow-alder-ash woodland	Derrycassan ESA	Island, north Derrycassan Lough
WN6	Wet willow-alder-ash woodland	Garadice ESA	Garadice, west margin Garadice Lough
WN6	Wet willow-alder-ash woodland	Carrickmakeegan ESA	West bank Garadice Lough
WN6	Wet willow-alder-ash woodland	Woodford Demense ESA	South bank of river
WN6	Wet willow-alder-ash woodland	Derrycassan ESA	South bank Woodford River between Derrycassan and Coolage Lough
WN6	Wet willow-alder-ash woodland	Woodford Demense ESA	South bank of river
WN6	Wet willow-alder-ash woodland	Woodford Demense ESA	West margin Woodford Lough
WN6	Wet willow-alder-ash woodland	Derryniggin ESA	South bank Woodford Canal between Ballymagauran and Derrycassan Lough
WN6	Wet willow-alder-ash woodland	Derrycassan ESA	North bank Woodford River between Derrycassan and Coolage Lough
WN6	Wet willow-alder-ash woodland	Carrickmakeegan ESA	West bank Garadice Lough
WN6	Wet willow-alder-ash woodland	Killaphort ESA	North margin Garadice Lough
WN6	Wet willow-alder-ash woodland	Cully ESA	North margin Garadice Lough
WN6	Wet willow-alder-ash woodland	Cully ESA	North margin Garadice Lough
WN6	Wet willow-alder-ash woodland	Cully ESA	North margin Garadice Lough
WN6	Wet willow-alder-ash woodland	Burren ESA	South Derrycassan Lough
WN6	Wet willow-alder-ash woodland	Cully ESA	North margin Garadice Lough
WN6	Wet willow-alder-ash woodland	Woodford Demense ESA	East margin, east bank Woodford Lough
WN6	Wet willow-alder-ash woodland	Woodford Demense ESA	West margin Ballymagauran Lough
WN6	Wet willow-alder-ash woodland	Burren ESA	South Derrycassan Lough
WN6	Wet willow-alder-ash woodland	Woodford Demense ESA	North bank of river

Code	Habitat	ESA Name	ESA Description
WN6	Wet willow-alder-ash woodland	Crane Island ESA	Garadice Lough



Plate 6.1. Wet Woodland (WN6) which displayed evidence of occasional inundation during high lake water levels.

6.2 ESA 2 – Eutrophic Lakes (FL5)

Five Eutrophic lakes were recorded within the study area (Table 6.3). The lake habitat and water quality therein was not subject to a comprehensive survey. Eutrophic lakes have higher nutrient levels than oligo to mesotrophic lakes and are typically species rich. However, this habitat type has been subject to alteration as a result of over-enrichment with nutrients which has a negative impact on species richness. Eutrophic lakes have links to the Annex I habitat Natural Eutrophic Lakes with *Magnopotamion* or *Hydrocharition* – type vegetation [3150].

Extensive areas of Reed and large sedge swamp (FS1) were recorded throughout the lake systems. The extent of the reed swamp varied. In some areas the habitat occurred as a short, narrow fringing feature along the lake margins. In other areas, such as St. Johns Lough Upper, the habitat formed dense, extensive stands. The dominant species in this habitat were Clubrush (*Schoenoplectus lacustris*) and Reed Canary Grass (*Phalaris arundinacea*). Other species recorded from well developed areas of this habitat Marsh pennywort (*Hydrocotyle vulgaris*), Brooklime (*Veronica beccabunga*), Meadowsweet (*Filipendula ulmaria*), Horsetail (*Equisetum* sp.), Creeping Bent (*Agrostis stolonifera*), Floating Sweet-grass (*Glyceria fluitans*), Lesser Spearwort (*Ranunculus flammula*) and Valerian (*Valeriana officinalis*).

Aquatic macrophytes recorded within the lakes include Yellow Lilly (*Nuphur lutea*), Amphibious Bistort (*Persicaria amphibia*) and Broad-leaved Pondweed (*Potamogeton natans*).

The lakes are likely to be important for coarse fish including Pike and Perch. The lake and riparian habitats are likely to be important for waterfowl. Snipe, Mallard, Heron and Mute Swan were recorded frequently utilising the lake habitats. 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 lakes were classified as ESAs given their species diversity and importance as natural features within the landscape.

Table 6.2 Eutrophic Lakes ESAs

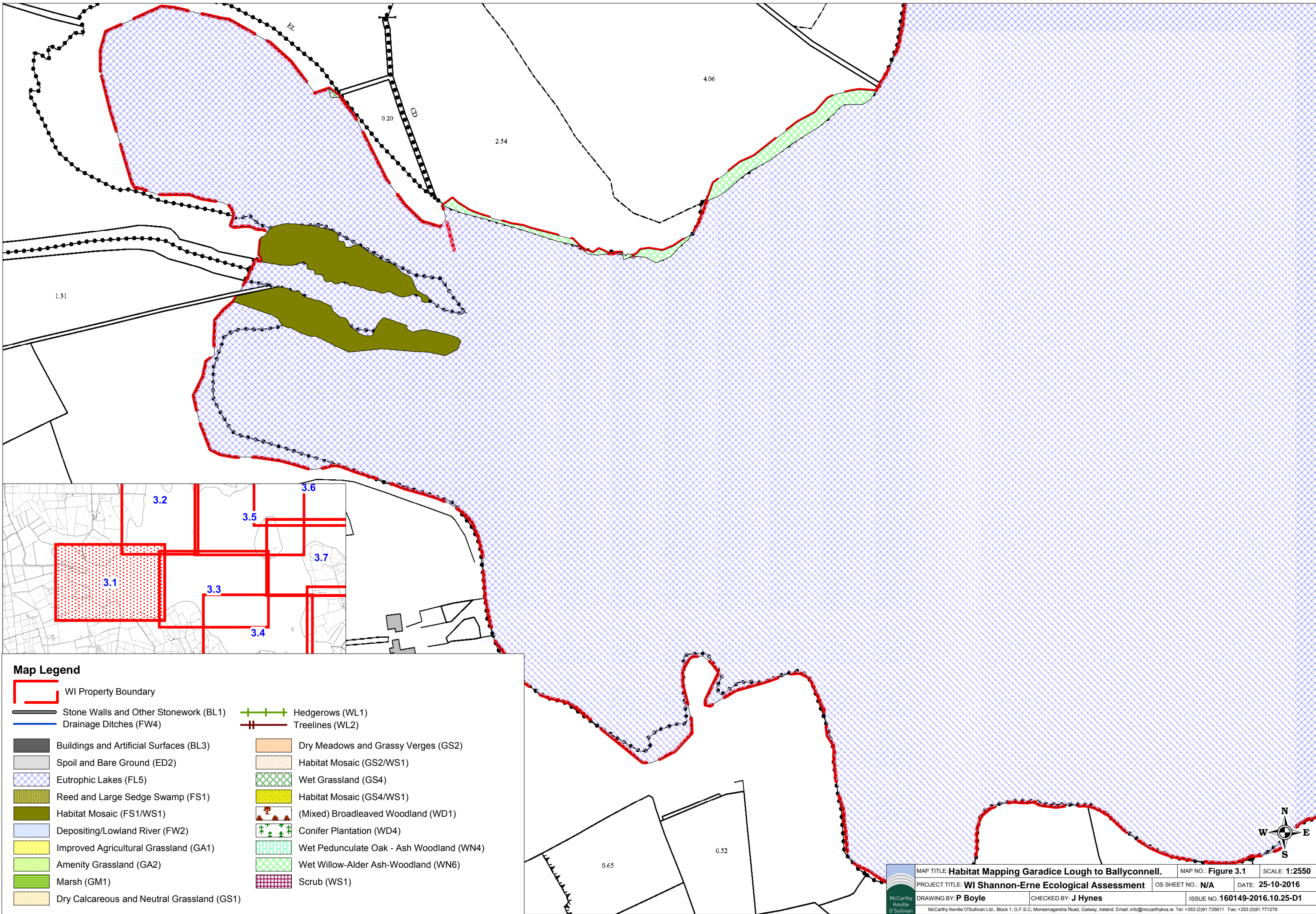
Code	Habitat	ESA Name	ESA Description
FL5	Eutrophic lakes	Coolage Lough ESA	Intensive agriculture along the margins of this lake.
FL5	Eutrophic lakes	Derrycassan Lough ESA	Supports wet willow alder ash woodland along eastern margins and wetland habitat along the western margins.
FL5	Eutrophic lakes	Woodford Lough ESA	Small lake east of Garadice Lough
FL5	Eutrophic lakes	Garadice Lough ESA	Large lake, shallow in south-east. Contains small islands which support woodland and grassland habitat
FL5	Eutrophic lakes	Ballymagauran Lough ESA	Shallow lake with dense vegetative growth throughout



Plate 6.3 Example of Eutrophic Lake (Garadice Lough)

Appendix I

Habitat Mapping



















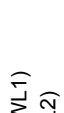







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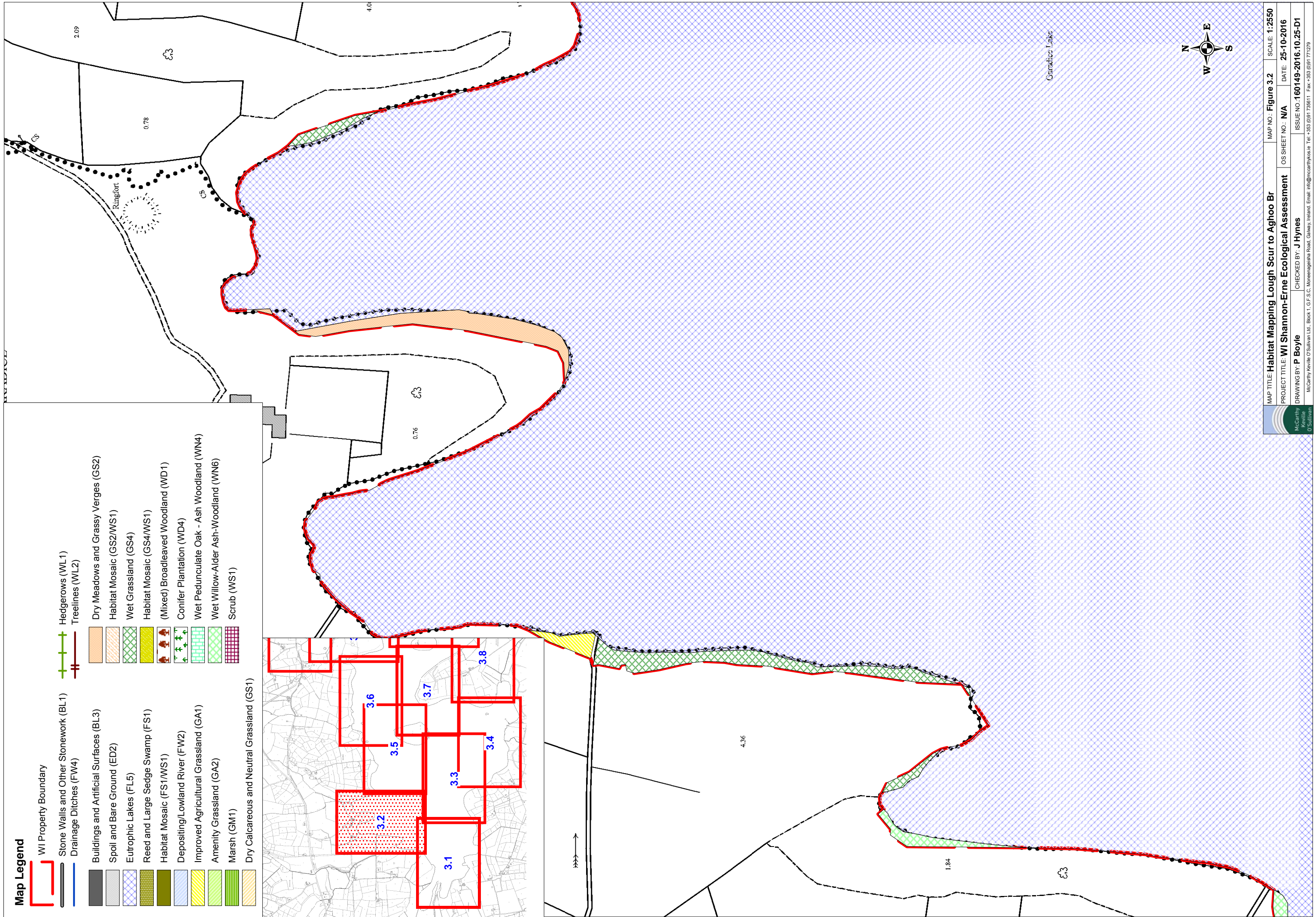
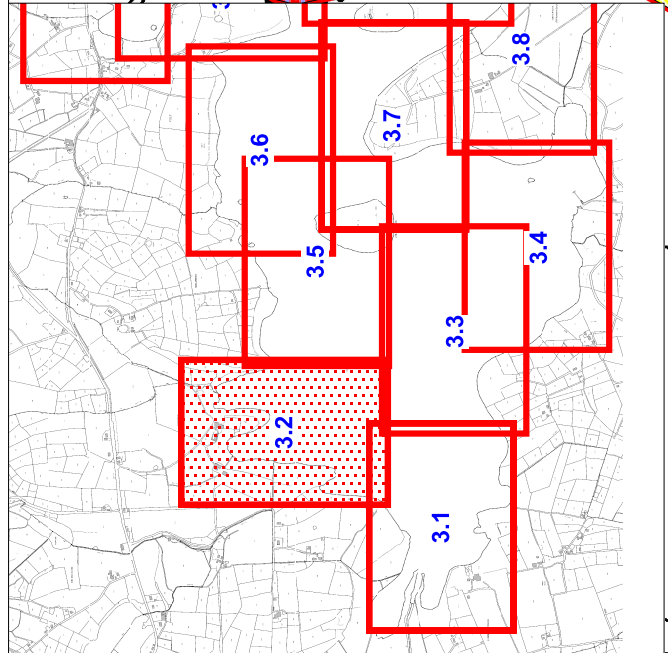
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- Buildings and Artificial Surfaces (BL3)
- Spoil and Bare Ground (ED2)
- Eutrophic Lakes (FL5)
- Reed and Large Sedge Swamp (FS1)
- Habitat Mosaic (FS1/WS1)
- Depositing/Lowland River (FW2)
- Improved Agricultural Grassland (GA1)
- Amenity Grassland (GA2)
- Marsh (GM1)
- Dry Calcareous and Neutral Grassland (GS1)
- Hedgerows (WL1)
- Treelines (WL2)
- Dry Meadows and Grassy Verges (GS2)
- Habitat Mosaic (GS2/WS1)
- Wet Grassland (GS4)
- Habitat Mosaic (GS4/WS1)
- (Mixed) Broadleaved Woodland (WD1)
- Conifer Plantation (WD4)
- Wet Pedunculate Oak - Ash Woodland (WN4)
- Wet Willow-Alder Ash-Woodland (WN6)
- Scrub (WS1)

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PROJECT TITLE: WI Shannon-Erne Ecological Assessment	OS SHEET NO.: N/A	DATE: 25-10-2016
DRAWING BY: P Boyle	CHECKED BY: J Hynes	ISSUE NO.: 160149-2016.10.25-D1
McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthynos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279		





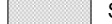



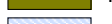















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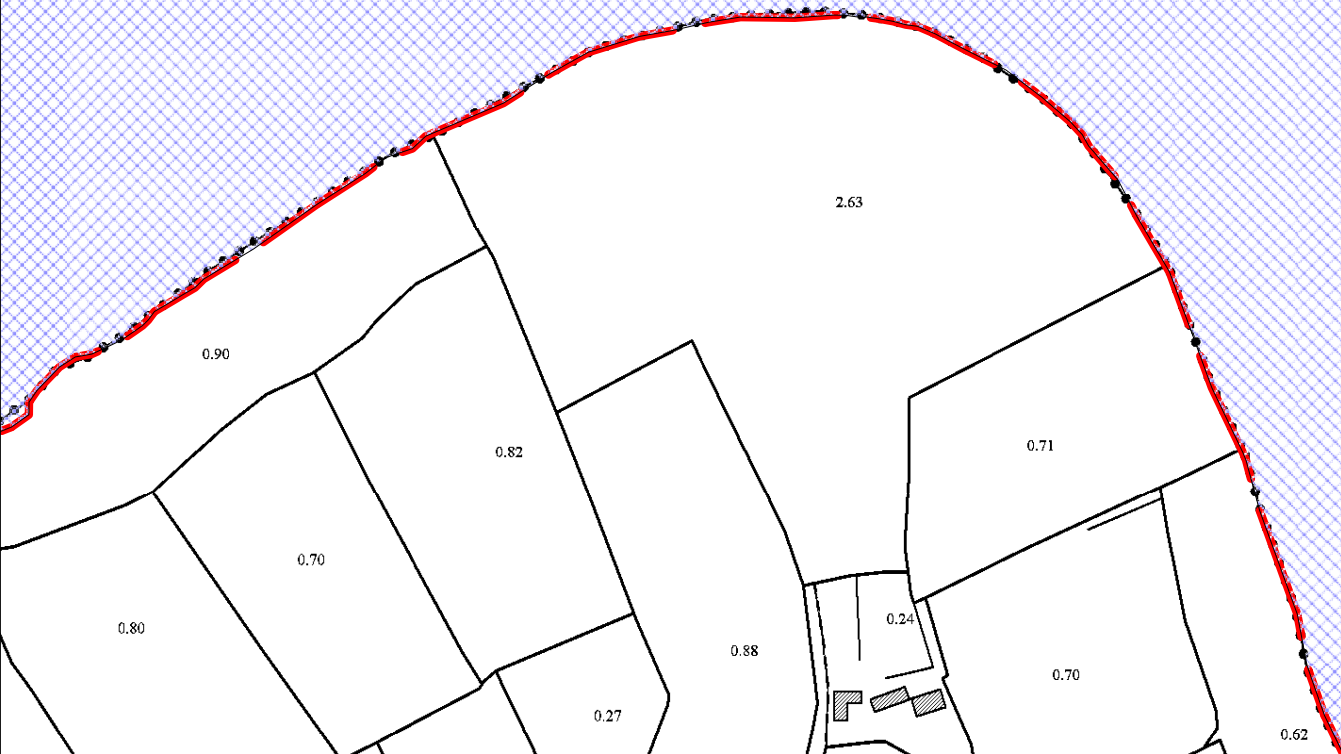
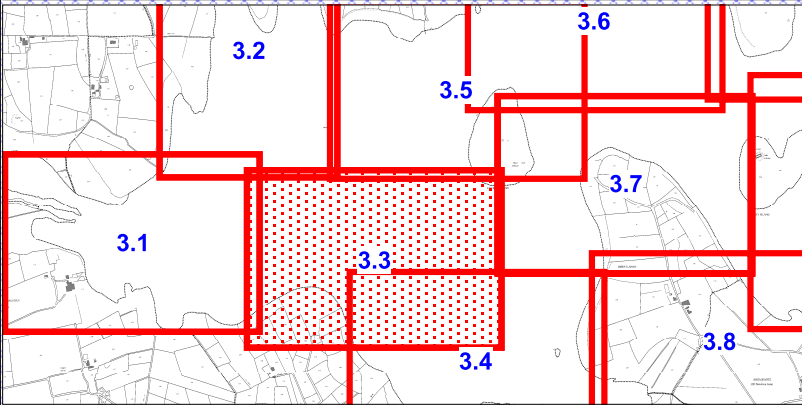
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-  Amenity Grassland (GA2)
-  Marsh (GM1)
-  Dry Calcareous and Neutral Grassland (GS1)
-  Hedgerows (WL1)
-  Treelines (WL2)
-  Dry Meadows and Grassy Verges (GS2)
-  Habitat Mosaic (GS2/WS1)
-  Wet Grassland (GS4)
-  Habitat Mosaic (GS4/WS1)
-  (Mixed) Broadleaved Woodland (WD1)
-  Conifer Plantation (WD4)
-  Wet Pedunculate Oak - Ash Woodland (WN4)
-  Wet Willow-Alder Ash-Woodland (WN6)
-  Scrub (WS1)




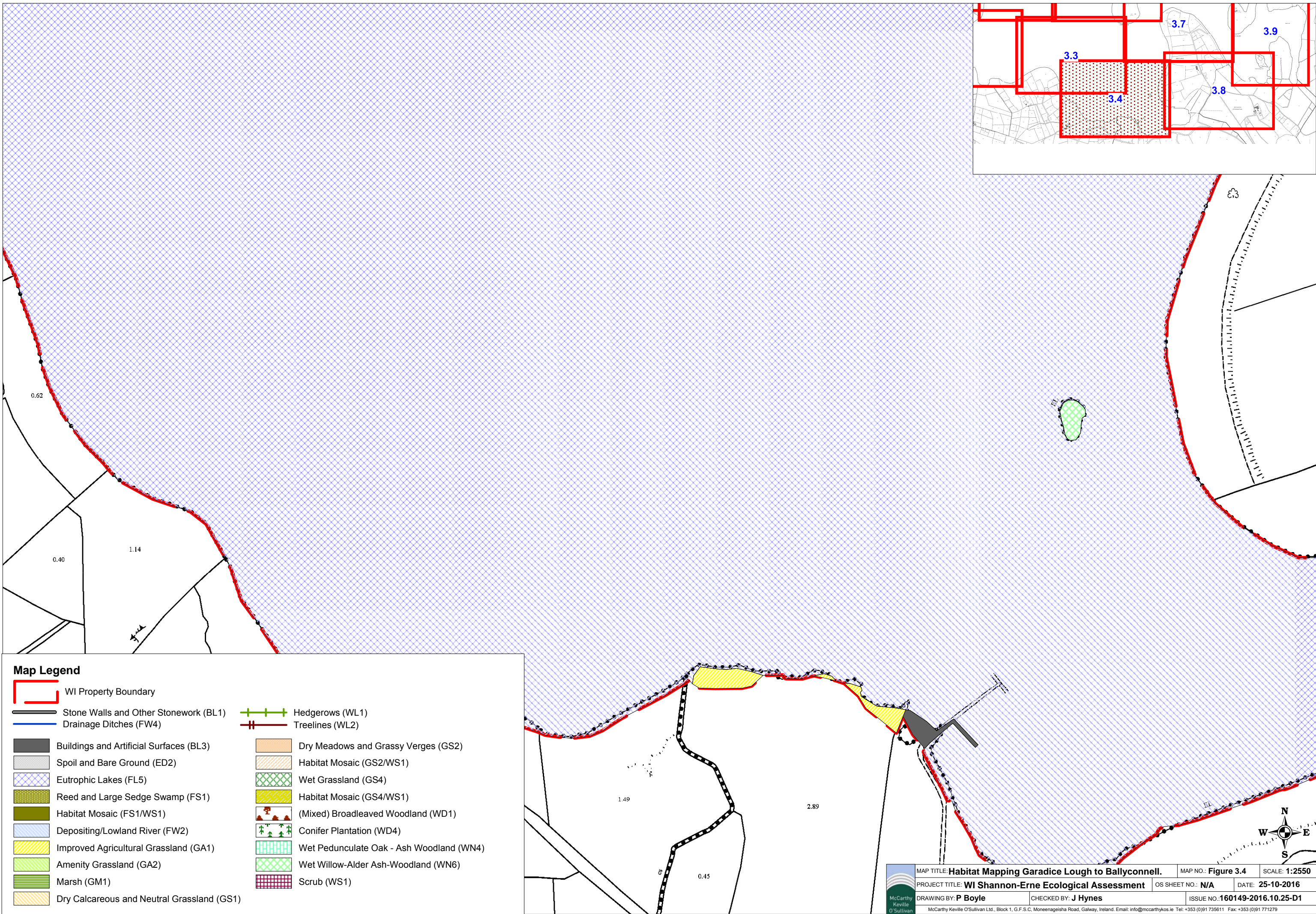
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-  Scrub (WS1)



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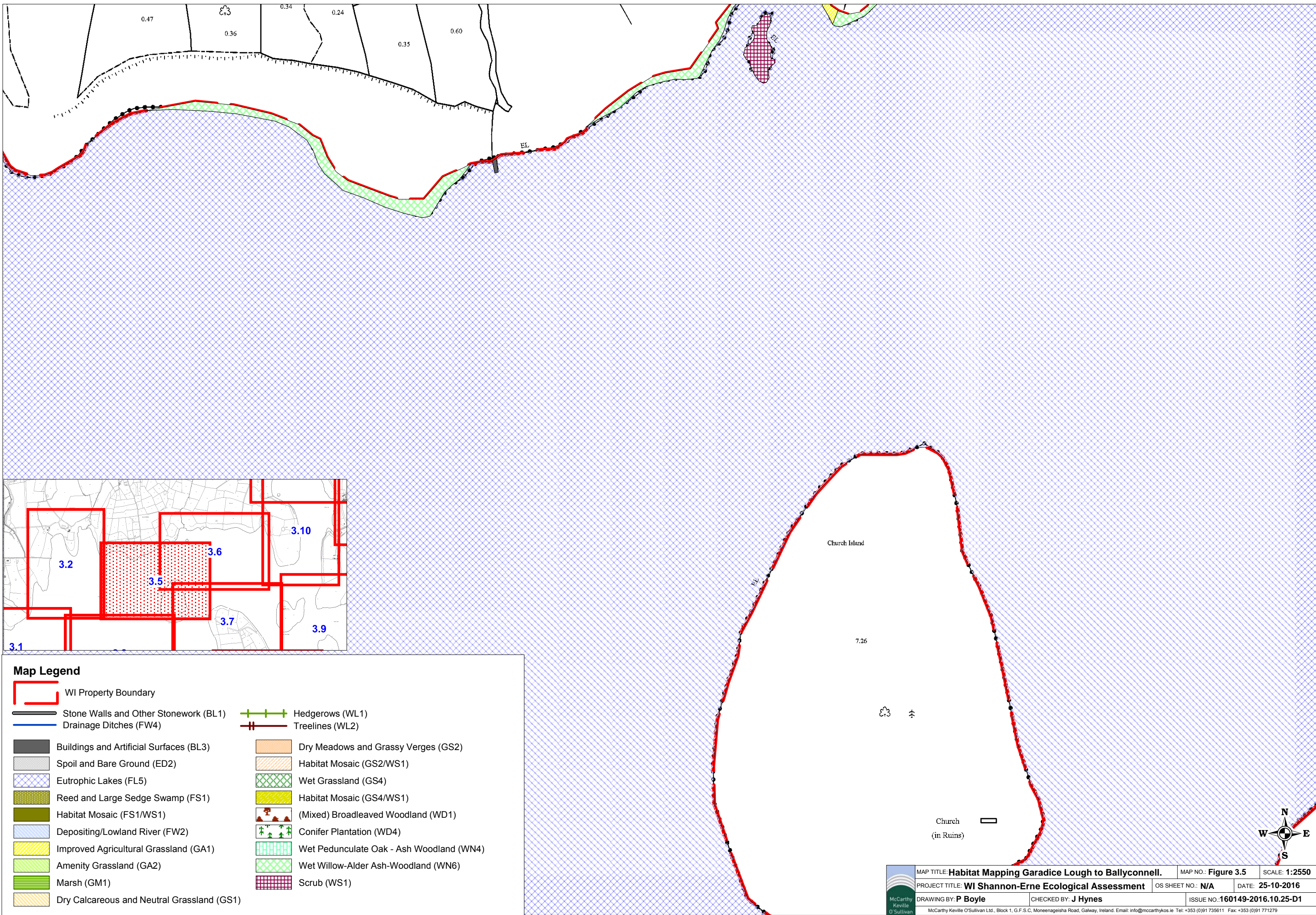
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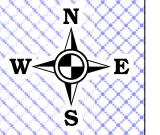
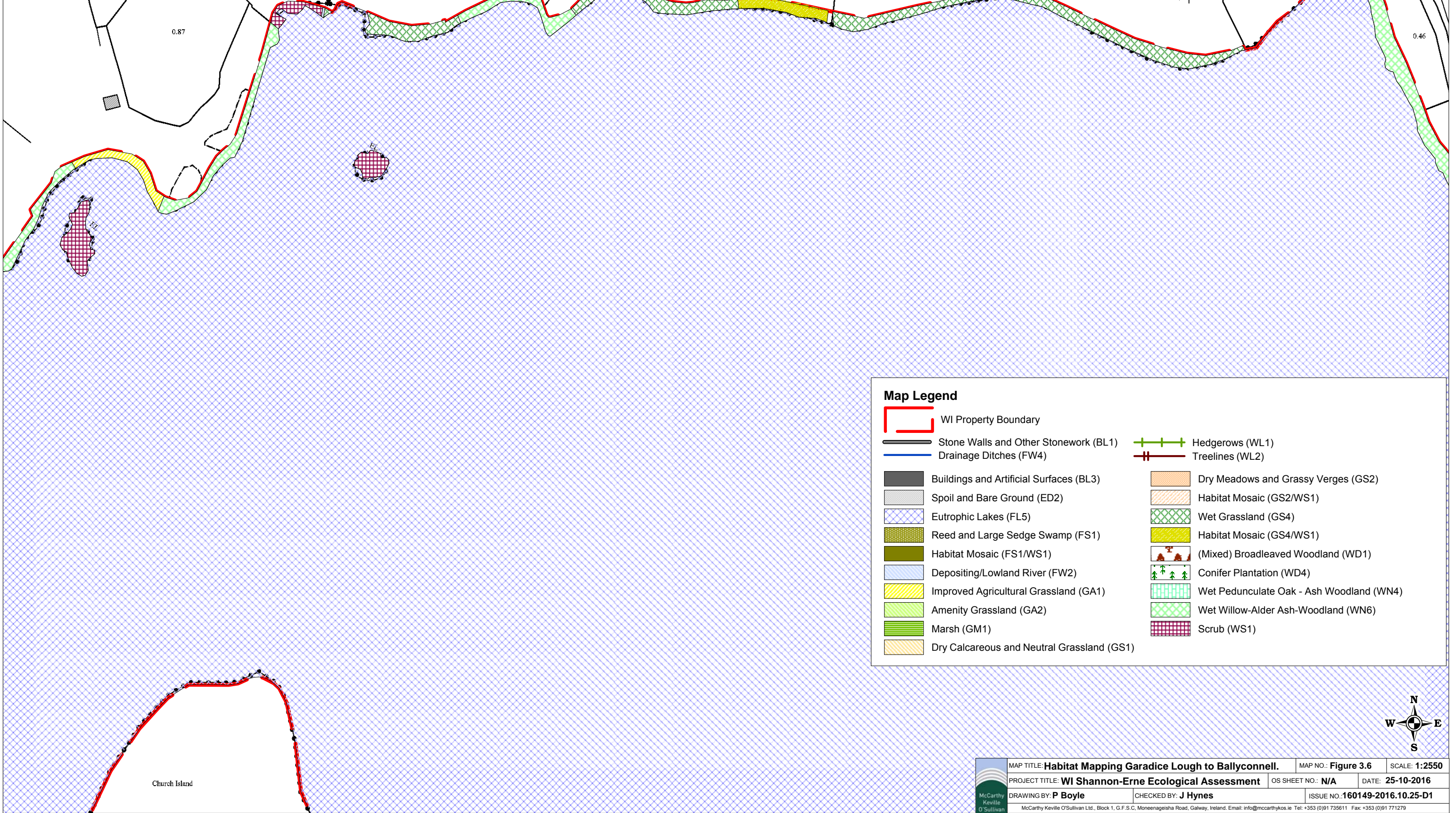
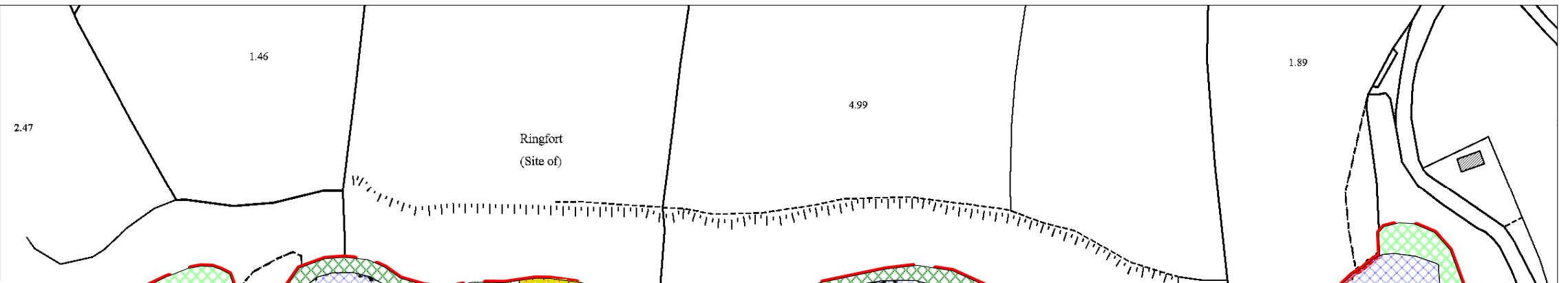
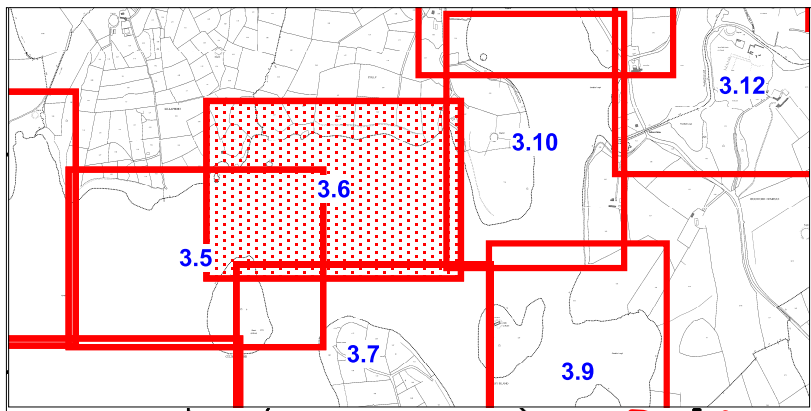
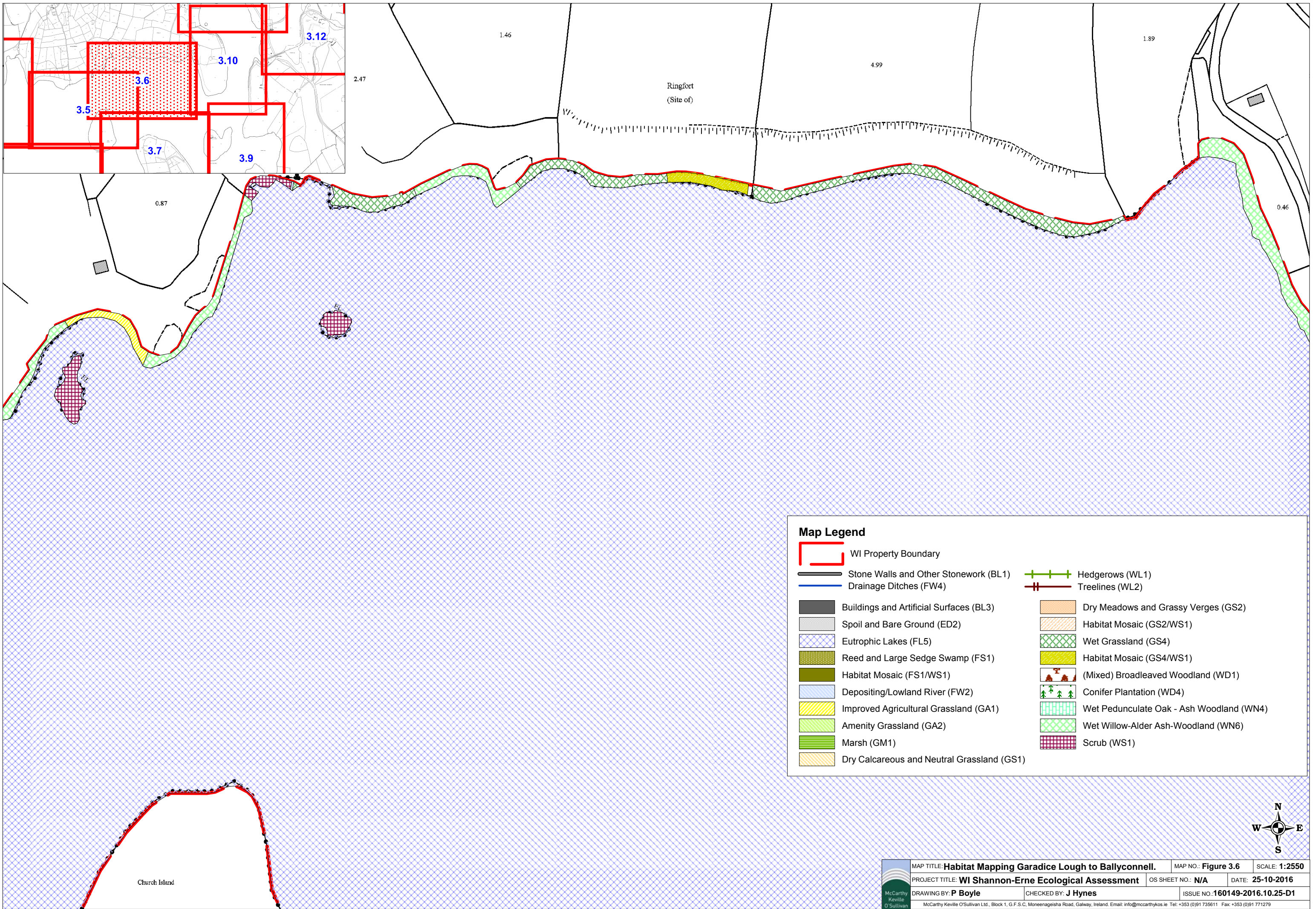
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- Wet Willow-Alder Ash-Woodland (WN6)
- Scrub (WS1)

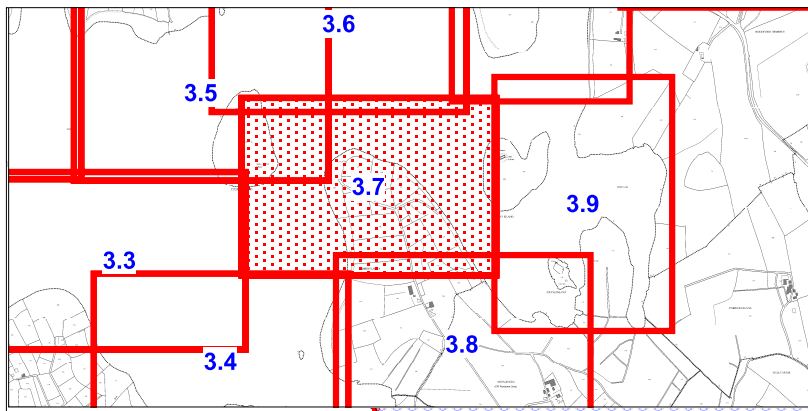
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McCarthy Keville O'Sullivan McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthynos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279		











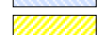















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- Buildings and Artificial Surfaces (BL3)
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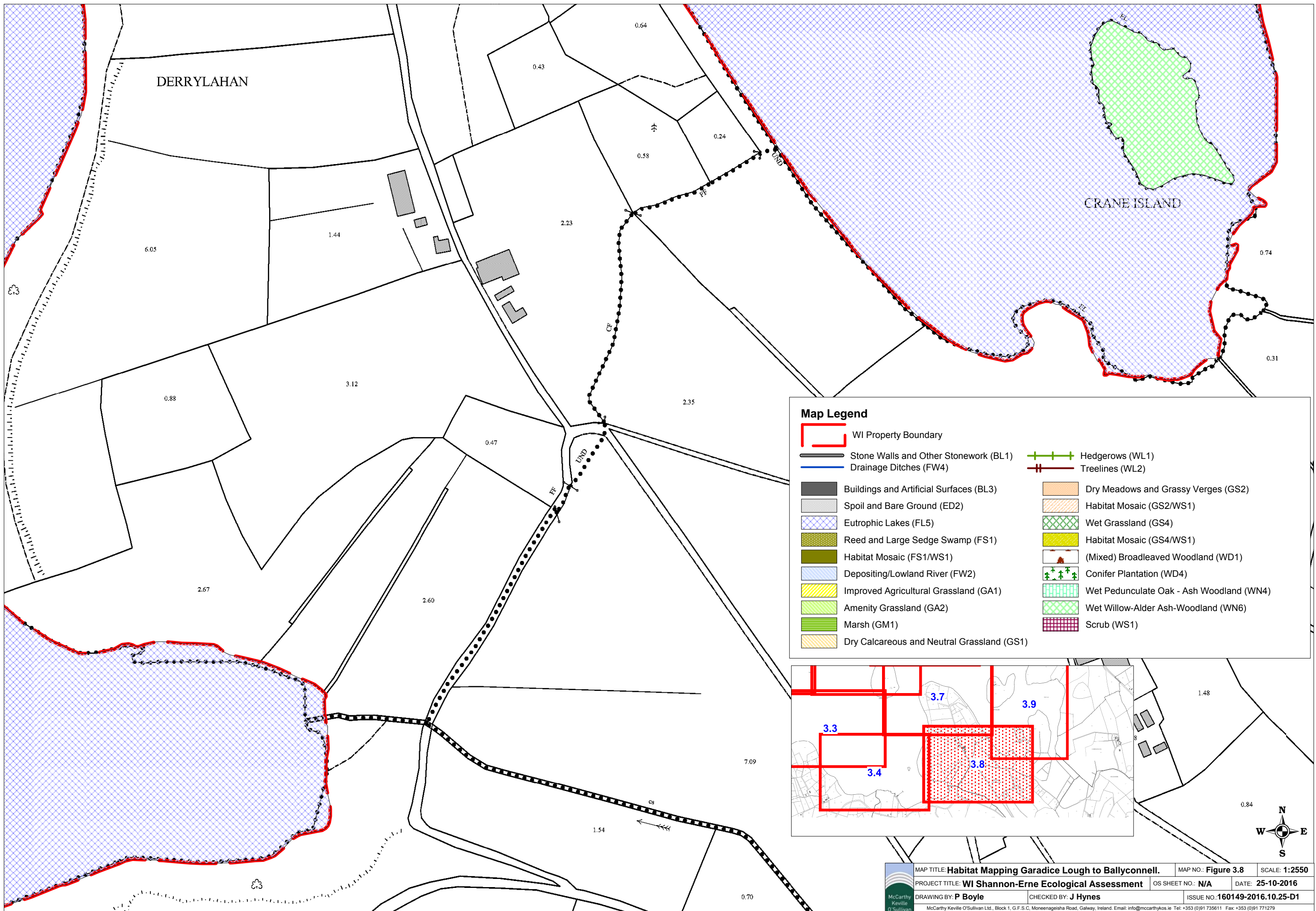


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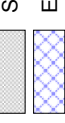



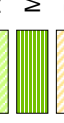


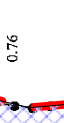


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McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthycos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279			



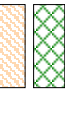


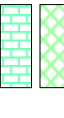
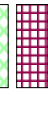






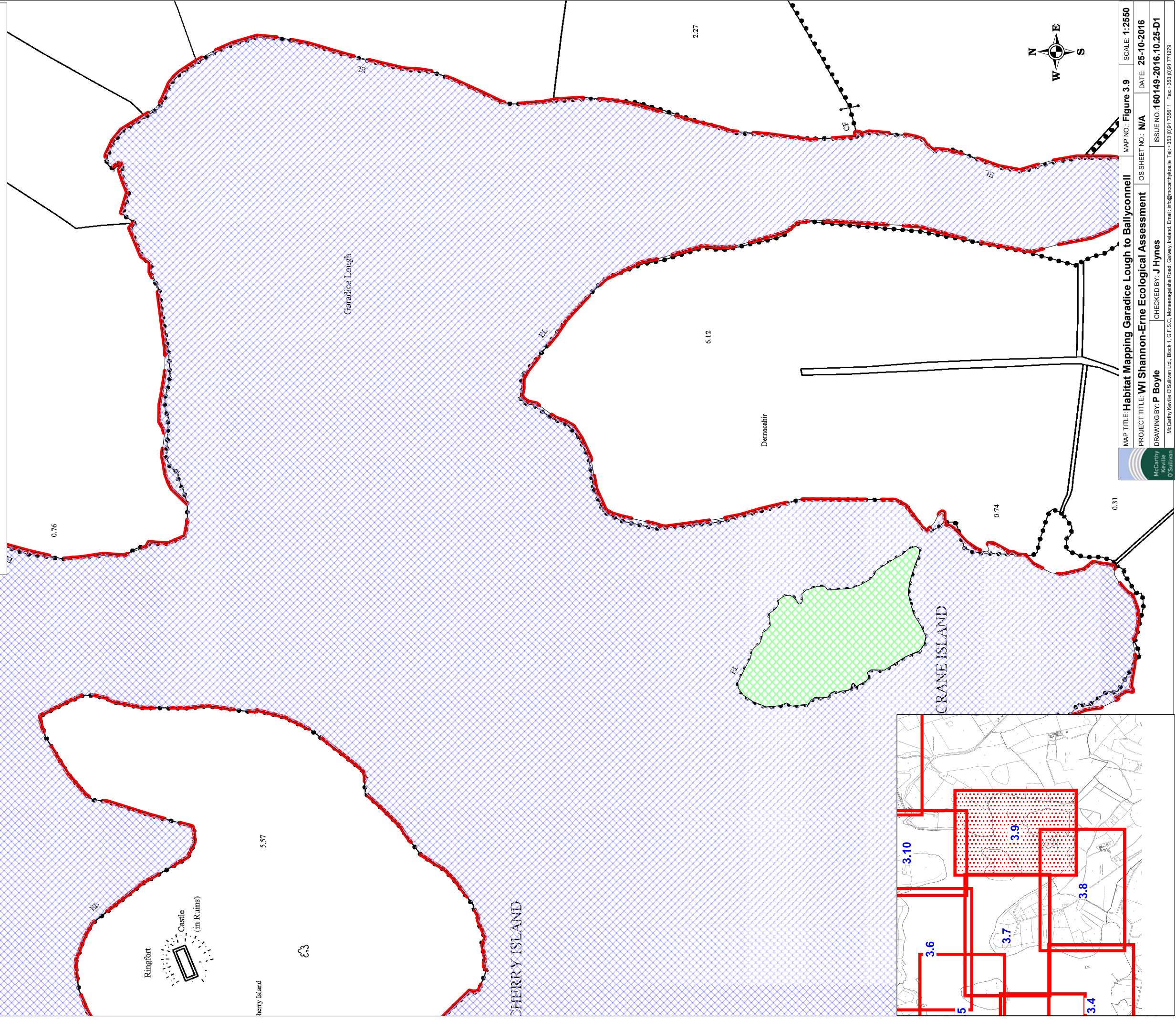
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Buildings and Artificial Surfaces (BL3)	Habitat Mosaic (GS2/WS1)
Spoil and Bare Ground (ED2)	Wet Grassland (GS4)
Eutrophic Lakes (FL5)	Habitat Mosaic (GS4/WS1)
Reed and Large Sedge Swamp (FS1)	(Mixed) Broadleaved Woodland (WD1)
Habitat Mosaic (FS1/WS1)	Conifer Plantation (WD4)
Depositing/Lowland River (FW2)	Wet Pedunculate Oak - Ash Woodland (WN4)
Improved Agricultural Grassland (GA1)	Wet Willow-Alder Ash-Woodland (WN6)
Amenity Grassland (GA2)	Scrub (WS1)
Marsh (GM1)	
Dry Calcareous and Neutral Grassland (GS1)	

Map Legend






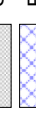
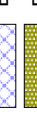







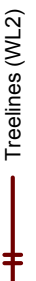







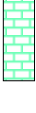

-  WI Property Boundary
-  Stone Walls and Other Stonework (BL1)
-  Drainage Ditches (FW4)
-  Buildings and Artificial Surfaces (BL3)
-  Spoil and Bare Ground (ED2)
-  Eutrophic Lakes (FL5)
-  Reed and Large Sedge Swamp (FS1)
-  Habitat Mosaic (FS1/WS1)
-  Depositing/Lowland River (FW2)
-  Improved Agricultural Grassland (GA1)
-  Amenity Grassland (GA2)
-  Marsh (GM1)
-  Dry Calcareous and Neutral Grassland (GS1)

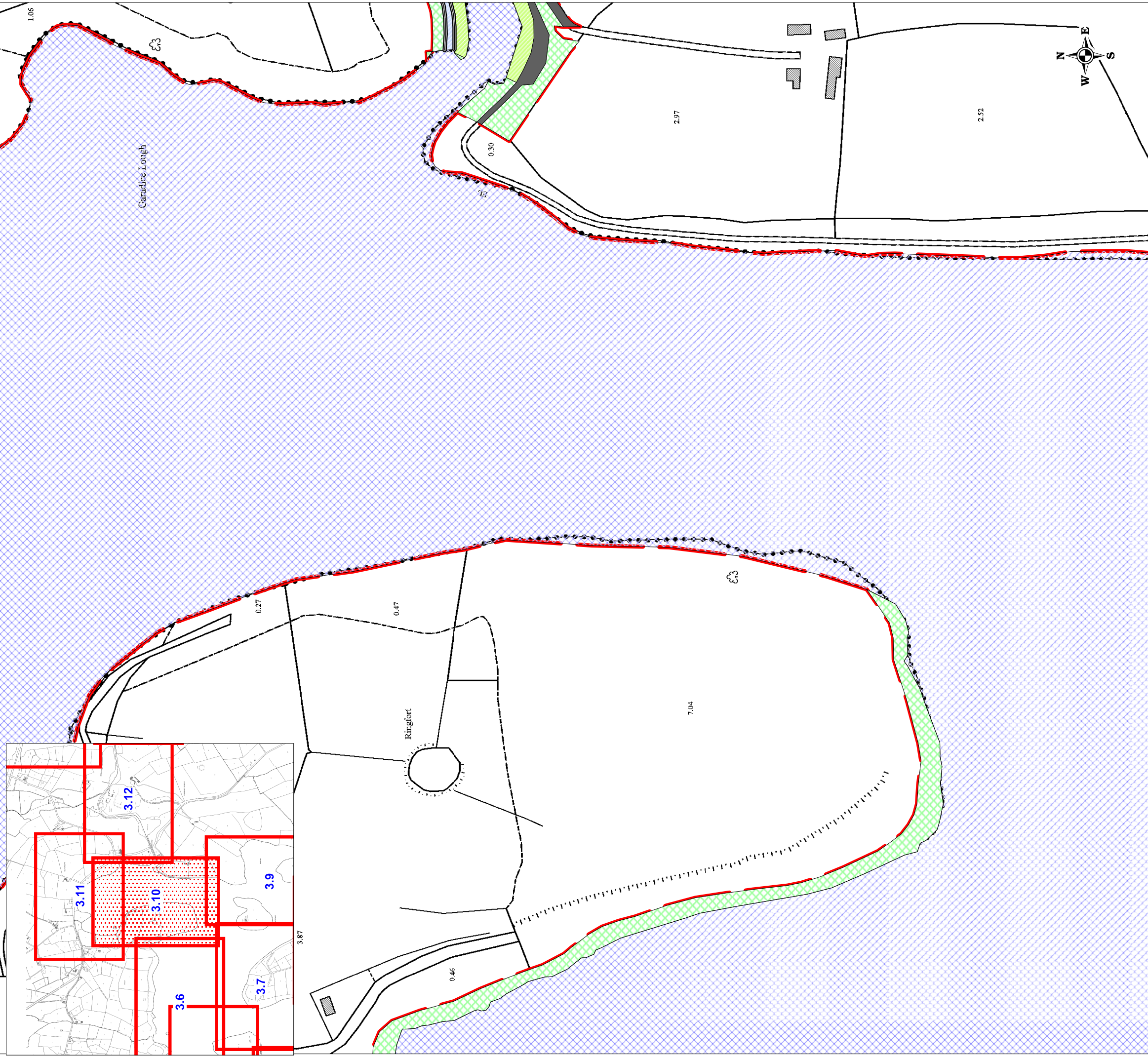
-  Hedgerows (WL1)
-  Treelines (WL2)
-  Dry Meadows and Grassy Verges (GS2)
-  Habitat Mosaic (GS2/WS1)
-  Wet Grassland (GS4)
-  Habitat Mosaic (GS4/WS1)
-  (Mixed) Broadleaved Woodland (WD1)
-  Conifer Plantation (WD4)
-  Wet Pedunculate Oak - Ash Woodland (WN4)
-  Wet Willow-Alder Ash-Woodland (WN6)
-  Scrub (WS1)










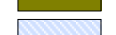
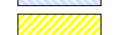










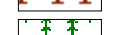





MAP TITLE: Habitat Mapping Garadice Lough to Ballyconnell **MAP NO.: Figure 3.9** **SCALE: 1:2550**
PROJECT TITLE: WI Shannon-Erne Ecological Assessment **OS SHEET NO.: N/A** **DATE: 25-10-2016**
DRAWING BY: P Boyle **CHECKED BY: J Hynes** **ISSUE NO.: 160 149-2016.10.25-D1**
McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moreenagarras Road, Galway, Ireland. Email: info@mcCarthyKeville.ie Tel: +353 (0)91 779611 Fax: +353 (0)91 771279

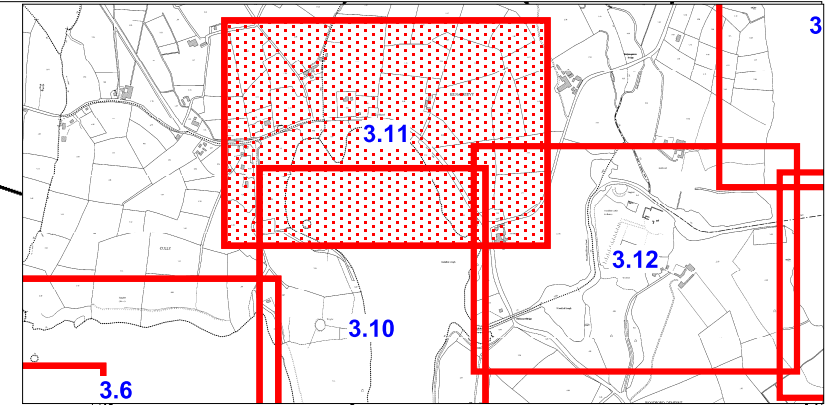
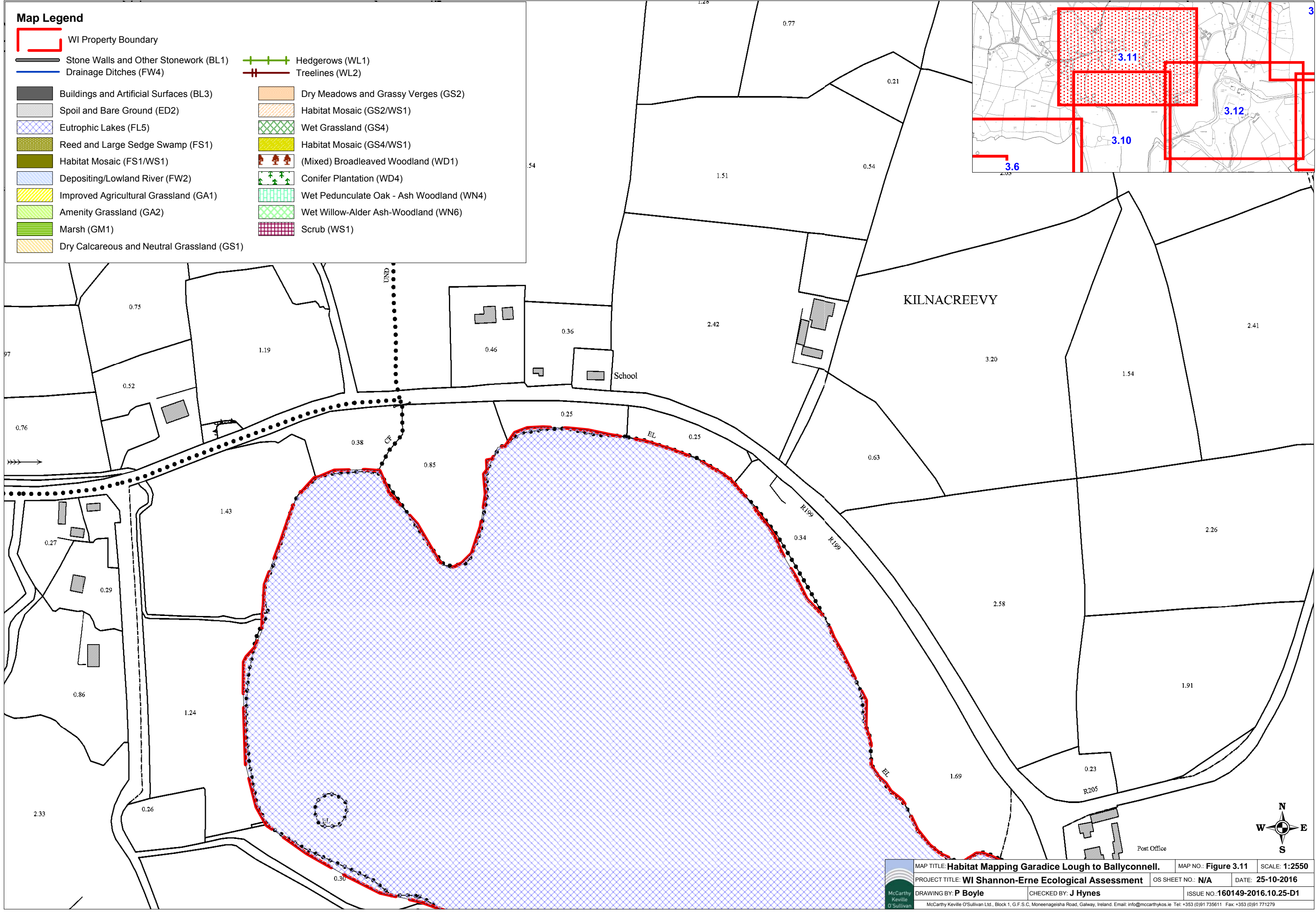
Map Legend


-  WI Property Boundary
-  Stone Walls and Other Stonework (BL1)
-  Drainage Ditches (FW4)
-  Buildings and Artificial Surfaces (BL3)
-  Spoil and Bare Ground (ED2)
-  Eutrophic Lakes (FL5)
-  Reed and Large Sedge Swamp (FS1)
-  Habitat Mosaic (FS1/W/S1)
-  Depositing/Lowland River (FW2)
-  Improved Agricultural Grassland (GA1)
-  Amenity Grassland (GA2)
-  Marsh (GM1)
-  Dry Calcareous and Neutral Grassland (GS1)
-  Hedgerows (WL1)
-  Treelines (WL2)
-  Dry Meadows and Grassy Verges (GS2)
-  Habitat Mosaic (GS2/W/S1)
-  Wet Grassland (GS4)
-  Habitat Mosaic (GS4/W/S1)
-  (Mixed) Broadleaved Woodland (WD1)
-  Conifer Plantation (WD4)
-  Wet Pedunculate Oak - Ash Woodland (WN4)
-  Wet Willow-Alder Ash-Woodland (WN6)
-  Scrub (WS1)



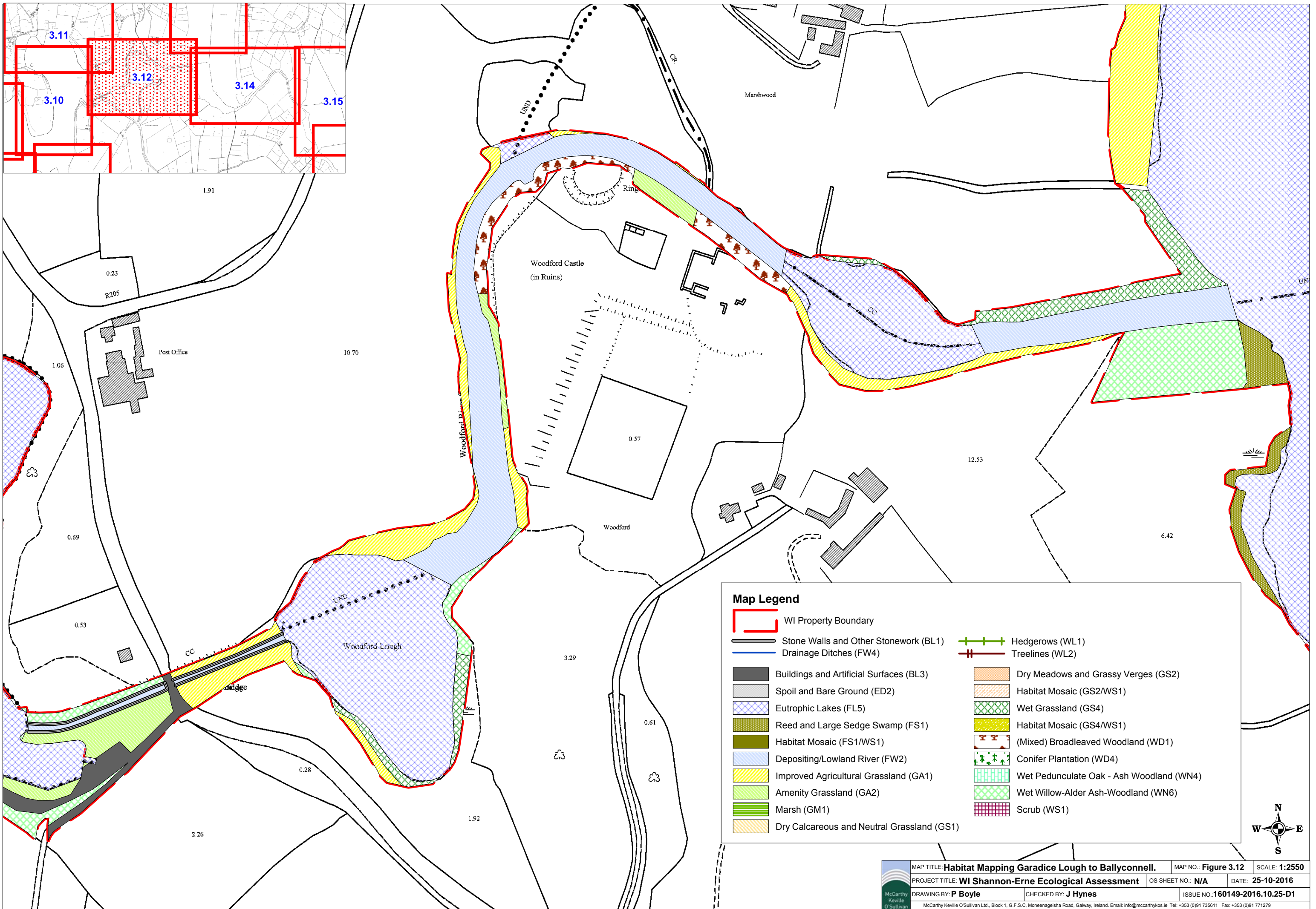
Map Legend

-  WI Property Boundary
-  Stone Walls and Other Stonework (BL1)
-  Drainage Ditches (FW4)
-  Buildings and Artificial Surfaces (BL3)
-  Spoil and Bare Ground (ED2)
-  Eutrophic Lakes (FL5)
-  Reed and Large Sedge Swamp (FS1)
-  Habitat Mosaic (FS1/WS1)
-  Depositing/Lowland River (FW2)
-  Improved Agricultural Grassland (GA1)
-  Amenity Grassland (GA2)
-  Marsh (GM1)
-  Dry Calcareous and Neutral Grassland (GS1)
-  Hedgerows (WL1)
-  Treelines (WL2)
-  Dry Meadows and Grassy Verges (GS2)
-  Habitat Mosaic (GS2/WS1)
-  Wet Grassland (GS4)
-  Habitat Mosaic (GS4/WS1)
-  (Mixed) Broadleaved Woodland (WD1)
-  Conifer Plantation (WD4)
-  Wet Pedunculate Oak - Ash Woodland (WN4)
-  Wet Willow-Alder Ash-Woodland (WN6)
-  Scrub (WS1)



	MAP TITLE: Habitat Mapping Garadice Lough to Ballyconnell.	MAP NO.: Figure 3.11	SCALE: 1:2550
	PROJECT TITLE: WI Shannon-Erne Ecological Assessment	OS SHEET NO.: N/A	DATE: 25-10-2016
	DRAWING BY: P Boyle	CHECKED BY: J Hynes	ISSUE NO.: 160149-2016.10.25-D1
	<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthysos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279</small>		

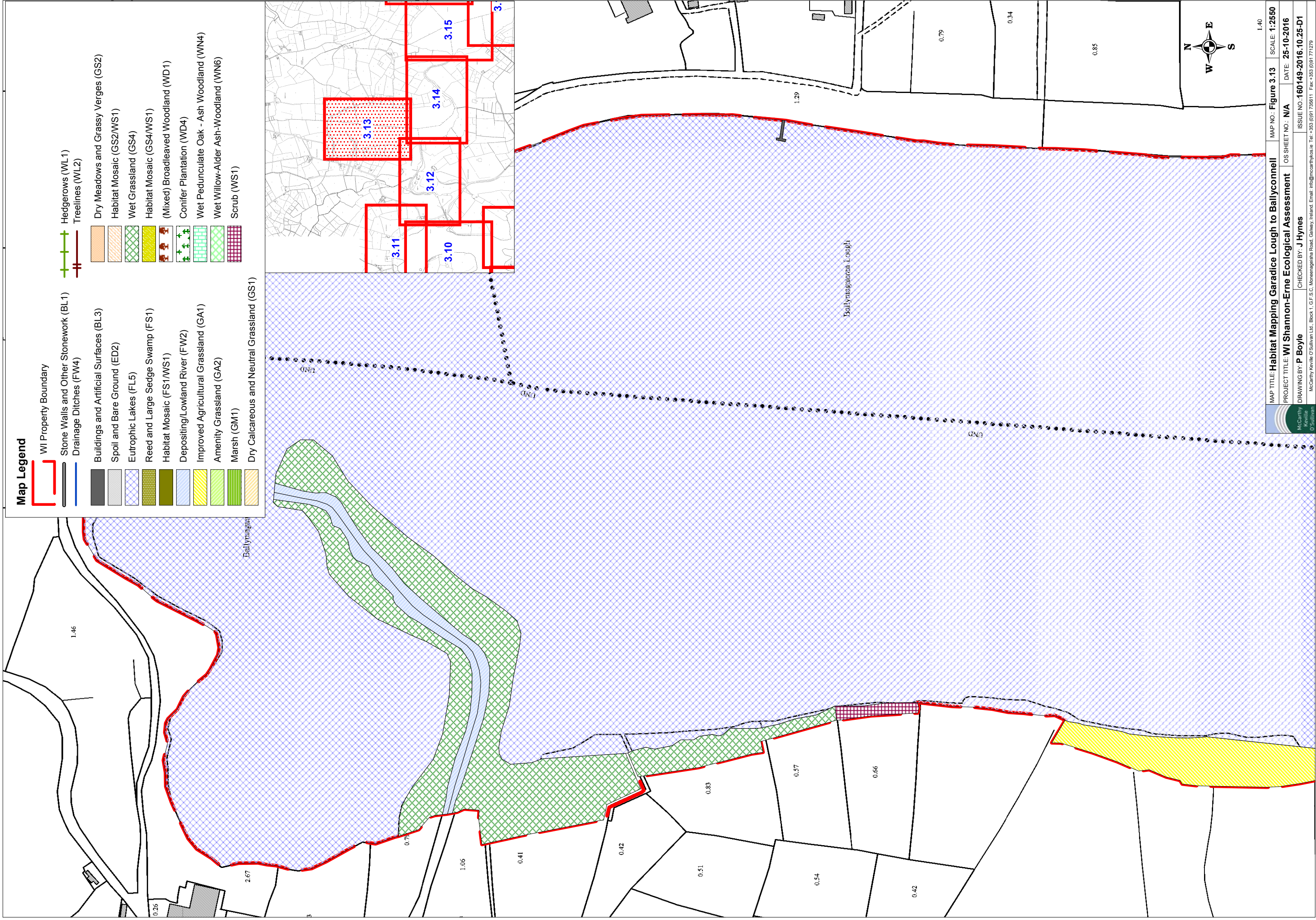
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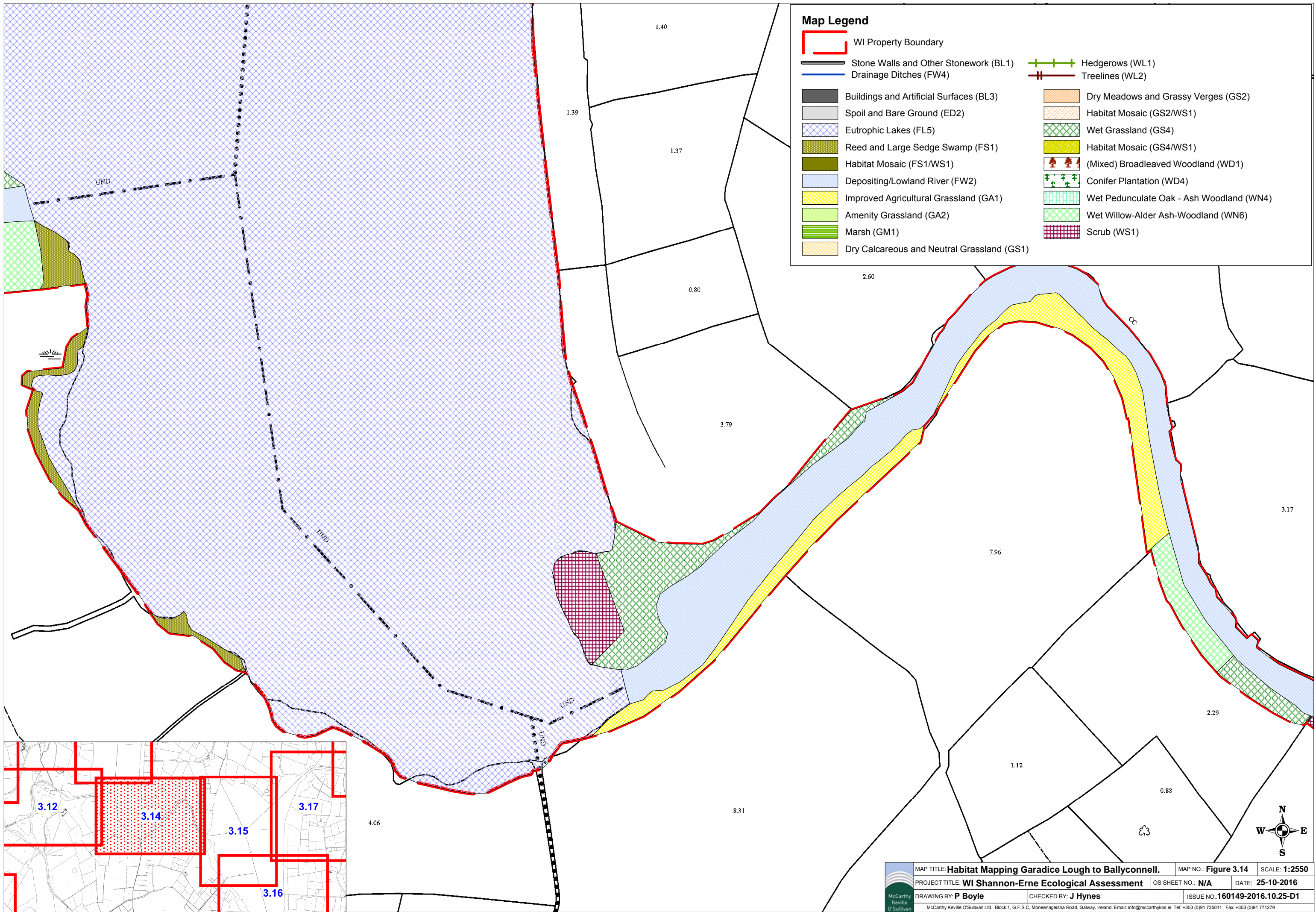


Map Legend

WI Property Boundary	Hedgerows (WL1)
Stone Walls and Other Stonework (BL1)	Treelines (WL2)
Drainage Ditches (FW4)	Dry Meadows and Grassy Verges (GS2)
Buildings and Artificial Surfaces (BL3)	Habitat Mosaic (GS2/WS1)
Spoil and Bare Ground (ED2)	Wet Grassland (GS4)
Eutrophic Lakes (FL5)	Habitat Mosaic (GS4/WS1)
Reed and Large Sedge Swamp (FS1)	(Mixed) Broadleaved Woodland (WD1)
Habitat Mosaic (FS1/WS1)	Conifer Plantation (WD4)
Depositing/Lowland River (FW2)	Wet Pedunculate Oak - Ash Woodland (WN4)
Improved Agricultural Grassland (GA1)	Wet Willow-Alder Ash-Woodland (WN6)
Amenity Grassland (GA2)	Scrub (WS1)
Marsh (GM1)	
Dry Calcareous and Neutral Grassland (GS1)	





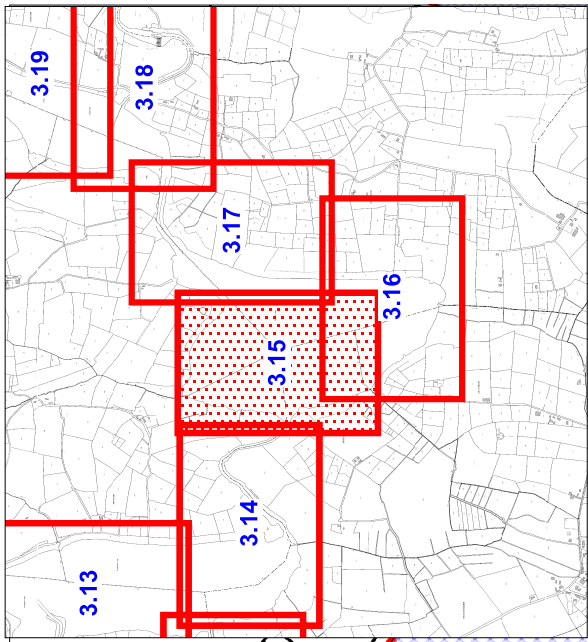
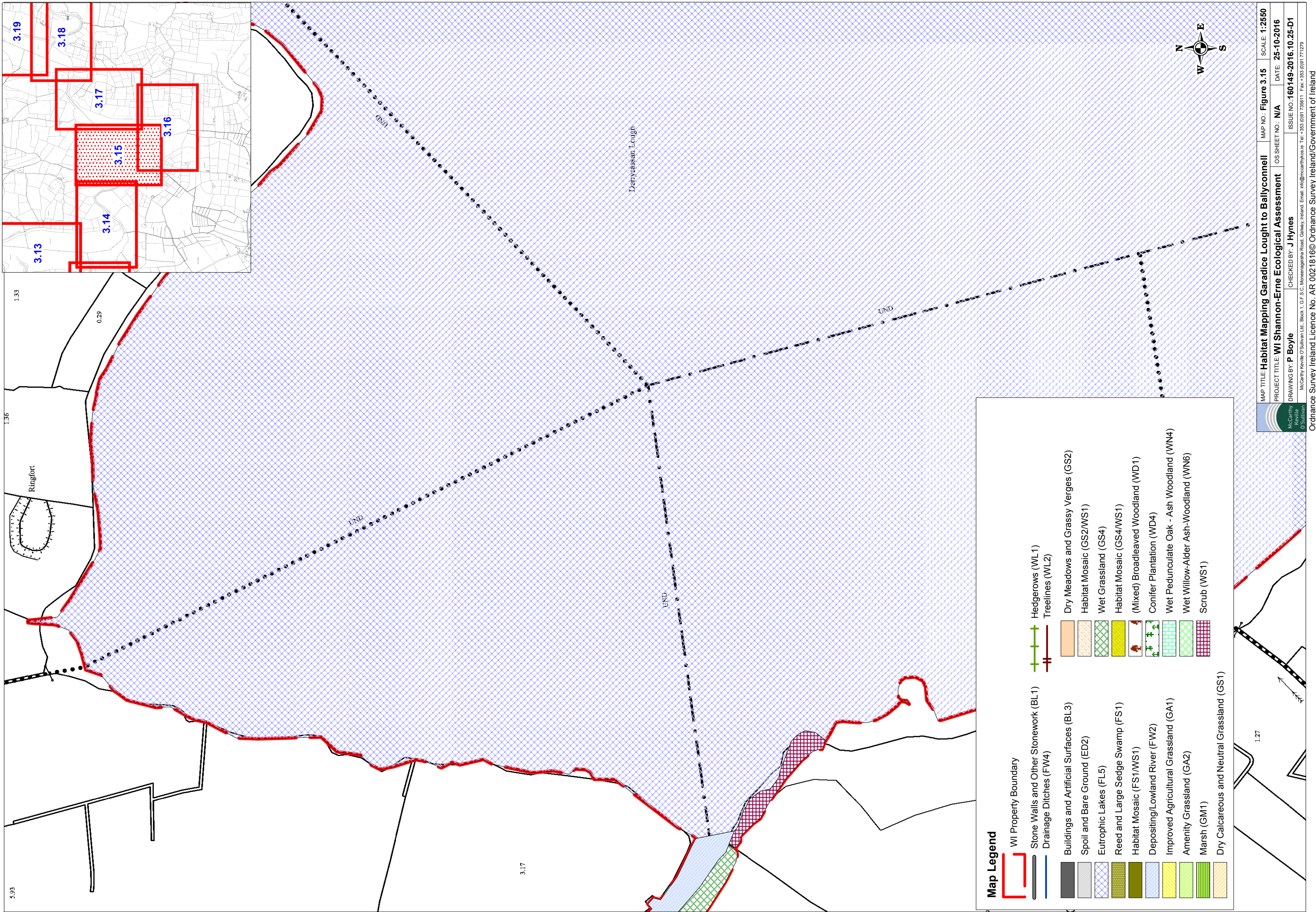


Map Legend

WI Property Boundary	Hedgerows (WL1)
Stone Walls and Other Stonework (BL1)	Treelines (WL2)
Drainage Ditches (FW4)	Dry Meadows and Grassy Verges (GS2)
Buildings and Artificial Surfaces (BL3)	Habitat Mosaic (GS2/WS1)
Spoil and Bare Ground (ED2)	Wet Grassland (GS4)
Eutrophic Lakes (FL5)	Habitat Mosaic (GS4/WS1)
Reed and Large Sedge Swamp (FS1)	(Mixed) Broadleaved Woodland (WD1)
Habitat Mosaic (FS1/WS1)	Conifer Plantation (WD4)
Depositing/Lowland River (FW2)	Wet Pedunculate Oak - Ash Woodland (WN4)
Improved Agricultural Grassland (GA1)	Wet Willow-Alder Ash-Woodland (WN6)
Amenity Grassland (GA2)	Scrub (WS1)
Marsh (GM1)	
Dry Calcareous and Neutral Grassland (GS1)	

	MAP TITLE: Habitat Mapping Garadice Lough to Ballyconnell.	MAP NO.: Figure 3.14	SCALE: 1:2550
	PROJECT TITLE: WI Shannon-Erne Ecological Assessment	OS SHEET NO.: N/A	DATE: 25-10-2016
	DRAWING BY: P Boyle	CHECKED BY: J Hynes	ISSUE NO.: 160149-2016.10.25-D1
	<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthysos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279</small>		

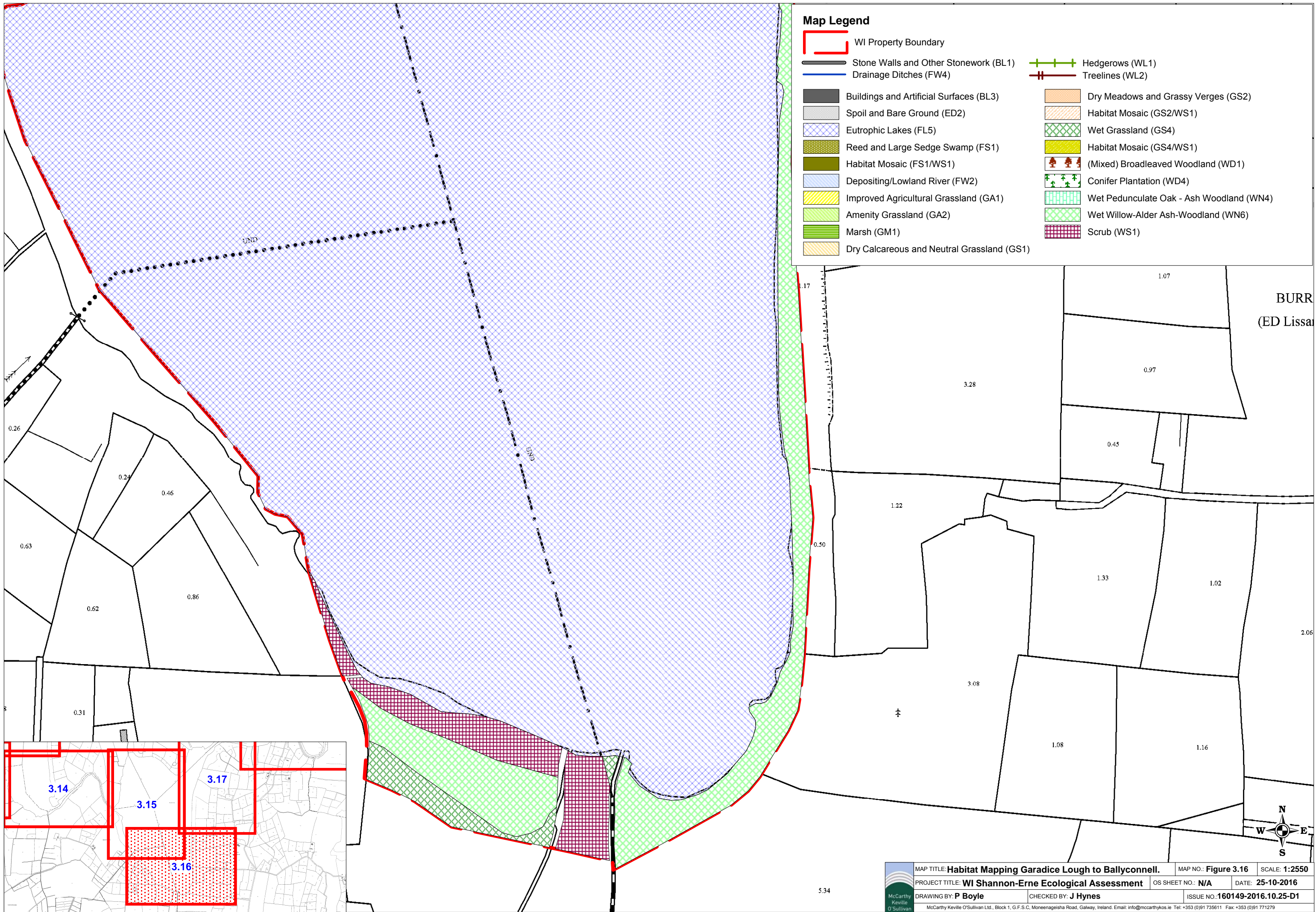
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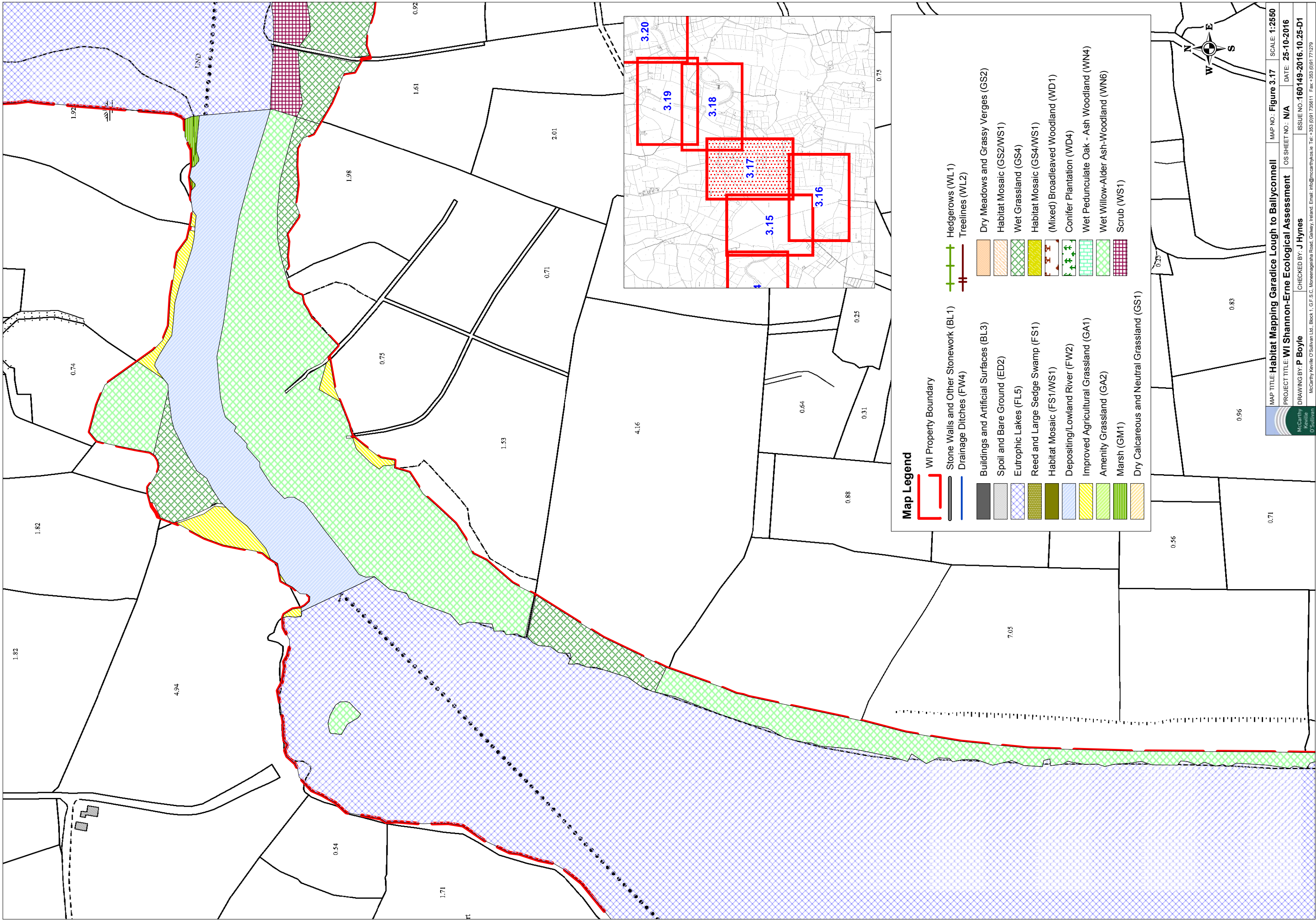


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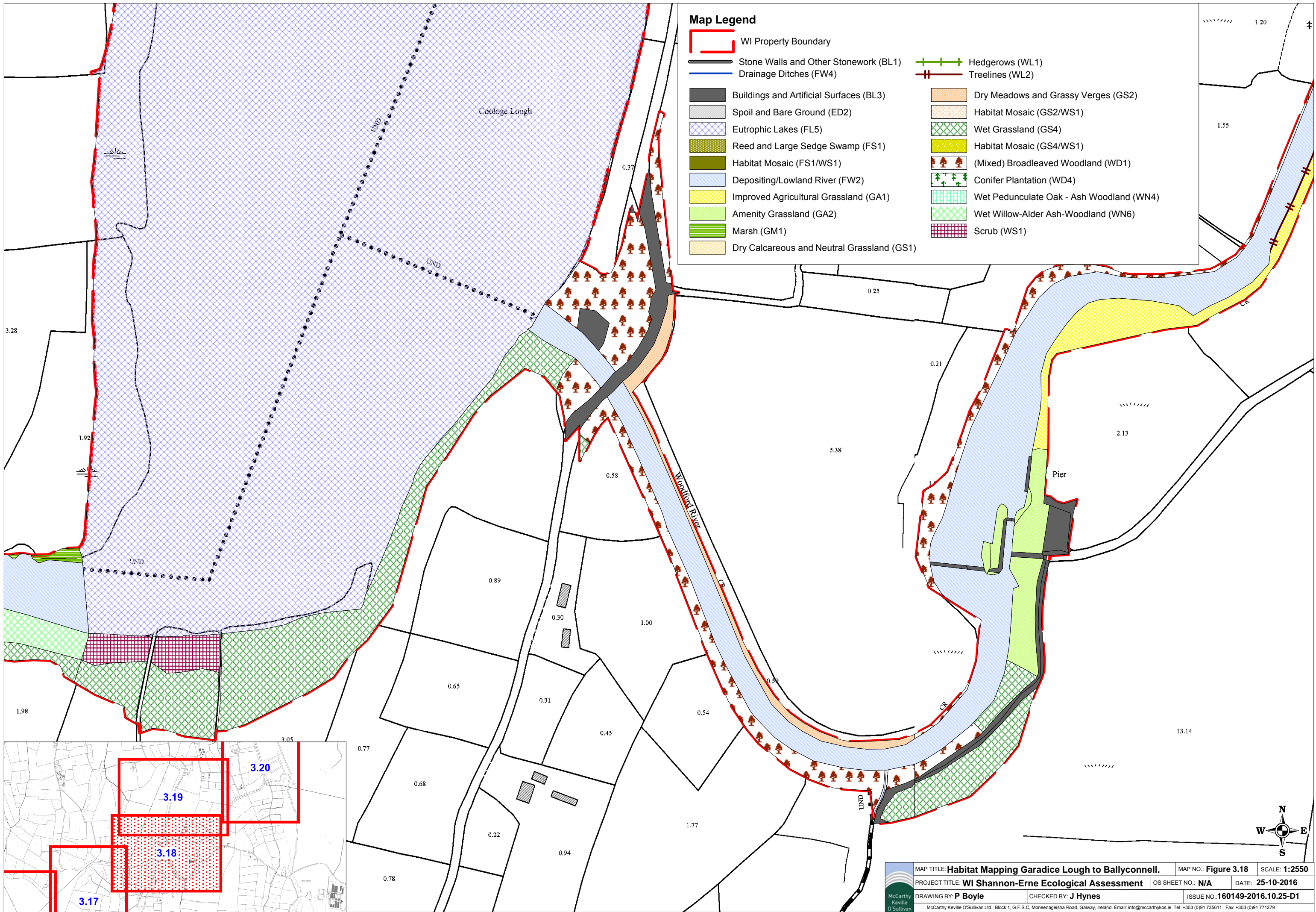
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| WI Property Boundary | Hedgerows (WL1) | Dry Meadows and Grassy Verges (GS2) |
| Stone Walls and Other Stonework (BL1) | Treelines (WL2) | Habitat Mosaic (GS2/WS1) |
| Drainage Ditches (FW4) | | Wet Grassland (GS4) |
| Buildings and Artificial Surfaces (BL3) | | Habitat Mosaic (GS4/WS1) |
| Spoil and Bare Ground (ED2) | | (Mixed) Broadleaved Woodland (WD1) |
| Eutrophic Lakes (FL5) | | Conifer Plantation (WD4) |
| Reed and Large Sedge Swamp (FS1) | | Wet Pedunculate Oak - Ash Woodland (WN4) |
| Habitat Mosaic (FS1/WS1) | | Wet Willow-Alder Ash-Woodland (WN6) |
| Depositing/Lowland River (FW2) | | Scrub (WS1) |
| Improved Agricultural Grassland (GA1) | | |
| Amenity Grassland (GA2) | | |
| Marsh (GM1) | | |
| Dry Calcareous and Neutral Grassland (GS1) | | |







MAP TITLE: **Habitat Mapping Garadice Lough to Ballyconnell** MAP NO.: **Figure 3.17** SCALE: **1:2550**
 PROJECT TITLE: **WI Shannon-Erne Ecological Assessment** OS SHEET NO.: **N/A** DATE: **25-10-2016**
 DRAWING BY: **P Boyle** CHECKED BY: **J Hynes** ISSUE NO.: **160 149-2016.10.25-D1**
 McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneneengara Road, Galway, Ireland. Email: info@mccarthys.ie Tel: +353 (0)91 779611 Fax: +353 (0)91 771279

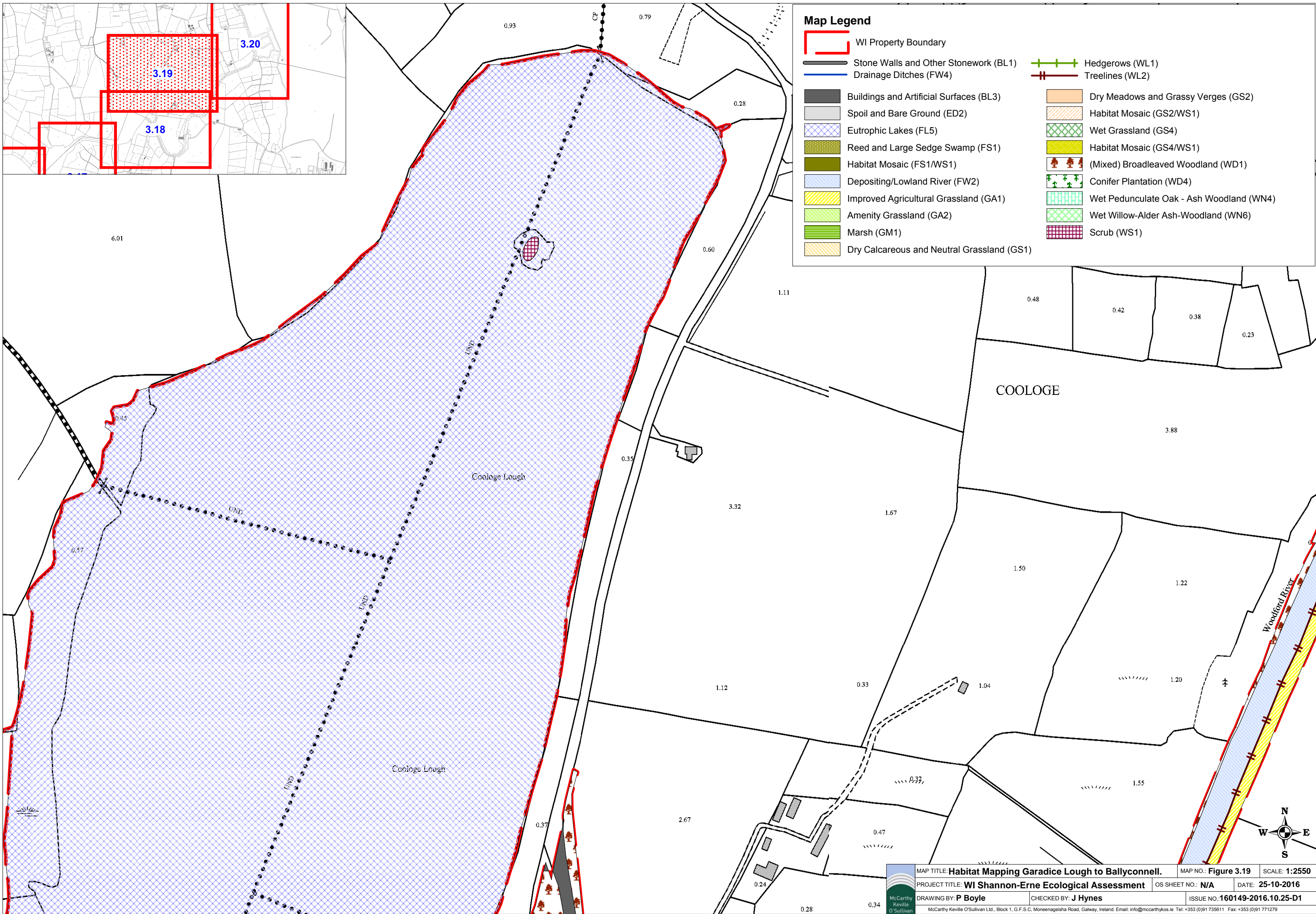
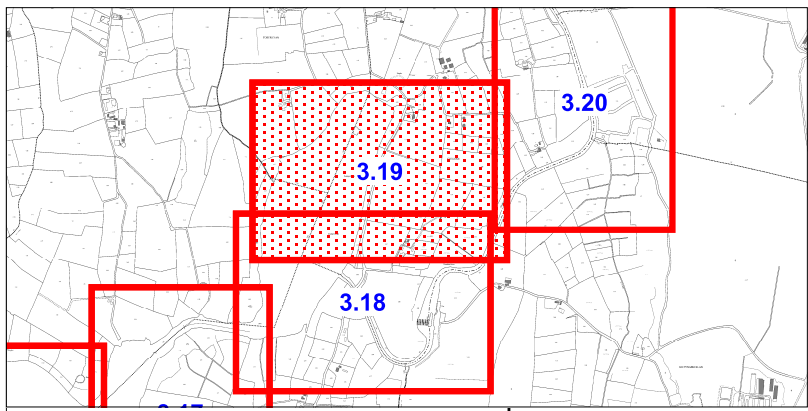


Map Legend

- WI Property Boundary
- Stone Walls and Other Stonework (BL1)
- Drainage Ditches (FW4)
- Buildings and Artificial Surfaces (BL3)
- Spoil and Bare Ground (ED2)
- Eutrophic Lakes (FL5)
- Reed and Large Sedge Swamp (FS1)
- Habitat Mosaic (FS1/WS1)
- Depositing/Lowland River (FW2)
- Improved Agricultural Grassland (GA1)
- Amenity Grassland (GA2)
- Marsh (GM1)
- Dry Calcareous and Neutral Grassland (GS1)
- Dry Meadows and Grassy Verges (GS2)
- Habitat Mosaic (GS2/WS1)
- Wet Grassland (GS4)
- Habitat Mosaic (GS4/WS1)
- (Mixed) Broadleaved Woodland (WD1)
- Conifer Plantation (WD4)
- Wet Pedunculate Oak - Ash Woodland (WN4)
- Wet Willow-Alder Ash-Woodland (WN6)
- Scrub (WS1)
- Hedgerows (WL1)
- Treelines (WL2)

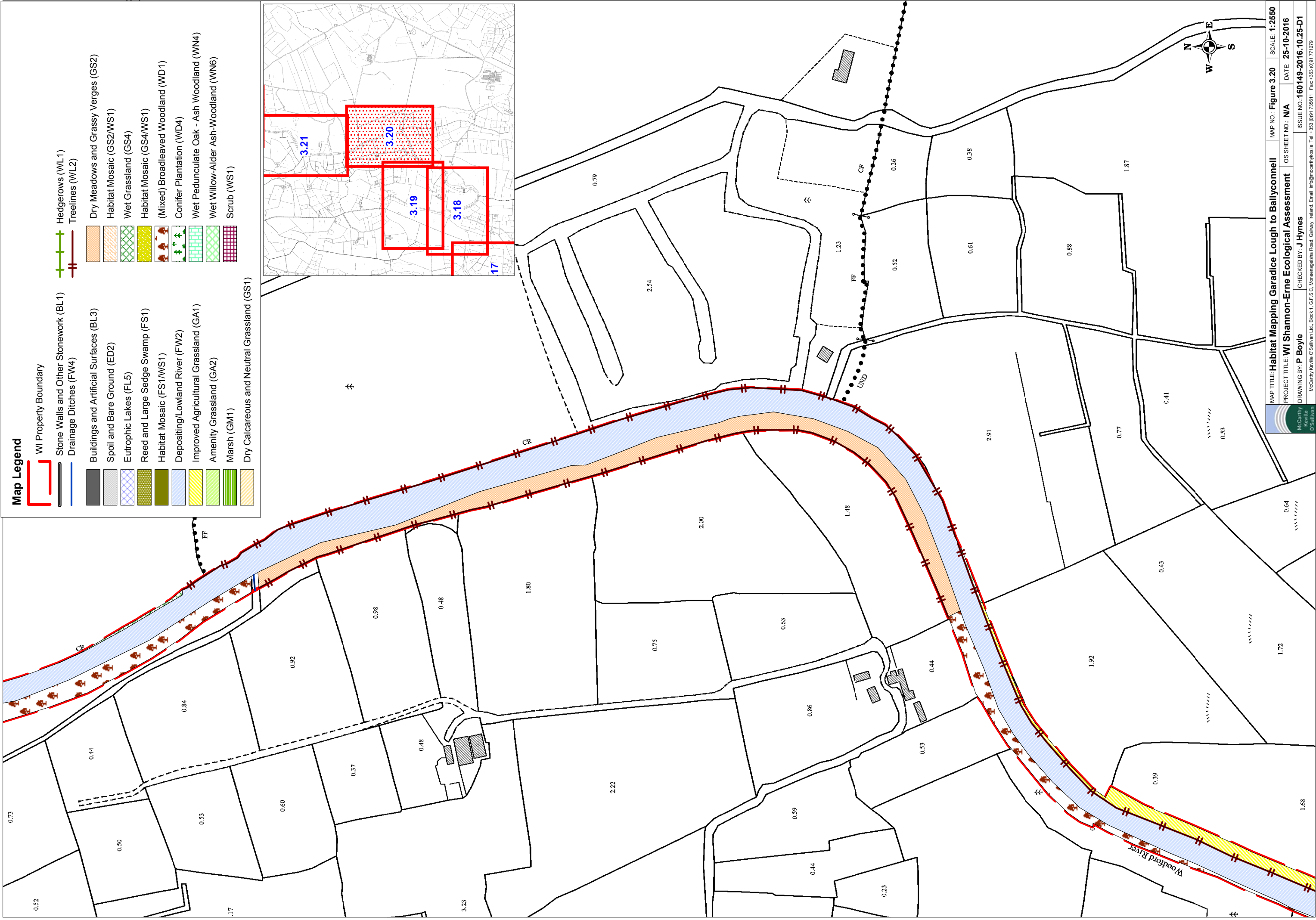
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PROJECT TITLE: WI Shannon-Erne Ecological Assessment	OS SHEET NO.: N/A	DATE: 25-10-2016
DRAWING BY: P Boyle	CHECKED BY: J Hynes	ISSUE NO.: 160149-2016.10.25-D1

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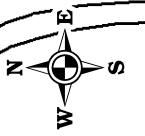
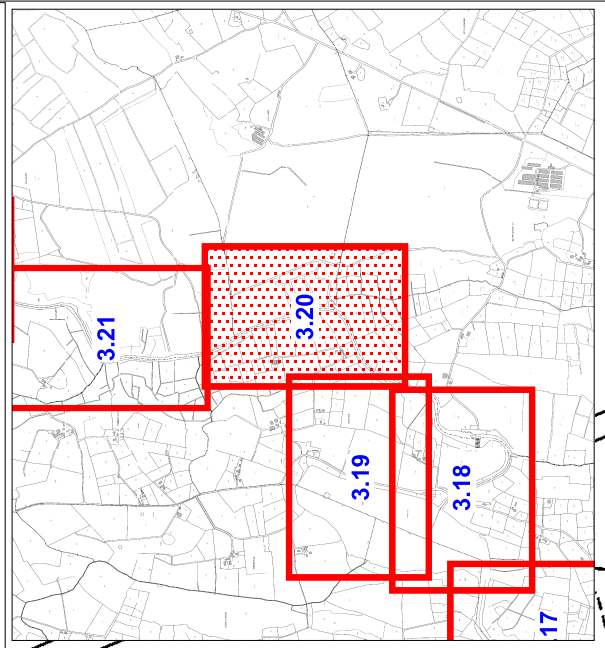
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	Stone Walls and Other Stonework (BL1)		Treelines (WL2)
	Drainage Ditches (FW4)		Dry Meadows and Grassy Verges (GS2)
	Buildings and Artificial Surfaces (BL3)		Habitat Mosaic (GS2/WS1)
	Spoil and Bare Ground (ED2)		Wet Grassland (GS4)
	Eutrophic Lakes (FL5)		Habitat Mosaic (GS4/WS1)
	Reed and Large Sedge Swamp (FS1)		(Mixed) Broadleaved Woodland (WD1)
	Habitat Mosaic (FS1/WS1)		Conifer Plantation (WD4)
	Depositing/Lowland River (FW2)		Wet Pedunculate Oak - Ash Woodland (WN4)
	Improved Agricultural Grassland (GA1)		Wet Willow-Alder Ash-Woodland (WN6)
	Amenity Grassland (GA2)		Scrub (WS1)
	Marsh (GM1)		
	Dry Calcareous and Neutral Grassland (GS1)		




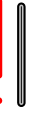






















Map Legend

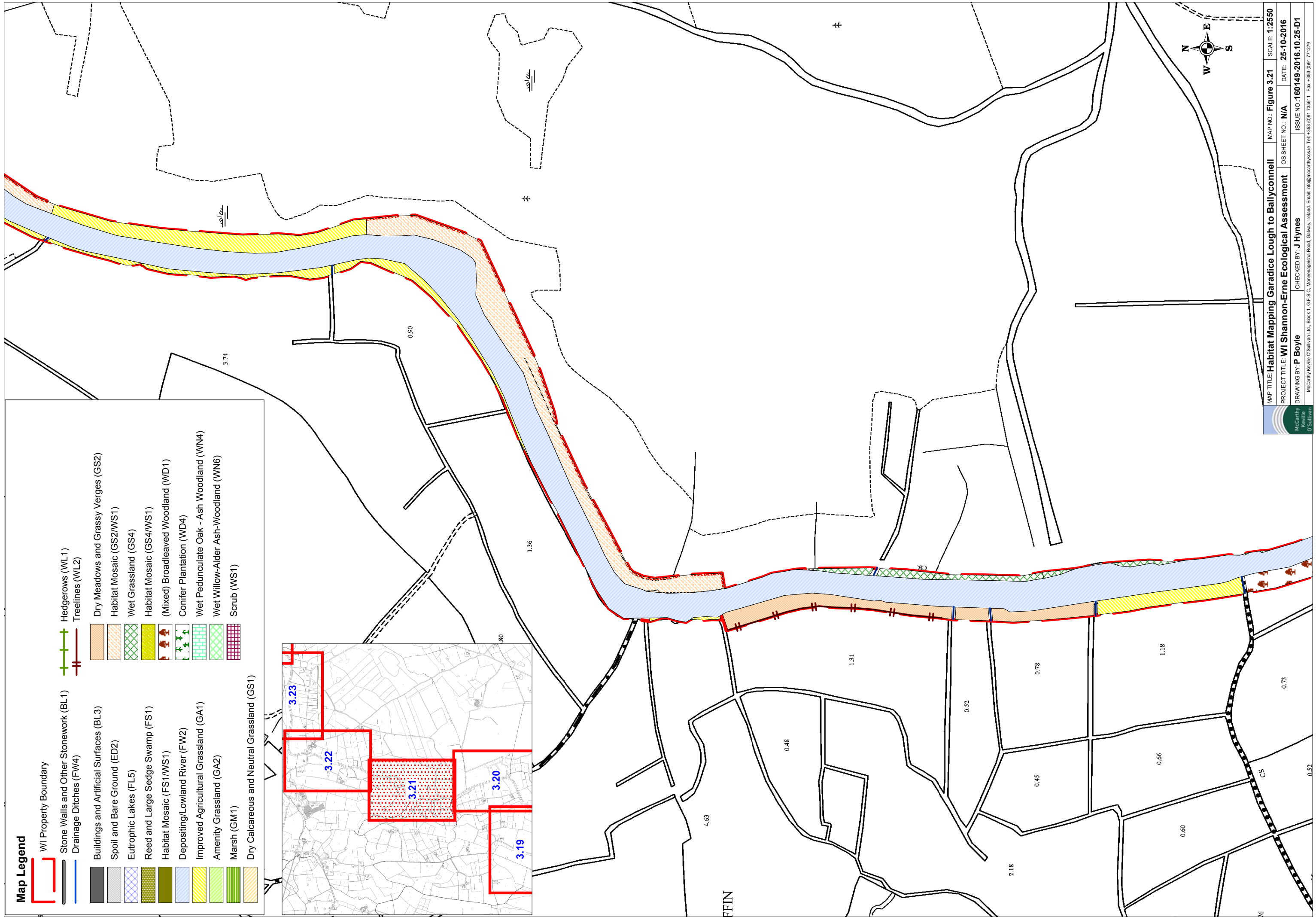
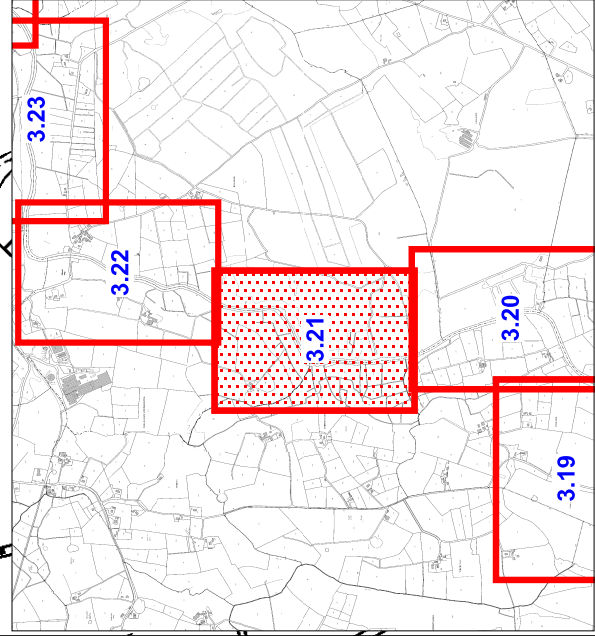
- WI Property Boundary
- Stone Walls and Other Stonework (BL1)
- Drainage Ditches (FW4)
- Buildings and Artificial Surfaces (BL3)
- Spoil and Bare Ground (ED2)
- Eutrophic Lakes (FL5)
- Reed and Large Sedge Swamp (FS1)
- Habitat Mosaic (FS1WS1)
- Depositing/Lowland River (FW2)
- Improved Agricultural Grassland (GA1)
- Amenity Grassland (GA2)
- Marsh (GM1)
- Dry Calcareous and Neutral Grassland (GS1)
- Hedgerows (WL1)
- Treelines (WL2)
- Dry Meadows and Grassy Verges (GS2)
- Habitat Mosaic (GS2WS1)
- Wet Grassland (GS4)
- Habitat Mosaic (GS4WS1)
- (Mixed) Broadleaved Woodland (WD1)
- Conifer Plantation (WD4)
- Wet Pedunculate Oak - Ash Woodland (WN4)
- Wet Willow-Alder Ash-Woodland (WNE)
- Scrub (WS1)



MAP TITLE: Habitat Mapping Garadice Lough to Ballyconnell	MAP NO.: Figure 3.20	SCALE: 1:2550
PROJECT TITLE: WI Shannon-Erne Ecological Assessment	OS SHEET NO.: N/A	DATE: 25-10-2016
DRAWING BY: P Boyle	CHECKED BY: J Hynes	ISSUE NO.: 160 149-2016.10.25-D1
<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moreenagarrara Road, Galway, Ireland. Email: info@mcCarthyKeville.ie Tel: +353 (0)91 795611 Fax: +353 (0)91 771279</small>		

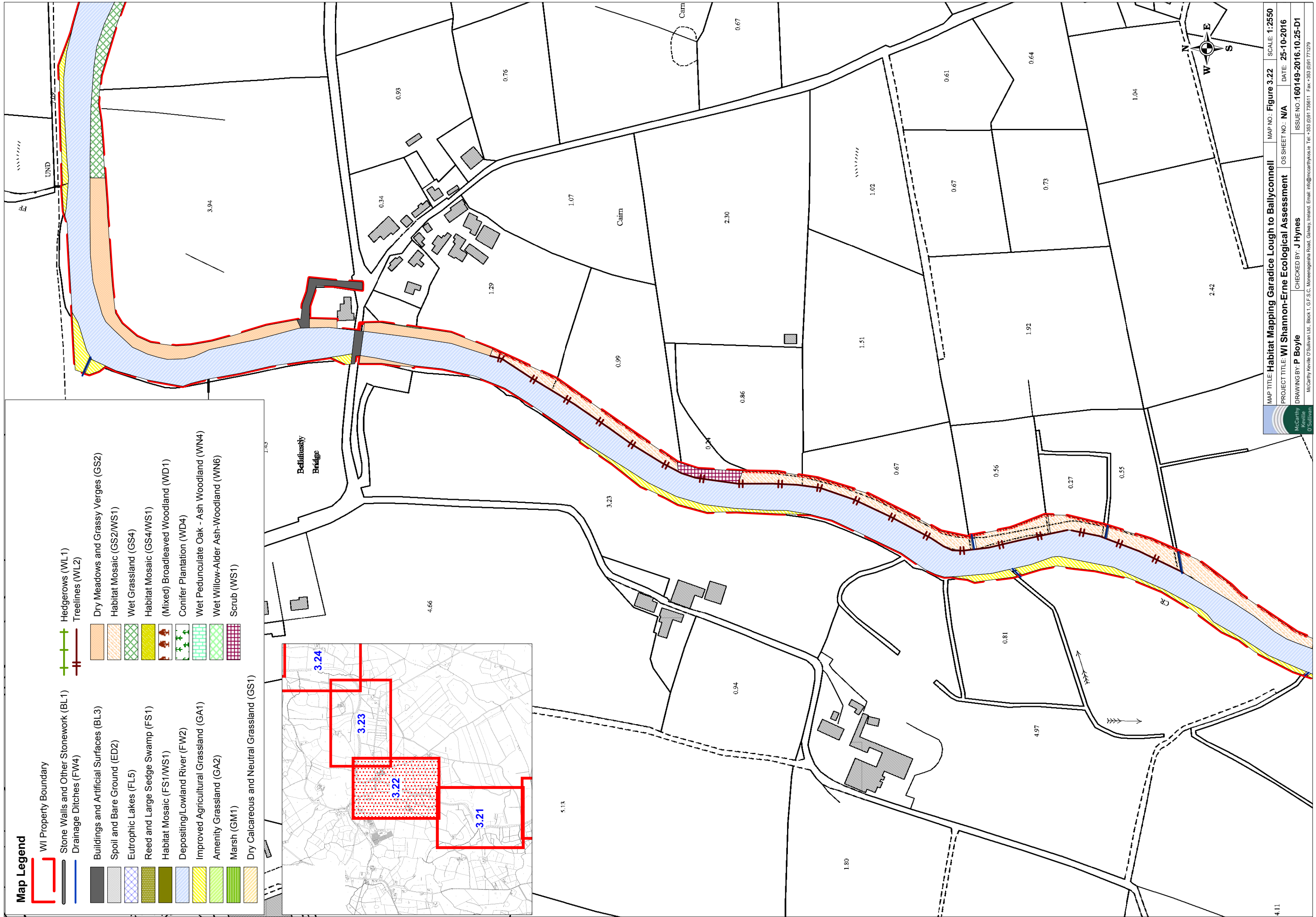
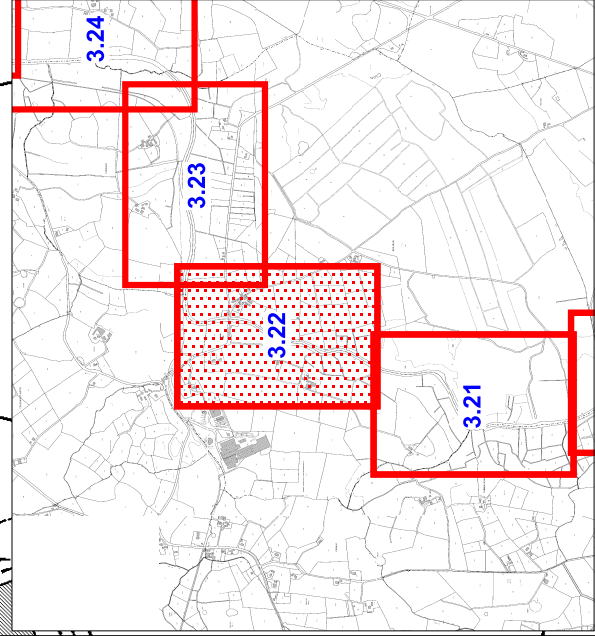
Map Legend

-  WI Property Boundary
-  Stone Walls and Other Stonework (BL1)
-  Drainage Ditches (FW4)
-  Buildings and Artificial Surfaces (BL3)
-  Spoil and Bare Ground (ED2)
-  Eutrophic Lakes (FL5)
-  Reed and Large Sedge Swamp (FS1)
-  Habitat Mosaic (FS1/MS1)
-  Depositing/Lowland River (FW2)
-  Improved Agricultural Grassland (GA1)
-  Amenity Grassland (GA2)
-  Marsh (GM1)
-  Dry Calcareous and Neutral Grassland (GS1)
-  Hedgerows (WL1)
-  Treelines (WL2)
-  Dry Meadows and Grassy Verges (GS2)
-  Habitat Mosaic (GS2/WS1)
-  Wet Grassland (GS4)
-  Habitat Mosaic (GS4/WS1)
-  (Mixed) Broadleaved Woodland (WD1)
-  Conifer Plantation (WD4)
-  Wet Pedunculate Oak - Ash Woodland (WN4)
-  Wet Willow-Alder Ash-Woodland (WN6)
-  Scrub (WS1)



Map Legend

- | | | | |
|--|--|--|--|
| | WI Property Boundary | | Hedgerows (WL1) |
| | Stone Walls and Other Stonework (BL1) | | Treelines (WL2) |
| | Drainage Ditches (FW4) | | Dry Meadows and Grassy Verges (GS2) |
| | Buildings and Artificial Surfaces (BL3) | | Habitat Mosaic (GS2/WS1) |
| | Spoil and Bare Ground (ED2) | | Wet Grassland (GS4) |
| | Eutrophic Lakes (FL5) | | Habitat Mosaic (GS4/WS1) |
| | Reed and Large Sedge Swamp (FS1) | | (Mixed) Broadleaved Woodland (WD1) |
| | Habitat Mosaic (FS1/WS1) | | Conifer Plantation (WD4) |
| | Depositing/Lowland River (FW2) | | Wet Pedunculate Oak - Ash Woodland (WN4) |
| | Improved Agricultural Grassland (GA1) | | Wet Willow-Alder Ash-Woodland (WN6) |
| | Amenity Grassland (GA2) | | Scrub (WS1) |
| | Marsh (GM1) | | |
| | Dry Calcareous and Neutral Grassland (GS1) | | |

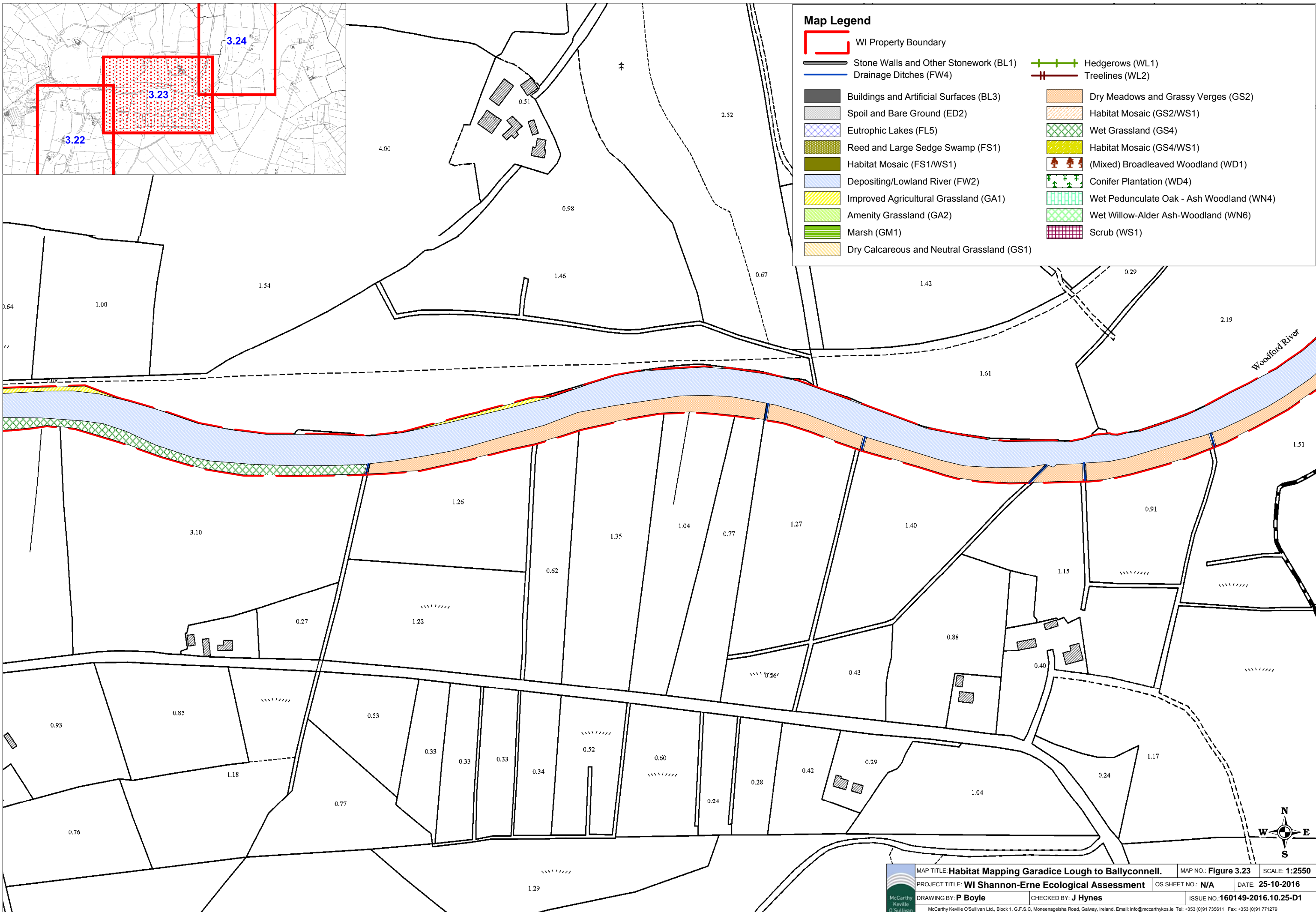


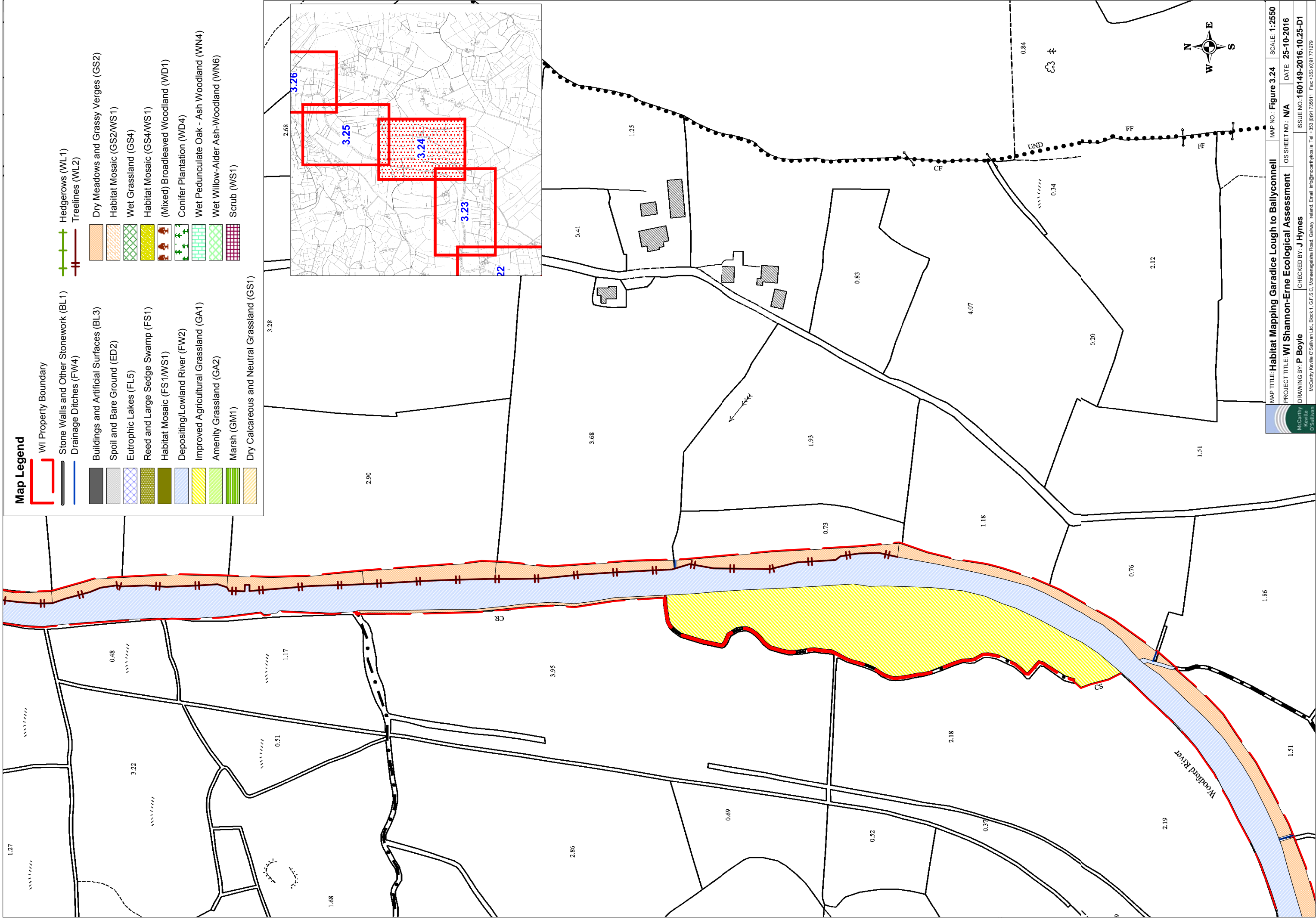
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PROJECT TITLE: **WI Shannon-Erne Ecological Assessment** OS SHEET NO.: **N/A** DATE: **25-10-2016**


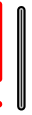











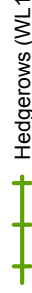
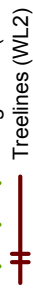









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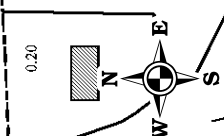
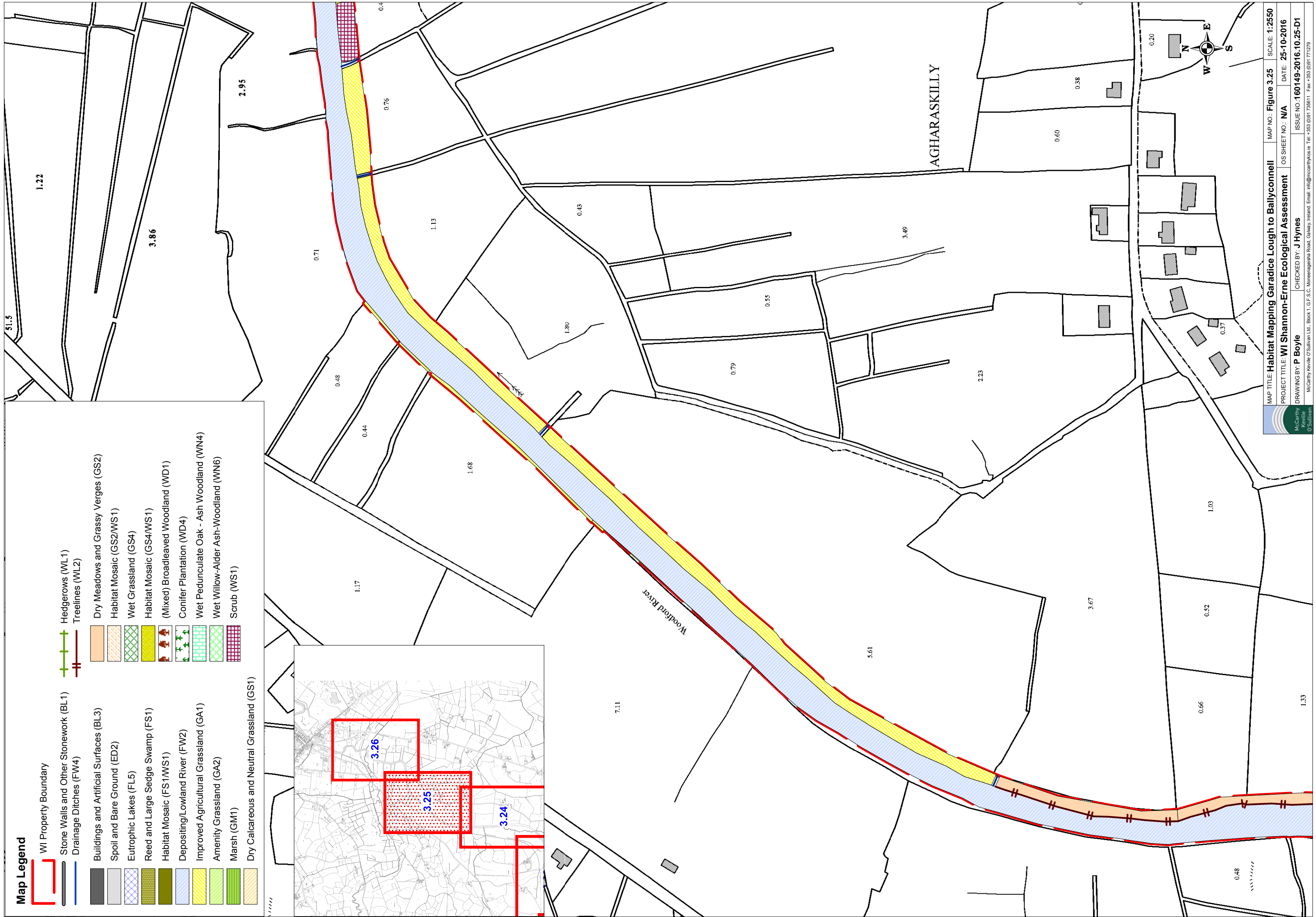
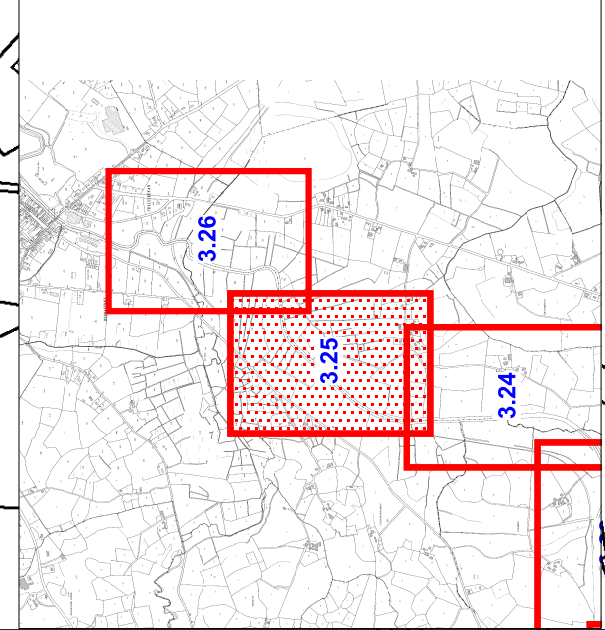
McCarthy Keville O'Sullivan Ltd., Block 1, G.F.C. Moreenagarras Road, Galway, Ireland. Email: info@mccarthys.ie Tel: +353 (0)91 795611 Fax: +353 (0)91 771279





Map Legend

-  WI Property Boundary
-  Stone Walls and Other Stonework (BL1)
-  Drainage Ditches (FW4)
-  Buildings and Artificial Surfaces (BL3)
-  Spoil and Bare Ground (ED2)
-  Eutrophic Lakes (FL5)
-  Reed and Large Sedge Swamp (FS1)
-  Habitat Mosaic (FS1/MS1)
-  Depositing/Lowland River (FW2)
-  Improved Agricultural Grassland (GA1)
-  Amenity Grassland (GA2)
-  Marsh (GM1)
-  Dry Calcareous and Neutral Grassland (GS1)
-  Hedgerows (WL1)
-  Treelines (WL2)
-  Dry Meadows and Grassy Verges (GS2)
-  Habitat Mosaic (GS2/MS1)
-  Wet Grassland (GS4)
-  Habitat Mosaic (GS4/WS1)
-  (Mixed) Broadleaved Woodland (WD1)
-  Conifer Plantation (WD4)
-  Wet Pedunculate Oak - Ash Woodland (WN4)
-  Wet Willow-Alder Ash-Woodland (WN6)
-  Scrub (WS1)



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