

APPENDIX 10:**ECOLOGY & NATURE CONSERVATION****Annex A: Phase 1 Habitat Survey****Annex B: Bat Survey****Annex C: Otter Survey****Annex D: Breeding Bird Survey****Annex E: Newt Survey**

APPENDIX 10: ECOLOGY & NATURE CONSERVATION

Annex A: Phase 1 Habitat Survey



A24 Ballynahinch Bypass

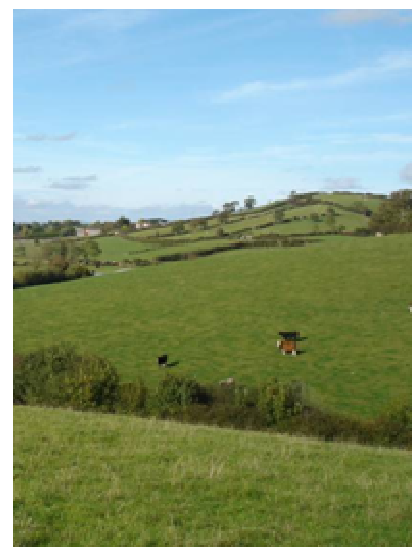
Appendix 10 Annex A
Phase 1 Habitat Survey

March 2015

47037246

Prepared for:
DRD Transport NI

UNITED
KINGDOM &
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transportni



An Agency within the Department for
**Regional
Development**
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Rev	Date	Details	Prepared by	Checked by	Approved by
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ANNEX A PHASE 1 HABITAT SURVEY

TABLE 1: PHASE 1 TARGET NOTES

Target Note	Habitat
T1	<p data-bbox="507 495 746 524">G2.1 Running Water</p>  <p data-bbox="507 1025 1417 1218">Habitats: At the time of the Phase 1 Habitat survey flow rates within the watercourse were very slow, with significant aggregations of emergent vegetation and macrophytes. Principal species include Branched Bur-reed (<i>Sparganium erectum</i>), Sweet-grass (<i>Glyceria sp.</i>), Water Forget-me-not (<i>Myosotis scorpioides</i>), Brooklime (<i>Veronica beccabunga</i>), Water-cress (<i>Rorippa nasturtium-aquaticum</i>), Meadowsweet (<i>Filipendula ulmaria</i>), Water horsetail (<i>Equisetum fluviatile</i>), Marsh-bedstraw (<i>Galium palustre</i>) and Common duckweed (<i>Lemna minor</i>).</p>
T2	<p data-bbox="507 1249 847 1279">B5 Marsh / Marshy Grassland</p>  <p data-bbox="507 1803 1406 1939">Habitats: An area of marsh / marshy grassland occupying an area of low lying land. Principal species include Soft rush (<i>Juncus effuses</i>), Sweet-grass (<i>Glyceria sp.</i>), Yorkshire fog (<i>Holcus lanatus</i>), Marsh foxtail (<i>Alopecurus geniculatus</i>), Water Forget-me-not, Cuckooflower (<i>Cardamine pratensis</i>), Large bitter-cress (<i>Cardamine amara</i>), Oval sedge (<i>Carex ovalis</i>) and Sharp-flowered rush (<i>Juncus acutiflorus</i>).</p>

Target Note	Habitat
<p>T3</p>	<p>B2.2 Semi Improved Neutral Grassland</p>  <p>Habitat: Consists of a narrow zone of semi-improved neutral grassland, present within the riparian zone of the Glassdrumman River. Principal species include Rough meadow-grass (<i>Poa trivialis</i>), Cock's-foot (<i>Dactylis glomerata</i>), False oat-grass (<i>Arrhenatherum elatius</i>), Meadowsweet, Common sorrel (<i>Rumex acetosa</i>), Creeping buttercup (<i>Ranunculus repens</i>) and Tufted vetch (<i>Vicia cracca</i>).</p>
<p>T4</p>	<p>A2.1 & A2.2 Dense / Scattered Scrub, A3.1 Scatter Broad-leaved Trees, B5 Marsh / Marshy Grassland and B2.2 Semi Improved Neutral Grassland (Species Poor)</p>  <p>Habitats: Extensive area consisting of a mosaic of dense / scattered scrub, scattered trees, marsh / marshy grassland and area of species poor semi improved neutral grassland. Principal species include Ash (<i>Fraxinus excelsior</i>) and Sycamore (<i>Acer pseudoplatanus</i>). Scrub consists largely of Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>), Gorse (<i>Ulex europaeus</i>) and Bramble (<i>Rubus fruticosus</i> agg.).</p> <p>Species present within the marsh / marshy grassland and the area of species poor semi improved neutral grassland include Soft rush, Rough meadow-grass, Tufted hair-grass (<i>Deschampsia cespitosa</i>), Creeping buttercup, Common sorrel, Crested dog's-tail (<i>Cynosurus cristatus</i>), Cock's-foot and Common nettle (<i>Urtica dioica</i>).</p>

Target Note	Habitat
<p>T5</p>	<p>B2.2 Semi Improved Neutral Grassland (Species Poor)</p>  <p>Habitats:</p> <p>Consists of an area of tall sward species poor semi-improved neutral grassland immediately adjacent to a new housing estate. Species present include False oat-grass, Rough meadow-grass, Yorkshire fog, Creeping buttercup, Cock's-foot, Creeping buttercup, White clover, Common nettle, Tufted vetch and Smooth hawk's-beard (<i>Crepis capillaris</i>).</p>
<p>T6</p>	<p>B2.2 Semi Improved Neutral Grassland (Species Poor)</p>  <p>Habitat: A relatively small area of species poor semi improved neutral grassland located on steep ground within a field consisting of otherwise improved grassland. Principal species include Rough meadow-grass, Cock's-foot, Perennial rye-grass (<i>Lolium perenne</i>), Creeping buttercup, Common mouse-ear (<i>Cerastium fontanum</i>), Common sorrel, Yarrow (<i>Achillea millefolium</i>), White clover and Common ragwort (<i>Senecio jacobaea</i>).</p>

Target Note	Habitat
<p>T7</p>	<p>B4 Improved Grassland</p>  <p>Habitats:</p> <p>Typical plant assemblages for fields classified as improved grassland include Perennial rye-grass, Timothy (<i>Phleum pratense</i>), Rough meadow-grass and Broad-leaved dock (<i>Rumex obtusifolius</i>). Other species which may be present though less frequent (particularly within the field margins) include Yorkshire fog, Creeping buttercup, Crested dog's-tail, Sweet vernal-grass and Meadow foxtail.</p>
<p>T8</p>	<p>B2.2 Semi Improved Neutral Grassland (Species Poor)</p>  <p>Habitats:</p> <p>Typical plant assemblages for fields classified as species poor semi improved neutral grassland include Perennial rye-grass, Rough meadow-grass, Yorkshire fog, Creeping buttercup, Broad-leaved dock and Daisy (<i>Bellis perennis</i>). Species such as Crested dog's-tail, Sweet vernal-grass and Meadow foxtail may also be present (not frequent) particularly within the field margins.</p>



Target Note	Habitat
<p>T9</p>	<p>G2.1 Running Water</p>  <p>Habitats: Ballynahinch River is considered an important wildlife habitat corridor, due to its linear characteristics and associated linear vegetation. Also associated river floodplain area with associated mosaic of marshy grassland and inundation vegetation. Evidence of otters, fish, aquatic invertebrates and kingfishers were observed in the river corridor.</p> <p>Species include Branched Bur-reed <i>Sparganium erectum</i>, Sweet-grass (<i>Glyceria sp.</i>), Water Forget-me-not <i>Myosotis scorpioides</i>, Brooklime <i>Veronica beccabunga</i>, Water-cress <i>Rorippa nasturtium-aquaticum</i>, Meadowsweet <i>Filipendula ulmaria</i>, Water horsetail <i>Equisetum fluviatile</i>, Marsh-bedstraw <i>Galium palustre</i> and Common duckweed <i>Lemna minor</i>.</p>
<p>T10</p>	<p>A1.1.1 Broad-leaved semi-natural woodlands and A3.1 Broad-leaved Scattered trees</p>  <p>Habitats: The woodlands contain a variety of species, many of which are native; these include Ash <i>Fraxinus excelsior</i>, Sessile oak <i>Quercus petraea</i>, and Elder (<i>Sambucus nigra</i>). Other species include Scots pine <i>Pinus sylvestris</i>, Beech <i>Fagus sylvatica</i>, Horse-chestnut <i>Aesculus hippocastanum</i>, and Lime <i>Tilia x europaea</i>. Ground cover consists of Ivy <i>Hedera helix</i>, Brambles <i>Rubus fruticosus agg</i>, fern species <i>Dryopteris sp.</i>, stinging nettles <i>Urtica dioica</i> and spring flowers such as Bluebells <i>Hyacinthoides non-scripta</i> and Greater stitchwort <i>Stellaria holostea</i>.</p>

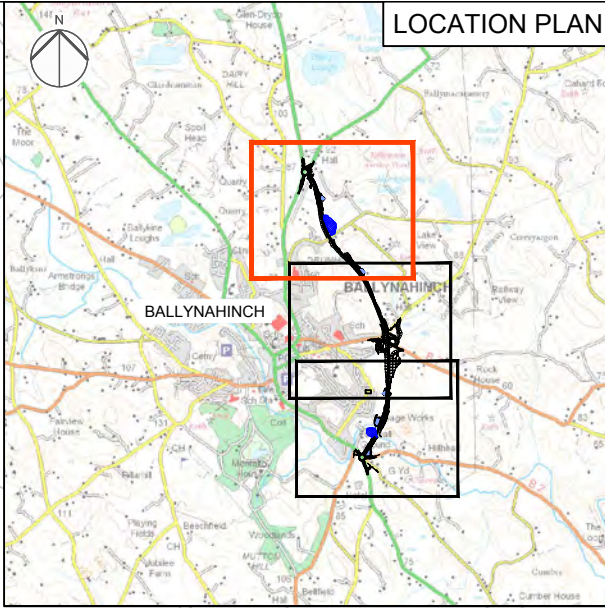
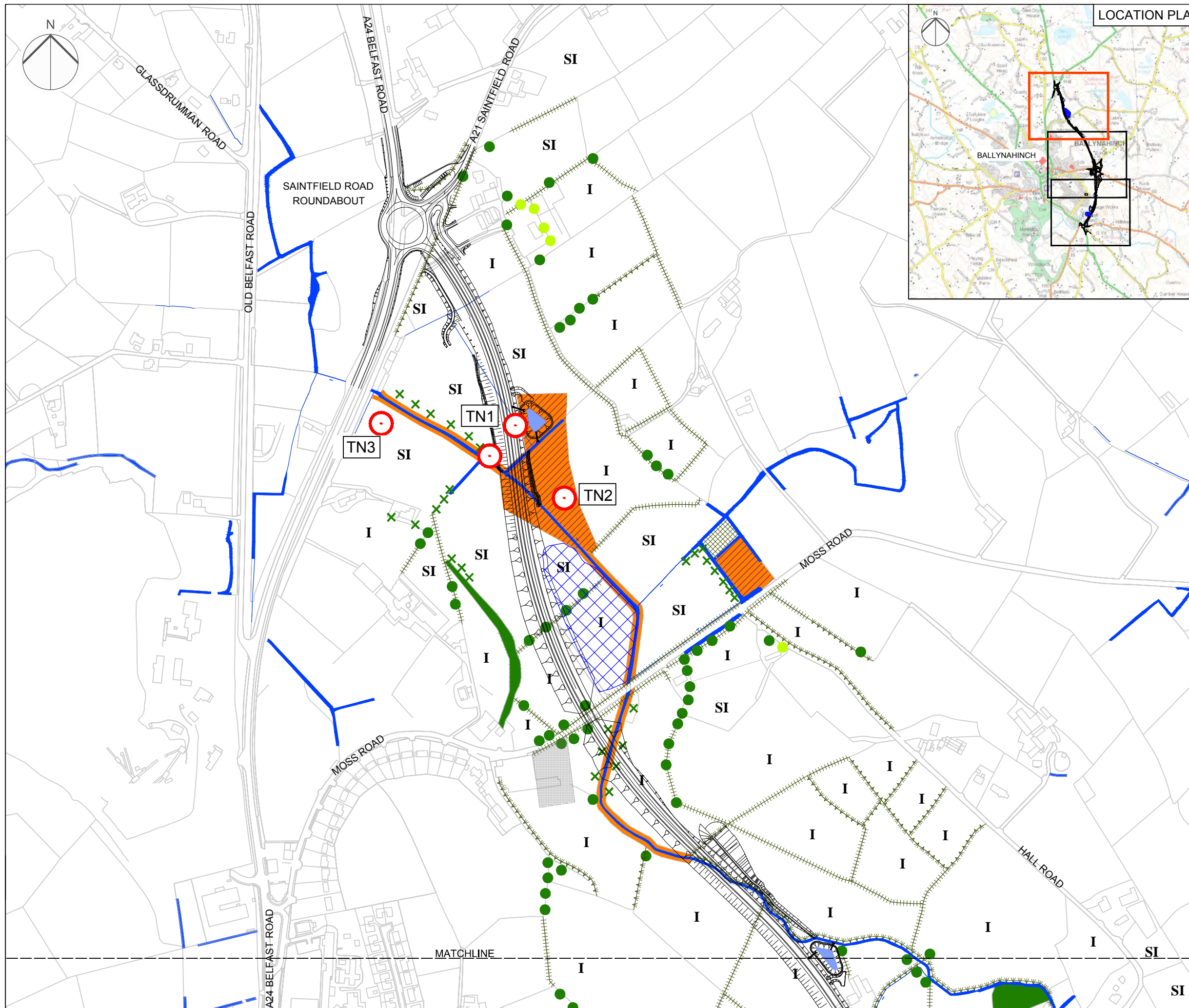
TABLE 2: SPECIES LIST

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Number	Common Name	Latin Name
1	Alder	<i>Alnus glutinosa</i>
2	Annual meadow grass	<i>Poa annua</i>
3	Apple tree	<i>Malus domestica</i>
4	Ash	<i>Fraxinus excelsior</i>
5	Beech	<i>Fagus sylvatica</i>
6	Bind weed	<i>Convolvulus arvensis</i>
7	Bird's-foot-trefoil	<i>Lotus corniculatus</i>
8	Bittercress	<i>Cardamine hirsuta</i>
9	Black medick	<i>Medicago lupulina</i>
10	Blackthorn	<i>Prunus spinosa</i>
11	Bluebell	<i>Hyacinthoides non-scripta</i>
12	Bracken	<i>Pteridium aquilinum</i>
13	Bramble	<i>Rubus fruticosus</i>
14	Broad-leaved dock	<i>Rumex obtusifolius</i>
15	Brooklime	<i>Veronica beccabunga</i>
16	Broom	<i>Cytisus scoparius</i>
17	Buddleja	<i>Buddleja davidii</i>
18	Bush vetch	<i>Vicia sepium</i>
19	Cabbage tree	<i>Cordyline australis</i>
20	Cherry laurel	<i>Prunus laurocerasus</i>
21	Cock's-foot	<i>Dactylis glomerata</i>
22	Common bent	<i>Agrostis capillaris</i>
23	Common clevers	<i>Galium aparine</i>
24	Common duckweed	<i>Lemna minor</i>
25	Common field-speedwell	<i>Veronica persica</i>
26	Common knapweed	<i>Centaurea nigra</i>
27	Common mouse ear	<i>Cerastium fontanum</i>
28	Common sorrel	<i>Rumex acetosa</i>

TABLE 2: SPECIES LIST		
29	Common stitchwort	<i>Stellaria graminea</i>
30	Common vetch	<i>Vicia sativa</i>
31	Cow parsley	<i>Anthriscus sylvestris</i>
32	Crack willow	<i>Salix fragilis</i>
33	Creeping buttercup	<i>Ranunculus repens</i>
34	Creeping thistle	<i>Cirsium arvense</i>
35	Cuckooflower	<i>Cardamine pratensis</i>
36	Curled dock	<i>Rumex crispus</i>
37	Daisy	<i>Bellis perennis</i>
38	Dandelion	<i>Taraxacum officinale</i>
39	Dog rose	<i>Rosa canina</i>
40	Dogwood	<i>Cornus sanguinea</i>
41	Elder	<i>Sambucus nigra</i>
42	European gorse	<i>Ulex europaeus</i>
43	False oat-grass	<i>Arrhenatherum elatius</i>
44	Foxglove	<i>Digitalis purpurea</i>
45	Goat willow	<i>Salix caprea</i>
46	Great willowherb	<i>Epilobium hirsutum</i>
47	Greater plantain	<i>Plantago major</i>
48	Greater spearwort	<i>Ranunculus lingua</i>
49	Groundsel	<i>Senecio vulgaris</i>
50	hart's-tongue fern	<i>Asplenium scolopendrium</i>
51	Hawthorn	<i>Crataegus monogyna</i>
52	Hazel	<i>Corylus avellana</i>
53	Herb Robert	<i>Geranium robertianum</i>
54	Hogweed	<i>Heracleum sphondylium</i>
55	Holly	<i>Ilex aquifolium</i>
56	Honeysuckle	<i>Lonicera periclymenum</i>
57	Horse-chestnut	<i>Aesculus hippocastanum</i>
58	Ivy	<i>Hedera helix</i>

TABLE 2: SPECIES LIST		
59	Large bitter-cress	<i>Cardamine amara</i>
60	Leyland cypress	<i>Cupressus x leylandii</i>
61	Lime	<i>Tilia x vulgaris</i>
62	Male fern	<i>Dryopteris filix-mas</i>
63	Mare's tail	<i>Hippuris vulgaris</i>
64	Marsh-bedstraw	<i>Galium palustre</i>
65	Marsh foxtail	<i>Alopecurus geniculatus</i>
66	Meadow foxtail	<i>Alopecurus pratensis</i>
67	Meadowsweet	<i>Filipendula ulmaria</i>
68	Meadow buttercup	<i>Ranunculus acris</i>
69	Montbretia	<i>Crocsmia x crocosmiiflora</i>
70	Nettle	<i>Urtica dioica</i>
71	Oriental Cherry	<i>Prunus serrulata</i>
72	Oval sedge	<i>Carex ovalis</i>
73	Pedunculate oak	<i>Quercus robur</i>
74	Perennial ryegrass	<i>Lolium perenne</i>
75	Privet	<i>Ligustrum ovalifolium</i>
76	Ragwort	<i>Jacobaea vulgaris</i>
77	Red clover	<i>Trifolium pratense</i>
78	Red dead-nettle	<i>Lamium purpureum</i>
79	Redshank	<i>Persicaria maculosa</i>
80	Reed canarygrass	<i>Phalaris arundinacea</i>
81	Ribwort plantain	<i>Plantago lanceolata</i>
82	Rosebay willowherb	<i>Epilobium angustifolium</i>
83	Rough meadow-grass	<i>Poa trivialis</i>
84	Rowan	<i>Sorbus aucuparia</i>
85	Scots pine	<i>Pinus sylvestris</i>
86	Sharp-flowered rush	<i>Juncus acutiflorus</i>
87	Silver birch	<i>Betula pendula</i>
88	Silverweed	<i>Argentina anserina</i>

TABLE 2: SPECIES LIST		
89	Smooth hawk's-beard	<i>Crepis capillaris</i>
90	Smooth meadow-grass	<i>Poa pratensis</i>
91	Snowberry	<i>Symphoricarpos albus</i>
92	Soft rush	<i>Juncus effusus</i>
93	Spear thistle	<i>Cirsium vulgare</i>
94	Sweet-grass	<i>Glyceria sp.</i>
95	Sweet vernal-grass	<i>Anthoxanthum odoratum</i>
96	Sycamore	<i>Acer pseudoplatanus</i>
97	Timothy	<i>Phleum pratense</i>
98	Tufted hair-grass	<i>Deschampsia cespitosa</i>
99	Tufted vetch	<i>Vicia cracca</i>
100	Unbranched bur-reed	<i>Sparganium emersum</i>
101	Water-cress	<i>Nasturtium officinale</i>
102	Water Forget-me-not	<i>Myosotis scorpioides</i>
103	Water horsetail	<i>Equisetum fluviatile</i>
104	White clover	<i>Trifolium repens</i>
105	Whitebeam	<i>Sorbus aria</i>
106	Wood avens	<i>Geum urbanum</i>
107	Yorkshire fog	<i>Holcus lanatus</i>



Project Title
A24 BALLYNAHINCH BYPASS

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Drawing Title
ECOLOGY AND NATURE CONSERVATION

Phase 1 Habitat

KEY:

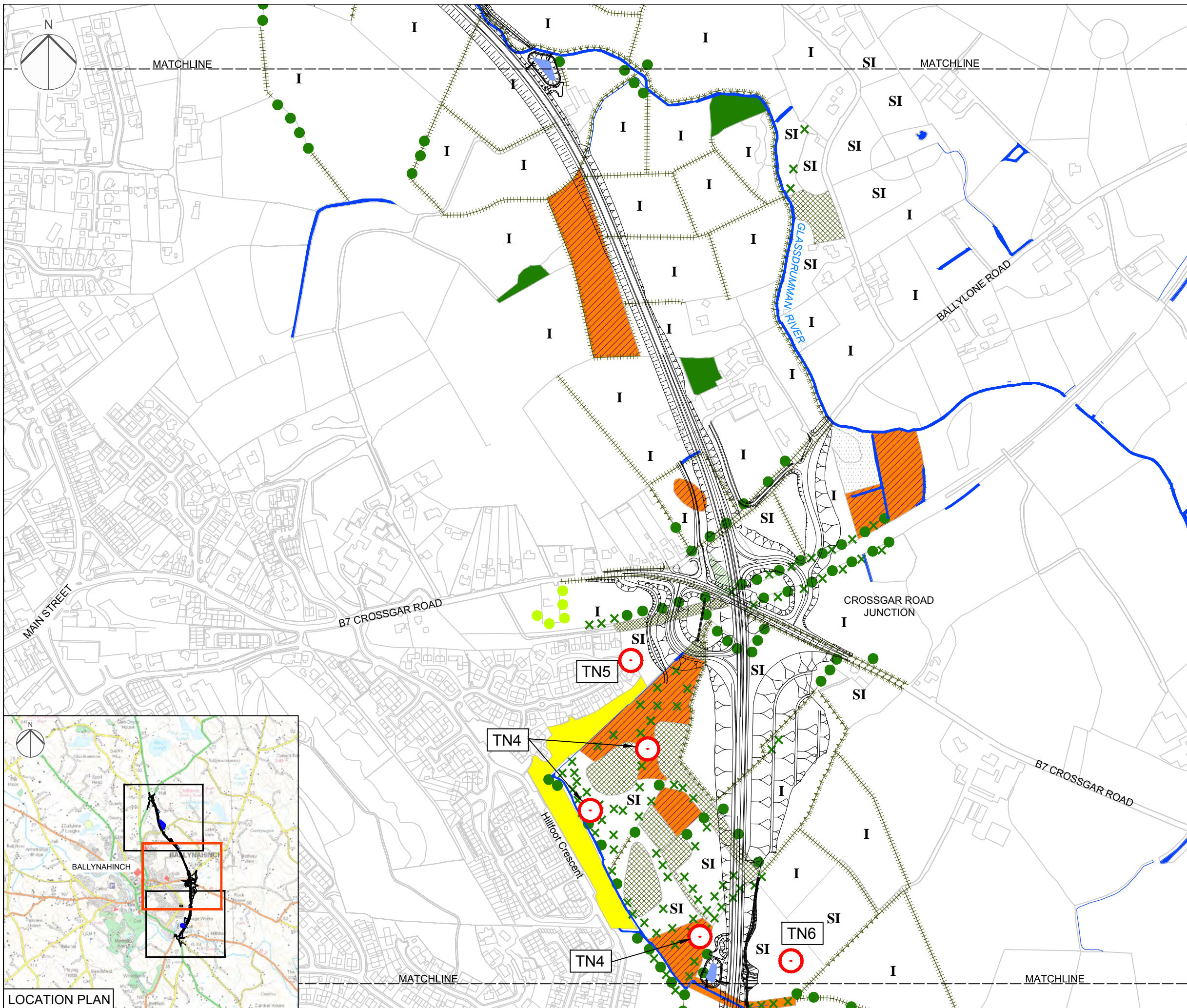
	Proposed Scheme
	Sustainable Drainage System (SuDS)
	Proposed Watercourse Diversion
	Proposed Flood Compensation Area
	Woodland - Broad-leaved Parkland
	Woodland - Broad-leaved Semi-natural
	Parkland / Scattered Trees - Coniferous
	Parkland / Scattered Trees - Broad-leaved
	Poor Semi-improved Neutral Grassland
	Semi-Improved Neutral Grassland
	Improved Grassland
	Amenity Grassland
	Scrub - Scattered
	Scrub - Dense / Continuous
	Marsh / Marshy Grassland
	Species-Rich Hedge
	Species-Poor Hedge
	Running Water
	Bare Ground
	Target Note

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FIGURE 1
 (Sheet 1 of 3)



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A24 BALLYNAHINCH BYPASS

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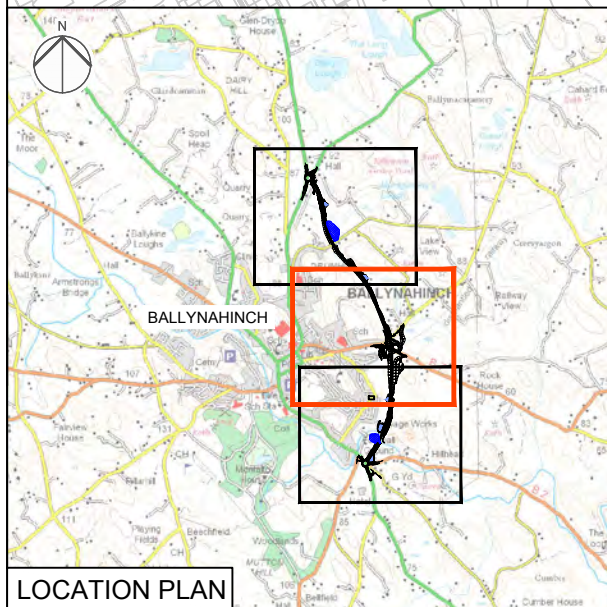
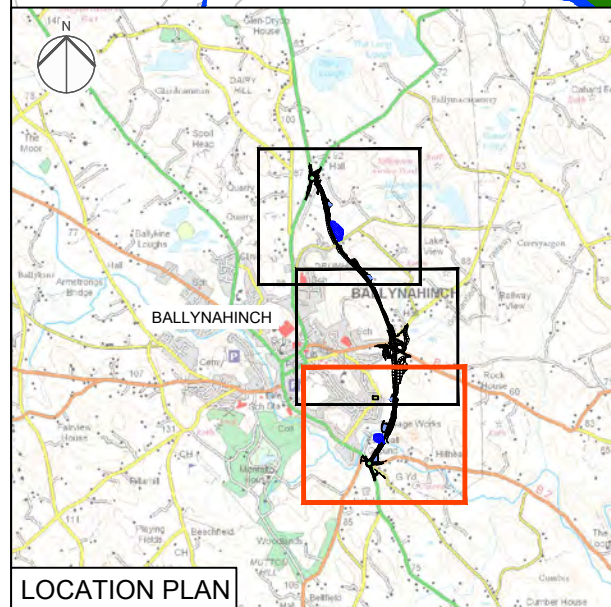
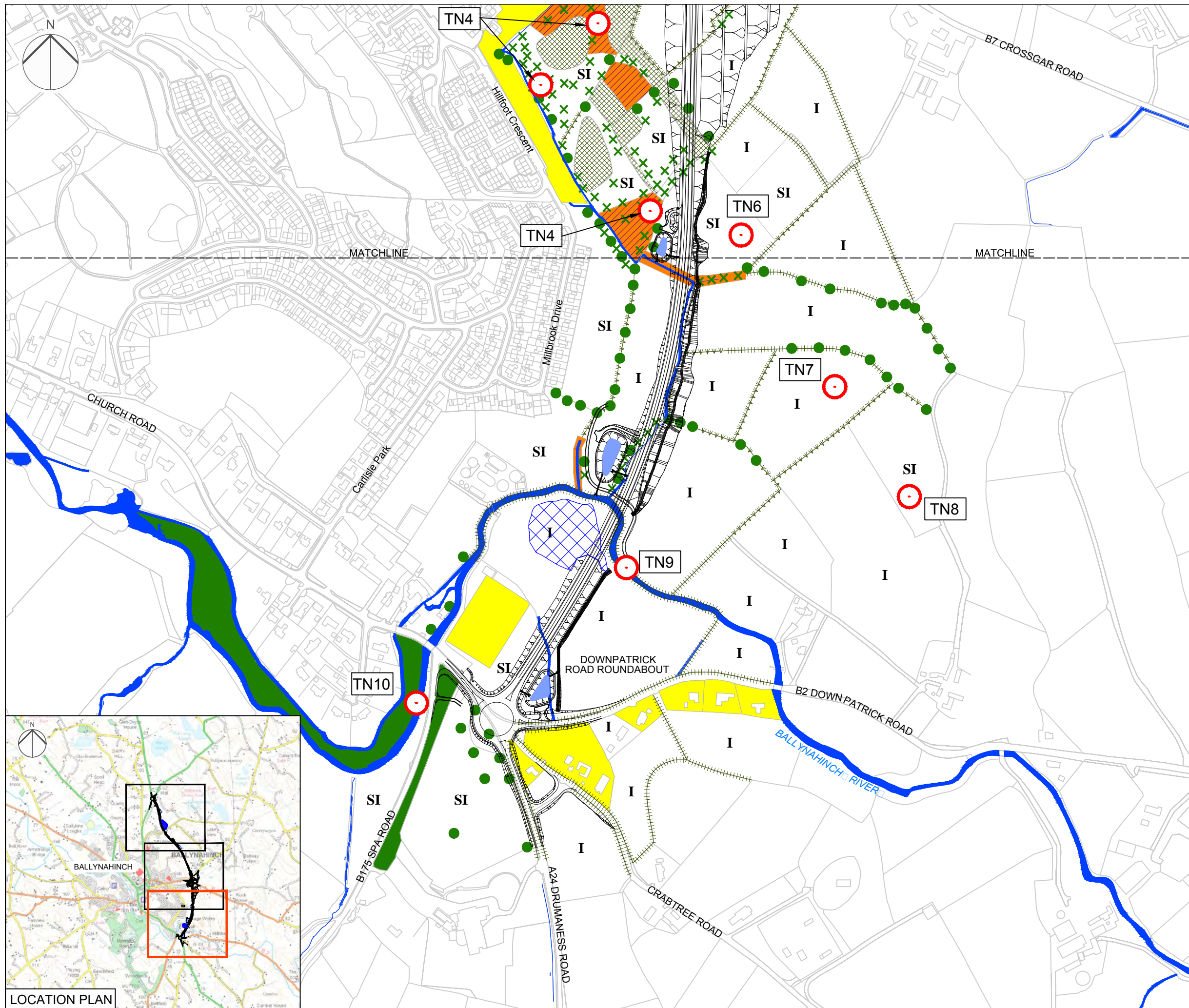


FIGURE 1
 (Sheet 2 of 3)

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Annex B: Bat Survey



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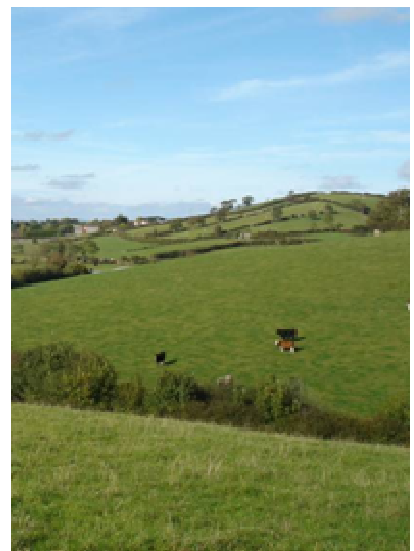
Appendix 10 Annex B
Bat Survey Report

March 2015

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Prepared for:
DRD Transport NI

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REVISION SCHEDULE					
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0	February 2014	Bat Survey (Draft)	Conor Reid Graduate Ecologist	Dr. Paul Lynas Ecologist	Gareth Coughlin Associate (Environmental Science)
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TABLE OF CONTENTS

1.	INTRODUCTION	1
1.1	Background	1
2.	METHODOLOGY	1
2.1	Desk study	1
2.2	Field surveys	1
2.2.1	<i>Bat Roost Potential Assessments</i>.....	1
2.2.2	<i>Activity Surveys</i>	2
3.	LEGISLATION.....	3
3.1	Habitats Directive / Habitat Regulations.....	3
3.2	The Wildlife and Natural Environment Act (Northern Ireland) 2011	3
3.3	Biodiversity Policy	3
4.	RESULTS	4
4.1	Desktop Studies	4
4.2	Field Surveys	4
4.2.1	<i>Bat Roost Potential Assessments</i>.....	4
4.2.2	<i>Activity Surveys</i>	8
5.	DISCUSSION	10
5.1	Bat Use of the Site.....	10
6.	MITIGATION AND ENHANCEMENT.....	10
6.1	Avoidance of damage or obstruction to roost	10
6.2	Mitigation	10
6.3	Enhancement.....	11
7.	SUMMARY OF KEY ISSUES	12
8.	REFERENCES	12

FIGURE 1 - BAT SURVEY

APPENDIX 1 – SITE PHOTOGRAPHS

APPENDIX 2 - BAT ACTIVITY SURVEY SUMMARY

BALLYNAHINCH BYPASS – BAT SURVEY

1. INTRODUCTION

1.1 Background

The immediate study area for the field survey covers the lands to be vested for the Proposed Scheme. The wider study area includes adjacent fields and habitats such as woodland and watercourses which has the potential to be indirectly affected by the Proposed Scheme. This area extends between the A24 Belfast Road/ A21 Saintfield Road junction and the junction of the A24 Drumanness Road and B2 Downpatrick Road.

This report presents the results of the EIA bat surveys and should be read in conjunction with the Ballynahinch Bypass ES Chapter 10 Ecology and Nature Conservation.

The purpose of the bat survey was to identify the usage of the site by bats and the potential impacts of the proposed road on both bats and their habitat. The surveys were designed to record the presence of bats, any roosting locations and bat foraging and commuting routes within the study area.

2. METHODOLOGY

2.1 Desk study

A desktop study was undertaken, to gather together ecological evidence based on previous surveys of the area, website-based research for ecological records and knowledge, and information from a data request from the Centre for Environmental Data and Recording (CEDaR).

Additionally, the *Habitas* website (<http://www.habitas.org.uk>) was reviewed for information on priority habitats and species within Northern Ireland, and for information on designated sites and protected species occurring within hectads (10 x 10km grid squares) overlapped by the study area.

2.2 Field surveys

Surveys were managed and implemented by experienced ecologists from URS Infrastructure and Environment UK Ltd.

Bat surveys were carried out following standard methodology in accordance with NIEA bat survey guidance (NIEA, 2011). Recommendations and good practice as highlighted in *Bat Surveys: Good Practice Guidelines* (2nd Edition), produced by the Bat Conservation Trust (Hundt 2012), and Mitchell-Jones, A.J. & McLeish, A.P. (Eds) (2004) *The Bat Workers Manual* (3rd Edition), were also considered.

2.2.1 *Bat Roost Potential Assessments*

Buildings and trees to be impacted by the Proposed Scheme and scheduled for proposed demolition or felling were identified. They were then surveyed for their suitability for bat roosting.

During daylight hours, the identified trees and buildings were surveyed from the ground. For buildings, an external inspection of the structure was carried out. Potential roost sites in trees include obvious features such as cavities, frost cracks and trunk and branch splits, rot holes

where branches have been removed and hollow sections of trunk, branches and roots exist. Bats can also roost in less obvious places such as under ivy, under loose bark and in bat or bird boxes.

Given the diverse number and size of tree features in which roosts can occur, in practice it can be very difficult to say categorically whether a tree contains a bat roost or not. In addition, many of these features are not easily detectable from the ground; therefore binoculars were used to ascertain greater detail.

External signs that bats are using a tree or a building as a roost site include:

- Suitable entry points in buildings/trees etc.;
- bat droppings: black droppings, 5-10mm long that crumble to a fine dust when crushed and may be located on the ground or stuck to walls;
- staining: secretions from bat fur can cause oily brown stains in the vicinity of roost entrances;
- urine stains below the entrance to the roost;
- audible squeaking from within the roost site;
- large roost sites may produce an odour; and
- flies around the entrance attracted by the smell of bat droppings.

The results were used to grade locations as having negligible, low, medium, high or confirmed bat roosting potential.

2.2.2 **Activity Surveys**

Transect routes around the entire Proposed Scheme footprint were walked by surveyors, spread over a number of visits over the survey period (eight in total, although several were dusk/dawn surveys in the same 24 hour period). Often up to three surveyors operated at once, to undertake simultaneous surveys of different parts of the site. Transects were planned to incorporate the main areas to be impacted, and also to cover key corridors of mature vegetation. Surveyors listened for bats using detectors with headphones and on hearing a bat, they made an attempt to identify flight direction and bat behaviour. All surveys were digitally recorded (see below). During the activity surveys, close attention was paid to surrounding structures and trees for additional roosting bats emerging or re-entering roosts.

Equipment used for activity surveys included, BatBox Duet ultrasonic detectors recording in Frequency Division mode onto Zoom Handy H2 digital recorders. Data was stored throughout for later analysis using BatSound specialist software. Weather details were recorded using a standard thermometer and descriptions.

All survey data was initially recorded onto survey maps in the field before being digitised and firstly transferred into GIS information using MapInfo, prior to being transferred to a Computer Aided Design (CAD) system to enable a high quality drawing to be produced (Figure 1).

3. LEGISLATION

3.1 Habitats Directive / Habitat Regulations

Bats are protected within Northern Ireland through The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 as amended. This states that it is an offence to deliberately capture, injure or kill a wild animal of a European Protected Species listed in Schedule II of these regulations which includes all bats.

It is also an offence to:

- (a) Deliberately disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- (b) Deliberately disturb such an animal in such a way as to be likely to:
 - (i) affect the local distribution or abundance of the species to which it belongs; or
 - (ii) impair its ability to breed or reproduce, or rear or care for its young; or
 - (iii) impair its ability to hibernate or migrate.
- (c) Deliberately obstruct access to a breeding site or resting place of such an animal; or
- (d) Damage or destroy a breeding site or resting place of such an animal.

3.2 The Wildlife and Natural Environment Act (Northern Ireland) 2011

The above Act states the following:

- (1) It is the duty of every public body, in exercising any functions, to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions.
- (2) In complying with subsection (1), a public body must in particular have regard to any strategy designated under section 2 (1).
- (3) Conserving biodiversity includes— (a) in relation to any species of flora or fauna, restoring or enhancing a population of that species; (b) in relation to any type of habitat, restoring or enhancing the habitat.

3.3 Biodiversity Policy

The UK Biodiversity Action Plan (UKBAP) (1995) was developed to fulfil the Convention on Biological Diversity in 1992, to which the UK is a signatory. Part of the UKBAP is a list of national priority species, which have specific action plans defining the measures required to ensure their conservation. Additionally, an all-Ireland species action plan was produced in 2008 and covers all eight species previously recorded in Northern Ireland. These are listed in Table 1.

Table 1: Bat species occurring within Northern Ireland

Species	Echolocation mean frequency of max energy (kHz)	Usual habitat type
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	55.5	Woodland edge & riparian

Species	Echolocation mean frequency of max energy (kHz)	Usual habitat type
Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	46.5	Woodland edge, parkland and hedgerows
Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>)	40.7	Woodland edge & water
Daubenton's bat (<i>Myotis daubentonii</i>)	47.8	Watercourses, lakes, pond and riparian trees
Whiskered bat (<i>Myotis mystacinus</i>)	50.0	Parks, meadows, woodland & gardens
Natterer's bat (<i>Myotis nattereri</i>)	48.9	Relatively dense woodland, also over water
Leisler's bat (<i>Nyctalus leisleri</i>)	26.9	Above lakes, meadows and parkland
Brown long-eared bat (<i>Plecotus auritus</i>)	39.8	Dense habitats woodland, parkland & gardens

Source: Adapted from Russ (1999) and Habitas website www.habitas.org.uk

4. RESULTS

4.1 Desktop Studies

With reference to the Habitas Website, the following four bat species (Table 2) are likely to occur within the study area.

Table 2: Bats likely to occur within the study area.

Common Name	Scientific Name
Common pipistrelle	<i>Pipistrellus pipistrellus</i>
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>
Leisler's bat	<i>Nyctalus leisleri</i>
Daubenton's bat	<i>Myotis daubentonii</i>

Source: Habitas website www.habitas.org.uk

4.2 Field Surveys




4.2.1 Bat Roost Potential Assessments



Across the site, no suitable tree roosting sites were detected. Given the diverse number and size of tree features in which roosts can occur, in practice it can be very difficult to say categorically whether a tree contains a bat roost or not. Therefore pre-construction surveys would be recommended on any trees likely to hold roosts.

No bat roosts were identified within any of the structures/buildings which are likely to be vested for the development. Following close inspection, a lack of suitable roosting locations was found and the structure and buildings were assigned to be of 'Low' BRP.

The buildings on site scheduled for demolition as a result of scheme construction are outlined in Table 3.

Table 3: Schedule of properties and structures at risk of demolition.

Plot No.	Property Type & Description	Location	Image
D1	Commercial (Agricultural, barns and cattle yard)	Located on private agricultural lane, accessed from Crossgar Road.	
D2	Commercial (Agricultural, piggery)	12 Ballylone Road	
D3	Residential	85 Crossgar Road	

Plot No.	Property Type & Description	Location	Image
D4	Residential	88 Crossgar Road	
D5	Crossgar Road Bridge, over the former Ballynahinch Branch Railway line	Crossgar Road	

Each of the buildings/structures was assessed for the potential for roosting bats and classified into 'negligible', 'low', 'medium', 'high' and 'confirmed' Bat Roost Potential. The results are summarised in Table 4.

Table 4: Summary of survey findings and resulting BRP classification.

Location ref	Address	Type	Survey findings	Survey Conclusion
D1	Located on private agricultural lane accessed from Crossgar Road	Complex of farm outbuildings and other farm related infrastructure (i.e. cattle crush, silo)	<ul style="list-style-type: none"> No staining; no droppings; no other evidence; access to roof and buildings possible in places, no suitable roosting points located; and bats used the surrounding environs for foraging and commuting routes however no bats were observed entering/exiting the buildings. 	<p>No bat species detected roosting in the buildings.</p> <p>Overall assessment: Low BRP</p>
D2	12 Ballylone Road	Extensive complex of farm outbuildings (piggery) and other farm related infrastructure (i.e. silos)	<ul style="list-style-type: none"> Recently constructed buildings consisted of mainly single-storey pig houses. They appeared unsuitable for bats with no obvious potential roosting locations; no entry points were detected; no droppings; no other evidence; and bats used the surrounding environs for foraging and commuting routes however no bats were observed entering/exiting the buildings. 	<p>No bat species detected roosting in the buildings.</p> <p>Overall assessment: Low BRP</p>
D3	Bridge Cottage 85 Crossgar Road	Single storey dwelling	<ul style="list-style-type: none"> Bungalow had no obvious entry points; no droppings; no other evidence; and bats used the surrounding environs for foraging and commuting routes however no bats were observed entering/exiting the buildings. 	<p>No bat species detected roosting in the buildings.</p> <p>Overall assessment: Low BRP</p>

Location ref	Address	Type	Survey findings	Survey Conclusion
D4	86 Crossgar Road	Single storey dwelling and outbuilding (shed)	<ul style="list-style-type: none"> Bungalow had no obvious entry points; no droppings; no other evidence apparent; and bats used the surrounding environs for foraging and commuting routes however no bats were observed entering/exiting the buildings. 	<p>No bat species detected roosting in the building.</p> <p>Overall assessment: Low BRP</p>
D5	Crossgar Road Bridge, over the former Ballynahinch Branch Railway line	Brick work on underside of the Bridge arch, main structure stone. Recently pointed.	<ul style="list-style-type: none"> Bridge had no obvious entry points; recently re-pointed stone and brickwork; no droppings; no other evidence apparent; and bats used the surrounding environs for foraging and commuting routes however no bats were observed entering/exiting the Bridge structure. 	<p>No bat species detected roosting in the building.</p> <p>Overall assessment: Low BRP</p>

4.2.2 Activity Surveys

Activity surveys were carried out throughout the site on the dates shown below. Weather conditions and sunset/sunrise times were all recorded (Table 5).

Table 5: Weather recorded during bat surveys

Time	Temperature (°C)	Cloud cover (%)	Wind description	Precipitation
24/06/13 (Sunset 22.02)				
21.00	12	10	Still	None
01.00	8	10	Still	None
25/06/13 (Sunset 22.02)				
21.30	13	100	Gentle breeze	None
01.00	11	100	Still	None
26/06/13 (Sunrise 04.50)				
03.30	8	100	Still	None

Time	Temperature (°C)	Cloud cover (%)	Wind description	Precipitation
08.30	9	100	Gentle breeze	None
09/09/13 (Sunset 19.54)				
21.30	14	0	Gentle Breeze	None
00.00	12	0	Gentle Breeze	None
10/09/13 (Sunrise 06.48)				
04.30	8	75	Light breeze	None
0800	10	50	Light breeze	None
11/09/13 (Sunset 19.49)				
19.30	14	50	Light breeze	None
00.00	12	50	Light breeze	None
12/09/13 (Sunrise 06.52)				
04.30	11	100	Light breeze	None
07.30	13	100	Light breeze	None
26/09/13 (Sunset 19.11)				
18.30	12	100	Light breeze	Period of Light drizzle
22.00	12	100	Light breeze	None

Activity surveys detected a total of 5 different bats species (Table 6).

Table 6: Bats species detected during activity surveys

Common Name	Scientific Name
Common pipistrelle	<i>Pipistrellus pipistrellus</i>
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>
Leisler's bat	<i>Nyctalus leisleri</i>
Daubenton's bat	<i>Myotis daubentonii</i>
Whiskered bat	<i>Myotis mystacinus</i>

Most bat activity was detected around the mature treelines and hedgerows throughout the study area (Figure 1), in particular the along the B7 Crossgar Road (Appendix 1, Photograph 2), along the treeline of the former Ballynahinch Branch Railway line (Appendix 1, Photograph 3), around the mature treelines near the B175 Spa Road and A24 Drumaness Road junction (Appendix 1, Photograph 1). There were also significant numbers of bats using the mature hedgerows and treelines near the farm buildings between the Moss Road and the Ballylone Road (Appendix 1 Photograph 4).

Leisler's bats were recorded occasionally in low numbers throughout the area. They were observed foraging in a range of locations. Most often, they were recorded passing high above features of the immediate study area including hedgerows, open areas and buildings.

Daubenton's bats were noted flying along the Ballynahinch River near the B175 Spa Road junction with A24 Drumaness Road.

Additionally Whiskered bats were recorded along the former Ballynahinch Branch line, with numerous passes back and forth under the road bridge.

Full details of each bat recorded are presented in Appendix 1 Table 1 Bat Activity Summary and locations are shown in Figure 1.

5. DISCUSSION

5.1 Bat Use of the Site

During the detailed bat activity or roost emergence/re-entry surveys, no obvious roost sites were detected. Emergence/re-entry surveys were carried out at houses, farm buildings and the former Ballynahinch Branch Line Railway line bridge (Table 4) within the study area that were at risk of demolition. Close attention was paid to mature trees during activity surveys and additional time spent at dawn and dusk to observe any bats leaving or returning to the trees.

Large mature trees were found in certain areas such as at the B175 Spa Road and A24 Drumaness Road junction. High bat activity was found in these locations but no evidence was found of specific roosting locations. Although no evidence of roosting bats was observed or suitable roosting sites detected, there are potentially large numbers of possible sites spread along the 3.1km route.

It is recommended that detailed preconstruction surveys should be carried out during the summer season before construction work begins, to ensure sufficient time is allowed to address any mitigation required for bats. Additionally trees and hedgerows should be thoroughly investigated prior to clearance to ensure no bat roost has become established in the interim.

Given the diverse number and size of tree features in which roosts can occur, in practice it can be very difficult to say categorically whether a tree contains a bat roost or not. In addition, many of these features are not easily detectable from the ground. Bats can also roost in less obvious places such as under ivy, or under loose bark.

Additionally, non-breeding bats can be very mobile in terms of roost sites and may change them on a daily basis depending upon the prevailing weather conditions. As such, the success rate for emergence surveys can be low.

6. MITIGATION AND ENHANCEMENT

6.1 Avoidance of damage or obstruction to roost

No roosts were found within this study area. However, it is important to note that all bats and their roosts are protected by law and therefore if any roosts are found on the site in the future, access to and from the roost should be maintained at all times. Should there be a requirement to damage any roost sites, then Northern Ireland Environment Agency (NIEA) should be consulted and any work carried out under a European Protected Species (EPS) Licence.

6.2 Mitigation

- § Specific bat mitigation is shown on Figure 10.8 of the main ES.

- § The ECoW should undertake pre-construction surveys on any semi-mature / mature trees to be removed and assess them for the likelihood of bat presence;
- § existing woodland areas on site should be retained where possible, as they provide suitable bat habitat;
- § bat roosting locations should be provided where possible away from the road. Ideally these should be in the form of bat boxes, fixed on the outside of bridges buildings or trees;
- § four bat boxes should be built into or placed on the Ballynahinch River Bridge;
- § four bat boxes should be placed on the mature trees around the B175 Spa Road and A24 Drumaness Road junction;
- § a variety of native tree species should be planted along the study area, with connections to existing features such as hedgerows and mature trees;
- § landscaping along the road would discourage low flight, forcing the bats to fly high over the road. This is achieved by planting thick hedges and trees 4m in height, or planted on banks to achieve the height required. This would act as bat hop-over vegetation to encourage bats to fly high over the new road corridor, therefore reducing traffic collisions. Alternatively planting could direct bats under any new structure at river crossings or road junctions, directing them to routes with the least probability of traffic collisions;
- § bat hop-over vegetation should be planted especially around
- § river habitat restoration would also provide ideal foraging areas for bats;
- § bats should be considered when producing the detailed lighting design for the site. The siting of lighting columns should be away from green corridors, as light spill can also be reduced by restricting lamp columns to the minimal permissible height. Use of planting and screening can also reduce light spill; and
- § suitable lighting design should be used that minimises light spill and concentrates artificial light on a small area. This should include cowling or lenses to focus the light where needed. Low-pressure sodium lights should be used instead of high pressure sodium lights or mercury lamps. If mercury lamps are used, UV filters should be fitted.

6.3 Enhancement

- § The new roads should be tree-lined on both sides using native species;
- § river habitat should be restored and creation of Sustainable Drainage Systems (SuDS) as part of the road design, would also provide ideal foraging areas for bats;
- § unused corners of the site and areas surrounding junctions should be planted-up with shrubs and trees of native origin to maximise the natural vegetation on site;
- bat boxes should be provided on mature trees or bridges. They should consist of a variety of types to ensure adequate summer and winter roosting;
- planting to encourage insects should be used to create suitable feeding areas for bats throughout the site, especially in borders and linear planting features;

- § planting of bat hop-over vegetation will encourage bats to fly high over the new road therefore reducing traffic collisions;
- bats should be considered in the site lighting plan to ensure connecting corridors of unlit dark areas remain across the site; and
- lights should prevent upward light spill, by use of for example full cut-off lanterns.

7. SUMMARY OF KEY ISSUES

- As no bat roosts have been identified, it is thought that the proposed scheme will not impact significantly on the local bat population. Trees that would require felling as a result of the scheme have low bat roost potential but should still be checked thoroughly as part of pre-construction surveys for the interchange.
- With the introduction of planting and landscaping, the habitat on site can be improved for bats.
- Lighting schemes should aim to cause minimal impact on bats and their habitats.
- With the introduction of bat roosting locations, bats would have greater opportunities to roost within the study area.

8. REFERENCES

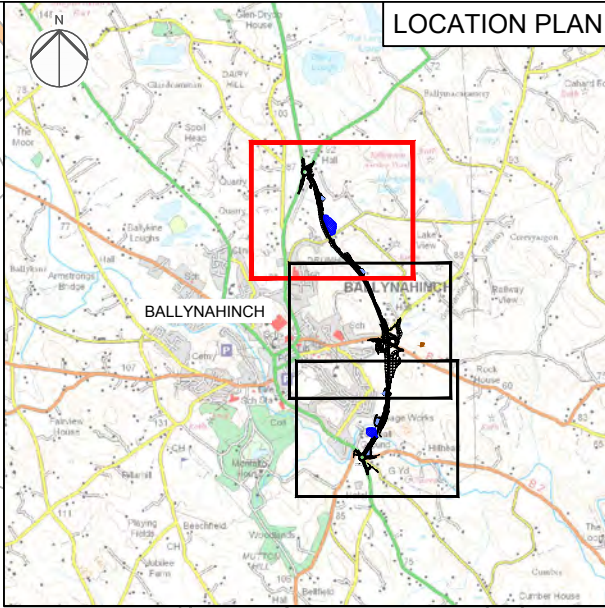
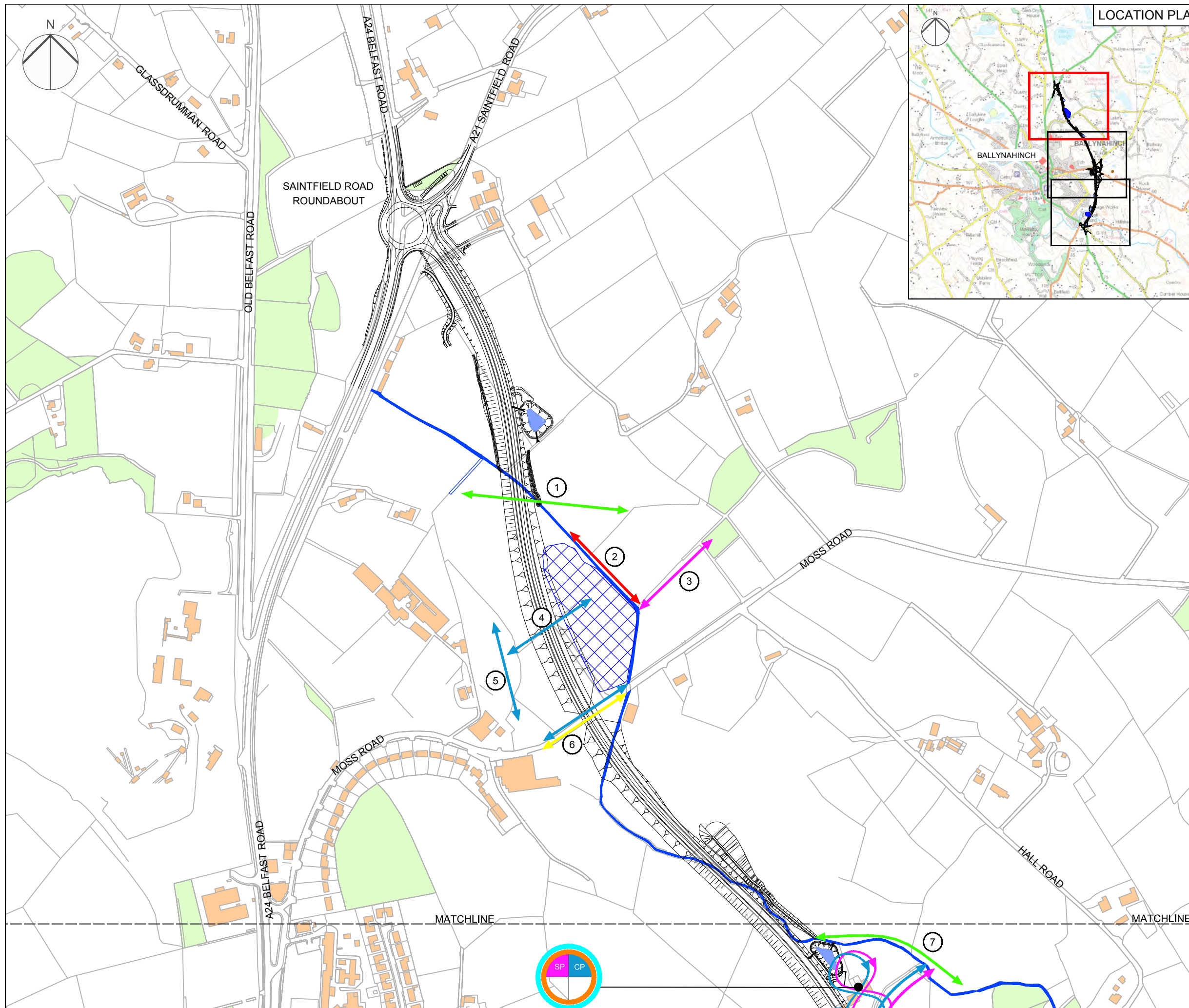
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FIGURE 1 – BAT SURVEY



Project Title
A24 BALLYNAHINCH BYPASS

Client
transportni

Drawing Title
ECOLOGY AND NATURE CONSERVATION

Bat Survey

- KEY:**
- Proposed Scheme
 - Sustainable Drainage System (SuDS)
 - Proposed Watercourse Diversion
 - Proposed Flood Compensation Area
 - Watercourse / Waterbody
 - Area of Notable Vegetation
- BA** Bat's Location Reference Number Survey Location Reference Number
- Leisler's Bat
 - Soprano Pipistrelle
 - Common Pipistrelle
 - Daubenton's Bat
 - Whiskered Bat
 - Unspecified Pipistrelle
- BRP Bat Roost Potential Surveys
 - BER Bat Emergence & Re-entry Surveys
- BA** Leisler's Bat Common Pipistrelle
 Soprano Pipistrelle Whiskered Bat

Scale @ A3
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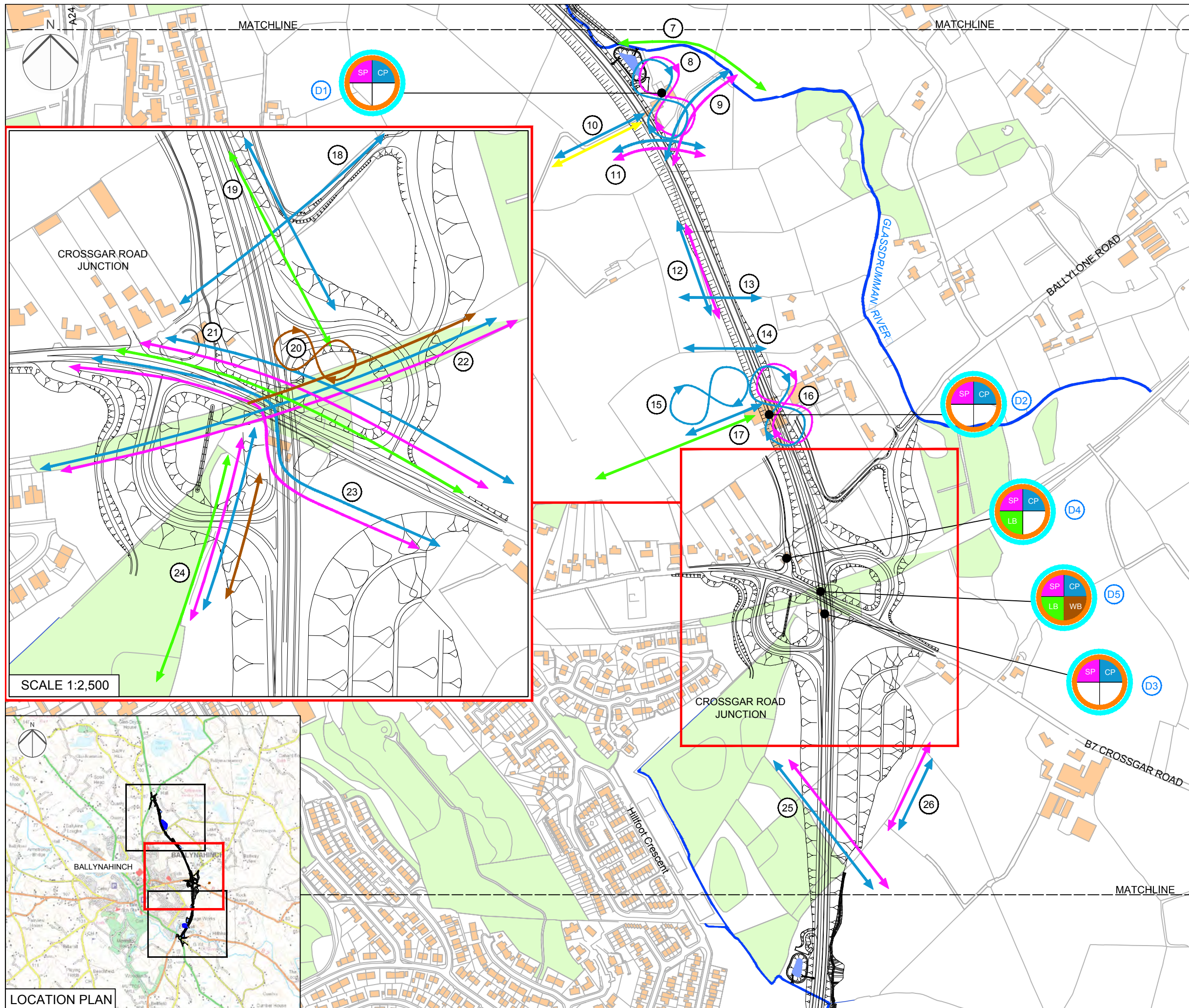
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Project Title
A24 BALLYNAHINCH BYPASS

Client
transportni

Drawing Title
ECOLOGY AND NATURE CONSERVATION
 Bat Survey

KEY:

- Proposed Scheme
- Sustainable Drainage System (SuDS)
- Proposed Watercourse Diversion
- Proposed Flood Compensation Area
- Watercourse / Waterbody
- Area of Notable Vegetation

BA Bat Roost Potential Surveys
 Bat Emergence & Re-entry Surveys

Legend for Bat Species:

- Leisler's Bat
- Soprano Pipistrelle
- Common Pipistrelle
- Daubenton's Bat
- Whiskered Bat
- Unspecified Pipistrelle

Legend for Survey Locations:

- Bat's Location Reference Number
- Survey Location Reference Number

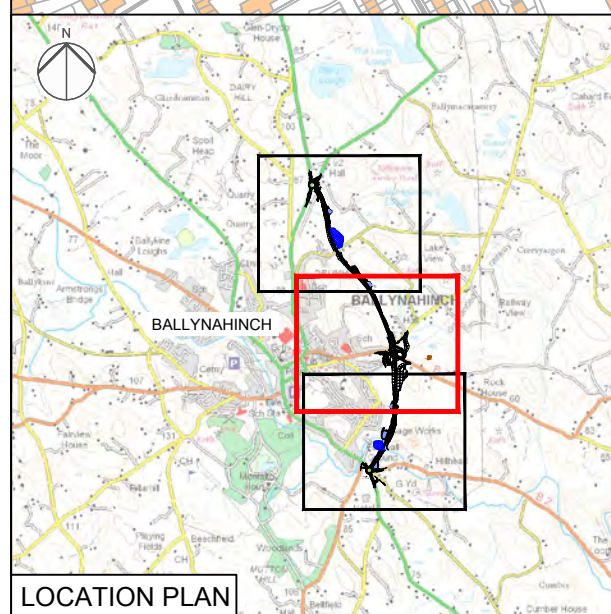
Legend for Survey Types:

- BRP Bat Roost Potential Surveys
- BER Bat Emergence & Re-entry Surveys

Legend for Species in Surveys:

- Leisler's Bat
- Common Pipistrelle
- Soprano Pipistrelle
- Whiskered Bat

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 1:5,000

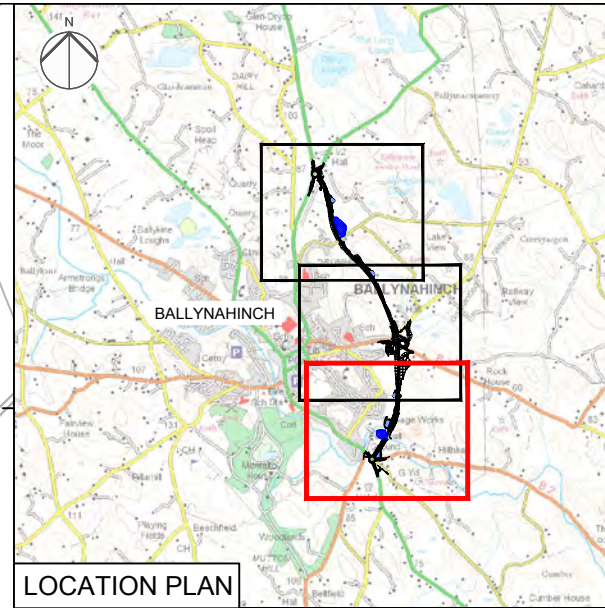
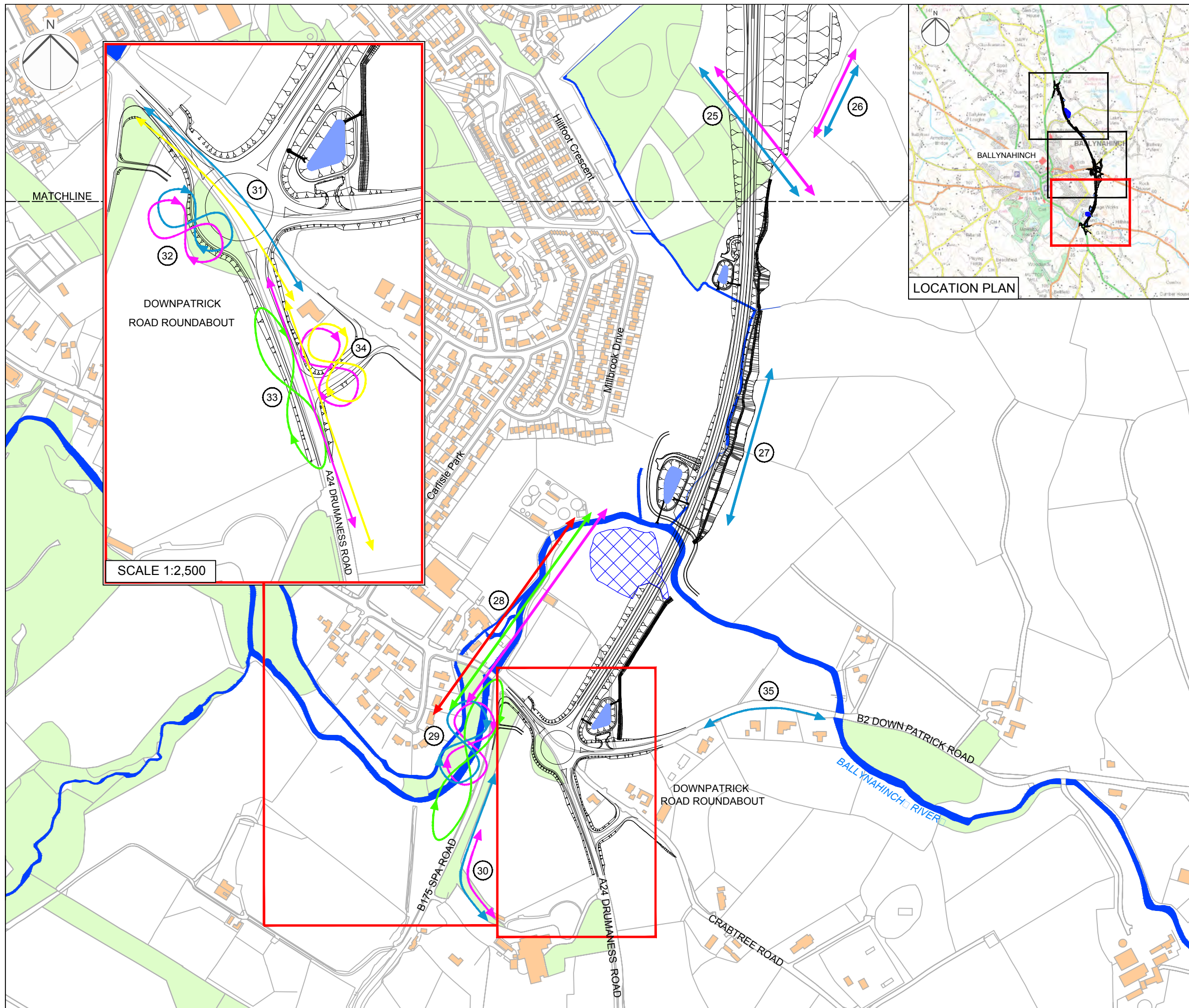
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Project Title
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Drawing Title
ECOLOGY AND NATURE CONSERVATION

Bat Survey

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 - Sustainable Drainage System (SuDS)
 - Proposed Watercourse Diversion
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 - Area of Notable Vegetation
- BA** Leisler's Bat
 Soprano Pipistrelle
 Common Pipistrelle
 Daubenton's Bat
 Whiskered Bat
 Unspecified Pipistrelle
- (15)** Bat's Location Reference Number **(D1)** Survey Location Reference Number
- BRP Bat Roost Potential Surveys
 BER Bat Emergence & Re-entry Surveys
- BA** **LB** Leisler's Bat **CP** Common Pipistrelle
SP Soprano Pipistrelle **WB** Whiskered Bat

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APPENDIX 1 – SITE PHOTOGRAPHS

Photograph 1 – Concentration of bat activity through the mature trees in the area between the Downpatrick Road junction and the Spa Road, connectivity with the Montalto Estate and the Ballynahinch River corridor.



Photograph 2 – Area of scrub and thick hedgerows to the east of Hillfoot Crescent, south of the B7 Crossgar Road. Important foraging and commuting area for bats.



Photograph 3 – Green corridor along the former Ballynahinch Branch Line provides an important commuting and foraging route. This area should be prioritised for bat hop-over vegetation to maintain this route following road construction.



Photograph 4 – Thick hedgerows and mature trees along the study area between the Moss Road and the Ballylone Road. Important foraging routes particularly for Pipistrelle species.



APPENDIX 2 - BAT ACTIVITY SURVEY SUMMARY

Date	Dusk /Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
24.06.13	Dusk	22.23	Soprano pipistrelle	53	1	29	Foraging over mature trees
24.06.13	Dusk	22.23	Leisler's Bat	29	1	29	Foraging over mature trees
24.06.13	Dusk	22.23	Unspec pipistrelle	51	1 (10)	29	Foraging over mature trees
24.06.13	Dusk	22.31	Common pipistrelle	48	1	30	Along treeline.
24.06.13	Dusk	22.31	Unspec pipistrelle	50	2	30	Along treeline.
24.06.13	Dusk	22.31	Soprano pipistrelle	58	1	31	Flying across Downpatrick Road Junction.
24.06.13	Dusk	22.35	Unspec pipistrelle	51	2	32	Through area of scattered trees and towards Crabtree Road
24.06.13	Dusk	22.39	Soprano pipistrelle	55	1	34	Foraging in gardens
24.06.13	Dusk	22.39	Unspec pipistrelle	50	1	34	Foraging in gardens
24.06.13	Dusk	22.40	Common pipistrelle	45	1	18	Along Ballylone Road
24.06.13	Dusk	22.40	Leisler's Bat	23	2	19	Along lane
24.06.13	Dusk	22.40	Common pipistrelle	45	1	19	Along lane
24.06.13	Dusk	22.43	Soprano pipistrelle	55	1	33	On A24 Drumaness Road
24.06.13	Dusk	22.43	Common pipistrelle	45	1	6	Along Moss Road
24.06.13	Dusk	22.45	Unspec pipistrelle	50	1	33	On A24 Drumaness Road
24.06.13	Dusk	22.46	Common pipistrelle	45	1	18	Along Ballylone Road.
24.06.13	Dusk	22.46	Soprano pipistrelle	55	2	21	Along Crossgar Road.

Date	Dusk /Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
24.06.13	Dusk	22.46	Common pipistrelle	45	2	6	Along Moss Road.
24.06.13	Dusk	22.49	Common pipistrelle	45	2	6	Along Moss Road.
24.06.13	Dusk	22.51	Common pipistrelle	45	1	6	Along Moss Road
24.06.13	Dusk	22.57	Soprano pipistrelle	54	4	21	Along Crossgar Road
24.06.13	Dusk	22.58	Common pipistrelle	45	1	6	Along Moss Road
24.06.13	Dusk	23.03	Common pipistrelle	45	1	5	Along tree line.
24.06.13	Dusk	23.03	Soprano pipistrelle	55	1	21	Along Crossgar Road
24.06.13	Dusk	23.04	Leisler's Bat	24	1	1	Flying overhead.
24.06.13	Dusk	23.07	Daubenton's Bat	44	1	28	Foraging along the Ballynahinch River.
24.06.13	Dusk	23.07	Leisler's Bat	28	1	29	Foraging over mature trees
24.06.13	Dusk	23.08	Common pipistrelle	45	1	4	Along the treeline.
24.06.13	Dusk	23.10	Soprano pipistrelle	56	3	23	From behind No.85 Crossgar Road, then under the railway bridge.
24.06.13	Dusk	23.10	Common pipistrelle	48	1	23	From behind No. 85 Crossgar Road, then under the railway bridge.
24.06.13	Dusk	23.11	Common pipistrelle	45	2	4	Along the treeline.
24.06.13	Dusk	23.19	Soprano pipistrelle	56	1	24	Along hedgerow.
24.06.13	Dusk	23.19	Common pipistrelle	45	2	24	Along hedgerow.
24.06.13	Dusk	23.19	Unspec pipistrelle	55	3	24	Along hedgerow.
24.06.13	Dusk	23.19	Leisler's Bat	21	1	24	Along hedgerow.

Date	Dusk /Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
24.06.13	Dusk	23.21	Common pipistrelle	45	2	3	Along hedgerow.
24.06.13	Dusk	23.27	Soprano pipistrelle	54	2	24	Along hedgerow.
24.06.13	Dusk	23.27	Common pipistrelle	45	2	24	Along hedgerow.
24.06.13	Dusk	23.28	Common pipistrelle	45	3	3	Along hedgerow.
24.06.13	Dusk	23.30	Daubenton's Bat	40	1	2	Along Glasdrumman River
24.06.13	Dusk	23.37	Common pipistrelle	43	1	25	Along hedgerow.
24.06.13	Dusk	23.40	Soprano pipistrelle	55	1	3	Along hedgerow.
24.06.13	Dusk	23.41	Leisler's Bat	24	1	28	Foraging along the Ballynahinch River.
24.06.13	Dusk	23.41	Daubenton's Bat	40	1	28	Foraging along the Ballynahinch River.
24.06.13	Dusk	23.41	Soprano pipistrelle	52	1	28	Foraging along the Ballynahinch River.
24.06.13	Dusk	23.42	Soprano pipistrelle	55	1	3	Along hedgerow.
24.06.13	Dusk	23.43	Common pipistrelle	44	1	26	Along hedgerow.
24.06.13	Dusk	23.47	Leisler's Bat	24.5	1	28	Foraging along the Ballynahinch River.
24.06.13	Dusk	23.50	Common pipistrelle	45	1	6	Along Moss Road
24.06.13	Dusk	23.51	Soprano pipistrelle	55	1	26	Along hedgerow.
24.06.13	Dusk	23.52	Soprano pipistrelle	52	2	24	Along hedgerow.
24.06.13	Dusk	23.57	Unspec pipistrelle	50	1	21	Along Crossgar Road.
24.06.13	Dusk	23.57	Soprano pipistrelle	55	1	21	Along Crossgar Road.
24.06.13	Dusk	23.57	Common pipistrelle	47	2	21	Along Crossgar Road.

Date	Dusk /Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
24.06.13	Dusk	00.01	Common pipistrelle	42	1	21	Along Crossgar Road.
24.06.13	Dusk	00.01	Unspec pipistrelle	49.5	1	21	Along Crossgar Road.
25.06.13	Dusk	22.33	Common pipistrelle	46	2	10	Foraging along lane.
25.06.13	Dusk	22.33	Soprano pipistrelle	51	1	10	Foraging along lane.
25.06.13	Dusk	22.33	Soprano pipistrelle	52	1	11	From other farm buildings.
25.06.13	Dusk	22.33	Common pipistrelle	45	1	11	From other farm buildings.
25.06.13	Dusk	22.39	Common pipistrelle	47	2	8	Foraging around farm buildings
25.06.13	Dusk	22.39	Unspec pipistrelle	49.5	1	8	Foraging around farm buildings
25.06.13	Dusk	22.39	Soprano pipistrelle	55	2	8	Foraging around farm buildings
25.06.13	Dusk	22.43	Common pipistrelle	45	2	9	Foraging along hedgerows
25.06.13	Dusk	22.43	Common pipistrelle	44	1	12	Foraging along hedgerows
25.06.13	Dusk	22.49	Common pipistrelle	48	1	10	Foraging along laneway
25.06.13	Dusk	22.49	Unspec pipistrelle	49	1	10	Foraging along laneway
25.06.13	Dusk	22.49	Common pipistrelle	45	5	8	Foraging around farm buildings
25.06.13	Dusk	22.49	Unspec pipistrelle	50	2	8	Foraging around farm buildings
25.06.13	Dusk	22.49	Leisler's Bat	25	3	7	Commuting high over Glasdrumman River
25.06.13	Dusk	22.49	Soprano pipistrelle	55	2	8	Foraging around farm buildings
25.06.13	Dusk	22.49	Common pipistrelle	47	1	10	Foraging along laneway
25.06.13	Dusk	22.49	Common pipistrelle	44	1	15	Foraging over field

Date	Dusk /Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
25.06.13	Dusk	22.54	Common pipistrelle	44	1	14	Foraging along hedgerows.
25.06.13	Dusk	23.02	Common pipistrelle	45	1	16	Foraging around farm.
25.06.13	Dusk	23.02	Common pipistrelle	46	3	19	Long lane.
25.06.13	Dusk	23.08	Common pipistrelle	46	2	19	Long lane.
25.06.13	Dusk	23.11	Common pipistrelle	48	1	6	Foraging along the road
25.06.13	Dusk	23.11	Unspec pipistrelle	50	1	6	Foraging along the road
25.06.13	Dusk	23.16	Common pipistrelle	44	1	6	Foraging along the road
25.06.13	Dusk	23.17	Common pipistrelle	45	1	17	Foraging along hedgerow.
25.06.13	Dusk	23.21	Common pipistrelle	45	1	9	Foraging along hedgerow.
25.06.13	Dusk	23.25	Common pipistrelle	47	2	9	Foraging along hedgerow.
25.06.13	Dusk	23.31	Common pipistrelle	46	4	8	Foraging around farm buildings
25.06.13	Dusk	23.34	Common pipistrelle	43	3	10	Foraging along lane.
25.06.13	Dusk	23.39	Common pipistrelle	46	7	8	Foraging around farm buildings
26.06.13	Dawn	3.59	Common pipistrelle	48	2	10	Foraging along lane
26.06.13	Dawn	3.59	Unspec pipistrelle	50	1	11	Commuting towards Glasdrumman River
26.06.13	Dawn	3.59	Unspec pipistrelle	50	1	9	Commuting towards Ballylone Road
26.06.13	Dawn	3.59	Common pipistrelle	46	1	10	Commuting along laneway
26.06.13	Dawn	4.11	Unspec pipistrelle	50	1	10	Commuting along laneway
26.06.13	Dawn	4.11	Common pipistrelle	48	1	10	Commuting along laneway

Date	Dusk /Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
09.09.13	Dusk	20.39	Common pipistrelle	46	1	14	Foraging along hedgerow
09.09.13	Dusk	20.43	Soprano pipistrelle	52	1	12	Foraging along hedgerow
09.09.13	Dusk	20.55	Common pipistrelle	45	2	12	Foraging along hedgerow
09.09.13	Dusk	21.05	Common pipistrelle	46	2	10	Foraging along lane
09.09.13	Dusk	21.05	Common pipistrelle	48	1	8	Foraging around Farm
09.09.13	Dusk	21.09	Common pipistrelle	47	2	10	Along lane
09.09.13	Dusk	21.18	Common pipistrelle	47	3	9	Along hedgerow.
09.09.13	Dusk	21.18	Soprano pipistrelle	52	1	9	Along hedgerow.
09.09.13	Dusk	21.29	Common pipistrelle	48	1	9	Foraging at back of Farm
09.09.13	Dusk	21.36	Unspec pipistrelle	50	1	9	Foraging at back of Farm
09.09.13	Dusk	21.36	Common pipistrelle	47	3	9	Foraging at back of Farm
09.09.13	Dusk	21.36	Soprano pipistrelle	52	1	9	Foraging at back of Farm
09.09.13	Dusk	21.57	Common pipistrelle	45	1	9	Along hedgerow.
09.09.13	Dusk	21.57	Soprano pipistrelle	54	1	9	Along hedgerow.
09.09.13	Dusk	22.04	Common pipistrelle	47	1	9	Along hedgerow.
09.09.13	Dusk	22.06	Common pipistrelle	46	1	8	Through farmyard.
09.09.13	Dusk	22.19	Common pipistrelle	47	1	9	Along hedgerow.
09.09.13	Dusk	22.25	Common pipistrelle	47	1	19	Along lane.
09.09.13	Dusk	22.25	Unspec pipistrelle	50	1	19	Along lane.

Date	Dusk /Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
09.09.13	Dusk	22.28	Common pipistrelle	46	2	18	Along road
09.09.13	Dusk	22.28	Unspec pipistrelle	50	1	18	Along road
09.09.13	Dusk	22.30	Common pipistrelle	47	1	18	Foraging along Ballylone Road.
09.09.13	Dusk	22.39	Common pipistrelle	48	6	27	Along hedgerow.
09.09.13	Dusk	22.39	Soprano pipistrelle	52	6	24	Along hedgerow.
09.09.13	Dusk	22.39	Whiskered bat	50	1	24	Along hedgerow.
09.09.13	Dusk	22.43	Common pipistrelle	48	10	21	Foraging along Crossgar Road.
09.09.13	Dusk	22.43	Soprano pipistrelle	55	5	21	Foraging along Crossgar Road. With social calls.
09.09.13	Dusk	22.43	Unspec pipistrelle	50	3	21	Foraging along Crossgar Road.
09.09.13	Dusk	22.48	Soprano pipistrelle	57	1	21	Along road.
09.09.13	Dusk	22.48	Common pipistrelle	48	2	21	Along road.
09.09.13	Dusk	22.48	Unspec pipistrelle	49.5	2	21	Along road.
09.09.13	Dusk	22.48	Whiskered bat	50	1	22	Along old railway line under bridge.
09.09.13	Dusk	22.51	Whiskered bat	50	1	22	Along old railway line under bridge.
09.09.13	Dusk	23.06	Common pipistrelle	47	1	22	Along old railway line under bridge.
09.09.13	Dusk	23.06	Unspec pipistrelle	49.5	1	22	Along old railway line under bridge.
10.09.13	Dawn	05.12	Soprano pipistrelle	57	2	18	Along the Road
10.09.13	Dawn	05.12	Common pipistrelle	43	1	18	Along the Road
10.09.13	Dawn	05.13	Common pipistrelle	48	3	16	Foraging over farm buildings.

Date	Dusk /Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
10.09.13	Dawn	05.13	Soprano pipistrelle	54	2	16	Foraging over farm buildings.
10.09.13	Dawn	05.14	Soprano pipistrelle	57	1	18	Along the road.
10.09.13	Dawn	05.20	Common pipistrelle	47	2	21	Foraging along road
10.09.13	Dawn	05.20	Soprano pipistrelle	57	1	21	Foraging along road. With social calls.
10.09.13	Dawn	05.23	Soprano pipistrelle	54	2	21	Along road.
10.09.13	Dawn	05.23	Common pipistrelle	47	2	21	Along road.
10.09.13	Dawn	05.23	Unspec pipistrelle	49.5	1	21	Along road
10.09.13	Dawn	05.27	Leisler's Bat	25	1	21	Along road
10.09.13	Dawn	05.27	Common pipistrelle	47	1	21	Along road
10.09.13	Dawn	05.33	Common pipistrelle	48	3	19	Along lane.
10.09.13	Dawn	05.33	Soprano pipistrelle	57	2	19	Along lane.
10.09.13	Dawn	05.33	Soprano pipistrelle	57	2	21	Foraging along road. With social calls.
10.09.13	Dawn	05.33	Leisler's Bat	22.5	4	21	Foraging along road.
10.09.13	Dawn	05.33	Soprano pipistrelle	58	3	21	Foraging along road.
10.09.13	Dawn	05.33	Unspec pipistrelle	49	2	21	Foraging along road.
10.09.13	Dawn	05.33	Common pipistrelle	47	5	21	Foraging along road.
10.09.13	Dawn	05.35	Common pipistrelle	48	2	14	Foraging along hedgerow.
10.09.13	Dawn	05.38	Common pipistrelle	46	2	12	Along hedgerow.
10.09.13	Dawn	05.38	Soprano pipistrelle	55	1	12	Along hedgerow.
10.09.13	Dawn	05.42	Common pipistrelle	45	6	12	Foraging along hedgerow

Date	Dusk /Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
10.09.13	Dawn	05.42	Soprano pipistrelle	56	1	12	Foraging along hedgerow
10.09.13	Dawn	05.42	Common pipistrelle	48	1	13	Foraging along hedgerow
10.09.13	Dawn	05.49	Soprano pipistrelle	54	2	9	Foraging along hedgerow
10.09.13	Dawn	05.49	Common pipistrelle	46	1	9	Foraging along hedgerow
10.09.13	Dawn	06.01	Common pipistrelle	47	7	13	Foraging along hedgerow
10.09.13	Dawn	06.01	Soprano pipistrelle	55	4	13	Foraging along hedgerow
10.09.13	Dawn	06.01	Unspec pipistrelle	50	1	13	Foraging along hedgerow
10.09.13	Dawn	06.07	Common pipistrelle	48	1	9	Towards farmyard
11.09.13	Dusk	20.25	Whiskered bat	50	1	22	Foraging along railway line under bridge.
11.09.13	Dusk	20.29	Whiskered bat	50	1	22	Foraging along railway line under bridge.
11.09.13	Dusk	20.31	Unspec pipistrelle	49	1	29	Foraging around mature trees.
11.09.13	Dusk	20.31	Soprano pipistrelle	53	2	32	Foraging around mature trees.
11.09.13	Dusk	20.39	Whiskered bat	50	2	22	Foraging along railway line under bridge.
11.09.13	Dusk	20.41	Soprano pipistrelle	55	1	30	Foraging around mature trees.
11.09.13	Dusk	20.58	Soprano pipistrelle	53	1	28	Commuting along river corridor.
11.09.13	Dusk	20.58	Daubenton's Bat	42	1	28	Foraging along river corridor.
11.09.13	Dusk	21.17	Daubenton's Bat	42	4	28	Foraging along river corridor.
11.09.13	Dusk	21.45	Leisler's Bat	22.5	1	34	Foraging along hedgerow
11.09.13	Dusk	21.51	Common pipistrelle	46	1	31	Commuting across Downpatrick Junction.

Date	Dusk /Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
11.09.13	Dusk	21.55	Common pipistrelle	46	1	31	Commuting across Downpatrick Junction.
11.09.13	Dusk	22.02	Common pipistrelle	44	1	35	Foraging around gardens.
11.09.13	Dusk	22.05	Common pipistrelle	47	1	21	Along the road.
11.09.13	Dusk	22.07	Common pipistrelle	43	1	21	Along the road.
11.09.13	Dusk	22.07	Soprano pipistrelle	59	1	24	Foraging along hedgerow.
11.09.13	Dusk	22.07	Whiskered bat	45	1	24	Foraging along hedgerow.
11.09.13	Dusk	22.29	Soprano pipistrelle	57	2	28	Foraging over Ballynahinch River near WWTW.
11.09.13	Dusk	22.39	Whiskered bat	42	2	24	Foraging along hedgerow.
11.09.13	Dusk	22.39	Soprano pipistrelle	55	3	25	Foraging along hedgerow.
11.09.13	Dusk	23.01	Common pipistrelle	47	1	27	Foraging along hedgerow.
12.09.13	Dawn	05.27	Leisler's Bat	25	1	17	Flying high over fields.
12.09.13	Dawn	05.47	Soprano pipistrelle	53	1	25	Foraging along hedgerow.
12.09.13	Dawn	05.56	Common pipistrelle	46	2	24	Foraging along hedgerow.
12.09.13	Dawn	05.56	Soprano pipistrelle	53	1	24	Foraging along hedgerow.
12.09.13	Dawn	06.00	Leisler's Bat	23	1	24	Foraging along hedgerow.
12.09.13	Dawn	06.00	Unspec pipistrelle	50	1	24	Foraging along hedgerow.
12.09.13	Dawn	06.00	Soprano pipistrelle	55	1	24	Foraging along hedgerow.
12.09.13	Dawn	06.00	Common pipistrelle	46	3	24	Foraging along hedgerow.
12.09.13	Dawn	06.13	Whiskered bat	40	1	24	Foraging along hedgerow.

Date	Dusk /Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
12.09.13	Dawn	06.13	Unspec pipistrelle	50	1	24	Foraging along hedgerow.
12.09.13	Dawn	06.13	Common pipistrelle	46	2	24	Foraging along hedgerow.
12.09.13	Dawn	06.18	Soprano pipistrelle	57	1	29	Foraging around mature trees.
12.09.13	Dawn	06.29	Soprano pipistrelle	57	1	32	Foraging around mature trees.

**'Unspecified pipistrelle' 49-50 kHz, Common pipistrelle: 43-49; Soprano pipistrelle: 51 kHz and over.*

APPENDIX 10: ECOLOGY & NATURE CONSERVATION

Annex C: Otter Survey



A24 Ballynahinch Bypass

Appendix 10 Annex C
Otter Survey Report

March 2015

47037246

Prepared for:
DRD Transport NI

UNITED
KINGDOM &
IRELAND



transportni



Rev	Date	Details	Prepared by	Checked by	Approved by
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1	March 2015	Otter Survey Report	Conor Reid Ecologist	Dr. Paul Lynas Senior Ecologist	Gareth Coughlin Associate (Environmental Scientist)

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Where field investigations are carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in issuing this Report.

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TABLE OF CONTENTS	1.	INTRODUCTION	1
	1.1	Background.....	1
	1.2	Legislation Affecting Otters.....	1
	2.	METHODOLOGY	1
	2.1	Field Survey.....	1
	2.2	Data Collation and Analysis.....	2
	3.	RESULTS	2
	3.1	Otter survey	2
	4.	DISCUSSION	3
	5.	MITIGATION.....	4
	6.	ENHANCEMENT	4
	7.	REFERENCES	4

FIGURE 1 – OTTER SURVEY

FIGURE 2 – MAMMAL MITIGATION

APPENDIX A – SITE PHOTOGRAPHS

A24 BALLYNAHINCH BYPASS – OTTER SURVEY REPORT

1. INTRODUCTION

1.1 Background

The immediate study area for the field survey covers the lands to be vested for the Proposed Scheme. The wider study area includes adjacent fields and habitats such as woodland and watercourses which has the potential to be indirectly affected by the Proposed Scheme. This area extends between the A24 Belfast Road/ A21 Saintfield Road junction and the junction of the A24 Drumanness Road and B2 Downpatrick Road. Habitat areas were calculated on the lands within the proposed vesting boundary. Potential impacts were also assessed further afield where appropriate e.g. the impact of the Proposed Scheme on designated sites.

This report presents the results of the Otter surveys and should be read in conjunction with the A24 Ballynahinch Bypass Environmental Statement (ES), Chapter 10 Ecology and Nature Conservation.

1.2 Legislation Affecting Otters

The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended), states that it is an offence to deliberately capture, injure or kill a wild animal of a European protected species included in Schedule II of these Regulations, which includes the otter (*Lutra lutra*).

It is also an offence to:

(a) Deliberately disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;

(b) Deliberately disturb such an animal in such a way as to be likely to:

(i) affect the local distribution or abundance of the species to which it belongs;

(ii) impair its ability to survive, breed or reproduce, or rear or care for its young; or

(iii) impair its ability to hibernate or migrate;

(c) Deliberately obstruct access to a breeding site or resting place of such an animal; or

(d) Damage or destroy a breeding site or resting place of such an animal.

2. METHODOLOGY

2.1 Field Survey

Otter survey methodology followed recommendations by NIEA's *Otter Survey Specific Requirements* (July 2009) (Appendix 2) and *Ecology of the European Otter*, Chanin (2003). An initial walkover survey was carried out on 24 May 2013 and further specific otter surveys were carried out on the 23 January 2014 and 14 March 2014. The survey was conducted during daylight hours following a period of settled weather with little rainfall. The area around the watercourses and surrounding vegetation (up to 30 meters) were checked for evidence of otter refuges and other activities such as sprainting sites, tracks, and slides. Where otter refuges (holts and laying-up areas) were encountered, information was recorded about the refuges and their usage. Photographs were taken of each refuge site if found.

All surveys were undertaken suitably experienced URS Ecologists.

Otter refuge sites and other activity were classified and described using the following terms:

Otter Holt – relates to an enclosed chamber or chambers used by otters as a refuge, located within embankments, rock exposures, tree roots or a combination.

Laying-up Area – relates to a partially enclosed or screened site used by otters as a transitory / short term refuge. Such sites are commonly associated with undercut embankments and overhanging trees.

Potential Holt or Laying-up Area – the terminology relates to either a holt or laying-up area location, which conforms to the above descriptions and are likely to be used by otters, but at the time of survey, no supporting field evidence was recorded.

Natal Holt – relates to a site that is used by a female otter for the actual birth of cubs and is usually occupied for a period of up to three months.

Post-natal Holt – relates to a site to which a female otter moves her offspring from the natal holt; occupation times can be variable.

Spraint Sites – spraint [otter droppings] sites occur as two distinct features:

- § Confirmed holts and laying-up areas usually have spraints present either within the entrance chamber or within close proximity to the site i.e. 1m.
- § Stand-alone spraint sites. Such sites are often associated with the conservation of food resources; sprainting is used as a means of preventing competition from other otters and relate to feeding areas rather than territory.

Sand Castle – spraint site in soft sand or mud, where as part of the process of sprainting, the otter scrapes at the surrounding sand, creating a raised area – a sand castle. As a territorial marking post, it is assumed this is to make the spraint more prominent.

2.2 Data Collation and Analysis

The exact location of otter evidence was firstly recorded on accurate field maps. Where required, a hand held Global Positioning System (GPS) was used. Field notes were made together with data associated with activity levels and other field signs present were recorded.

All survey data was initially recorded onto digitised survey maps utilising MapInfo, prior to being transferred to a Computer Aided Design (CAD) system to enable a high quality drawing to be produced (Figure 1).

3. RESULTS

3.1 Otter survey

Activity within the site was low overall, with six spraints recorded at two sprainting sites.

Table 1 details information relating to the findings of the walkover survey, prints and spraint site locations.

Table 1: Details of recorded otter evidence

Ref No	Type	Narrative	Grid Ref
SP1	Spraint	One fresh and one recent spraint located on a rock in the Ballynahinch River, just down from the Waste Water Treatment Works (WWTW).	E 324,160 N 361,747
SP2	Spraint	Three recent and one old spraint, all located on the river bank east of the Ballynahinch River.	E337, 622 N351, 735

4. DISCUSSION

The incidence of otter using the site was recorded to be low, with two spraints sites not far from the WWTW. However the potential still exists to significantly impact this species.

Otters are known to travel many kilometres along watercourses, especially male 'dog' otters which can range widely and incorporate huge lengths of watercourse into their territories. The Ballynahinch River and Glasdrumman River are likely to be part of at least one territory.

The Ballynahinch River joins the Carson's Dam River to become the Annacloy River before becoming the River Quoile where it eventually enters Strangford Lough at the Quoile barrage. The whole catchment provides potential habitat for otters with important habitat particularly at the Quoile pondage which is designated as an Area of Special Scientific Interest (ASSI) known for its range of aquatic plant species, with emergent swamp around the margins, backed by a species- rich fen. The other minor streams have less potential for otter habitat, with a more restricted flow and low potential for sustaining Salmonid fish populations. Although these small streams have low foraging potential they may still be used as important dispersal habitat.

Pre-construction otter surveys, should be undertaken, before any development is carried out in the vicinity of the water courses. This would be in order to update the location of potential new holts or laying-up areas within the footprint of the future road construction. At this time, if otter activity is found within the footprint of any development, then mitigation measures would need to be discussed and agreed with NIEA – Natural Heritage.

The Otter *Lutra lutra* is fully protected by the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended). There are provisions in the legislation to allow actions to take place under licence that would otherwise contravene the above law. Licences must be obtained from NIEA for any works that may cause disturbance to otters or involves damage or destruction of their resting places (otter holts or laying-up sites). Otters must not be disturbed and their resting places must not be damaged or destroyed during the construction works without appropriate and proportionate mitigation under the terms of a European Protected Species mitigation licence.

The watercourses are locally important due to their use by otters and their importance as a wildlife corridor on the site. Both water courses are likely to be directly affected by site construction due to culverting. They would also likely be indirectly affected by noise, vibrations, pollution and lighting. During the construction phase, any pollution incidents, sedimentation impacts or runoff from earthworks, loss of adjacent natural habitat, reduction in water quality or pollution incidents, could severely impact the watercourse and indirectly on otters. During the site's long-term operation, artificial lighting, disturbance from people, loss of adjacent natural habitat, reduction in water quality or pollution incidents could all negatively impact otters.

5. MITIGATION

- Pre-construction surveys for otter activity along the watercourses should be carried out, as a means of establishing the current status of otters;
- all works should be largely restricted to daylight hours, so as to cause as little disturbance as possible to these mainly nocturnal creatures;
- drainage and attenuation ducts and drains should restrict otter entry, and any temporary features which are liable to entrap wildlife should be covered or have a means of escape;
- oversized otter culverts (box culverts which are larger than required for engineering purposes) should be installed at all the river crossings to allow movement of otters through these corridors both during times of low flow and flood conditions. Proposed Culverts locations are shown on Figure 2. Culverts should be recessed at least 500mm below the river bed, which will reform over time;
- otter fencing should be installed along the length of the road 100m in both directions on both sides of the road in line with DMRB requirements to prevent traffic collisions (proposed location of otter fencing is shown on Figure 2). To prevent otters from excavating below or climbing over the top, the fence should be 50mm mesh buried underground, 300mm down and 300mm return and with a 300 mm overhang angled away from the road;
- ledges should be installed at least 150mm above the highest water level, whilst still allowing 600mm head room. Ledges should be 500mm wide, with ramps allowing otters to access the ledge;
- in the instance that there is insufficient room for ledges within the culvert, an underpass should be constructed alongside, parallel to the river. The underpass should be located within 50 metres of the riverbank and above possible flood levels; and
- lighting should be avoided close to the watercourses and the channel should not be illuminated. Lighting, where necessary, should be kept to essential locations only, with the position and direction of lighting being designed to minimise intrusion and disturbance to river corridors and their nature conservation value. Use of full cut-off lanterns would minimise light spillage onto adjacent areas.

6. ENHANCEMENT

- Where possible, a riparian strip of natural vegetation should be retained along the watercourses to provide cover and connectivity for otters to follow potentially established routes; and
- Any modified or engineered river bed must have 100% coverage of habitat with pool and riffle sequences, providing suitable habitat for fish and therefore foraging otters.

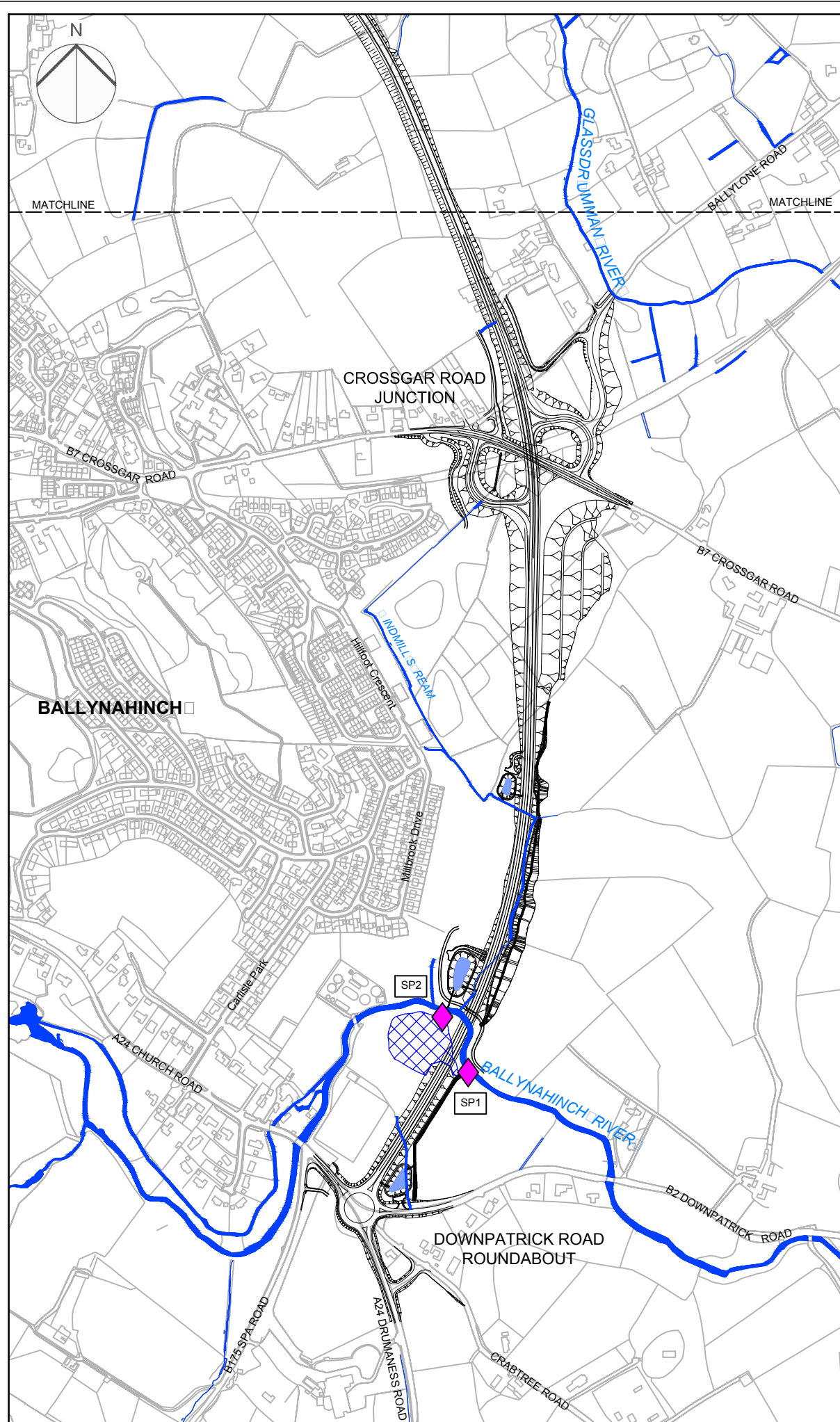
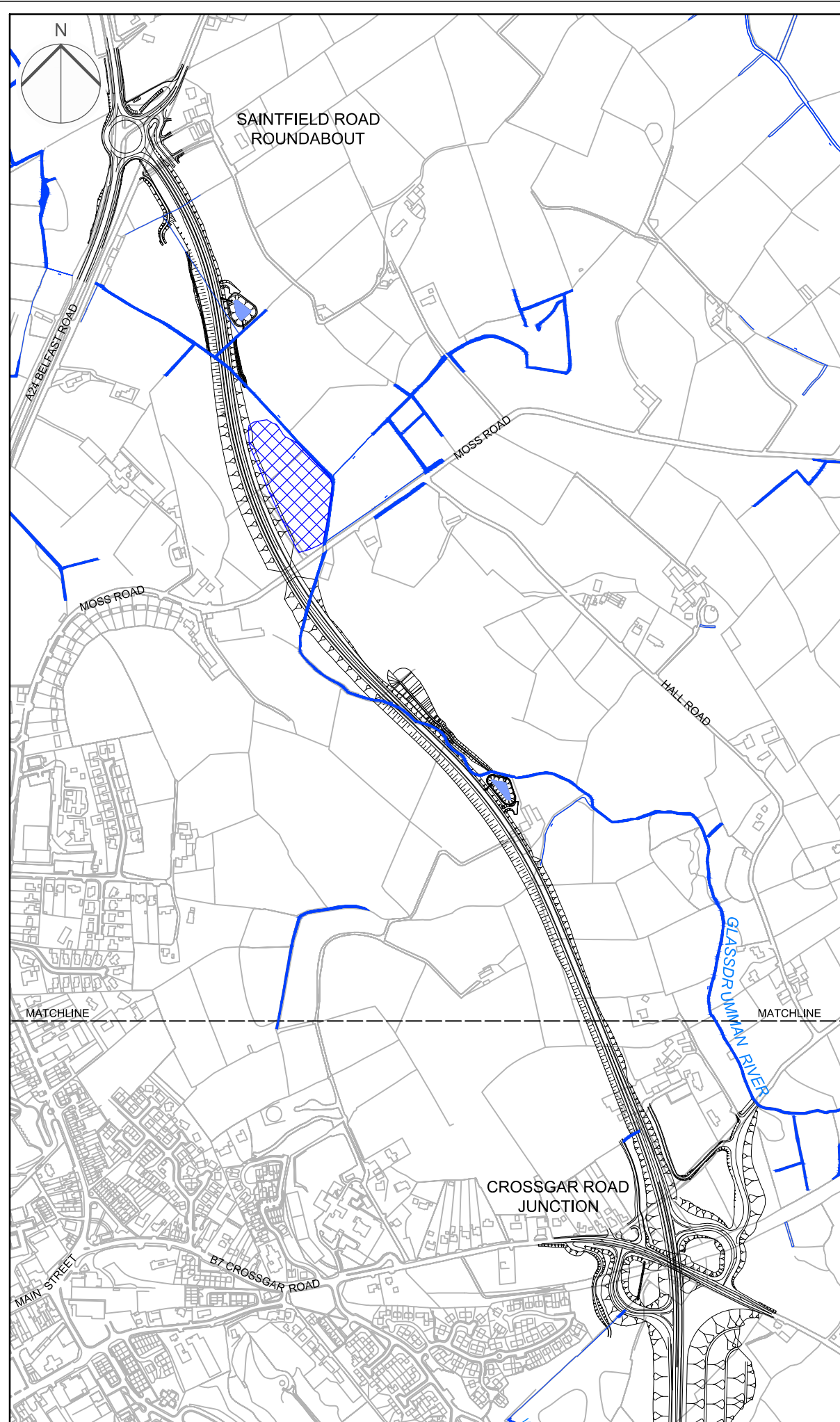
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Project Title
A24 BALLYNAHINCH BYPASS

Client
transportni

Drawing Title
ECOLOGY AND NATURE CONSERVATION

Offer Survey

KEY

- Proposed Scheme
- Sustainable Drainage System (SuDS)
- Proposed Watercourse Diversion
- Proposed Flood Compensation Area
- Watercourse / Waterbody

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- Spraint
- Ref Number


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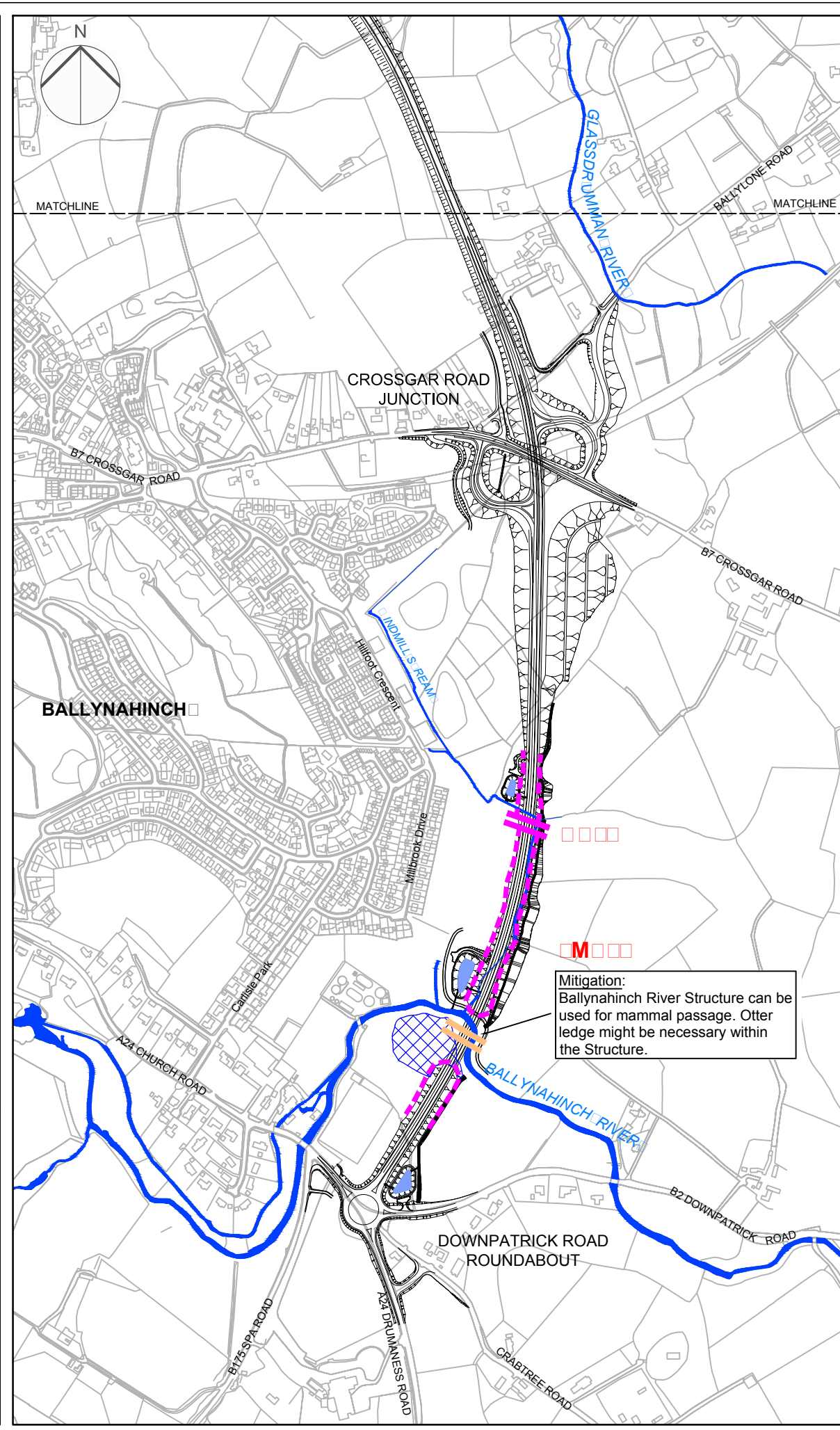
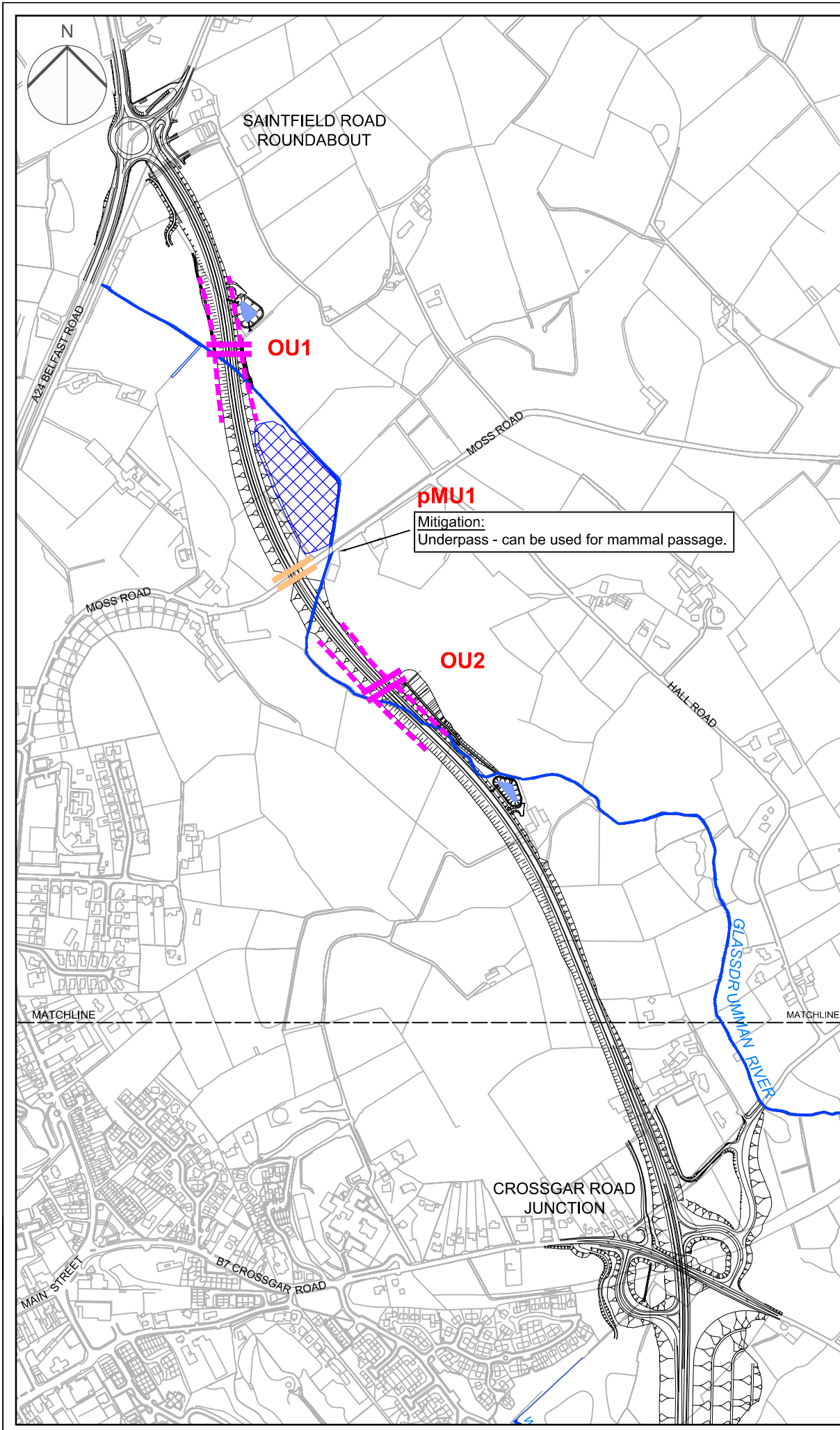
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Project Title
A24 BALLYNAHINCH BYPASS

Client
transportni

Drawing Title
ECOLOGY AND NATURE CONSERVATION
Mammal Mitigation

KEY

- Proposed Scheme
- Sustainable Drainage System (SuDS)
- Proposed Watercourse Diversion
- Proposed Flood Compensation Area
- Watercourse / Waterbody

MAMMAL MITIGATION

- Otter Underpass
- Mammal Passes
- Otter Fencing

O - OTTER
 M - POTENTIAL MAMMAL
 U - UNDERPASS
 REF NUMBER


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APPENDIX 1 – SITE PHOTOGRAPHS

Photograph 1 – Fresh otter spraint found on a large rock by the side of the river just down from the Waste Water Treatment Works (WWTW) (SP1).



Photograph 2 – Recent spraint just behind the fresh spraint on the same rock (SP1).



Photograph 3 – Three recent and one old spraint on the riverbank east of the Ballynahinch River.



Photograph 4 – Ballynahinch River. Good otter habitat, with bankside vegetation for cover and river habitat which supports a Salmonid fish population. Wildlife corridor connects to the Quoile pondage which is designated as an Area of Special Scientific Interest (ASSI) and Strangford Lough, which are both known for their otter populations.



Photograph 5 – Smaller drainage ditches such as the Windmill Stream have less potential habitat for otters but may still be used as commuting and dispersal habitat.



APPENDIX 10: ECOLOGY & NATURE CONSERVATION

Annex D: Breeding Bird Survey



A24 Ballynahinch Bypass

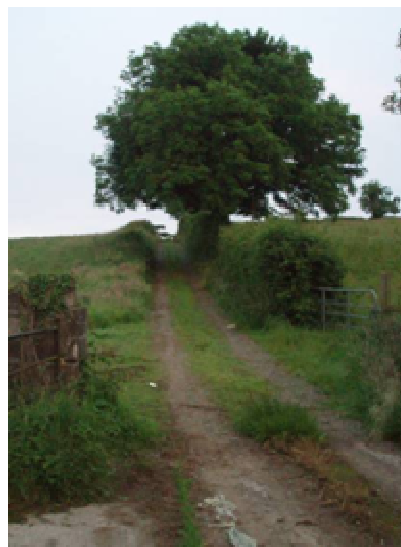
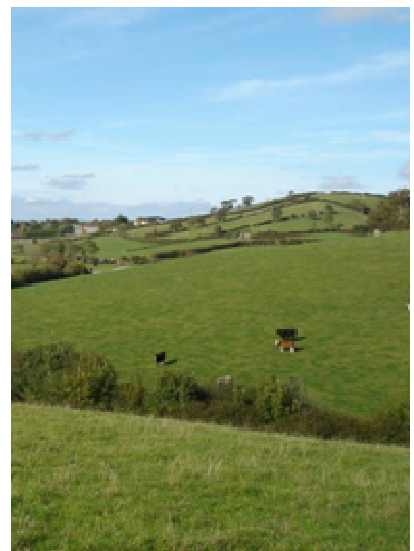
Appendix 10 Annex D
Breeding Bird Survey

March 2015

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Rev	Date	Details	Prepared by	Checked by	Approved by
0	February 2014	Breeding Bird Survey	Conor Reid Graduate Ecologist	Dr. Paul Lynas Ecologist	Gareth Coughlin Associate (Environmental Scientist)
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TABLE OF CONTENTS	1.	INTRODUCTION	1
	1.1	Background.....	1
	1.2	Purpose	1
	2.	METHODOLOGY	1
	3.	LEGISLATION	2
	4.	RESULTS	2
	4.1	Overview	2
	4.2	Birds of Conservation Concern.....	2
	4.3	Main habitats and associated species.....	5
	5.	MITIGATION.....	7
	6.	BIODIVERSITY ENHANCEMENT FOR BIRDS.....	7
	7.	SUMMARY OF KEY ISSUES.....	7
	8.	REFERENCES	8

FIGURE 1 - BIRD SURVEY

A24 BALLYNAHINCH BYPASS - BREEDING BIRD SURVEY

1. INTRODUCTION

1.1 Background

The immediate study area for the field survey covers the lands to be vested for the Proposed Scheme. The wider study area includes adjacent fields and habitats such as woodland and watercourses which has the potential to be indirectly affected by the Proposed Scheme. This area extends between the A24 Belfast Road/ A21 Saintfield Road junction and the junction of the A24 Drumanness Road and B2 Downpatrick Road. Habitat areas were calculated on the lands within the proposed vesting boundary. Potential impacts were also assessed further afield where appropriate e.g. the impact of the Proposed Scheme on designated sites.

1.2 Purpose

The purpose of the bird survey was to identify the usage of the site by bird species and the potential use of the site in the breeding season, especially those birds of high conservation concern. The impact of the proposed road to those species will also be examined. The outputs include:

- bird survey along the proposed route;
- map of bird locations recorded during the survey;
- species list of all birds recorded; and
- discussion of species in relation to their conservation value and status.

This Bird Survey Annex should be read in conjunction with the entire A24 Ballynahinch Bypass ES, in particular Chapter 10 Ecology and Nature Conservation.

2. METHODOLOGY

A specific breeding bird survey using adapted British Trust for Ornithology (BTO) Breeding Bird Survey (BBS) / Common Bird Census methodology was carried out during late May and late June 2013. The objective of this survey was to identify the value of the survey area for nesting birds and the potential use of the study area in the breeding season, especially for those birds of high conservation concern.

Transects were walked by suitably experienced ornithologists at a steady pace and all birds seen or heard were recorded. The route was walked at a steady pace from the Downpatrick Road, through the fields before crossing the Crossgar Road and the Moss Road, and ending at the Saintfield Road / Belfast Road Junction. The surveyors paused at regular intervals to scan and also to listen for calling and singing birds. Standard BTO two-letter codes and behaviour symbols were used to record the location of each observation (Marchant 1983¹).

When individuals or pairs of birds were encountered, the fieldworker determined whether the bird(s) were different from any previously noted. This involved careful attention to the behaviour, exact locations and movements of birds, together with the birds' sex and plumage characteristics. In this way the risk of double counting was greatly reduced.

¹ Marchant, J. H. 1983 The Common Bird Census instructions. British Trust for Ornithology, Tring.

Each observation was recorded on a map and later digitised. The results were displayed on a map using the BTO codes to represent each species. Usage of the study area by bird species was discussed and their conservation status in Ireland (Colhoun & Cummins 2013²) was assessed.

A wintering bird survey was not carried out as the habitat was deemed not significant to over-wintering birds.

3. LEGISLATION

The ***Wildlife (Northern Ireland) Order (1985) (as amended)*** is the main legislation protecting the natural environment including birds. It provides a very clear and specific explanation of the protection afforded to wild birds. It states that it is against the law to intentionally or recklessly:

- (a) kill, injure or take any wild bird; or
- (b) take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- (c) take or destroy an egg of any wild bird; or
- (d) disturb any wild bird while it is building a nest or is in, on or near a nest containing eggs or young; or
- (e) disturb dependent young of such a bird.

The definition of 'recklessly' in this context is understood to mean *'to carry on with potentially disturbing activities, within suitable bird nesting habitat, without first making a reasonable attempt to ascertain whether birds are nesting first.'*

4. RESULTS

4.1 Overview

The study area is located in a predominantly agricultural landscape, suitable for a range of farmland birds. There are also numerous features such as the watercourse corridors and areas of scrubland and woodland which will improve the area for bird species diversity. The area is likely therefore to hold a number of common farmland and woodland bird species, including breeding populations of summer migrants and over-wintering migrants.

Additionally with reference to CEDaR records, there are reports in 1993 and 2004 of Barn Owls in the area.

4.2 Birds of Conservation Concern

Of the species noted, eleven were species of conservation concern (i.e. Amber or red-listed in Ireland or a Northern Ireland Priority Species).

One red-listed species was recorded; two Meadow pipit *Anthus pratensis* were recorded - one in open fields near the Crossgar Road junction and the other near the Downpatrick Road

² Colhoun, K., & Cummins, S., 2013 The status of birds in Ireland, 2014–2019 Irish Birds 9 523-544

junction. Meadow pipits are red-listed species of conservation concern due to recent short-term (13-year) declines of more than 50% in their breeding populations.

Six common amber-listed species were seen across the site including House sparrow, Linnet, Mistle thrush, Starling, Swallow and Robin. All are common and widespread in rural areas of Northern Ireland however have shown short-term declines in breeding population (> 25%).

House sparrow, Starling and Swallows were associated with human habitation for nesting sites and were found foraging across the site. Robins were also widespread across the site and were found in abundance along the numerous hedgerows.

Linnet and Mistle thrush along with Lesser redpoll, Dunnock and Song thrush, which are all Northern Ireland Priority species, were all recorded in small numbers across the site

The locations of these birds can be seen in Figure 1. Full scientific names, estimates of the number of breeding pairs and conservation status are shown in Table 1.

Table 1: Results of breeding bird survey showing numbers recorded and conservation importance of each species

No.	Species	Conservation status in Ireland & UK BAP species	Northern Ireland status	Number of breeding pairs	Number of additional non breeding individuals
1	Blackbird (<i>Turdus merula</i>)	Green	-	8	36
2	Blackcap (<i>Sylvia atricapilla</i>)	Green	-	9	0
3	Blue Tit (<i>Cyanistes caeruleus</i>)	Green	-	3	4
4	Chaffinch (<i>Fringilla coelebs</i>)	Green	-	8	13
5	Chiffchaff (<i>Phylloscopus collybita</i>)	Green	-	3	0
6	Coal Tit (<i>Parus ater</i>)	Green	-	0	2
7	Collared Dove (<i>Streptopelia decaocto</i>)	Green	-	0	2
8	Dunnock (<i>Prunella modularis</i>)	Green	Priority	6	4
9	Goldfinch (<i>Carduelis carduelis</i>)	Green	-	3	18
10	Great Tit (<i>Parus major</i>)	Green	-	4	2
11	Greenfinch (<i>Carduelis chloris</i>)	Green	-	1	1
12	Hooded Crow (<i>Corvus cornix</i>)	Green	-	0	13
13	House Sparrow (<i>Passer domesticus</i>)	Amber, UK BAP	Priority	2	11

No.	Species	Conservation status in Ireland & UK BAP species	Northern Ireland status	Number of breeding pairs	Number of additional non breeding individuals
14	Jackdaw (<i>Corvus monedula</i>)	Green	-	2	18
15	Lesser Redpoll (<i>Carduelis flammea cabaret</i>)	Green, UK BAP	Priority	0	2
16	Linnet (<i>Carduelis cannabina</i>)	Amber	Priority	1	0
17	Magpie (<i>Pica pica</i>)	Green	-	0	11
18	Mallard (<i>Anas platyrhynchos</i>)	Green	-	1	1
19	Meadow pipit (<i>Anthus pratensis</i>)	Red	-	0	2
20	Mistle Thrush (<i>Turdus viscivorus</i>)	Amber	-	1	1
21	Pheasant (<i>Phasianus colchicus</i>)	N/A	-	1	2
22	Pied Wagtail (<i>Motacilla alba yarrellii</i>)	Green	-	0	2
23	Robin (<i>Erithacus rubecula</i>)	Green	-	6	7
24	Rook (<i>Corvus frugilegus</i>)	Green	-	1	23
25	Song Thrush (<i>Turdus philomelos</i>)	Green, UK BAP	Priority	3	1
26	Starling (<i>Sturnus vulgaris</i>)	Amber, UK BAP	Priority	2	101
27	Swallow (<i>Hirundo rustica</i>)	Amber	-	0	25
28	Willow Warbler (<i>Phylloscopus trochilus</i>)	Amber	-	5	1
29	Woodpigeon (<i>Columba palumbus</i>)	Green	-	1	21
30	Wren (<i>Troglodytes troglodytes</i>)	Green	-	36	3
Total	30			107	327

Source: Ireland Status : Colhoun & Cummins 2013
Northern Ireland Status NIEA 2011, Priority – Priority species

4.3 Main habitats and associated species

The area represents a typical Northern Ireland lowland mixed farmland of predominantly improved pasture used for intensive grazing and silage production. The main areas of landtake for the proposed junction layout are improved grassland fields, with some mature hedgerows, scrub, small areas of woodlands and scattered mature trees.

A number of good quality, predominantly Hawthorn *Crataegus monogyna* hedgerows surround the fields in the area, there is also a large area of scrub to the east of Hillfoot Crescent and mature trees near the Downpatrick road junction. These habitats provided foraging and nesting habitat for resident species such as Blackbird, Robin, Wren, Dunnock, Tit species and Woodpigeon. Summer migrants such as Blackcap, Willow warblers and Chiffchaff were also seen in the hedgerows and trees. The hedgerows also provide excellent potential foraging opportunities for winter migrants such as Redwing and Fieldfare.

A number of species were noted to be associated with the human dwellings and farm buildings close to the proposed junction layout. House sparrows in particular were recorded in the vicinity of buildings near the Millbrook Drive and Moss road. House sparrows are a Priority Species and Amber-listed. They have experienced a decline in their populations in recent years which has been attributed to agricultural improvements and limited nesting opportunities.

Several swallows were also noted foraging around farm buildings and fields. Swallow are Amber-listed and a priority species in Northern Ireland and occur throughout the summer months.

The river corridors provide important habitat for species such as the Kingfisher (recorded during Phase 1 habitat survey), which is also a Priority Species and Amber-listed. The presence of this species indicates that the Ballynahinch River is in relatively good condition and provides suitable prey for kingfishers.

Additionally with reference to CEDaR records, there are reports in 1993 and 2004 of Barn Owls in the area. Despite frequent nesting opportunities in the numerous farm out-buildings, no evidence was found of barn owls during field surveys. Co. Down is considered a Barn owl stronghold in Northern Ireland however the habitat was assessed to be sub-optimal due to agricultural intensification. These processes such as loss of rough grassland, increased silage production and loss of mixed farming practices have reduced prey availability and therefore rendered the habitat within the bypass footprint unsuitable.

The predicted effects of the proposed route on Priority Species, Amber-listed Species and their habitats are further outlined in Table 2. It is considered that these species would be largely unaffected by the route. The area of proposed works is surrounded by suitable habitat and therefore any displacement will be of minimal impact.

Table 2: Potential impact of the proposed road on Species of Conservation Concern in Ireland and Northern Ireland Priority Species.

Species	Status	NI Status	Comments	Impact of new road
Dunnock	Green	Priority	Common throughout Northern Ireland. Was found in the dense undergrowth.	Sufficient foraging and nesting habitat exists in the surrounding area for these species and so they would not be significantly affected by the proposed junction

Species	Status	NI Status	Comments	Impact of new road layout.
House sparrow	Amber	Priority	Common bird throughout Northern Ireland. Cavity nesting species associated with human habitation	
Lesser redpoll	Green	Priority	Widespread throughout northern Ireland. Breeds in scrub and young woodlands.	
Linnet	Amber	Priority	Common bird throughout Northern Ireland. Frequently nests in scrub and hedges.	
Meadow pipit	Red	-	Common bird throughout Northern Ireland. Though more abundant in upland areas. Due to its ground nesting behaviour this species is sensitive to agricultural intensification.	
Mistle thrush	Amber	-	Common bird throughout Northern Ireland. Frequently nests in scrub and hedges.	
Robin	Amber	-	Common throughout Northern Ireland. Was found in the dense undergrowth.	
Song thrush	Green	Priority	Common bird throughout Northern Ireland. Frequently nests in scrub and hedges.	
Starling	Amber	Priority	Common bird throughout Northern Ireland. Cavity nesting species associated with human habitation	
Swallow	Amber	-	Associated primarily with farmland and farm buildings. Feeds on insects, caught on the wing.	

5. MITIGATION

- A pre-construction breeding bird survey should be undertaken prior to any site clearance. This would establish if the breeding bird population has changed, as well as the presence of protected or rare species which may require further mitigation measures;
- all site clearance work should be undertaken outside of the bird breeding season, generally considered to be from March to August, (though not limited to that period). Any site clearance work undertaken within the bird breeding season should be approved by the ECoW who should make a detailed check of any suitable vegetation for nests prior to vegetation/tree removal;
- landscaped areas should be created to provide bird species with multiple nesting opportunities across the site. The landscaping plan should ensure a mix of heights of shrubs and plants is included to provide suitable habitat to maximise biodiversity in addition to providing visual attraction. The planting plan should include seed and berry-rich plants and those that will provide nectar for bees and insects. These in turn would provide food for birds;
- although barn owls were not recorded during the survey period, there is anecdotal evidence that they may be present in the area. As barn owls are particularly sensitive to road construction, it is recommended that landscaping along the road would discourage low flight, forcing the owls to fly high over the road. This is achieved by planting thick hedges and trees 4m in height, or planted on banks to achieve the necessary height. This will act as barn owl hop-over vegetation to encourage the owls to fly high over the new road, therefore reducing risk of traffic collisions. In areas adjacent to the road where tall vegetation is not appropriate, dense scrub should be encouraged to provide cover for small mammals; this habitat restricts foraging for barn owls beside the road. Suitable foraging habitat such as grassland should be provided away from the new road and; and
- a range of bird box styles, suited to various different species found on site should be provided.

6. BIODIVERSITY ENHANCEMENT FOR BIRDS

- Areas to be landscaped should incorporate shrub and plant species which would provide plentiful food for birds in the form of seeds and berries;
- Species in planted areas should be chosen to provide places for birds to roost and nest;
- A variety of bird boxes should be provided around the site, in any relatively quiet areas. A suitably experienced ecologist should advise on the exact type and positioning of the boxes; and
- Open grassland areas should also be created to provide locations for birds to forage.

7. SUMMARY OF KEY ISSUES

Farmland, especially fields with thick, mature hedges and mature trees, have been outlined above as being important for certain resident and migrant bird species. The encroachment of the proposed scheme would lead to the removal of some of the mature features would give rise to most concern.

Prior to any hedgerows or trees being removed they should be thoroughly assessed by a suitably experienced ecologist for evidence of breeding birds.

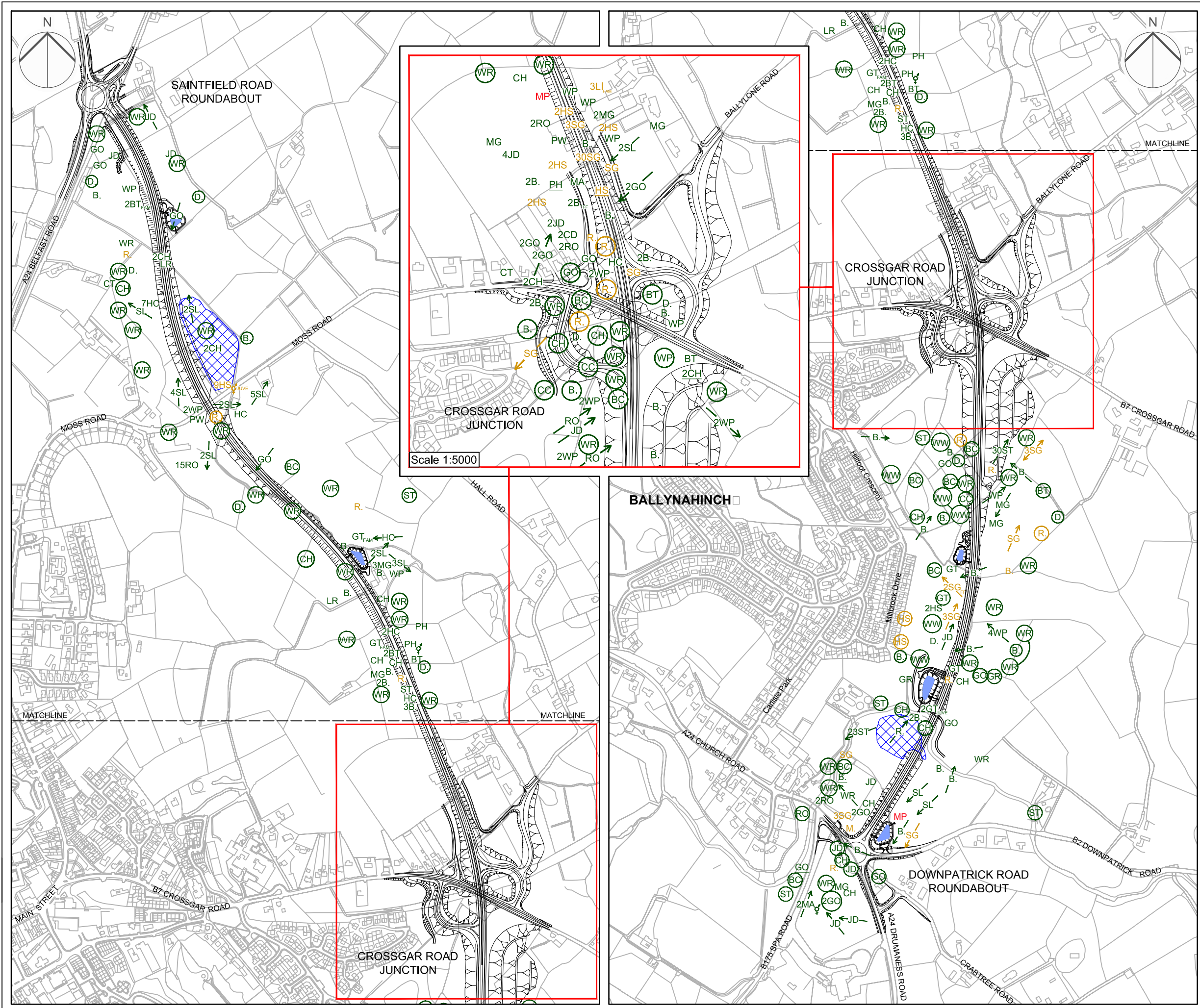
In terms of bird species, it is possible that as a result of the proposal that some species may be displaced from their current locations as recorded in this survey. However, there is sufficient habitat available close by for the populations to be largely unaffected.

Where any extensive areas of mature hedges or trees are removed to make way for the study area, consideration should be given to replace this with additional planting. This would ensure the overall habitat area could be retained for those species mentioned in the text.

Consideration should also be given to extensive hedgerow planting on the roadsides of the junction layout to buffer the surrounding environment from any detrimental effects such as disturbance from noise and visual impacts that may be created in the study area.

8. REFERENCES

- Colhoun, K., & Cummins, S., 2013 The status of birds in Ireland, 2014–2019 Irish Birds 9 523-544
- Marchant, J. H. 1983 The Common Bird Census instructions. British Trust for Ornithology, Tring.
- NIEA 2011 Northern Ireland Status, Priority species



Project Title
A24 BALLYNAHINCH BYPASS

Client
transportni

Drawing Title
ECOLOGY AND NATURE CONSERVATION
Bird Survey

KEY
 Proposed Scheme
 Sustainable Drainage System (SuDS)
 Proposed Flood Compensation Area

B **C** **I** **C**
 B. Blackbird
 BC Blackcap
 BT Blue Tit
 CC Chiffchaff
 CD Collared Dove
 CH Chaffinch
 CT Coal Tit
 D. Dunnock
 GO Goldfinch
 GR Greenfinch
 GT Great Tit
 HC Hooded Crow
 HS House Sparrow
 WR Jackdaw
 LR Lesser Redpoll
 L. Linnet
 MA Mallard
 MG Magpie
 MP Meadow Pipit
 M. Mistle Thrush
 PH Pheasant
 PW Pied Wagtail
 R. Robin
 RO Rook
 SG Starling
 SL Swallow
 ST Song Thrush
 WP Woodpigeon
 WR Wren
 WW Willow Warbler

BI **YMB** **L**
 ♀ Pair
 → Flight Path
 ○ Singing
 ♂ Calling Bird
 FAM/JUVE Family/Juvenile
 FF Food/Faecal sac
 Red
 Amber
 Green

Scale @ A3
1:8,000
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FIGURE 1

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APPENDIX 10: ECOLOGY & NATURE CONSERVATION

Annex E: Newt Survey



A24 Ballynahinch Bypass

Appendix 10 Annex E
Smooth Newt Habitat
Potential Survey

March 2015

47037246

Prepared for:
DRD Transport NI

UNITED
KINGDOM &
IRELAND



Rev	Date	Details	Prepared by	Checked by	Approved by
0	February 2014	Smooth Newt Habitat Potential Survey (DRAFT)	Conor Reid Graduate Ecologist	Dr. Paul Lynas Ecologist	Gareth Coughlin Associate (Environmental Scientist)
1	March 2015	Smooth Newt Habitat Potential Survey	Conor Reid Ecologist	Dr. Paul Lynas Senior Ecologist	Gareth Coughlin Associate (Environmental Scientist)

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TABLE OF CONTENTS

1.	INTRODUCTION	1
1.1	BACKGROUND	1
2.	LEGISLATION	1
3.	METHODOLOGY	1
4.	RESULTS	2
5.	MITIGATION & ENHANCEMENTS	2
6.	CONCLUSIONS	3

FIGURE 1 - NEWT HABITAT POTENTIAL SURVEY

APPENDIX A – SITE PHOTOGRAPHS

A24 BALLYNAHINCH BYPASS-SMOOTH NEWT PRESENCE AND ABUNDANCE SURVEY**1. INTRODUCTION****1.1 Background**

The immediate study area for the field survey covers the lands to be vested for the Proposed Scheme. The wider study area includes adjacent fields and habitats such as woodland and watercourses which has the potential to be indirectly affected by the Proposed Scheme. This area extends between the A24 Belfast Road/ A21 Saintfield Road junction and the junction of the A24 Drumanness Road and B2 Downpatrick Road. Habitat areas were calculated on the lands within the proposed vesting boundary. Potential impacts were also assessed further afield where appropriate e.g. the impact of the Proposed Scheme on designated sites.

The purpose of the Smooth newt survey was to identify any potentially suitable habitat affected by the planned scheme and undertake further detailed survey work if necessary.

2. LEGISLATION

The Smooth or Common newt *Lissotriton vulgaris* (formerly *Triturus vulgaris*) is the only species of newt found in Northern Ireland. It is protected under Article 10 of the Wildlife (Northern Ireland) Order 1985 (as amended).

It is an offence to:

- (a) intentionally or recklessly kill, injure or take any wild animal included in Schedule 5 of this Order, which includes the Smooth or Common newt;
- (b) intentionally or recklessly: damage or destroy, or obstruct access to, any structure or place which newts use for shelter or protection;
- (c) damage or destroy anything which conceals or protects any such structure;
- (d) disturb a newt while it is occupying a structure or place which it uses for shelter or protection.

Although Smooth newts are widespread across Northern Ireland, suitable habitat for the species is in decline. Newts breed in ponds and areas of standing water with vegetation cover close by. Ponds are exceptionally vulnerable, and face many threats, including drainage and infill.

3. METHODOLOGY

The aim of the Smooth newt survey was to assess potential for Smooth newts and their habitats on the site. This in turn would be used to decide whether a licence would be required to undertake a full newt presence and abundance survey. This would then be used to identify any ecological constraints to the proposed development and any further mitigation which would be required.

Suitably experienced URS ecologists undertook the site visits to assess habitat suitability.

4. RESULTS

No suitable Smooth newt habitat was found on site and no Smooth newts were inadvertently detected during surveys for other protected species. No permanent ponds were found along the study area. Several ditches with slow moving water were found, however they connect to other fast-flowing streams and to the main Ballynahinch River. They are also regularly dredged to improve drainage and prevent thick vegetation growth.

All areas which had not recently been dredged had dense vegetation and were highly eutrophic. All areas were deemed unsuitable due to eutrophic conditions, regular dredging and the flowing nature of the water. Table 1 describes each potential wetland area assessed (See also Appendix 1 for Site photographs).

Table 1: Areas surveyed for Smooth newt presence and habitat suitability.

Watercourse	Description	Results	Conclusion
Minor streams and Glasdrumman River	<p>A small ditch of slow moving water through improved grassland fields.</p> <p>Substrate was brown silt in areas that had been dredged. Dense marginal and emergent vegetation was present in other areas.</p> <p>Water contained high suspended solids. Several section of the Glasdrumman River had evidence of poaching by unrestricted access of cattle to the waters edge. Duckweed <i>Lemna minor</i> present also suggests eutrophic conditions (Appendix 1 – Photographs 1 - 3).</p>	No newts or suitable habitat found.	<p>Area surveyed deemed unsuitable for newts due to:</p> <ul style="list-style-type: none"> • poor water quality, • excessive shading by vegetation or dredging and • flowing nature of the water.
Windmill stream	<p>A small ditch of slow moving water through improved grassland fields. Flow rate sufficient to prevent duck weed accumulation.</p> <p>Areas had been recently dredged and substrate was largely brown silt. Some regrowth of reed canary grass (Appendix 1 – Photograph 4).</p>	No newts or suitable habitat found.	<p>Area surveyed deemed unsuitable for newts due to:</p> <ul style="list-style-type: none"> • poor water quality, • Lack of vegetation and • flowing nature of the water.

5. MITIGATION & ENHANCEMENT

Where wetland areas are lost due to the road development, mitigation should aim to replace these habitats. This can be achieved through the creation of suitable wetland habitat areas with wetland plants and associated other vegetation. The creation of SuDS ponds and wetlands, where the design allows will also create improved habitat for wetland species. Landscape and management planning should also encourage a mosaic of tree and shrub planting and a mix of open habitats such as long and short grassland.

As no newts have been detected on site, no protected species survey licence is necessary for any mitigation measures. However, a survey licence should be obtained from NIEA prior to undertaking future surveys, consistent with NIEA newt survey guidelines.

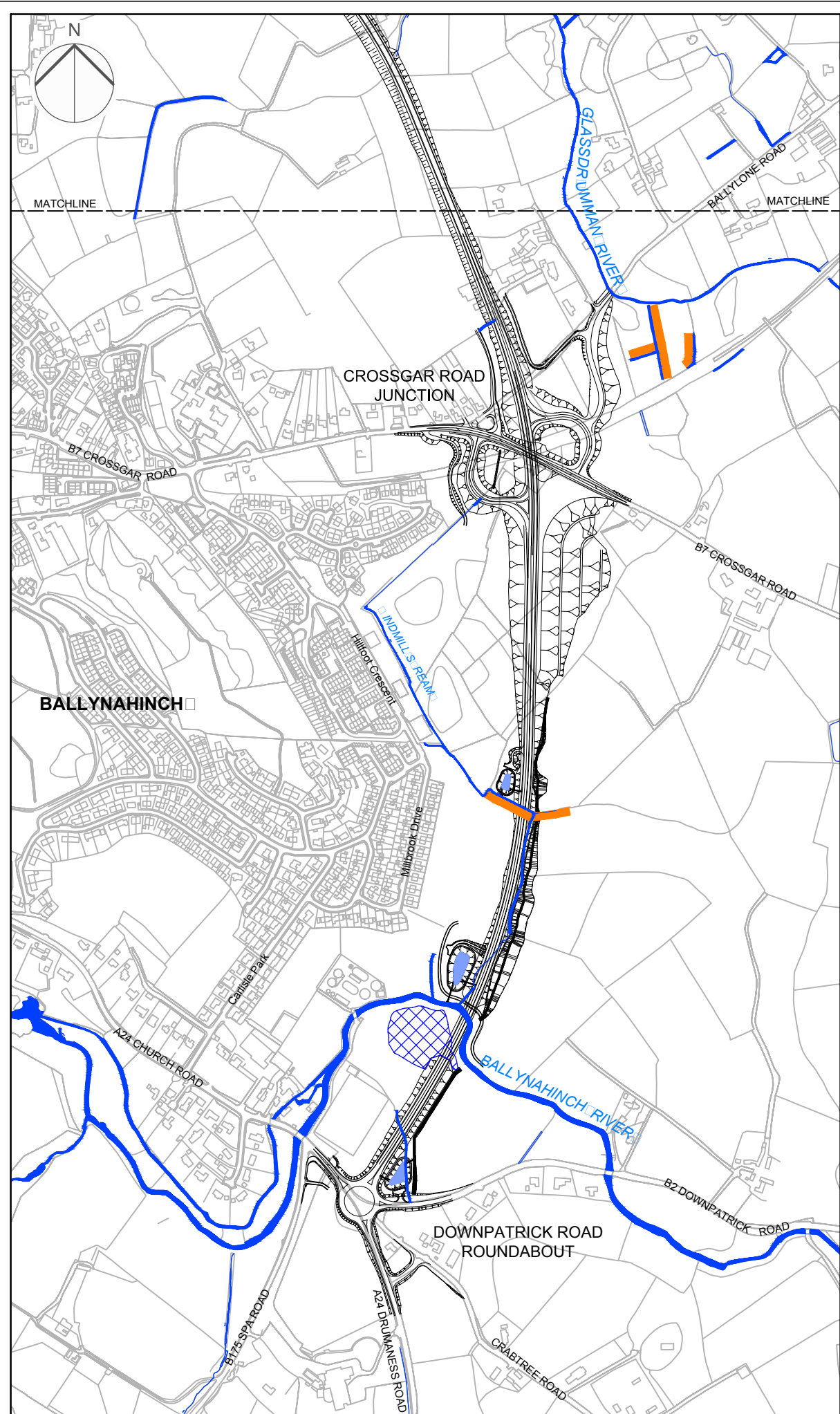
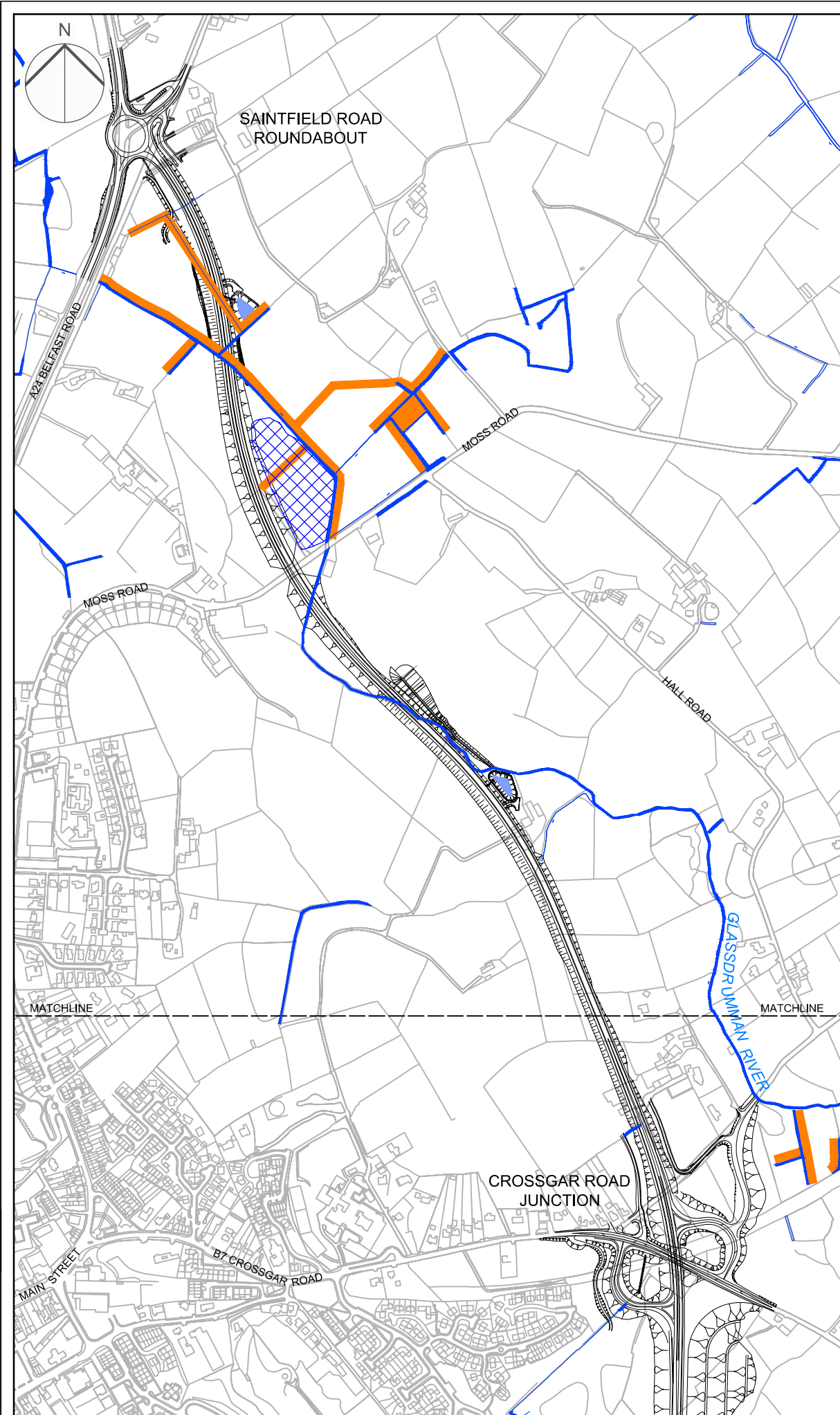
Further surveys should be carried out on all ponds, ditches and wet areas for Smooth newt presence prior to any construction or redevelopment of the site.

The external roads network should create opportunities for wetland areas alongside the new road, in the form of SuDS ponds. These would provide habitat for amphibians, aquatic invertebrates and insects.

6. CONCLUSIONS

The survey applied standardised techniques and did not find any suitable Smooth newt habitat in the pond or associated terrestrial habitat. It is therefore considered that at the present time, Smooth newts are unlikely to be present on the site and no specific mitigation measures are required.

Both areas were considered to be eutrophic due to agricultural improvements and livestock access to the water course. Both ditches had either dense vegetation growth or had been recently dredged. They also both had a significant flow. These conditions made the habitat less suitable for newts and therefore may explain their likely absence from the site.



Project Title
A24 BALLYNAHINCH BYPASS

Client
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Drawing Title
ECOLOGY AND NATURE CONSERVATION

Newt Habitat Potential Survey

KEY

- Proposed Scheme
- Sustainable Drainage System (SuDS)
- Proposed Watercourse Diversion
- Proposed Flood Compensation Area
- Watercourse / Waterbody

Newt Habitat Potential - Location of Survey

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APPENDIX A SITE PHOTOGRAPHS

Photograph 1 – Minor drainage ditch which drains into the Glasdrumman River. Overgrown with dense vegetation and eutrophic condition.



Photograph 2 – Glasdrumman River, highly eutrophic, slow flowing with dense *Spyrogyra* green algae. This ditch has recently been dredged, as can be seen from the spoil on the left side of the image.



Photograph 3 – Another section of the Glasdruman River with evidence of poaching by unrestricted access of cattle to the water's edge. Duckweed *Lemna minor* present also suggests eutrophic conditions.



Photograph 4 – Windmill stream which connects directly to the Ballynahinch River. Greater flow rate present and recent signs of dredging.

