

**APPENDIX 10: ECOLOGY & NATURE CONSERVATION****Annex A: Phase 1 Habitat Survey****Annex B: Bat Survey****Annex C: Breeding Bird Survey****Annex D: Native Species Planting Guidance****Annex E: CEDaR Records**

**APPENDIX 10: ECOLOGY & NATURE CONSERVATION****Annex A: Phase 1 Habitat Survey**



York Street  
Interchange  
Environmental  
Statement

Appendix 10 Annex A  
Phase 1 Habitat  
Survey Report

January 2015

47037827

Prepared for:  
DRD Transport NI

UNITED  
KINGDOM &  
IRELAND



**transportni**



Department for  
**Regional  
Development**  
[www.drtni.gov.uk](http://www.drtni.gov.uk)

## REVISION SCHEDULE

Rev	Date	Details	Prepared by	Reviewed by	Approved by
0	January 2015	Phase 1 Habitat Survey	Conor Reid Graduate Ecologist	Dr. Paul Lynas Ecologist	Gareth Coughlin Associate (Environmental Scientist)

URS  
Beechill House  
Beechill Road  
Belfast  
BT8 7RP

Tel (028) 9070 5111  
Fax (028) 9079 5651

[www.urs.com](http://www.urs.com)

## Limitations

URS Infrastructure & Environment UK Limited has prepared this Report for the sole use of **DRD Transport NI** in accordance with the Agreement under which our services were performed, **47037827**. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by URS. This Report is confidential and may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of URS.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by URS has not been independently verified by URS, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by URS in providing its services are outlined in this Report. The work described in this Report was undertaken between **May 2013** and **December 2014** and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this Report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

URS disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to URS' attention after the date of the Report.

Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. URS specifically does not guarantee or warrant any estimate or projections contained in this Report.

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.

## Copyright

© This Report is the copyright of URS Infrastructure & Environment UK Limited. Any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited.

TABLE OF CONTENTS	YORK STREET INTERCHANGE – PHASE 1 HABITAT SURVEY ..... 1
1.	INTRODUCTION ..... 1
1.1	Background..... 1
1.1	Aims..... 1
2.	METHODOLOGY ..... 1
2.1	Desk Study ..... 1
2.2	Field Survey..... 1
2.3	Site visits..... 3
3.	RESULTS ..... 3
3.1	Phase 1 Habitats ..... 3
3.1.1	Woodland Broad-leaved Plantation (A1.1.2) ..... 4
3.1.2	Scrub (A2.1)..... 4
3.1.3	'Brownfield' - Tall ruderal, Short perennial, Bare ground and Scattered scrub mosaic (C3.1, J1.3, J4, A2.2)..... 5
3.1.4	Grasslands (J1.2, B2.2) ..... 5
3.1.5	Scattered Scrub and Trees & Introduced Shrub (A2.2, A3.1, J1.4) ..... 5
3.1.6	Brackish Standing Water (G1.6) and Watercourses (G2) .. 6
3.1.7	Bare ground (J4)..... 6
3.1.8	Other habitats ..... 6
3.1.9	Invasive Species..... 6
3.1.10	Protected Non-volant Mammals ..... 6
	FIGURE 1 – PHASE 1 HABITAT SURVEY
	APPENDIX A TARGET NOTES
	APPENDIX B PLANT SPECIES LIST

## YORK STREET INTERCHANGE – PHASE 1 HABITAT SURVEY

### 1. INTRODUCTION

#### 1.1 Background

The York Street Interchange aims to improve links from the Westlink, to the M2 motorway and the M3 motorway in Belfast. The existing signalised York Street junction links the Westlink, M2 and M3 through a complex arrangement of traffic signals which interface with the street network at York Street, Nelson Street and Great George's Street. Road users currently experience long delays and congestion at peak periods travelling through the signalised system.

Transport NI has developed preliminary proposals to provide a grade-separated junction at York Street that would provide direct links between the Westlink and the M2 and M3 motorways and greatly improve access between these roads. Plans to improve the York Street junction with Westlink are included in the Department's Investment Delivery Plan for Roads.

This report presents the results of the Phase 1 Habitat Surveys and should be read in conjunction with the York Street Interchange Environmental Statement (ES), Chapter 10 Ecology and Nature Conservation.

#### 1.1 Aims

The purpose of this report is to summarise and present results of the extended Phase 1 Habitat surveys carried out within the study area. The study area covers the 'immediate study area' (land within the proposed vesting boundary) and adjacent lands.

### 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 Habitats website (<http://www.habitats.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 hectares (10 x 10km grid squares) overlapped by the study area.

#### 2.2 Field Survey

The standard Phase 1 field survey and mapping methodology was used, as developed by the Joint Nature Conservation Committee (JNCC) (JNCC, 2010), categorising habitats and landscape features on site. The timing of the survey was appropriate to enable a full survey of key habitats. Because of the limited range and extent of wildlife habitats in study area, the significance of relatively small sites is increased.

The 'extended' element of the survey looked for protected species, their field signs, or the potential of the habitats on site to support protected species. A search was made for invasive species, which appear on Schedule 9 (II) of the Wildlife (NI) Order 1985 (as amended), such as Japanese knotweed *Fallopia japonica*, Giant hogweed *Heracleum mantegazzianum* and Himalayan balsam *Impatiens glandulifera*. These species have implications for construction

activity, and human health in the case of giant hogweed, and carry with them legal obligations for their management and removal from a site.

The extended Phase 1 Habitat survey was undertaken during the survey season 2013, and again in 2014 to identify notable and protected habitats. The entire Proposed Scheme layout and adjacent lands were walked by experienced ecologists, noting plant communities, habitats, landscape features of ecological value, potential habitats for different ecological groups, and signs any mammal and invasive plants presence.

The nature conservation value of species recorded within the study area was then determined in relation to national and international legislation, and standard texts on rarity/distribution in Northern Ireland.

Target notes are an essential part of Phase 1 Habitat survey. They are used to provide additional descriptions of features of particular note (e.g. presence of key and characteristic species) and to note the potential value of areas to fauna.

The following are included in the target note:-

- habitat type or types present together with their dominant plant species;
- other species of note; and
- need for further survey if relevant.

Following the surveys, recognised habitats were mapped on Surveys Maps (AutoCAD) based on Phase 1 methodology (JNCC, 2010). Blocks of land were assigned to recognised broad-habitat categories and marked on a map using standard mapping colour codes. The use of colour codes on the final habitat maps allows rapid visual assessment of the extent and distribution of different habitat types.

The Phase 1 classification comprises ten (A-J) broad high level categories:

- Woodland and scrub;
- Grassland and marsh;
- Tall herb and fen;
- Heathland;
- Mire;
- Swamp, marginal and inundation;
- Open water;
- Coastland;
- Rock, exposure and waste; and
- Miscellaneous.

Amongst these, 155 specific habitat types are recognised, each having its own name, alphanumeric code, description and mapping colour.

Once habitats were mapped, areas were calculated on the extent, proportion and distribution of each habitat type occurring within the proposed vesting boundary.

### 2.3 Site visits

The extended Phase 1 Habitat Surveys were undertaken on 29 August 2013 and 12 August 2014, and additionally winter walkovers were undertaken on 07 February 2014 and again on 02 December 2014. Every parcel of land in the entire survey area was visited by surveyors and the vegetation mapped onto survey maps. The survey was carried out by ecologists experienced in Phase 1 surveying – Dr Paul Lynas CEnv MCIEEM (Ecologist) and Conor Reid BSc MSc, Grad CIEEM (Graduate Ecologist).

## 3. RESULTS

### 3.1 Phase 1 Habitats

During the field visits, a number of Phase 1 habitats were identified as present within the study area (Table 1). The results of the Phase 1 survey are also shown in Figure 1 and further details of specific areas are outlined in the Target Notes (Appendix 1).

The study area consists of a high-density urban mix of various land uses for commercial use, housing, and the western side of the Port of Belfast. 'Natural habitats' have virtually all been created and mainly date from landscaping following construction of the M3 and its various connecting slip-roads during the 1990s.

Bare ground comprises the largest habitat area (Table 1) occurring as car parks and bare ground. It was often interspersed with sparse flora. The second largest habitats were Woodland Broad-leaved Plantation and Introduced Shrub, particularly along the M2 and M3 motorway embankments (Figure 1) (Table 1), which make up sizeable areas. These trees, shrubs and small areas of amenity planting in the vicinity of the York Street junction are of relatively low ecological value but provide important shelter and foraging habitat for wildlife in an otherwise urban environment.

Brownfield habitat includes a mosaic of tall ruderal, short perennial, bare ground and scattered scrub. This habitat contains the highest botanical diversity on site and in turn provides habitat for the greatest invertebrate populations.

**Table 1:** Main Habitat types recorded within the proposed vesting boundary.

Habitat	Approximate Area (m <sup>2</sup> )	Approximate Area (ha)	% Proposed Vested Lands
Bare Ground (J.4)	41585.2	4.16	15.78
Woodland Broad-leaved Plantation (A1.1.2)	11638	1.16	4.42
Dense Scrub (A2.1)	11041.3	1.10	4.19
Ephemeral/short perennial (J1.3)	4678.2	0.47	1.78
Amenity Grassland (J1.2)	2538.6	0.25	0.96

Habitat	Approximate Area (m <sup>2</sup> )	Approximate Area (ha)	% Proposed Vested Lands
Semi-Improved Grassland (B2.2)	1388.3	0.14	0.53
Scattered Scrub (A2.2)	975.5	0.10	0.37
Tall Ruderal (C3.1)	834.9	0.08	0.32
Introduced Shrub (J1.4)	623.3	0.06	0.24
Scattered Trees (A3.1)	156	0.02	0.06
Other (roads, buildings, misc. habitats etc.)	188091.7	18.81	71.37
<b>TOTAL</b>	<b>263,551</b>	<b>26.36</b>	<b>100</b>

### 3.1.1 **Woodland Broad-leaved Plantation (A1.1.2)**

Although the study area is dominated by an urban hard standing landscape, a number of parcels of woodland plantation (amenity planting) occur, particularly in the middle of the study area, along the M2 motorway, along both the M2 Nelson Street off-slip and M2 York Street on-slip (Appendix 1, Target Note 2), and also under Dargan Bridge (Figure 1). These trees, shrubs and small areas of amenity planting in the vicinity of the York Street junction are of relatively low ecological value, but provide important shelter and foraging habitat for wildlife in an otherwise urban environment.

The majority of existing plantation woodland occurs on sloping earth banks, planted during construction of the M3, in the mid-1990s. Dominant species include Alder *Alnus* sp., Silver birch *Betula pendula*, and Sycamore *Acer pseudoplatanus*. Other species include Oak *Quercus petraea*, Scots pine *Pinus sylvestris*, Rowan *Sorbus aucuparia*, Lime *Tilia* sp., Willow *Salix* sp., and Poplar *Populus nigra*. Ground flora includes Ivy *Hedera helix*, Bramble *Rubus fruticosus* agg., Dog rose *Rosa canina* agg., and Stinging nettle *Urtica dioica*.

### 3.1.2 **Scrub (A2.1)**

Dense scrub comprises woody plants usually less than 5m tall, and was found as an understorey within the broad-leaved plantation woodland. It is also prevalent within a number of areas, particularly along the edge of Westlink, and adjacent to York Link and the M2 motorway (Figure 1). It consists mainly of Privet *Ligustrum* sp., Guelder-rose *Viburnum opulus*, Dogwood *Cornus alba*, Buddleia *Buddleja davidii*, Elder *Sambucus nigra*, Japanese rose *Rosa rugosa*, Willow *Salix* sp., and Bramble *Rubus fruticosus*.

Small parcels of introduced shrubs (ornamental planting) occur around the Yorkgate Railway Station and adjacent to retail units along Nelson Street. They consist of mainly shrubs and hedging, including Cotoneaster *Cotoneaster* sp., and Laurel *Prunus* sp.

### 3.1.3 **'Brownfield' - Tall ruderal, Short perennial, Bare ground and Scattered scrub mosaic (C3.1, J1.3, J4, A2.2)**

'Open mosaic habitat found on previously developed land' is a UK and Northern Ireland Priority habitat and UK Biodiversity Action Plan (UKBAP) habitat. It was found only in two areas within the site under the Dargan Bridge as the Phase 1 habitats of Tall ruderal, Short perennial, Bare ground and Scattered scrub. It is commonly referred to as brownfield land and will be referred to as such from now on.

A large area of brownfield habitat between the M2 motorway, York Street and Dock Street was originally recorded during visits to the site in 2013 (Appendix 1, Target Note 6). Surrounded by trees and vegetation, it was the main area of natural habitat in the vicinity of the junction. Whilst the majority of this area lay outside of the proposed vesting boundary, some was included within it. During a follow-up visit in December 2014, it was noted to have been cleared completely of surface vegetation and boundary scrub and trees. The resulting bare soil was graded out over the entire cleared area. Many of the plant species below were recorded in this area and were present to create the brownfield mosaic. This portion of the site currently exists as Bare ground (J.4) (earth) and has been presented as such in the Phase 1 results.

A wide variety of Tall ruderal (Appendix 1, Target Note 3), Short perennial and Scrub vegetation occur at various densities within brownfield areas which provide a mosaic of important wildlife habitat. Rosebay willowherb *Chamerion angustifolium* and Buddleia are the most prevalent species of vegetation in these areas. Other common wasteland species include Creeping thistle *Cirsium arvense*, Creeping buttercup *Ranunculus repens*, Gorse *Ulex europaeus*, Meadow vetchling *Lathyrus pratensis*, Mugwort *Artemisia vulgaris*, Nipplewort *Lapsana communis*, Coltsfoot *Tussilago farfara*, Fat-hen *Chenopodium album*, Black medic *Medicago lupulina*, Horsetail *Equisetum* sp., Ribwort plantain *Plantago lanceolata*, Greater plantain *Plantago major*, Red clover *Trifolium pratense*, White clover *Trifolium repens*, Dandelion *Taraxacum* sp., Yarrow *Achillea millefolium*, Common couch *Elytrigia repens*, Yorkshire fog *Holcus lanatus*, and False-oat grass *Arrhenatherum elatius*.

Brownfield habitat areas contained the highest botanical diversity on site, which in turn provided habitat for invertebrate populations. A number of common species such as Small copper butterfly *Lycaena phlaeas*, Common blue butterfly *Polyommatus icarus*, Peacock butterfly *Agais io*, Red tailed bumblebee *Bombus lapidaris*, and Early bumblebee *Bombus pratorum* were observed within the site in brownfield habitat.

### 3.1.4 **Grasslands (J1.2, B2.2)**

Most amenity grasslands comprise intensively managed swards of standard species, such as Perennial rye grass *Lolium perenne*, Red fescue *Festuca rubra*, and Sheep fescue *Festuca ovina*. Herbs such as White clover, Dandelion, and Creeping buttercup are also present. The grass area adjacent to the M2 southbound off-slip at Nelson Street has a sward rich in herbs with Creeping thistle predominating, as well as Mugwort *Artemisia vulgaris*, and Silverweed *Argentina anserina*, and has been classified as semi-improved neutral grassland (Appendix 1, Target Note 4).

### 3.1.5 **Scattered Scrub and Trees & Introduced Shrub (A2.2, A3.1, J1.4)**

Scattered (ornamental) trees and scrub have also been planted as landscaping in stretches along York Street, Nelson Street and around Galway House car park (Figure 1). Hebe, Prunus, Cotoneaster and Sorbus are commonly occurring species.

### 3.1.6 **Brackish Standing Water (G1.6) and Watercourses (G2)**

There is one significant waterbody within the vicinity of the scheme, Belfast Harbour, fed by the River Lagan. The Lagan drains a catchment of approximately 576km<sup>2</sup> in the south-east of the Province and discharges into Belfast Lough, to the east of the M2 motorway. The river, classed as Belfast Harbour at this point, is tidal. The river contains various ecologically significant habitats over its length, although all are well upstream and none are in proximity to the immediate study area. The Mile Water and Farset River occur at the extreme north and extreme south of the site, however they are both culverted through the site. Currently, the surface drainage from the site is diverted to Duncrue Street Wastewater Treatment Works, where it is treated before it discharges into Belfast Lough.

### 3.1.7 **Bare ground (J4)**

Bare ground is the most dominant Phase 1 habitat feature and exists in the form of hard surfaces devoid of vegetation such as roads, pedestrian pathways and car parking spaces.

### 3.1.8 **Other habitats**

Other (roads, buildings, misc. small, fragmented habitats etc.) relates to all areas of the remaining built environment (Figure 1). As non-natural, habitat it was not classified in the Phase 1 survey.

### 3.1.9 **Invasive Species**

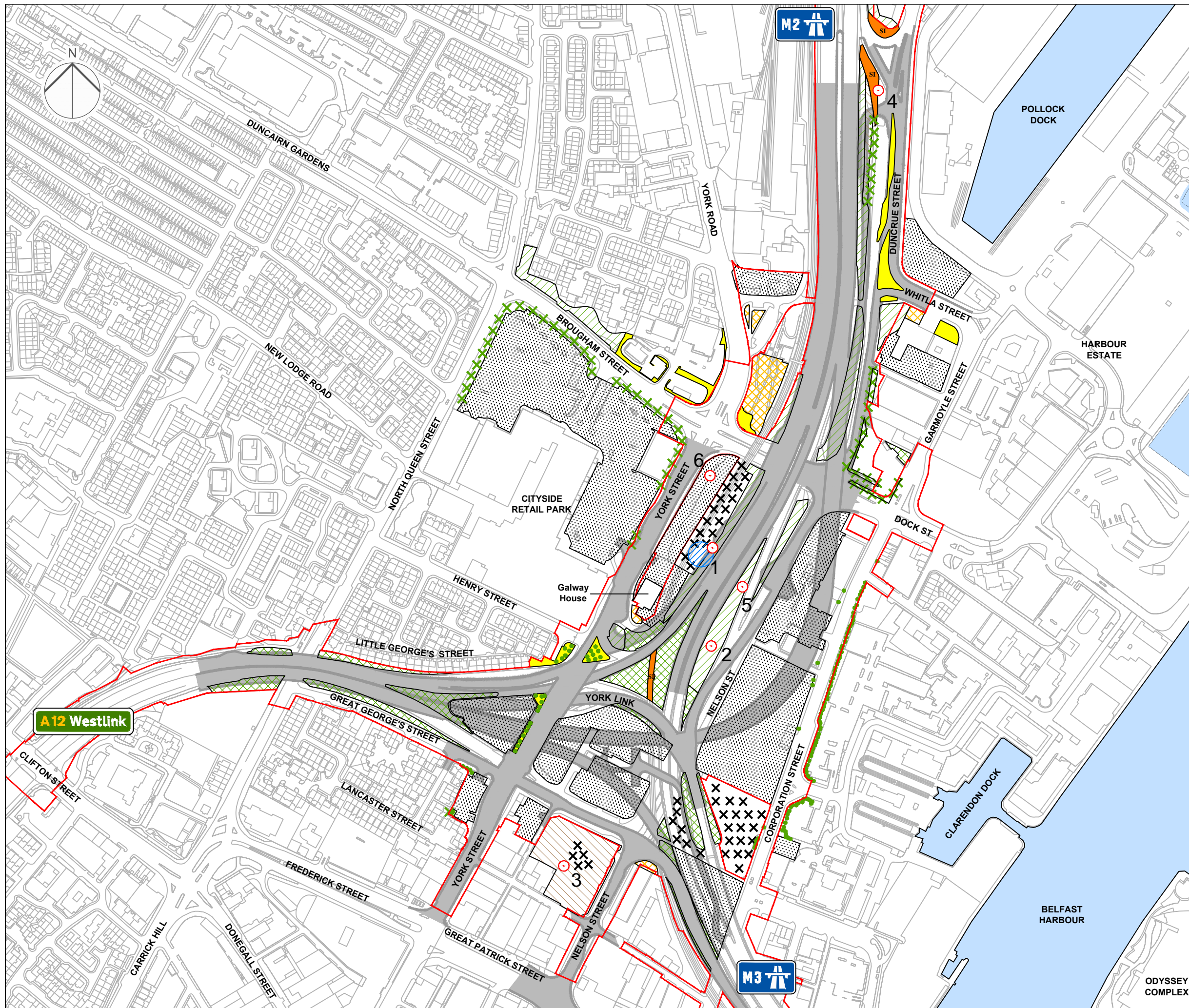
Two small stands of Japanese knotweed *Fallopia japonica* were noted on an embankment at the edge of the derelict land behind Galway House, adjacent to the M2 (Figure 1, Appendix 1, Target Note 1). The Wildlife (Northern Ireland) Order 1985 (as amended) states that it is an offence to cause this species to grow in the wild. Any material leaving site contaminated with Japanese knotweed should be disposed of in accordance with this Order.

### 3.1.10 **Protected Non-volant Mammals**

No non-volant (incapable of flight) protected species were detected. During several site visits, at different times of the year, an assessment was made of the likely occurrence of protected mammals such as Badger *Meles meles*, Irish hare *Lepus timidus hibernicus*, and Red squirrel *Sciurus vulgaris*; all of which are protected at all times under Schedule 5 to the Wildlife (Northern Ireland) Order 1985 (as amended). Otter *Lutra lutra* are protected under the Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995 (as amended). No evidence was found for any of the aforementioned species.

Several small holes were identified in the woodland and scrub between the M2 and Nelson Street off-slip (Appendix 1, Target Note 5). These holes were found to be inactive and had no evidence of protected mammals. These same holes were also identified to be inactive at Stage 1 and Stage 2. Foxes have been observed regularly in the area and therefore these holes may have been associated with past fox activity.

## FIGURE 1 – PHASE 1 HABITAT SURVEY



Project Title  
**YORK STREET INTERCHANGE**

Client  
**transportni**

Drawing Title  
**ECOLOGY & NATURE CONSERVATION**  
Phase 1 Habitat Survey

**KEY**

	Proposed Scheme
	Woodland - Broad-leaved Plantation (A1.1.2)
	Scrub - Dense / Continuous (A2.1)
	Scrub - Scattered (A2.2)
	Parkland/Scattered Trees - Broad-leaved (A3.1)
	Neutral Grassland Semi-improved (B2.2)
	Tall Ruderal Herb (C3.1)
	Standing Water - Brackish (Marine) (G1.6)
	Amenity Grassland (J1.2)
	Introduced Shrub (J1.4)
	Bare Ground (J4)
	Ephemeral - Short Perennial (J1.3)
	Vesting Boundary
	Target Note
	Japanese Knotweed Location

Scale @ A3  
1:4,000

This document has been prepared pursuant to and subject to the terms of URS' appointment by its client. URS accepts no liability for any use of this document other than by its original client or following URS' express agreement to such use, and only for the purposes for which it was prepared and provided.

This material is based upon Crown Copyright and is reproduced with the permission of Land & Property Services under delegated authority from the controller of Her Majesty's Stationery Office.  
© Crown copyright and database rights NIMA ES&LA214.  
Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings.

**FIGURE 1**

URS Infrastructure & Environment UK Limited  
Beechill House  
Beechill Road, Belfast  
BT8 7RP  
T: +44 (0)28 9070 5111  
F: +44 (0)28 9079 5651  
[www.ursglobal.com](http://www.ursglobal.com)



ODYSSEY  
COMPLEX

**APPENDIX A TARGET NOTES**

Table 1: Phase 1 Target notes	
Target Note Reference	Habitat description
TN1	<p><b>J1.4. Introduced shrub Japanese knotweed (<i>Fallopia japonica</i>)</b></p>  <p><b>Notes:</b> Japanese knotweed identified at the back of Galway House at York Street. An invasive species management plan will be required to deal with the invasive species on site.</p>

Table 1: Phase 1 Target notes	
TN2	<p><b>A1.2 Broad-leaf plantation woodland</b></p>  <p><b>Notes:</b> Along both the M2 Nelson Street off-slip and M2 York Street on-slip, and also under Dargan Bridge. Planted approximately during construction of the M3, in the mid-1990s. Dominant species include Alder <i>Alnus sp.</i> Silver birch <i>Betula pendula</i> and Sycamore <i>Acer pseudoplatanus</i>. Ground flora includes Ivy <i>Hedera helix</i>, Bramble <i>Rubus fruticosus agg.</i>, Dog rose <i>Rosa canina agg.</i>, and Stinging nettle <i>Urtica dioica</i>.</p>
TN3	<p><b>Brownfield habitat - B2.2 Semi-improved neutral grassland, C3.1 tall ruderal, J4 bare ground and A2.1 Scattered Scrub.</b></p>  <p><b>Notes:</b> Brownfield site with a mosaic of habitats. Grassland species include Bedstraw <i>Galium avensi</i>, Common bent <i>Agrostis capillaris</i>, Creeping meadow grass <i>Poa supina</i> and Creeping soft grass <i>Holcus mollis</i>. Tall ruderal Rosebay willowherb <i>Chamerion angustifolium</i>.</p>



Table 1: Phase 1 Target notes	
<p>TN4</p>	<p><b>Semi-improved neutral grassland</b></p>  <p><b>Notes:</b> The grass area adjacent to the M2 southbound off-slip at Duncrue Street has a sward rich in herbs Creeping thistle predominating as well as Mugwort <i>Artemisia vulgaris</i>, Oxeye daisy <i>Leucanthemum vulgare</i>, Yarrow <i>Achillea millefolium</i> and Silverweed <i>Argentina anserina</i>.</p>
<p>TN5</p>	<p><b>Inactive Hole</b></p>  <p><b>Notes:</b> Likely attributable to fox activity. No evidence of recent use, with large amounts of debris within the entrance hole (Scale: Each black or white sector is 2cm).</p>

Table 1: Phase 1 Target notes	
<b>TN6</b>	<p>A large area of brownfield habitat between the M2 motorway, York Street and Dock Street was originally recorded during visits to the site in 2013. Surrounded by trees and vegetation, it was the main area of natural habitat in the vicinity of the junction. Whilst the majority of this area lay outside of the proposed vesting boundary, some was included. It was noted during a follow-up visit in December 2014 to have been cleared completely of surface vegetation and boundary scrub and trees. The resulting bare soil was graded out over the entire cleared area. Many of the plant species below were recorded in this area and were present to create the brownfield mosaic. This portion of the site currently exists as Bare ground (J.4) (earth) and has been presented as such in the Phase 1 results.</p>

## APPENDIX B PLANT SPECIES LIST

	Species list	Scientific name
1	Alder	<i>Alnus glutinosa</i>
2	American turkey oak	<i>Quercus laevis</i>
3	Annual meadow grass	<i>Poa annua</i>
4	Ash	<i>Fraxinus excelsior</i>
5	Beech	<i>Fagus sylvatica</i>
6	Bindweed	<i>Calystegia sepium</i>
7	Bird's-foot-trefoil	<i>Lotus corniculatus</i>
8	Bittercress	<i>Cardamine hirsuta</i>
9	Bittersweet	<i>Solanum dulcamara</i>
10	Black medic	<i>Medicago lupulina</i>
11	Blackthorn	<i>Prunus spinosa</i>
12	Bramble	<i>Rubus fruticosus</i>
13	Broad leaved dock	<i>Rumex obtusifolius</i>
14	Broom	<i>Cytisus scoparius</i>
15	Buddleja	<i>Buddleja davidii</i>
16	Bush vetch	<i>Vicia sepium</i>
17	Cherry laurel	<i>Prunus laurocerasus</i>
18	Cock's-foot	<i>Dactylis glomerata</i>
19	Coltsfoot	<i>Tussilago farfara</i>
20	Common bent	<i>Agrostis capillaris</i>
21	Common clevers	<i>Galium aparine</i>
22	Common couch	<i>Elytriga repens</i>
23	Common figwort	<i>Scrophularia nodosa</i>
24	Common fleabane	<i>Pulicaria dysenterica</i>
25	Common gorse	<i>Ulex europaeus</i>
26	Common hemp-nettle	<i>Galeopsis tetrahit</i>
27	Common knapweed	<i>Centaurea nigra</i>

	Species list	Scientific name
28	Common mouse ear	<i>Cerastium fontanum</i>
29	Common stitchwort	<i>Stellaria graminea</i>
30	Cotoneaster	<i>Cotoneaster horizontalis</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	Curled dock	<i>Rumex crispus</i>
36	Daisy	<i>Bellis perennis</i>
37	Dandelion	<i>Taraxacum officinale</i>
38	Dog rose	<i>Rosa canina</i>
39	Dogwood	<i>Cornus sanguinea</i>
40	Dove's foot cranesbill	<i>Geranium molle</i>
41	Elder	<i>Sambucus nigra</i>
42	Escallonia	<i>Escallonia sp.</i>
43	European Larch	<i>Larix decidua</i>
44	Evening -primrose	<i>Oenothera glazioviana</i>
45	False oat-grass	<i>Arrhenatherum elatius</i>
46	Fat-hen	<i>Chenopodium album</i>
47	Field maple	<i>Acer campestre</i>
48	Field poppy	<i>Papaver rhoeas</i>
49	Forget-me-not	<i>Myosotis arvensis</i>
50	Foxglove	<i>Digitalis purpurea</i>
51	Goat willow	<i>Salix caprea</i>
52	Great willow herb	<i>Epilobium hirsutum</i>
53	Greater plantain	<i>Plantago major</i>
54	Groundsel	<i>Senecio vulgaris</i>
55	Guelder-rose	<i>Viburnum opulus</i>
56	Hawthorn	<i>Crataegus monogyna</i>

	Species list	Scientific name
57	Hebe	<i>Hebe x andersonii</i>
58	Hebe	<i>Hebe topiara</i>
59	Hedgerow cranesbill	<i>Geranium pyrenaicum</i>
60	Herb robert	<i>Geranium robertianum</i>
61	Hogweed	<i>Heracleum sphondylium</i>
62	Holly	<i>Ilex aquifolium</i>
63	Ivy	<i>Hedera helix</i>
64	Japanese knotweed	<i>Fallopia japonica</i>
65	Japanese rose	<i>Rosa rugosa</i>
66	Japanese spindle	<i>Euonymus japonicus</i>
67	Leyland cypress	<i>Cupressus x leylandii</i>
68	Lime	<i>Tilia sp.</i>
69	Little gem cotoneaster	<i>Cotoneaster adpressus</i>
70	Male fern	<i>Dryopteris filix-mas</i>
71	Mare's tail	<i>Hippuris vulgaris</i>
72	Marsh willow herb	<i>Epilobium palustre</i>
73	Mayweed	<i>Tripleurospermum inodorum</i>
74	Meadow buttercup	<i>Ranunculus acris</i>
75	Monkey puzzle	<i>Araucaria araucana</i>
76	Montbretia	<i>Crocsmia x crocosmiiflora</i>
77	Mugwort	<i>Artemisia vulgaris</i>
78	Nettle	<i>Urtica dioica</i>
79	New Zealand broadleaf	<i>Griselinia littoralis</i>
80	Nipplewort	<i>Lapsana communis</i>
81	Norway maple	<i>Acer platanoides</i>
82	Oregon grape	<i>Mahonia aquifolium</i>
83	Pedunculate oak	<i>Quercus robur</i>
84	Perennial ryegrass	<i>Lolium perenne</i>
85	Perforate St John's-wort	<i>Hypericum perforatum</i>

	Species list	Scientific name
86	Privet	<i>Ligustrum ovalifolium</i>
87	Ragwort	<i>Jacobaea vulgaris</i>
88	Rape	<i>Brassica napus</i>
89	Red clover	<i>Trifolium pratense</i>
90	Redshank	<i>Persicaria maculosa</i>
91	Ribbed melilot	<i>Melilotus officinalis</i>
92	Ribwort plantain	<i>Plantago lanceolata</i>
93	Rosebay willowherb	<i>Epilobium angustifolium</i>
94	Scarlet pimpernal	<i>Anagallis arvensis</i>
95	Scots pine	<i>Pinus sylvestris</i>
96	Silverweed	<i>Argentina anserina</i>
97	Smooth hawk's-beard	<i>Crepis capillaris</i>
98	Smooth meadow-grass	<i>Poa pratensis</i>
99	Snowberry	<i>Symphoricarpos albus</i>
100	Soft rush	<i>Juncus effusus</i>
101	Spear thistle	<i>Cirsium vulgare</i>
102	Sun spurge	<i>Euphorbia helioscopia</i>
103	Sycamore	<i>Acer pseudoplatanus</i>
104	Tutsan	<i>Hypericum androsaemum</i>
105	White clover	<i>Trifolium repens</i>
106	White poplar	<i>Populus alba</i>
107	Whitebeam	<i>Sorbus aria</i>
108	Wild cherry	<i>Prunus avium</i>
109	Wormwood	<i>Artemisia absinthium</i>
110	Yarrow	<i>Achillea millefolium</i>
111	Yorkshire fog	<i>Holcus lanatus</i>

**APPENDIX 10: ECOLOGY & NATURE CONSERVATION****Annex B: Bat Survey**



# York Street Interchange

## Environmental Statement

Appendix 10 Annex B  
Bat Survey Report

January 2015

47037827

Prepared for:  
DRD Transport NI

UNITED  
KINGDOM &  
IRELAND



**transportni**



Department for  
**Regional  
Development**

[www.drtni.gov.uk](http://www.drtni.gov.uk)

REVISION SCHEDULE					
Rev	Date	Details	Prepared by	Reviewed by	Approved by
0	January 2015	Bat survey	Conor Reid Graduate Ecologist	Dr Paul Lynas Ecologist	Gareth Coughlin Associate Environmental Scientist

URS  
Beechill House  
Beechill Road  
Belfast  
BT8 7RP

Tel (028) 9070 5111  
Fax (028) 9079 5651

[www.ursglobal.com](http://www.ursglobal.com)

## Limitations

URS Infrastructure & Environment UK Limited ("URS") has prepared this Report for the sole use of **DRD Transport NI** in accordance with the Agreement under which our services were performed, **47037827**. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by URS. This Report is confidential and may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of URS.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by URS has not been independently verified by URS, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by URS in providing its services are outlined in this Report. The work described in this Report was undertaken **June 2013 – September 2014** and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this Report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

URS disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to URS' attention after the date of the Report.

Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. URS specifically does not guarantee or warrant any estimate or projections contained in this Report.

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.

## Copyright

© This Report is the copyright of URS Infrastructure & Environment UK Limited. Any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited.

TABLE OF CONTENTS	YORK STREET INTERCHANGE – BAT SURVEY .....	1
	1. INTRODUCTION .....	1
	2. METHODOLOGY .....	1
	2.1 Desktop studies .....	1
	2.2 Field surveys.....	1
	2.2.1 Bat Roost Potential Assessments .....	2
	2.2.2 Activity Surveys .....	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
	4.1.1 Extended Phase 1 Habitat Survey.....	4
	4.1.2 Bats.....	4
	4.2 Field Surveys .....	5
	4.2.1 Bat Roost Potential Assessments .....	5
	4.2.2 Bat Activity Surveys .....	13
	5. DISCUSSION .....	15
	5.1 Bat Use of the Site.....	15
	5.2 Improvements for bats.....	16
	6. MITIGATION AND ENHANCEMENT .....	16
	6.1 Avoidance of damage or obstruction to roost.....	16
	6.2 Mitigation .....	16
	6.3 Enhancement.....	17
	7. SUMMARY OF KEY ISSUES.....	17
	8. REFERENCES .....	18

FIGURE 1 – BAT SURVEY

APPENDIX A SITE PHOTOGRAPHS

## YORK STREET INTERCHANGE – BAT SURVEY

### 1. INTRODUCTION

The York Street Interchange aims to improve links from the Westlink, to the M2 motorway and the M3 motorway in Belfast. The existing signalised York Street junction links the Westlink, M2 and M3 through a complex arrangement of traffic signals which interface with the street network at York Street, Nelson Street and Great George's Street. Road users currently experience long delays and congestion at peak periods travelling through the signalised system.

Transport NI has developed preliminary proposals to provide a grade-separated junction at York Street that would provide direct links between the Westlink and the M2 and M3 motorways and greatly improve access between these roads. Plans to improve the York Street junction with Westlink are included in the Department's Investment Delivery Plan for Roads.

This report presents the results of the EIA bat surveys and should be read in conjunction with the York Street Interchange ES Chapter 11 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 Desktop studies

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 Dr Paul Lynas CEnv MCIEEM (Ecologist) with over 12 years' experience assisted by Conor Reid BSc (Hons), MSc, Grad CIEEM (Graduate Ecologist) and Michael Gillespie BSc (Hons), MSc, (Environmental Scientist) all 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* (2<sup>nd</sup> Edition), produced by the Bat Conservation Trust (Hundt 2012), and Mitchell-Jones, A.J. & McLeish, A.P. (Eds) (2004) *The Bat Workers Manual* (3<sup>rd</sup> 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. 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 on a continuous basis during the survey period. 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. These state 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
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 Habitats website [www.habitats.org.uk](http://www.habitats.org.uk)

## 4. RESULTS

### 4.1 Desktop Studies

#### 4.1.1 Extended Phase 1 Habitat Survey

Preliminary ecological surveys were undertaken for the Preliminary Options Report and Preferred Options Report. These advised the surveys undertaken as part of the Stage 3 assessment, which was carried out during 2013 and 2014.

The Stage 1 and Stage 2 surveys revealed that the Proposed Scheme footprint was located in an area of limited ecological value. It consisted largely of hardstanding with pockets of plantation woodland - trees and scrub planted as part of the M3 motorway and Dargan railway bridge construction in the early 1990s. At that time, the extended ecological component of the work detected three bat species, which matched those expected (Table 2) as the only protected species recorded from the area.

#### 4.1.2 Bats

With reference to the CEDaR website, the National Biodiversity Data Centre website and [www.nathusius.org.uk](http://www.nathusius.org.uk), the following three 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>

Source: *Habitas* website [www.habitas.org.uk](http://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. The majority of trees present were not fully mature as they were planted around 18 years ago, during the construction of the M3. Large Poplar *Populus* sp. trees did exist but there were no visible entrance holes and the trees were exposed on all sides. No suitable roosting sites were found within trees on the site and on that basis, all were assessed to be of 'Low' Bat Roost Potential (BRP).

The North Queen Street Bridge was assessed for its roosting potential. Bats were observed in the vicinity of the bridge. However on closer inspection, a lack of suitable roosting locations was found and the bridge was assigned to be of 'Low' BRP.

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

**Table 3:** Schedule of properties at risk of demolition and associated landtake.

Plot No.	Property Type & Description	Location	Image
D1	Government (Office, Stores / Outbuildings, Hardstanding & Car Parking) Driver & Vehicle Agency (DVA), Road Transport Licensing Division	148 - 158 Corporation Street	



Plot No.	Property Type & Description	Location	Image
D2	Government (Office, Storage Area, Hardstanding & Car Parking)  Transport NI – Eastern Division Section Office	148 - 158 Corporation Street	
D3	Commercial (Offices)  Focus Security Solutions (ground floor) / Office  Accommodation - vacant (second floor)	130 - 132 Corporation Street	
D4	Commercial (Mechanics Workshop & Hardstanding)  Jack Kirk Automobile Engineer	26 Shipbuoy Street	


Plot No.	Property Type & Description	Location	Image
D5	Commercial Vacant Office Unit in use for advertising hoardings (currently for sale)	151 – 153 York Street	
D6	Community The Pathways Project	141-149 York Street	

Each of the buildings was assessed for the potential for roosting bats and the results are presented in Table 4. It was noted that each building had poor linking habitat in and out of the area (e.g. hedges or tree lines), for bats to commute along. Table 5 highlights the summary of results and classification of each building for bat roosting potential.





**Table 4:** Descriptions of potential bat roosting opportunities on those buildings scheduled for proposed demolition.

Location	Description	Image
<p><b>Plot D1 &amp; D2</b> 148 - 158 Corporation Street</p>	<p>Well-maintained, mainly brick office buildings. One of the buildings is partly metal-clad with a flat roof while the other has a sloping roof.</p>	

Location	Description	Image
	<p>Fascia board fits tight to brickwork with no obvious spaces.</p> <p>Metal cladding also fits well.</p> <p>Limited entry point in front corner point where fascia board has rotted recently, however it was considered to not be currently used by bats.</p>	
<p><b>Plot D3</b> 130 - 132 Corporation Street</p>	<p>Brick and concrete clad retail building and offices.</p>	

Location	Description	Image
	<p>Sloping roof with gable to rear, shop front to Cooperation Street.</p> <p>Metal roofing, well fitted, leaving no obvious gaps or bat entry points.</p>	

Location	Description	Image
<p><b>Plot D4</b> 26 Shipbuoy Street</p>	<p>Constructed from block walls with corrugated metal in places. A slighting sloping roof was evident.</p>	
	<p>Fascia board to the rear, fits closely to the wall.</p>	
	<p>A brick wall surrounds yard area.</p>	

Location	Description	Image
<p><b>Plots D5 &amp; D6</b> 141-149 &amp; 151 – 153 York Street</p>	<p>Brick and roughcast buildings. Roof closely fitted with no obvious holes or entry points.</p>	
	<p>Roof intact and well-sealed at the York Street frontage with no entry points.</p>	
	<p>Rear wall abuts to the roof leaving no obvious entry points.</p>	
	<p>Surrounding wall to rear is intact with no missing blockwork noted.</p>	

**Table 5:** Summary of Bat Roost Potential Surveys and resulting building classification.

Plot No.	Property Type & Description	Location	Survey findings	Bat Roost Potential
D1	Government (Office, Stores / Outbuildings, Hardstanding & Car Parking) Driver & Vehicle Agency (DVA), Road Transport Licensing Division	148 - 158 Corporation Street	<ul style="list-style-type: none"> <li>No obvious entry points;</li> <li>No staining;</li> <li>No droppings;</li> <li>No bats observed during night survey visits; and</li> <li>Co-operation Street does provide fragmented tree lined habitat as an approach to this location.</li> </ul>	Low BRP
D2	Government (Office, Storage Area, Hardstanding & Car Parking) Transport NI – Eastern Division Section Office	148 - 158 Corporation Street	<ul style="list-style-type: none"> <li>No obvious entry points;</li> <li>No staining;</li> <li>No droppings;</li> <li>No bats observed during night survey visits; and</li> <li>Co-operation Street does provide fragmented tree lined habitat as an approach to this location.</li> </ul>	Low BRP
D3	Commercial (Offices) Focus Security Solutions (ground floor) / Office Accommodation - vacant (second floor)	130 - 132 Corporation Street	<ul style="list-style-type: none"> <li>No obvious entry points;</li> <li>No staining;</li> <li>No droppings;</li> <li>No bats observed during night survey visits; and</li> <li>Co-operation Street does provide fragmented tree lined habitat as an approach to this location.</li> </ul>	Low BRP
D4	Commercial (Mechanics Workshop & Hardstanding) Jack Kirk Automobile Engineer	26 Shipbuoy Street	<ul style="list-style-type: none"> <li>No obvious entry points;</li> <li>No staining;</li> <li>No droppings;</li> <li>No bats observed during night survey visits; and</li> <li>No suitable foraging or commuting habitat in this location.</li> </ul>	Low BRP

Plot No.	Property Type & Description	Location	Survey findings	Bat Roost Potential
D5	Commercial Vacant Office Unit in use for advertising hoardings (currently for sale)	151 – 153 York Street	<ul style="list-style-type: none"> <li>No obvious entry points;</li> <li>No staining;</li> <li>No droppings;</li> <li>No bats observed during night survey visits; and</li> <li>No suitable foraging or commuting habitat in this location.</li> </ul>	Low BRP
D6	Community The Pathways Project	141-149 York Street	<ul style="list-style-type: none"> <li>No obvious entry points;</li> <li>No staining;</li> <li>No droppings;</li> <li>No bats observed during night survey visits; and</li> <li>No suitable foraging or commuting habitat in this location.</li> </ul>	Low BRP

#### 4.2.2 Bat 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 6).

Three confirmed bat species were recorded on the site, Common *Pipistrellus pipistrellus*, Soprano *P.pygmaeus* and Leisler's bat *Nyctalus leisleri*. Nathusius' pipistrelle *Pipistrellus nathusii* was also potentially found as some of the pipistrelle calls dropped to below 40kHz, lower than would normally be expected from the Common pipistrelle. In addition, other call parameters such as call duration and inter-pulse interval were slightly longer than the normal Common pipistrelle although they matched Nathusius' bat. All bats were found to be using the site in low numbers and only intermediately as several survey dates recorded no bat activity. The bats were largely restricted to the wooded embankments between the M2 and Nelson Street off-slip between Great George's Street and North Queen Street Bridge close to the Westlink.

The bat species recorded were noted to be using the tree lines and gardens as foraging and commuting corridors, similar to the use of forest edge and hedgerow habitats in a rural setting. Additionally, buildings and road fly overs were being used as commuting routes, again similar to bat use of linear features such as rivers and hedgerows in rural settings.

**Table 6:** Weather recorded during bat surveys.

Time	Temperature (°C)	Cloud cover (%)	Wind description	Precipitation
<b>01/07/13 (Sunset - 22.03)</b>				
22.00	12	100	Still	None
01.30	9	100	Still	None
<b>03/07/13 (Sunrise - 04.54)</b>				
03.00	12	80	Light	None
06.00	12	80	Light	None
<b>28/08/13 (Sunrise - 06.24)</b>				
04.30	10	40	Light	None
07.00	11	40	Still	None
<b>28/08/13 (Sunset - 20.25)</b>				
22.00	15	20	Still	None
00.00	13	40	Gentle breeze	None

**Table 7:** Bat activity survey summary.

Date	Dusk/Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
01/07/13	Dusk	-	None	-	-	-	No bats recorded
03/07/13	Dawn	-	None	-	-	-	No bats recorded
28/08/13	Dawn	-	None	-	-	-	No bats recorded
28/08/13	Dusk	20.57	Soprano pipistrelle	52	1	1	Foraging over roadside vegetation and Little George St. back gardens.
28/08/13	Dusk	21.09	Soprano pipistrelle	53	1	1	Foraging over roadside vegetation and Little George St. back gardens.
28/08/13	Dusk	21.17	Soprano pipistrelle	55	1	1	Flew under the Westlink bridge and up North Queen Street.
28/08/13	Dusk	21.55	Soprano pipistrelle	54	1	3	Along Nelson Street.
28/08/13	Dusk	21.55	Unspecified pipistrelle	40 & 42	2	3	Along Nelson Street.

Date	Dusk/ Dawn	Time	Species	Freq (kHz)	No. of Bats	Location Ref. (Figure 1)	Notes
28/08/13	Dusk	21.55	Nathusius' pipistrelle*	39.4	1	3	Along Nelson Street
28/08/13	Dusk	22.03	Unspecified pipistrelle	40	1	2	Along Nelson Street off-slip
28/08/13	Dusk	22.51	Common pipistrelle	48.6	2	3	At Nelson Street end of subway
28/08/13	Dusk	22.51	Leisler's bat	28.8	1	2	Foraging along trees on Nelson Street off-slip towards city.
28/08/13	Dusk	23.21	Nathusius' pipistrelle*	39.5	1	3	Foraging around trees in Nelson St.
28/08/13	Dusk	23.21	Unspecified pipistrelle	40.8, 41 & 42.8.	3	3	Foraging around trees in Nelson St.
28/08/13	Dusk	23.31	Common pipistrelle	44	2	1	Heard at North Queen St and Great George's St. junction.
28/08/13	Dusk	23.31	Leisler's bat	25	1	1	Heard at North Queen St and Great George's St. junction.

*\*Calls below 40kHz were classified as Nathusius' pipistrelle as during analysis other call parameters (call duration, inter-pulse interval) also matched that species. 'Unspecified pipistrelle' 40-42kHz & 49-50kHz, Common pipistrelle:43-49; Soprano pipistrelles: 51kHz and over*

## 5. DISCUSSION

### 5.1 Bat Use of the Site

No roost sites or potential roost sites were recorded within the study area. Only small numbers of bats were found to be using the site intermittently. This is likely due to the suboptimal habitats in the area, with large expanses of bare ground and reduced opportunities for large insect populations. It is therefore likely that the habitat only provides foraging opportunities for the bats to use the area occasionally.

It is recommended that detailed pre-construction surveys should be carried out during the summer season before construction work begins, to check for any changes of bat usage of the site and to adapt the planned mitigation strategy if required. Additionally, trees and hedgerows should be thoroughly investigated prior to clearance to ensure no bat roost has become established in the interim. Buildings should also be checked before their demolition to ensure no bat roosts have 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.

## 5.2 Improvements for bats

On the outer edges of the Proposed Scheme footprint, street trees and long strips of planted areas would help to guide bats around the scheme area as an alternative to flying through it. Planted areas incorporating shrubs and trees would be located between link roads. These areas would help to guide any bats present through the complex urban area. Planting at road edges throughout the entire central area of the Proposed Scheme would act as bat hop-over vegetation to encourage bats to fly high over the new road layout, or under bridges (e.g. Dargan Bridge) therefore reducing the risk of traffic collisions.

## 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

- The ECoW should undertake pre-construction surveys on any semi-mature / mature trees to be felled and any buildings to be demolished. These should then be assessed again for the likelihood of bat presence prior to demolition;
- Two bat roosting boxes for pipistrelle bats should be installed at suitable locations around North Queen Street Bridge and the proposed new Dock Street Overbridge. Bats should not be encouraged to roost within the main area of the Proposed Scheme as the risk of road traffic collisions is too high;
- Street trees should be planted where appropriate, and strips of planted areas situated along the various road links, to connect with existing habitat features;
- Planted areas incorporating shrubs and trees would be located between link roads. These areas would help to guide any bats present through the complex urban area. Planting at road edges throughout the entire central area of the Proposed Scheme would act as bat hop-over vegetation to encourage bats to fly high over the new road layout, or under bridges (e.g. Dargan Bridge) therefore reducing traffic collisions. On the outer edges of the Proposed Scheme footprint, street trees and long strips of planted areas would help to guide bats around the scheme area as an alternative to flying through it;
- The existing urban area is already well lit by artificial lighting. From a safety perspective, it is necessary to ensure that this situation will continue. The Proposed Scheme layout would include the provision of a new, modern road lighting system for the safety of motorised and non-motorised road users. The provision, or replacement of existing

lighting systems has been considered as part of this process and the provision of additional lighting under proposed bridge structures would continue to be considered as part of future design development. Such a lighting design minimises light spill and concentrates artificial light on a smaller area. This would ensure that the light is concentrated on road areas. Bats may therefore benefit from the reduced light spill on the surrounding planted areas.

### **6.3 Enhancement**

- Bat boxes suitable for roosting pipistrelle bats should be provided at suitable locations around North Queen Street Bridge and the proposed new Dock Street Overbridge;
- Planting to encourage insects should be used to create suitable feeding areas for bats throughout the site, especially in planted areas and linear planting features; and
- The Interchange lighting plan would use modern lighting to concentrate brightest light on the road areas and away from vegetation as far as possible. However, safety requirements dictate that the area would stay well lit.

## **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 site.

**8. REFERENCES**

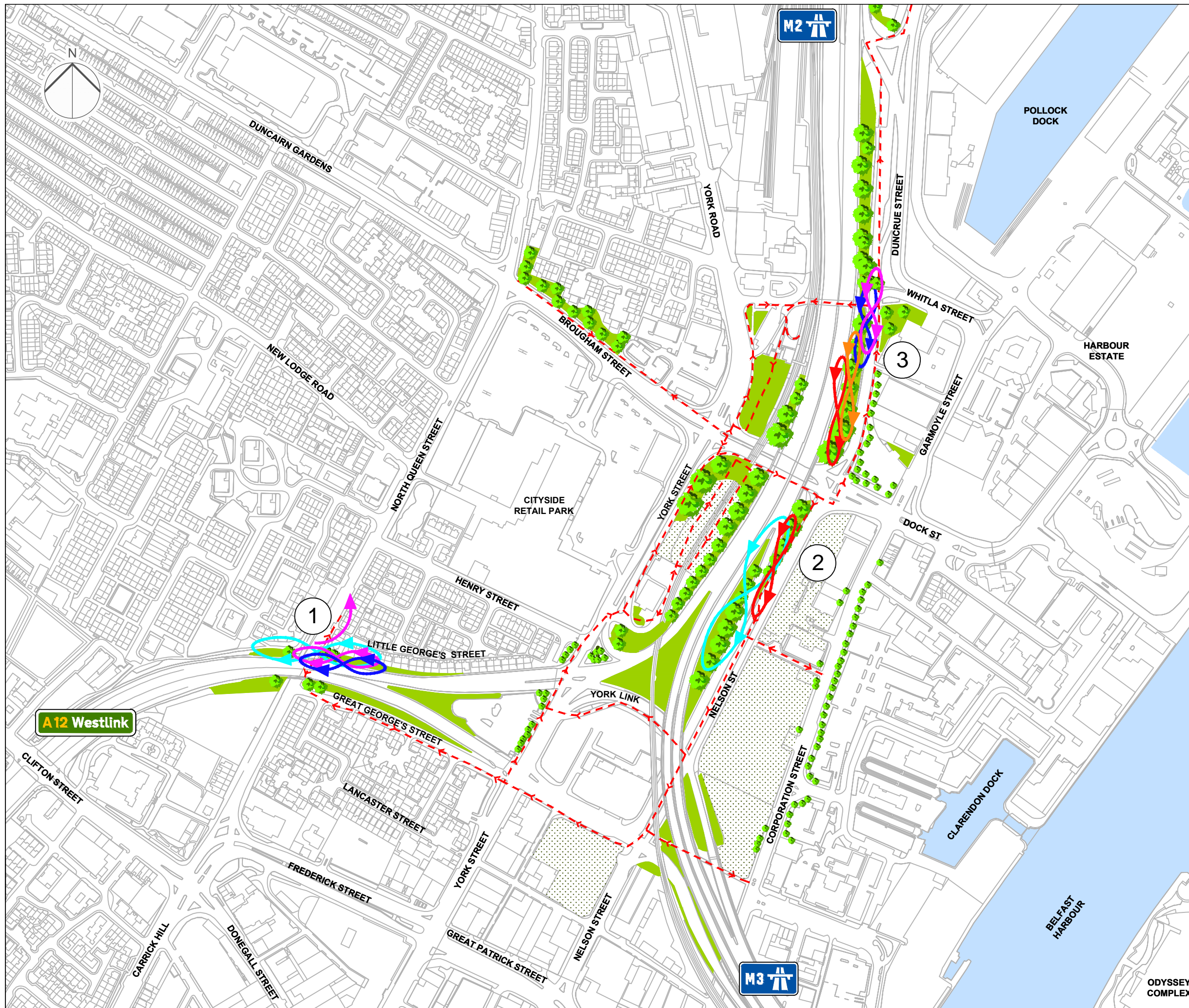
Department of the Environment (NI) – Northern Ireland Environment Agency, (2011) Bat Survey - Specific Requirements.

Hundt, L., (2012) Bat Surveys: Good Practice Guidelines, 2nd Edition. Bat Conservation Trust.

Mitchell-Jones, A.J. & McLeish, A.P. (Eds) (2004) The Bat Workers Manual (3rd Edition), Joint Nature Conservancy Council, Peterborough.

Russ J. (1999) The Bats of Britain and Ireland: Echolocation Calls, Sound Analysis and Species Identification, Alana Books.

## FIGURE 1 – BAT SURVEY



Project Title  
**YORK STREET INTERCHANGE**

Client  
**transportni**

Drawing Title  
**ECOLOGY & NATURE CONSERVATION**

Bat Survey

**KEY**

Proposed Scheme

**BATS:**

- Leisler's Bat
- Soprano Pipistrelle
- Common Pipistrelle
- Nathusius' Pipistrelle
- Unspecified Pipistrelle
- Survey Transect

**1** Bat Location

**EXISTING VEGETATION PRESENT ON SITE AT THE TIME OF SURVEY:**

- Broad-leaved Plantation
- Scrub
- Brownfield

Scale @ A3  
 1:4,000

This document has been prepared pursuant to and subject to the terms of URS' appointment by its client. URS accepts no liability for any use of this document other than by its original client or following URS' express agreement to such use, and only for the purposes for which it was prepared and provided.

This material is based upon Crown Copyright and is reproduced with the permission of Land & Property Services under delegated authority from the controller of Her Majesty's Stationery Office.

© Crown copyright and database rights NIMA ES&LA214. Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings.

**FIGURE 1**

URS Infrastructure & Environment UK Limited  
 Beechill House  
 Beechill Road, Belfast  
 BT8 7RP  
 T: +44 (0)28 9070 5111  
 F: +44 (0)28 9079 5651  
[www.ursglobal.com](http://www.ursglobal.com)

**ODYSSEY COMPLEX**

**URS**

**APPENDIX A SITE PHOTOGRAPHS**

**Photograph 1** – Soprano and Common pipistrelle noted foraging above the plantation woodland strip between the M2 and Nelson Street off-slip.



**Photograph 2** – The gardens and roadside vegetation between the Westlink and the residential houses on Little George Street, and Victoria Parade, where bats were foraging and commuting.



**APPENDIX 10: ECOLOGY & NATURE CONSERVATION****Annex C: Breeding Bird Survey**



# York Street Interchange

## Environmental Statement

Appendix 10 Annex C  
Bird Survey Report

January 2015

47037827

Prepared for:  
DRD Transport NI

UNITED  
KINGDOM &  
IRELAND



**transportni**



Department for  
**Regional  
Development**  
[www.drtni.gov.uk](http://www.drtni.gov.uk)



REVISION SCHEDULE					
Rev	Date	Details	Prepared by	Reviewed by	Approved by
0	January 2015	Bird Survey Report	Conor Reid Graduate Ecologist	Dr. Paul Lynas Ecologist	Gareth Coughlin Associate (Environmental Scientist)

URS  
Beechill House  
Beechill Road  
Belfast  
BT8 7RP

Tel (028) 9070 5111  
Fax (028) 9079 5651

[www.ursglobal.com](http://www.ursglobal.com)

## Limitations

URS Infrastructure & Environment UK Limited ("URS") has prepared this Report for the sole use of **DRD Transport NI** in accordance with the Agreement under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by URS. This Report is confidential and may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of URS.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by URS has not been independently verified by URS, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by URS in providing its services are outlined in this Report. The work described in this Report was undertaken between **May and June 2013** and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this Report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

URS disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to URS' attention after the date of the Report.

Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. URS specifically does not guarantee or warrant any estimate or projections contained in this Report.

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.

## Copyright

© This Report is the copyright of URS Infrastructure & Environment UK Limited. Any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited.

TABLE OF CONTENTS	YORK STREET INTERCHANGE - BIRD SURVEY.....1
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 .....3
5.	PREDICTED IMPACTS ON BIRDS .....4
6.	MITIGATION.....5
6.1	Natural Habitats .....5
6.2	Breeding Birds .....6
7.	BIODIVERSITY ENHANCEMENT FOR BIRDS.....6
8.	SUMMARY OF KEY ISSUES.....6
	FIGURE 1 – BIRD SURVEY

## YORK STREET INTERCHANGE - BIRD SURVEY

### 1. INTRODUCTION

#### 1.1 Background

The York Street Interchange aims to improve links from the Westlink, to the M2 motorway and the M3 motorway in Belfast. The existing signalised York Street junction links the Westlink, M2 and M3 through a complex arrangement of traffic signals which interface with the street network at York Street, Nelson Street and Great George's Street. Road users currently experience long delays and congestion at peak periods travelling through the signalised system.

Transport NI has developed proposals to provide a grade-separated junction at York Street that would provide direct links between the Westlink and the M2 and M3 motorways and greatly improve access between these roads. Plans to improve the York Street junction with Westlink are included in the Department's Investment Delivery Plan for Roads.

#### 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 by 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.

### 2. METHODOLOGY

Bird surveys were carried out along the planned location of Proposed Scheme on 16 June and 3 July 2013. The study area was walked at a steady pace covering the M2 and M3 on/offslips, Westlink, Nelson Street, York Street, Dock Street, Great George's Street and associated adjoining areas. All birds seen or heard in the vicinity of the planned road layout were recorded. The surveyors paused at regular intervals to scan and listen for calling and singing birds. Standard BTO two letter codes and behaviour symbols were used to record the location of each observation (Marchant 1983<sup>1</sup>). Surveys were conducted during calm, warm weather conditions.

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.

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

---

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

was discussed and their conservation status in Ireland (Colhoun & Cummins 2013<sup>2</sup>) was assessed.

### 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 immediate study area is a highly urbanised environment, suitable for a range of urban birds. There are several features such as the gardens and areas of scrubland and woodland which would improve the area for bird species diversity. The area holds a number of common urban and garden bird species.

A total of 166 observations were made of 22 different species (Table 1). The most abundant species across the site were feral pigeons *Columba livia domestica*, which used the road structures for shelter and nesting. Wrens *Troglodytes troglodytes* and blackbirds *Turdus merula* were also found in relatively high numbers close to the current road structure within the plantation woodland and scrub vegetation.

### 4.2 Birds of Conservation Concern

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

Two red-listed species were recorded; several Black-headed gulls *Chroicocephalus ridibundus* were recorded in the Cityside Retail Park car park, and a Herring gull *Larus argentatus* flew overhead. Although red-listed for their breeding status in Ireland, the species were not breeding within the Proposed Scheme area, but were foraging within it. Both species are locally common and forage over a wide area.

Five common amber-listed species were seen, Goldcrest *Regulus regulus*, House sparrow *Passer domesticus*, Lesser black-backed gull *Larus fuscus*, Starling *Sturnus vulgaris* and Swift *Apus apus*. All are common in urban areas of Northern Ireland and were expected to occur.

---

<sup>2</sup> Colhoun K. & Cummins S. 2013, Birds of Conservation Concern in Ireland 2014–2019 Irish Birds 9: 523-544

Finally, the common Dunnock *Prunella modularis*, a green-listed species but a Northern Ireland Priority Species, also occurred.

House Sparrow *Passer domesticus* and Starling *Sturnus vulgaris* were largely restricted to residential gardens on Great George's Street and Little George's Street. The Goldcrest and Dunnock occurred within the areas of planting on the site. A Lesser black-backed gull was flying overhead but another also joined with the Black-headed gulls foraging in fast-food litter within the Cityside Retail car park. Swifts *Apus apus* were observed flying high over the site. Unexpectedly, a Sedge warbler *Acrocephalus schoenobaenus* was recorded from an area of scrub, opposite the Cityside Complex – unusual for such an urban area.

The locations of these birds can be seen in Figure 1. Full scientific names and status are also shown in Table 1.

### 4.3 Main Habitats and Associated Species

The area represents a highly urbanised landscape, largely consisting of bare ground associated with current road infrastructure and car parks. There are also several areas of waste ground and grassland habitat, which provide foraging habitat for birds species, such as blackbirds. Most important for nesting birds is the scrub and plantation woodland where the majority of species were associated. As shown in Figure 1, the well vegetated embankments of the M2, around the Nelson Street offslip and between the M2 and York Street, provided habitat for a number of birds. Most house sparrows and goldfinches were associated with the housing on Great George's Street.

**Table 1:** Combined results of the Breeding Bird Survey (16 June and 3 July 2013) showing conservation importance of each species.

Code	Species	Irish Status	Status in NI	Total numbers	Breeding pairs (= singing male, nest, breeding pair, juveniles)	Additional individuals
B.	Blackbird <i>Turdus merula</i>	Green		9	0	9
BC	Blackcap <i>Sylvia atricapilla</i>	Green		2	2	0
BT	Blue tit <i>Parus caeruleus</i>	Green		3	0	3
BH	Black-headed gull <i>Chroicocephalus ridibundus</i>	Red	Priority	2	0	2
CH	Chaffinch <i>Fringilla coelebs</i>	Green		4	3	1
CT	Coal tit <i>Parus ater</i>	Green		1	0	1
D.	Dunnock <i>Prunella modularis</i>	Green	Priority	3	0	3
FP	Feral pigeon <i>Columba livia domestica</i>	N/A		72	1	71

Code	Species	Irish Status	Status in NI	Total numbers	Breeding pairs (= singing male, nest, breeding pair, juveniles)	Additional individuals
GC	Goldcrest <i>Regulus regulus</i>	Amber		1	1	0
GO	Goldfinch <i>Carduelis carduelis</i>	Green		5	2	3
GT	Great tit <i>Parus major</i>	Green		2	0	2
GR	Greenfinch <i>Carduelis chloris</i>	Amber		9	3	6
HG	Herring gull <i>Larus argentatus</i>	Red	Priority	4	0	4
HC	Hooded crow <i>Corvus cornix</i>	Green		3	0	3
HS	House sparrow <i>Passer domesticus</i>	Amber	Priority	11	6	5
LB	Lesser black-backed gull <i>Larus fuscus</i>	Amber		7	0	7
MG	Magpie <i>Pica pica</i>	Green		5	1	4
SW	Sedge warbler <i>Acrocephalus schoenobaenus</i>	Green		1	0	1
SG	Starling <i>Sturnus vulgaris</i>	Amber	Priority	3	1	2
SI	Swift <i>Apus apus</i>	Amber	Priority	1	0	1
WP	Woodpigeon <i>Columba palumbus</i>	Green		4	0	4
WR	Wren <i>Troglodytes troglodytes</i>	Green		14	10	4
<b>Total</b>	<b>22</b>			<b>166</b>	<b>30</b>	<b>136</b>

*Status in Ireland – Colhoun & Cummins 2013, Northern Ireland Status NIEA 2010, Priority – Priority species*

## 5. PREDICTED IMPACTS ON BIRDS

The predicted impacts of the Proposed Scheme on Priority Species, Red and Amber-listed Species and their habitats are further outlined in Table 2. It is considered that these species would be largely unaffected by the scheme, as the area of Proposed Scheme is surrounded by similar habitat further afield and therefore any displacement would be of minimal impact.

**Table 2:** Important species potentially impacted by the Proposed Scheme.

Species	Status	NI Status	Comments	Residual Effect
Black-headed gull	Red	Priority	Common throughout Northern Ireland. Observed foraging in the car park at Cityside.	Sufficient foraging and nesting habitat exists in the surrounding area for these species and so would not be significantly affected by the Proposed Scheme.
Dunnock	Green	Priority	Common throughout Northern Ireland. Was found in the dense amenity planting areas.	
Goldcrest	Amber		Common and widespread. Often associated with conifer trees.	
Herring gull	Red	Priority	Common particularly in coastal areas in Northern Ireland. Was observed flying over the site.	
House sparrow	Amber	Priority	Common and widespread. Associated with houses and gardens.	
Lesser black-backed gull	Amber		Common particularly in coastal areas in Northern Ireland. Was observed flying over the site and in the Cityside Retail carpark.	
Starling	Amber	Priority	Common throughout Northern Ireland. Associated with houses and gardens.	
Swift	Amber	Priority	Nests in buildings, feeds on insects, were found flying high over the study area.	

## 6. MITIGATION

### 6.1 Natural Habitats

Potential habitat is available in the surrounding environment for the range of species found, such as private gardens to the north and west, public realm landscaping features, and pockets of street trees and other green space. Any loss in habitat would be mitigated by replacement planting.

The overall landscape planting objectives to be incorporated as part of the Proposed Scheme, should attempt to mitigate and compensate for the mosaic of semi-natural and artificial habitats which would be lost. This would provide suitable habitat for birds. Plans should:

- incorporate existing trees where possible, especially where mature specimens occur;
- enhance the ecological interest of the Proposed Scheme through the creation of natural habitat with new planted areas and screen planting, comprising trees and shrubs between road links;
- maximise the number of native tree, shrub and plant species in new planted areas;

- provide food for insects and birds. This would include nectar-rich, berry-bearing and seed-bearing plants;
- incorporate street trees into design of appropriate streetscapes; and
- link new development proposals to the surrounding local landscape.

## 6.2 Breeding Birds

- A pre-construction breeding bird survey should be undertaken prior to any vegetation 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 vegetation 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 vegetation 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 planted 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 would provide nectar for bees and insects. These in turn, would provide food for birds; and
- A range of bird box styles, suited to various different species found on site should be provided throughout the planted areas.

## 7. 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
- Planted areas should be used to replace the large areas of bare ground and brownfield, to provide locations for birds to forage.

## 8. SUMMARY OF KEY ISSUES

Vegetation clearance should take place outside of the bird breeding season (considered to be from March to August inclusive). However, if this is not possible and it is necessary to undertake vegetation clearance within the bird breeding season, trees and scrub should be thoroughly assessed by a suitably experienced ecologist for evidence of breeding birds before commencement.

It is possible that as a result of the Proposed Scheme that some species may be displaced from their current locations as recorded in this survey. However, there is similar habitat further afield and therefore any displacement would be of minimal impact.

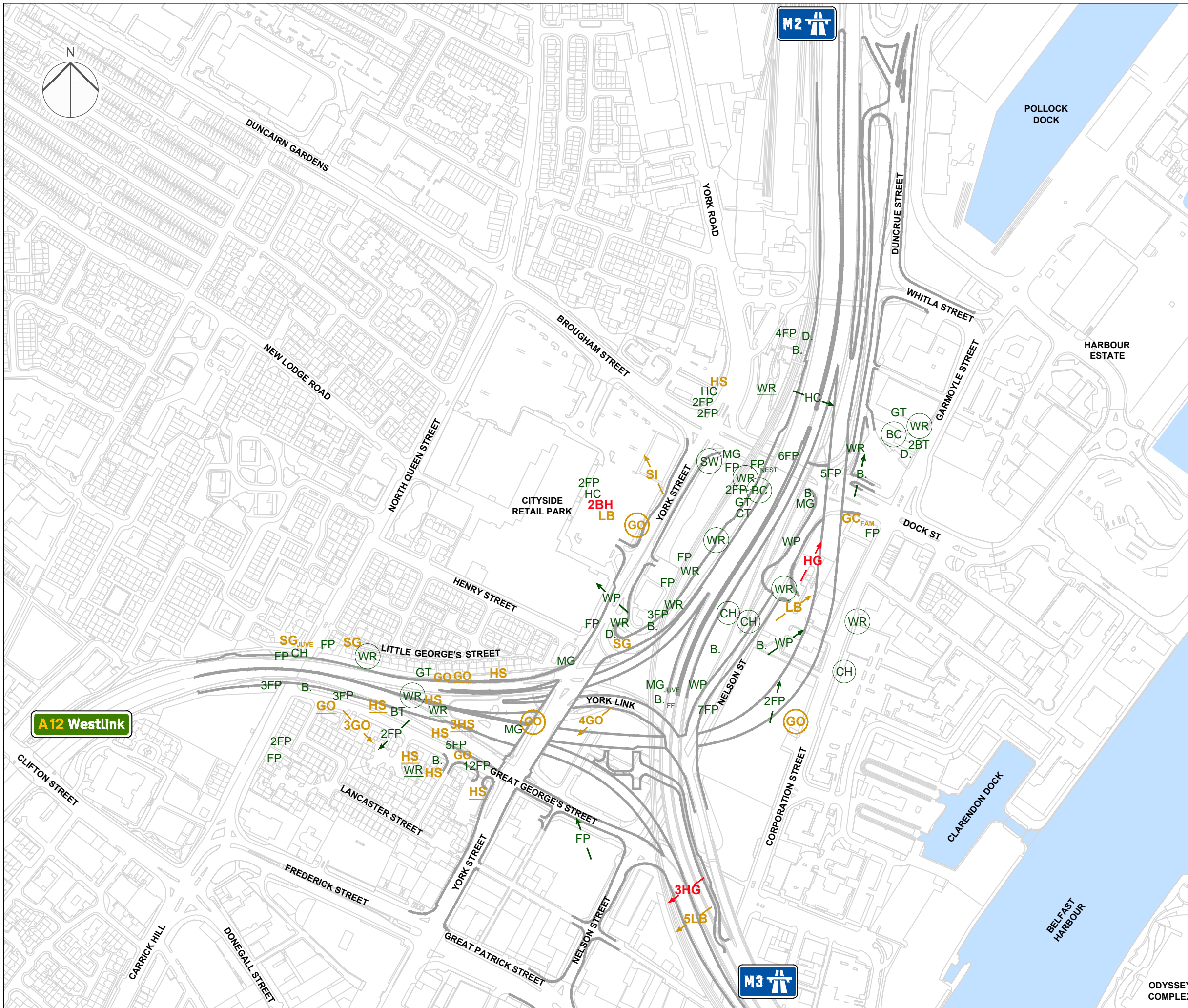
Where any extensive areas of scrub and trees are removed to make way for the Proposed Scheme layout, consideration should be given to replace this with additional planting. This

would ensure the overall habitat area could be retained for those species mentioned in this report.

Consideration should also be given to landscaping (where feasible), on the roadsides of the Proposed Scheme to buffer the surrounding environment from any detrimental effects, such as disturbance from noise and visual impacts that may be created by the traffic using the new road layout.

Mitigation in the form of landscape planting and bird boxes should mitigate any loss to bird habitats.

## FIGURE 1 – BIRD SURVEY







Project Title  
**YORK STREET INTERCHANGE**

Client  
**transportni**

Drawing Title  
**ECOLOGY & NATURE CONSERVATION**

Bird Survey

- KEY**
- 
- Proposed Scheme
- BTO SPECIES CODES:**
- |                      |                             |
|----------------------|-----------------------------|
| B. Blackbird         | GT Great Tit                |
| BC Blackcap          | HC Hooded Crow              |
| BH Black-headed Gull | HG Herring Gull             |
| BT Blue Tit          | HS House Sparrow            |
| CH Chaffinch         | LB Lesser Black-backed Gull |
| CT Coal Tit          | MG Magpie                   |
| D. Dunnock           | SG Starling                 |
| FP Feral Pigeon      | SI Swift                    |
| GC Goldcrest         | SW Sedge Warbler            |
| GR Greenfinch        | WP Woodpigeon               |
| GO Goldfinch         | WR Wren                     |

- BIRD SYMBOLS:**
-  Flight Path
  -  Singing
  -  Calling Bird
  - JUVE Juvenile
  - FAM Family
  - NEST Nest
  - FF Faecal Sac

Note: Birds marked as **Red** are Red listed species in Ireland and of High Conservation Concern  
 Note2: Birds marked as **Amber** are Amber listed species in Ireland and of Medium Conservation Concern  
 Note3: Birds marked as **Green** are Green listed species in Ireland

Scale @ A3  
 1:4,000

This document has been prepared pursuant to and subject to the terms of URS' appointment by its client. URS accepts no liability for any use of this document other than by its original client or following URS' express agreement to such use, and only for the purposes for which it was prepared and provided.

This material is based upon Crown Copyright and is reproduced with the permission of Land & Property Services under delegated authority from the controller of Her Majesty's Stationery Office.  
 © Crown copyright and database rights NIMA ES&LA214.  
 Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings.

**FIGURE 1**

URS Infrastructure & Environment UK Limited  
 Beechill House  
 Beechill Road, Belfast  
 BT8 7RP  
 T: +44 (0)28 9070 5111  
 F: +44 (0)28 9079 5651  
[www.ursglobal.com](http://www.ursglobal.com)



ODYSSEY  
 COMPLEX

**APPENDIX 10: ECOLOGY & NATURE CONSERVATION****Annex D: Native Species Planting Guidance**

### ANNEX D: NATIVE SPECIES PLANTING GUIDANCE

Tables D1 & D2 outline typical native species that are suitable for inclusion into the planting plan for the area.

**Table D1: Woodland and Scrub Planting**

Native tree species	Understorey tree and scrub species	Rare and non-native species which can also be considered
Alder <i>Alnus glutinosa</i>	Silver birch <i>Betula pendula</i>	Black poplar <i>Populus nigra ssp. betulifolia</i>
Downy birch <i>Betula pubescens</i>	Hawthorn <i>Crataegus monogyna</i>	Bird cherry <i>Prunus padus</i>
Hazel <i>Corylus avellana</i>	Spindle <i>Euonymus europaeus</i>	Scots pine <i>Pinus sylvestris</i>
Pedunculate oak <i>Quercus robur</i>	Holly <i>Ilex aquifolium</i>	Whitebeam <i>Sorbus spp.</i>
Sessile oak <i>Quercus petraea</i>	Crab apple <i>Malus sylvestris</i>	Yew <i>Taxus baccata</i>
Rowan <i>Sorbus aucuparia</i>	Aspen <i>Populus tremula</i>	Cotoneaster <i>Cotoneaster spp.</i>
	Wild cherry <i>Prunus avium</i>	Tutsan <i>Hypericum androsaemum</i>
	Elder <i>Sambucus nigra</i>	Alder buckthorn <i>Frangula alnus</i>
	Wych elm <i>Ulmus glabra</i>	
	Guelder rose <i>Viburnum opulus</i>	
	Blackthorn <i>Prunus spinosa</i>	
	Dog rose <i>Rosa canina</i>	
	Honeysuckle <i>Lonicera periclymenum</i>	

NIEA Native Species Planting Guidance January 2012

**Table D2: Native Grassland Species**

Grass species	Herbaceous species
Common bent <i>Agrostis capillaris</i>	Bugle <i>Ajuga reptans</i>
Creeping bent <i>Agrostis stolonifera</i>	Common bird's-foot-trefoil <i>Lotus corniculatus</i>
Crested dog's-tail <i>Cynosurus cristatus</i>	Common knapweed <i>Centaurea nigra</i>
Meadow fescue <i>Festuca pratensis</i>	Cuckooflower <i>Cardamine pratensis</i>
Meadow foxtail <i>Alopecurus pratensis</i>	Devil's-bit scabious <i>Succisa pratensis</i>
Red fescue <i>Festuca rubra</i>	Meadow buttercup <i>Ranunculus acris</i>
Sheep's-fescue <i>Festuca ovina</i>	Meadowsweet <i>Filipendula ulmaria</i>
Smooth meadow-grass <i>Poa pratensis</i>	Meadow vetchling <i>Lathyrus pratensis</i>

Grass species	Herbaceous species
Sweet vernal-grass <i>Anthoxanthum odoratum</i>	Oxeye daisy <i>Leucanthemum vulgare</i>
Yellow oat-grass <i>Trisetum flavescens</i>	Red clover <i>Trifolium pratense</i>
	Ribwort plantain <i>Plantago lanceolata</i>
	Selfheal <i>Prunella vulgaris</i>
	Sneezewort <i>Achillea ptarmica</i>
	Tormentil <i>Potentilla erecta</i>
	Yarrow <i>Achillea millefolium</i>
	Yellow rattle <i>Rhinanthus minor</i>

*NIEA Native Species Planting Guidance January 2012*

**APPENDIX 10: ECOLOGY & NATURE CONSERVATION****Annex E: CEDaR Records**

**ANNEX E: CEDAR RECORDS FROM 1990 ONWARDS**

**Table E1:** CEDaR Plant list

Common Name	Latin name	Record Location	Year	Grid ref.
A lichen	<i>Xanthoria polycarpa</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Xanthoria parietina</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Verrucaria baldensis</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Trapelia coarctata</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Rhizocarpon petraeum</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Porpidia tuberculosa</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Porpidia crustulata</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Physcia tenella ssp. tenella</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Lepraria incana s. lat.</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Lecidella elaeochroma forma elaeochroma</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Lecanora polytropa</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Lecanora handelii</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Lecanora conizaeoides conizaeoides</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Lecanora chlarotera</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Lecanora albescens</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Candelariella aurella forma aurella</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Caloplaca holocarpa</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Caloplaca citrina s. str.</i>	Clifton Street Cemetery, Henry Place	2008	J334753

Common Name	Latin name	Record Location	Year	Grid ref.
A lichen	<i>Buellia aethalea</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Aspicilia calcarea</i>	Clifton Street Cemetery, Henry Place	2008	J334753
A lichen	<i>Xanthoria elegans</i>	Clifton House, Clifton Street, Belfast	2008	J336752
A lichen	<i>Xanthoria parietina</i>	Clifton House, Clifton Street, Belfast	2008	J336752
A lichen	<i>Rinodina oleae</i>	Clifton House, Clifton Street, Belfast	2008	J336752
A lichen	<i>Peltigera didactyla</i>	Clifton House, Clifton Street, Belfast	2008	J336752
A lichen	<i>Lepraria incana s. lat.</i>	Clifton House, Clifton Street, Belfast	2008	J336752
A lichen	<i>Lecidella elaeochroma forma elaeochroma</i>	Clifton House, Clifton Street, Belfast	2008	J336752
A lichen	<i>Lecanora muralis</i>	Clifton House, Clifton Street, Belfast	2008	J336752
A lichen	<i>Lecanora dispersa</i>	Clifton House, Clifton Street, Belfast	2008	J336752
A lichen	<i>Lecanora chlarotera</i>	Clifton House, Clifton Street, Belfast	2008	J336752
A lichen	<i>Caloplaca holocarpa</i>	Clifton House, Clifton Street, Belfast	2008	J336752
A lichen	<i>Caloplaca flavocitrina</i>	Clifton House, Clifton Street, Belfast	2008	J336752
A lichen or fungus	<i>Arthonia radiata</i>	Clifton House, Clifton Street, Belfast	2008	J336752
Stinging nettle	<i>Urtica dioica</i>	Corporation Street, Belfast	1990	J342752
Prickly sow-thistle	<i>Sonchus asper</i>	Corporation Street, Belfast	1990	J342752
Groundsel	<i>Senecio vulgaris var. vulgaris</i>	Corporation Street, Belfast	1990	J342752
Sticky groundsel	<i>Senecio viscosus</i>	Corporation Street, Belfast	1990	J342752
Oxford ragwort	<i>Senecio squalidus</i>	Corporation Street, Belfast	1990	J342752
Dandelion	<i>Taraxacum officinale agg.</i>	Corporation Street, Belfast	1990	J342752
Nipplewort	<i>Lapsana communis</i>	Corporation Street, Belfast	1990	J342752

Common Name	Latin name	Record Location	Year	Grid ref.
Silver birch	<i>Betula pendula</i>	Corporation Street, Belfast	1990	J342752
Great willowherb	<i>Epilobium hirsutum</i>	Corporation Street, Belfast	1990	J342752
Creeping thistle	<i>Cirsium arvense</i>	Corporation Street, Belfast	1990	J342752
Toad rush [agg.]	<i>Juncus bufonius agg.</i>	Corporation Street, Belfast	1990	J342752
Spear-leaved orache	<i>Atriplex prostrata sens.str.</i>	Corporation Street, Belfast	1990	J342752
Germander speedwell	<i>Veronica chamaedrys</i>	Corporation Street, Belfast	1990	J342752
Procumbent pearlwort	<i>Sagina procumbens</i>	Corporation Street, Belfast	1990	J342752
Hedge mustard	<i>Sisymbrium officinale</i>	Corporation Street, Belfast	1990	J342752
Knotgrass [agg.]	<i>Polygonum aviculare agg.</i>	Corporation Street, Belfast	1990	J342752
Field penny-cress	<i>Thlaspi arvense</i>	Corporation Street, Belfast	1990	J342752
Curled dock	<i>Rumex crispus</i>	Corporation Street, Belfast	1990	J342752
Bramble	<i>Rubus fruticosus agg.</i>	Corporation Street, Belfast	1990	J342752
Common chickweed	<i>Stellaria media</i>	Corporation Street, Belfast	1990	J342752
Annual meadow-grass	<i>Poa annua</i>	Corporation Street, Belfast	1990	J342752
Greater plantain	<i>Plantago major</i>	Corporation Street, Belfast	1990	J342752
Fat-hen	<i>Chenopodium album sens.str.</i>	Corporation Street, Belfast	1990	J342752
Yorkshire-fog	<i>Holcus lanatus</i>	Corporation Street, Belfast	1990	J342752
Mugwort	<i>Artemisia vulgaris</i>	Corporation Street, Belfast	1990	J342752
Common fleabane	<i>Pulicaria dysenterica</i>	Corporation Street, Belfast	1990	J342752
An alsike clover	<i>Trifolium hybridum ssp. elegans</i>	Corporation Street, Belfast	1990	J342752
Colt's-foot	<i>Tussilago farfara</i>	Corporation Street, Belfast	1990	J342752
White clover	<i>Trifolium repens</i>	Corporation Street, Belfast	1990	J342752
Redshank	<i>Persicaria maculosa</i>	Corporation Street, Belfast	1990	J342752
Mayweed	<i>Tripleurospermum maritimum sens.str.</i>	Corporation Street, Belfast	1990	J342752

Common Name	Latin name	Record Location	Year	Grid ref.
Rosebay willowherb	<i>Chamerion angustifolium</i>	Corporation Street, Belfast	1990	J342752
Biting stonecrop	<i>Sedum acre</i>	Corporation Street, Belfast	1990	J342752
Cleavers	<i>Galium aparine</i>	Corporation Street, Belfast	1990	J342752
Creeping bent	<i>Agrostis stolonifera</i>	Nelson Street, Belfast	1990	J342752
Spear thistle	<i>Cirsium vulgare</i>	Corporation Street, Belfast	1990	J342752
Perennial rye-grass	<i>Lolium perenne</i>	Corporation Street, Belfast	1990	J342752
Butterfly-bush	<i>Buddleja davidii</i>	Corporation Street, Belfast	1990	J342752
Elder	<i>Sambucus nigra</i>	Corporation Street, Belfast	1990	J342752
Smooth sow-thistle	<i>Sonchus oleraceus</i>	Corporation Street, Belfast	1990	J342752
Equal-leaved knotgrass	<i>Polygonum arenastrum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Redshank	<i>Persicaria maculosa</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common knapweed	<i>Centaurea nigra</i>	Dock Area (County Antrim), Belfast	1994	J3475
Oat	<i>Avena sativa</i>	Dock Area (County Antrim), Belfast	1994	J3475
Annual pearlwort	<i>Sagina apetala</i>	Dock Area (County Antrim), Belfast	1994	J3475
Few-flowered fumitory	<i>Fumaria muralis ssp. boraei</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common field-speedwell	<i>Veronica persica</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common chickweed	<i>Stellaria media</i>	Dock Area (County Antrim), Belfast	1994	J3475
Marsh woundwort	<i>Stachys palustris</i>	Dock Area (County Antrim), Belfast	1994	J3475
Field poppy	<i>Papaver rhoeas</i>	Dock Area (County Antrim), Belfast	1994	J3475
Corn spurrey	<i>Spergula arvensis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Rosebay willowherb	<i>Chamerion angustifolium</i>	Dock Area (County Antrim), Belfast	1994	J3475

Common Name	Latin name	Record Location	Year	Grid ref.
Daisy	<i>Bellis perennis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Stinging nettle	<i>Urtica dioica</i>	Dock Area (County Antrim), Belfast	1994	J3475
Gorse	<i>Ulex europaeus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Black bindweed	<i>Fallopia convolvulus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Field horsetail	<i>Equisetum arvense</i>	Dock Area (County Antrim), Belfast	1994	J3475
Polypody	<i>Polypodium vulgare agg.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Long-headed poppy	<i>Papaver dubium ssp. dubium</i>	Dock Area (County Antrim), Belfast	1994	J3475
Red bartsia	<i>Odontites vernus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Meadow vetchling	<i>Lathyrus pratensis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Elder	<i>Sambucus nigra</i>	Dock Area (County Antrim), Belfast	1994	J3475
Bramble	<i>Rubus fruticosus agg.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Hawthorn	<i>Crataegus monogyna</i>	Dock Area (County Antrim), Belfast	1994	J3475
A rose	<i>Rosa sp.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common couch	<i>Elytrigia repens</i>	Dock Area (County Antrim), Belfast	1994	J3475
Rape	<i>Brassica napus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Large bird's-foot-trefoil	<i>Lotus pedunculatus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Bristle club-rush	<i>Isolepis setacea</i>	Dock Area (County Antrim), Belfast	1994	J3475
Bittersweet	<i>Solanum dulcamara</i>	Dock Area (County Antrim), Belfast	1994	J3475
Chicory	<i>Cichorium intybus</i>	Dock Area (County Antrim), Belfast	1994	J3475

Common Name	Latin name	Record Location	Year	Grid ref.
Willow	<i>Salix cinerea ssp. oleifolia</i>	Dock Area (County Antrim), Belfast	1994	J3475
Annual meadow-grass	<i>Poa annua</i>	Dock Area (County Antrim), Belfast	1994	J3475
Shepherd's-purse	<i>Capsella bursa-pastoris</i>	Dock Area (County Antrim), Belfast	1994	J3475
Great bindweed	<i>Calystegia sepium ssp. sepium</i>	Dock Area (County Antrim), Belfast	1994	J3475
False oat-grass	<i>Arrhenatherum elatius</i>	Dock Area (County Antrim), Belfast	1994	J3475
Kidney vetch	<i>Anthyllis vulneraria</i>	Dock Area (County Antrim), Belfast	1994	J3475
Creeping buttercup	<i>Ranunculus repens</i>	Dock Area (County Antrim), Belfast	1994	J3475
Cow parsley	<i>Anthriscus sylvestris</i>	Dock Area (County Antrim), Belfast	1994	J3475
Celery-leaved buttercup	<i>Ranunculus sceleratus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Oxford ragwort	<i>Senecio squalidus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common male fern	<i>Dryopteris filix-mas</i>	Dock Area (County Antrim), Belfast	1994	J3475
Lesser trefoil	<i>Trifolium dubium</i>	Dock Area (County Antrim), Belfast	1994	J3475
a hogweed	<i>Heracleum sphondylium ssp. sphondylium</i>	Dock Area (County Antrim), Belfast	1994	J3475
Bread wheat	<i>Triticum aestivum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Creeping bent	<i>Agrostis stolonifera</i>	Dock Area (County Antrim), Belfast	1994	J3475
Hairy tare	<i>Vicia hirsuta</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common hemp-nettle [agg.]	<i>Galeopsis tetrahit agg.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Silverweed	<i>Potentilla anserina</i>	Dock Area (County Antrim), Belfast	1994	J3475
Eastern rocket	<i>Sisymbrium orientale</i>	Dock Area (County Antrim), Belfast	1994	J3475

Common Name	Latin name	Record Location	Year	Grid ref.
Greater plantain	<i>Plantago major</i>	Dock Area (County Antrim), Belfast	1994	J3475
Creeping yellow- cress	<i>Rorippa sylvestris</i>	Dock Area (County Antrim), Belfast	1994	J3475
Ribbed melilot	<i>Melilotus officinalis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Red dead-nettle	<i>Lamium purpureum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Hop trefoil	<i>Trifolium campestre</i>	Dock Area (County Antrim), Belfast	1994	J3475
Barren brome	<i>Anisantha sterilis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Colt's-foot	<i>Tussilago farfara</i>	Dock Area (County Antrim), Belfast	1994	J3475
Cock's-foot	<i>Dactylis glomerata</i>	Dock Area (County Antrim), Belfast	1994	J3475
Meadow buttercup	<i>Ranunculus acris</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common fleabane	<i>Pulicaria dysenterica</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common bird's- foot-trefoil	<i>Lotus corniculatus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Cat's-ear	<i>Hypochaeris radicata</i>	Dock Area (County Antrim), Belfast	1994	J3475
White ramping- fumitory	<i>Fumaria capreolata</i>	Dock Area (County Antrim), Belfast	1994	J3475
Tufted vetch	<i>Vicia cracca</i>	Dock Area (County Antrim), Belfast	1994	J3475
Butterfly-bush	<i>Buddleja davidii</i>	Dock Area (County Antrim), Belfast	1994	J3475
Procumbent pearwort	<i>Sagina procumbens</i>	Dock Area (County Antrim), Belfast	1994	J3475
Short-fruited willowherb	<i>Epilobium obscurum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Knotgrass	<i>Polygonum aviculare sens.str.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Amphibious bistort	<i>Persicaria amphibia</i>	Dock Area (County Antrim), Belfast	1994	J3475

Common Name	Latin name	Record Location	Year	Grid ref.
Feverfew	<i>Tanacetum parthenium</i>	Dock Area (County Antrim), Belfast	1994	J3475
Oxeye daisy	<i>Leucanthemum vulgare</i>	Dock Area (County Antrim), Belfast	1994	J3475
Field forget-me-not	<i>Myosotis arvensis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Nipplewort	<i>Lapsana communis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common orache	<i>Atriplex patula</i>	Dock Area (County Antrim), Belfast	1994	J3475
Yarrow	<i>Achillea millefolium</i>	Dock Area (County Antrim), Belfast	1994	J3475
Lesser swine-cress	<i>Coronopus didymus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common ragwort	<i>Senecio jacobaea</i>	Dock Area (County Antrim), Belfast	1994	J3475
Ivy	<i>Hedera helix</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common mouse-ear	<i>Cerastium fontanum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Ribwort plantain	<i>Plantago lanceolata</i>	Dock Area (County Antrim), Belfast	1994	J3475
Creeping thistle	<i>Cirsium arvense</i>	Dock Area (County Antrim), Belfast	1994	J3475
Pale persicaria	<i>Persicaria lapathifolia</i>	Dock Area (County Antrim), Belfast	1994	J3475
Prickly sow-thistle	<i>Sonchus asper</i>	Dock Area (County Antrim), Belfast	1994	J3475
Smooth sow-thistle	<i>Sonchus oleraceus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Wall speedwell	<i>Veronica arvensis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Pineapple weed	<i>Matricaria discoidea</i>	Dock Area (County Antrim), Belfast	1994	J3475
Toad rush [agg.]	<i>Juncus bufonius agg.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Red fescue	<i>Festuca rubra agg.</i>	Dock Area (County Antrim), Belfast	1994	J3475

Common Name	Latin name	Record Location	Year	Grid ref.
Sheep's fescue [agg.]	<i>Festuca ovina agg.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Sun spurge	<i>Euphorbia helioscopia</i>	Dock Area (County Antrim), Belfast	1994	J3475
Turnip	<i>Brassica rapa</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common sorrel	<i>Rumex acetosa</i>	Dock Area (County Antrim), Belfast	1994	J3475
Rye brome	<i>Bromus secalinus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Black medick	<i>Medicago lupulina</i>	Dock Area (County Antrim), Belfast	1994	J3475
Soft rush	<i>Juncus effusus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Spear thistle	<i>Cirsium vulgare</i>	Dock Area (County Antrim), Belfast	1994	J3475
Fat-hen	<i>Chenopodium album sens.str.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Wallflower	<i>Erysimum cheiri</i>	Dock Area (County Antrim), Belfast	1994	J3475
White clover	<i>Trifolium repens</i>	Dock Area (County Antrim), Belfast	1994	J3475
Field pepperwort	<i>Lepidium campestre</i>	Dock Area (County Antrim), Belfast	1994	J3475
Tutsan	<i>Hypericum androsaemum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Alsike clover	<i>Trifolium hybridum ssp. hybridum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Sticky groundsel	<i>Senecio viscosus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Perennial rye- grass	<i>Lolium perenne</i>	Dock Area (County Antrim), Belfast	1994	J3475
Slender St. John's-wort	<i>Hypericum pulchrum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Charlock	<i>Sinapis arvensis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Groundsel	<i>Senecio vulgaris var. vulgaris</i>	Dock Area (County Antrim), Belfast	1994	J3475

Common Name	Latin name	Record Location	Year	Grid ref.
Smooth meadow-grass	<i>Poa pratensis sens.lat.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Grass-leaved orache	<i>Atriplex littoralis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Red goosefoot	<i>Chenopodium rubrum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Marsh yellow-cress	<i>Rorippa palustris</i>	Dock Area (County Antrim), Belfast	1994	J3475
Broad-leaved willowherb	<i>Epilobium montanum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Hedge mustard	<i>Sisymbrium officinale</i>	Dock Area (County Antrim), Belfast	1994	J3475
American willowherb	<i>Epilobium ciliatum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Mugwort	<i>Artemisia vulgaris</i>	Dock Area (County Antrim), Belfast	1994	J3475
Two-rowed barley	<i>Hordeum distichon sens.lat.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Wild radish	<i>Raphanus raphanistrum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Autumnal hawkbit	<i>Leontodon autumnalis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Wall barley	<i>Hordeum murinum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Yorkshire-fog	<i>Holcus lanatus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Rough meadow-grass	<i>Poa trivialis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Great willowherb	<i>Epilobium hirsutum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Red clover	<i>Trifolium pratense</i>	Dock Area (County Antrim), Belfast	1994	J3475
Rowan	<i>Sorbus aucuparia</i>	Dock Area (County Antrim), Belfast	1994	J3475
Sticky mouse-ear	<i>Cerastium glomeratum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Hart's-tongue	<i>Phyllitis scolopendrium</i>	Dock Area (County Antrim), Belfast	1994	J3475

Common Name	Latin name	Record Location	Year	Grid ref.
Dandelion	<i>Taraxacum officinale</i> <i>agg.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Cleavers	<i>Galium aparine</i>	Dock Area (County Antrim), Belfast	1994	J3475
Field bindweed	<i>Convolvulus arvensis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Montbretia	<i>Crocsmia x</i> <i>crocsmiiflora (C. aurea</i> <i>x pottsii)</i>	Dock Area (County Antrim), Belfast	1994	J3475
Germander speedwell	<i>Veronica chamaedrys</i>	Dock Area (County Antrim), Belfast	1994	J3475
Selfheal	<i>Prunella vulgaris</i>	Dock Area (County Antrim), Belfast	1994	J3475
Bush vetch	<i>Vicia sepium</i>	Dock Area (County Antrim), Belfast	1994	J3475
Hairy bitter-cress	<i>Cardamine hirsuta</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common figwort	<i>Scrophularia nodosa</i>	Dock Area (County Antrim), Belfast	1994	J3475
Common vetch	<i>Vicia sativa</i>	Dock Area (County Antrim), Belfast	1994	J3475
Dove's-foot crane's-bill	<i>Geranium molle</i>	Dock Area (County Antrim), Belfast	1994	J3475
Small water- pepper	<i>Persicaria minor</i>	Dock Area (County Antrim), Belfast	1994	J3475
Marsh foxtail	<i>Alopecurus geniculatus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Field penny-cress	<i>Thlaspi arvense</i>	Dock Area (County Antrim), Belfast	1994	J3475
Meadow foxtail	<i>Alopecurus pratensis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Bracken	<i>Pteridium aquilinum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Cut-leaved crane's-bill	<i>Geranium dissectum</i>	Dock Area (County Antrim), Belfast	1994	J3475
Timothy	<i>Phleum pratense</i> <i>sens.lat.</i>	Dock Area (County Antrim), Belfast	1994	J3475
Broom	<i>Cytisus scoparius</i>	Dock Area (County Antrim), Belfast	1994	J3475

Common Name	Latin name	Record Location	Year	Grid ref.
Broad-leaved dock	<i>Rumex obtusifolius</i>	Dock Area (County Antrim), Belfast	1994	J3475
Curled cock	<i>Rumex crispus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Smooth hawk's-beard	<i>Crepis capillaris</i>	Dock Area (County Antrim), Belfast	1994	J3475
Crested dog's-tail	<i>Cynosurus cristatus</i>	Dock Area (County Antrim), Belfast	1994	J3475
Ivy-leaved toadflax	<i>Cymbalaria muralis</i>	Dock Area (County Antrim), Belfast	1994	J3475
Small cord-grass	<i>Spartina maritima</i>	Dock Area (County Antrim), Belfast	1994	J3475
Canadian fleabane	<i>Conyza canadensis</i>	Carlisle Circus, Belfast	1990	J334752

**Table E2:** CEDaR Non-vertebrate list

Common Name	Latin name	Record Location	Year	Grid ref.
Painted Lady	<i>Cynthia cardui</i>	Corporation Street, Belfast	2002	J344755
Small Tortoiseshell	<i>Aglais urticae</i>	Corporation Street, Belfast	2002	J344755

**Table E3:** CEDaR Vertebrate list

Common Name	Latin name	Record Location	Year	Grid ref.
Waxwing	<i>Bombycilla garrulus</i>	Carlisle Circus/Westlink, Shankill	2003	J334752
Waxwing	<i>Bombycilla garrulus</i>	Westlink at York Gate, Belfast	20-Mar-05	J340753
Waxwing	<i>Bombycilla garrulus</i>	Westlink at York Gate, Belfast	13-Dec-05	J340753
Thick-lipped Mullet	<i>Chelon labrosus</i>	Dock Area (County Antrim), Belfast	2001	J3475
Waxwing	<i>Bombycilla garrulus</i>	Westlink, Belfast	2005	J3475
Waxwing	<i>Bombycilla garrulus</i>	Westlink, Belfast	2005	J3475