

## Appendix 11B: Bat Survey

SEMMMS A6 to Manchester  
Link Road:  
Bat Tree Survey

October 2013

*Produced for*  
Stockport Metropolitan Borough Council

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## Executive summary

**Scheme description and location** A6 to Manchester International Airport relief road, part of the south-east Manchester multi-modal strategy, or SEMMMS. The scheme passes through the Stockport area south of Manchester, and links the A6 near Poynton to Manchester International Airport via the A555 Manchester International Airport Eastern Link road.

**Previous studies and background** Ecological surveys were undertaken by Penny Anderson Associates in 2007 and by Mouchel in 2011/2012 to support previous planning applications for the scheme. Previous work identified trees which could support roosting bats and also looked at bat activity in the vicinity of the scheme which was found to be at a low level. It was found that the area does not support a rich assemblage of bats with three species identified during the surveys, with the common pipistrelle the most commonly recorded species.

The current surveys have been undertaken to update 2011/2012 surveys to support a new planning application for the scheme under a revised layout.

**Current study** The current study reviews and updates the previous ecological work related to bats to inform the scheme's ecological impact assessment. A review of desk study data related to bats and a field survey identifying trees suitable to support roosting bats was undertaken. Each tree was surveyed by undertaking two visits to look for emergence/return of bats during September/October 2013.

No buildings lie within the scheme corridor.

The likely ecological and/or legal constraints posed by bats roosting in trees have been identified, and recommendations for further work to discharge these constraints have been made.

**Results and discussion** Desk study data from the Greater Manchester Ecology Unit (GMEU) showed three historic records of roosts, two of which are far from the working corridor (both ~350m within adjacent housing development) and one adjacent to the corridor ~30m away in a farm building.

Sixty-one trees which could support roosting bats (mature trees with splits, cracks/crevices, holes etc into which bats can crawl and rest) were identified within and adjacent to the

working corridor. Emergence/return surveys did not identify roosting bats in any of the 61 trees.

Bats use some roosting sites, particularly trees, dynamically, moving between roosting sites on different nights depending on their needs. Taking this into account, the fact that none of the roosts was used demonstrates that the tree resource along the Proposed Scheme is of limited value, and used infrequently, if at all. Further surveys will be required prior to construction to re-confirm these findings and provide data to support a Natural England EPS development licence to cover the scheme

Bats may also be impacted by habitat clearance and fragmentation, removing foraging habitat and severing commuting routes. Bats may also be disturbed by construction activities.

#### Conclusions and recommendations

Mitigation has been recommended to reduce the impact of habitat clearance and fragmentation in the form of hop-overs and habitat screening. Recommendations have also been made to reduce the negative impacts on bats of lighting the scheme.



# 1 Introduction

## 1.1 Background

Stockport Metropolitan Borough Council, Manchester City Council and Cheshire East Council are working as a consortium to promote the construction of a strategic relief road from the A6 to Manchester International Airport. The scheme is part of the south-east Manchester multi-modal strategy, or SEMMMS, and involves the introduction of a 14 km dual carriageway between the A6 and the airport. Ten kilometres of the relief road would comprise new sections of dual carriageway. A central 4 km section of the relief road would comprise the previously constructed A555 Manchester International Airport Eastern Link road (MAELR) south of Bramhall. Ecological surveys were undertaken by Penny Anderson Associates in 2007 in support of a previous planning application for the scheme. The current surveys have been undertaken to update the findings of surveys undertaken by Mouchel in 2011 in support of a new planning application for the scheme under a revised layout.

Bat surveys were undertaken as part of the scheme's Environmental Impact Assessment (EIA), to assess the likelihood of the site supporting these legally protected species. The current work reported in this document updates work undertaken 2011 by reviewing desk study data and surveying the revised scheme layout for trees which could support roosting bats.

## 1.2 Site location

The study area comprised habitats within and adjacent to the scheme's proposed construction boundary from the A6 in the east (grid reference SJ 934859) to Manchester International Airport in the west (grid reference SJ 817857).

## 1.3 Study rationale and objectives

The aim of the study was to update previous work to determine the value of the study area for bats, to inform an assessment of ecological impacts upon these animals. This aim is achieved through:

- A review of desk study records obtained for previous studies in 2011;
- A field study to locate trees which could support roosting bats, and undertake emergence and return surveys to see if they are used; and
- Map and analyse data to determine whether bats pose a constraint to development, and inform the scheme's Environmental Impact Assessment.

## 2 Methods

### 2.1 Desk Study

An ecological desk study was undertaken to identify any historical records and statutory or non-statutory designated sites relevant to bats within the study area (land within the scheme and the wider area within a 2km buffer). Records prior to 2000 have been excluded from the findings as these are now likely to be out of date.

The following web-based sources were utilised:

- Multi-Agency Geographic Information for the Countryside (MAGIC) website ([www.magic.defra.gov.uk](http://www.magic.defra.gov.uk)) – information provided here covered the location of any European protected or nationally protected sites;
- National Biodiversity Network (NBN) (<http://data.nbn.org.uk>) – information provided here covered localised species records; and
- Greater Manchester Ecology Unit (GMEU).

### 2.2 Identification of Trees Which Could Support Roosting Bats

The landscape through which the scheme passes includes mature trees which could possess features suitable for use by roosting bats. A site walkover survey extending to ~50m either side of the full extent of the scheme was completed in March 2013 by Mouchel ecologists.

During the walkover, trees with that might be used by roosting bats were identified. Guidance recently issued by the Bat Conservation Trust (Lundt, 2012) provides a classification system for trees to determine their suitability as bat roosts and to guide further survey work. This classification system is reproduced below:

- Category 1\* - Trees with multiple, highly suitable features capable of supporting larger roosts.
- Category 1 - Trees with definite suitability to support roosting bats, but with fewer suitable features than category 1\* trees or with potential for use by single bats.
- Category 2 - Trees with no obvious suitability, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited suitability to support bats.
- Category 3 - Trees with no potential to support bats.

Category 1\* and Category 1 trees are suitable for roosting and were recorded during the survey as locations at which further work to determine whether roosts are present will be undertaken. Binoculars were used to identify features from ground

level. Features that were searched for and that indicate suitability for bat roosting include:

- Trees of an appropriate size to be of use to bats (i.e. relatively large and mature);
- Trees with natural holes e.g. woodpecker or rot holes;
- Trees or structures with splits, cracks, cavities;
- Trees or structures with dense cover of ivy;
- Presence of bird/bat boxes; and
- Staining, scratches or other signs of bats around entry points.

Features and their descriptions were recorded in the field along with accurate GPS locations to allow for electronic mapping of features in relation to the proposed scheme.

Category 2 and 3 trees that are unlikely to support roosts were not recorded during the survey. A method statement covering tree felling to offset residual risks to bats will form part of the scheme Construction Environmental Management Plan (CEMP), compliance with which will be monitored by a clerk of works.

### **2.3 Emergence/Return Surveys**

Following their identification, emergence/return surveys were undertaken during September and October 2013 to determine whether trees were used by roosting bats. Each tree was surveyed twice; once at dusk and once at dawn, to look for bats emerging from or returning to roosts in the trees.

Survey procedures followed guidance issued by the Bat Conservation Trust<sup>1</sup>, and surveyors monitored the trees to look for bats flying out of and into roost sites within them. Bat detectors were used to aid observations and recordings of call heard were used to determine the species and behaviour of the bats observed.

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<sup>1</sup> Bat Conservation Trust (2012). Bat Surveys: Good Practice Guidelines. BCT, London.

## 3 Baseline Conditions

### 3.1 Desk Study

MAGIC identified no statutory or non-statutory designated sites which have bats as a qualifying reason for designation, within 2km of the scheme,.

Following a data search on the NBN, records of bats were found in the vicinity of the scheme. The 10km<sup>2</sup> national grid squares SJ88 and SJ98 encompass the entirety of the scheme. Table 3.1 shows the species recorded by year and grid square. Where known, the approximate distance of the bat record from the scheme was also recorded.

Table 3.1 - Bat species records in the vicinity of the proposed scheme.

Bat Species	Grid Square	Approximate Distance from Scheme	Most Recent Year Recorded
Common Pipistrelle <i>Pipistrellus pipistrellus</i>	SJ88/SJ98	100m	2008
Soprano Pipistrelle <i>Pipistrellus pygmaeus</i>	SJ88/SJ98	100m/1km	2008
Daubenton's <i>Myotis daubentonii</i>	SJ88/SJ98	1km	2008
Noctule <i>Nyctalus noctula</i>	SJ88/SJ98	1km	2008
Brown Long Eared <i>Plecotus auritus</i>	SJ88/SJ98	Within 10km <sup>2</sup> grid square	2009
Whiskered/Brandt's <i>Myotis mystacinus/brandtii</i>	SJ88/SJ98	Within 10km <sup>2</sup> grid square	2008
Leisler's Bat <i>Nyctalus leisleri</i>	SJ98	Within 10km <sup>2</sup> grid square	2005

Data from a previous desktop study supplied by the Greater Manchester Ecology Unit (GMEU) in 2010 identified three active bat roosts adjacent to the scheme. This data is displayed in Table 3.2. Additional records of common pipistrelle, Daubenton's, brown long eared, noctule and Leisler's bat presence were noted in the path of the scheme, but dates of these records were not supplied.

Table 3.2 - GMEU bat data, May 2010.

Roost	Grid Reference	Roost Description	Location
1	SJ 91814 85595	Pipistrelle or whiskered/Brandt's	Approximately 400m north of proposed scheme. Located in residential area near open fields and linear habitat features.
2	SJ 91022 84486	Unknown bat roost	Approximately 20m north of proposed scheme. Situated in Hill Green Farm building.
3	SJ 89042 83294	Brown long eared roost	Approximately 340m south of A555, which is due to be subject to minimal work.

### 3.2 Tree Survey Results

Sixty-one locations with features suitable to support roosting bats (Category 1\* and 1) in the vicinity of the scheme were mapped. These features, which are described in Table 3.3, comprise 4 Category 1\* trees and 57 Category 1 trees. Several of these features fall directly in the path of the proposed scheme, while others are located within 50m of the scheme boundary.

Table 3.3 - Locations of trees with features suitable to support roosting bats.

Reference	Notes / Category	Eastings	Northings
1	Oak , obvious hole, no staining. 1	386037	393275
2	Heavy ivy roots on river bank. 1	386075	393319
3	Oak tree a few small holes. 1	386065	393373
4	Ash, pitted bark, rot holes. 1	386055	393345
5	Oak, two large holes, by pond. 1	386063	393381
6	Oak, large deep cavity near bottom, within hedgerow. 1	386020	393432
7	Mature ash. several woodpecker holes and large hole half way up. 1*	385872	393613
8	Ash with large vertical fissure and lifted bark. also oak with several woodpecker holes closer to field edge. 1*	385435	392262
9	Dead, holes seen from distance. 1*	385321	392144
10	Large hollow oak, lots of holes maybe open at top also note tree to right with lifted bark and vertical fissure surrounded by holly. 1	385303	392126
11	Mature oak, lip in branch. 1	385289	392136

Reference	Notes / Category	Eastings	Northings
12	Three trees: 2 ash 1 oak, several holes and cracks. 1	385270	392118
13	Mature oak, holes in dead branches. 1	385260	392082
14	Large hole in tree possible bird or squirrel, other holes and cracks visible. 1	385019	391818
15	Oak single hole on side of tree, edge of pond. 1	385253	392124
16	Oak, corner of field and hedgerow, hole with staining. 1	385545	393289
17	Woodpecker holes. 1	385513	393284
18	Sycamore with woodpecker holes. dead ash adjacent, only main stem left, large woodpecker hole at top. 1	385474	393261
19	Single hole half way up no obvious stains. 1	385453	393222
20	Alder, large cavity on side of main trunk by brook edge. 1	385459	393226
21	Oak with woodpecker holes plus broken limbs. 1	385486	393228
22	Two mature oaks, vertical fissures and broken limbs, second oak burnt out hollow to 10m. 1	385502	393180
23	Oak with rot hole. 1	385487	393182
24	Oak, canker damage, lots of crevices, some rot holes further up. 1	385457	393104
25	Mature ash with broken limb, woodpecker hole, plus ivy covered ash adjacent. 1	385439	393108
26	Alder, ash, hawthorn; three trees clustered together dense ivy cover. 1	383732	389342
27	Ash, broken limb, rot holes. 1	383698	389290
28	Oak , dense ivy cover, rot hole. 1	383667	389275
29	Ash, dense ivy. 1	383751	389451
30	Lots of lifted bark. 1	383781	389845
31	Few small holes with stains, possible other rot holes. 1	383739	389853
32	Lots of rot holes. 1	383845	389954
33	Lots of cavities and rot holes. 1	383866	389951
34	Several rot holes and bark splits. 1	383918	389926
35	Small hollow. 1	383941	389909
36	Small hollow with very rotten tree behind. 1	383987	390079
37	Oak, woodpecker hole. 1	384007	390109

Reference	Notes / Category	Eastings	Northings
38	Oak, woodpecker hole, hollow limb, standing dead tree next to it, with woodpecker hole, poss. hollow. 1	384045	390068
39	Edge of pond lots of split bark. Rotten tree just south as well. 1	383947	390196
40	Oak with cavity plus standing dead tree with pitted lifted bark . 1	385155	384020
41	Oak, large rot hole. 1	384926	391820
42	Oak , dense ivy clad. 1	384922	391808
43	Mature beech, numerous holes, cracks, crevices. on ancient woodland bank. 1	384820	391733
44	Mature beech. hole in main trunk. 1	384818	391721
45	Two dead/near dead oak, multiple holes. 1	384908	391735
46	Mature oak, holes. 1	384906	391763
47	Mature beech, large hole at base and several other holes. 1	384321	390989
48	Mature beech, numerous holes. 1	384327	391047
49	Mature oak, few holes with slight staining. 1	384295	391213
50	Oak, large crevices in limb, along hedgerow. 1	384429	391239
51	Oak, cracks and hole in limb along hedgerow. 1	384478	391255
52	3rd oak on the left, seen from distance, holes. 1	384537	391424
53	Tree under route covered in ivy, seen from distance. 1	384344	390738
54	Oak, roadside, holes, potential staining. 1	385357	385477
55	Oak, seen from distance, cracks. 1	384402	385346
56	Cracks. 1	384421	385296
57	Dead tree, seen from distance. 1	384392	385276
58	Oak, mature. 1	384312	385076
59	Ivy covered oak, mature. 1	384355	385165
60	Oak, hole in limb, within hedgerow. 1	384445	384867
61	Oak, hollow limb, bifurcated, second limb broken. 1*	384502	384824

### 3.3 Emergence/Return Survey Results

In total, 122 survey visits were conducted and all trees were surveyed twice as planned within the survey period. However, no roosts were detected. No bats were seen entering roost sites within the trees during return surveys or exiting trees during emergence surveys.

### 3.4 Overview of Results

The desk study confirmed that seven bat species have been recorded in within the study area, which includes three known bat roosts. These roosts are outside of the site boundary. The surveys identified thirty-three features within the field survey area that have potential to support roosting bats. Activity surveys recorded low levels of bat activity at all transect locations. Only three species of bat were recorded, of which common pipistrelle was the most frequent.



## 4 Discussion

### 4.1 Desk Study Results

The desktop study data obtained from the GMEU identified three known bat roosts in the vicinity of the scheme. None of these roosts will be directly affected by the scheme. However, it is possible that the proposed works could affect the foraging and commuting activity of bats using these roosts.

#### 4.1.1 *Roost 1*

Roost 1, a common pipistrelle/whiskered/Brandt's bat roost, is situated in a residential area ~350m to the north of the scheme. The roost has southern links to the grassland, hedgerows and watercourse adjacent to the scheme.

#### 4.1.2 *Roost 2*

Roost 2 is located approximately 30m from the proposed extent of the scheme in a building listed as Hill Green Farm, situated in the south west corner of Transect 4. The GMEU data did not identify the species of bat present in this roost. There are habitat connections directly adjacent to the roost, leading to the south and east towards the scheme. There are a number of hedgerows in this area with connections to adjacent habitat

#### 4.1.3 *Roost 3*

Roost 3 is located 340m south of the A555 where minimal works are planned. This roost will not be affected by works.

### 4.2 Trees

Sixty-one tree sites along the route have been identified as suitable to support roosting bats. Several of these represent multiple features, such as a small group of trees, or woodland. Thirty-six of the tree sites fall directly within the site boundary of the scheme and will be affected or may be removed by works. The remaining twenty-five tree sites are located within 50m of the works and may be indirectly affected by noise or light pollution at night.

Emergence/return surveys did not locate any trees which supported roosting bats. However, bats use some roosting sites, particularly trees, dynamically, moving between roosting sites on different nights depending on their needs. Taking this into account, the fact that none of the roosts was used demonstrates that the tree resource along the Proposed Scheme is of limited value, and used infrequently, if at all. Further surveys will be required prior to construction to re-confirm these findings and provide data to support a Natural England EPS development licence to cover the scheme



*We have used our reasonable endeavours to provide information that is correct and accurate and have discussed above the reasonable conclusions that can be reached on the basis of the information available. We would recommend that in order to obtain more secure results, the additional work outlined above should be commissioned.*

## 5 References

- Lundt, P. (2012). Bat Surveys: Good Practice Guidelines, 2nd edition. Bat Conservation Trust, London.

## Appendix 1: Legislative Context

### Legislative Summary

All bat species in England and Wales are fully protected through inclusion within Schedule II of the Conservation of Habitats and Species Regulations 2010. Under this legislation they are given the status of a European protected species (EPS). This legislation makes it an offence to deliberately capture, kill, injure or disturb bat species. For the purposes of this legislation disturbance has been defined as that likely:

- Impair their ability to:
  - (i) Survive, breed or reproduce, or to rear or nurture their young; or,
  - (ii) Hibernate or migrate.
- Affect significantly the local distribution or abundance of that species to which they belong.

It is also an offence to damage or destroy a breeding site or resting place of these species. It may be possible to apply for a licence from Natural England to allow activities that would otherwise be an offence under these Regulations.

All bats are also partially protected in England and Wales through their inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to intentionally or recklessly disturb a bat whilst it is using a place of rest or shelter and/or from being obstructed from entering such a place. This applies to individuals, but is subject to a number of defences, including if the disturbance was the '*incidental result of a lawful operation that could not reasonably have been avoided*'. No licences are available for the purposes of development for offences under the Wildlife and Countryside Act 1981 (as amended).

### Conservation Status

There are 17 species of bat commonly found in the UK. It is widely recognised that all bats species, arguably with the exception of Daubenton's bat *Myotis daubentonii*, are declining and considered vulnerable throughout England and the rest of Europe (Mitchell-Jones, 2004). Consequently, certain bats are listed as UK Biodiversity Action Plan (BAP) priority species. BAPs aim to maintain the current range, distribution and viability of existing populations throughout the country (UK BAP). There are seven bat species listed as UK BAP Priority Species, including the noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bat *Plecotus auritus*. Additionally, the Greater Manchester BAP lists bats as a priority species and seeks to maintain the current distribution of bats within the

county and increase the distribution and abundance of bats and suitable habitats without reducing the area of valuable habitat.

Biodiversity Action Plan (BAP) priority species are those that the UK Central and Local Governments have a particular responsibility to conserve for the good of international biodiversity conservation, as agreed at The Convention of Biological Diversity (the Rio Convention) 1992. While such designation does not confer any direct legal protection, government agencies are obliged to have regard to those species of principal conservation importance, in exercising of its functions (Section 74 CROW Act 2000, Section 40 NERC Act 2006). They are also obliged by virtue of Section 74 (3) CROW Act, 2000 to undertake steps to further the conservation interest of such species and by virtue of Section 40 NERC Act, 2006 to restore or enhance a population or habitat of such species

## Appendix 11C: Great Crested Newt Survey

**SEMMMS A6 to Manchester  
Airport Relief Road:**  
Great Crested Newt *Triturus  
cristatus* Report

02 July 2013

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## Executive Summary

Scheme description and location	The A6 to Manchester International Airport relief road, part of the South-East Manchester Multi-Modal Strategy (SEMMMS), passes through the Stockport area south of Manchester, and links the A6 near Poynton to Manchester International Airport via the A555 Manchester International Airport Eastern Link road.
Previous studies and background	Ecological surveys were undertaken by Penny Anderson Associates in 2007 in support of a previous planning application for the scheme. Further ecological surveys were subsequently undertaken in 2010 by Mouchel to support a new planning application for the scheme under a revised layout. The current surveys have been undertaken to evaluate further design revisions of the planning application, and to maintain best practice as the previous survey data is now three years old.
Current study	Great crested newt (GCN) surveys, comprising a desk study and detailed field survey. The value of the survey area to great crested newt was assessed, and likely ecological and/or legal constraints posed by great crested newt, their resting sites, migration routes and hibernation areas identified.
Results and discussion	GCNs inhabit ponds along the length of the proposed scheme. These ponds are mainly located in two clusters: one in and around Styal golf club, and the other in and around The Bramhall golf club. The 41 occupied ponds contained populations of newts of small (33 ponds) and medium (9 ponds) size class. No ponds supporting high size class populations were recorded.

# 1 Introduction

## 1.1 Background

Stockport Metropolitan Borough Council (SMBC), Manchester City Council (MCC) and Cheshire East Council (CEC) are working as a consortium to promote the construction of a strategic relief road from the A6 to Manchester International Airport. The scheme is part of the South-East Manchester Multi-Modal Strategy (SEMMMS), and involves the introduction of a 14 km dual carriageway between the A6 and the airport. Ten kilometres of the relief road would comprise new sections of dual carriageway. A central 4 km section of the relief road would comprise the previously constructed A555 Manchester International Airport Eastern Link Road (MAELR) south of Bramhall.

Ecological surveys were undertaken by Penny Anderson Associates in 2007 to support a previous planning application for the scheme. Further ecological surveys were also undertaken in 2010 by Mouchel to support a new planning application for the scheme under a revised layout. The 2010 ecological surveys included a great crested newt *Triturus cristatus* survey which informed the production of the 'Great Crested Newt Report' (Mouchel, 2012).

This report details the results of the updated great crested newt surveys undertaken in 2013 to inform the scheme's Environmental Impact Assessment, in support of an application for planning permission. The results of the 'Great Crested Newt Report' (Mouchel, 2012). have been used to inform this current assessment and its results are integrated in to this report.

## 1.2 Legislative and Policy framework

GCNs and the places they use for shelter or protection are protected under both UK law (the Wildlife and Countryside Act 1981) and European law (The Conservation of Habitats and Species Regulations 2010), it is an offence to:

- Deliberately capture, injure or kill a GCN
- Deliberately disturb a GCN
- Deliberately take or destroy the eggs of such an animal
- Intentionally or recklessly damage, or destroy a breeding site or resting place of a GCN and/or obstruct access to any structure or place used for shelter or protection by such an animal
- Possess or control any live or dead specimen or anything derived from a GCN.

Legislation and policy relevant to the scheme is summarised within Annex C.

## 1.3 Study Area

All ponds within a study area extending to 500m from the scheme boundary (based on Design Freeze 7) were investigated. The study area runs from the A6 in the east to Manchester International Airport in the west (Figure 1.1). This area includes ponds within and



surrounding Styal Golf Course which will be remodelled as part of the development of the road in order to keep the course functioning.

#### **1.4 Study Objectives**

The aim of the study was to determine the presence/ absence of GCNs within ponds within 500m of the proposed road. Where GCNs were present, the size class of the population was assessed using English Nature (2001) guidelines.

This report outlines the methods used in the survey (Chapter 2), presents the results that were obtained (Chapter 3), and draws conclusions about the distribution of amphibian populations present in the areas that were surveyed (Chapter 4). The report also outlines recommendations for mitigation (Chapter 5).

## 2 Methodology

### 2.1 Desk Study

The following sources were used to collate historical records of great crested newt within the study area and surrounding 1km radius:

- Greater Manchester Ecology Unit (GMEU)
- Local Amphibian and Reptile Groups (ARG)
- Data from surveys undertaken previously.
- Records from web based sources were also used, including those held on the National Biodiversity Network (NBN) Gateway ([www.nbn.org.uk](http://www.nbn.org.uk)).

### 2.2 Field Survey

All field survey techniques, timing, effort and design were selected with comprehensive consideration of the guidance provided in DMRB (2001), English Nature (2001), JNCC (2003) and Froglife (2001). Water bodies were identified from desk study data (e.g. ecological record searches and contact with local wildlife groups), 1:25000 Ordnance Survey maps and aerial photography, as well as those incidentally discovered during other field surveys. Flowing water (rivers, streams and drainage ditches with obvious water movement) were not considered suitable habitat for great crested newt.

#### 2.2.1 *Habitat Suitability Assessment*

To determine the potential of the ponds close to the development to support great crested newt all accessible ponds and ditches within 250m (the distance over which these animals are most active and forms the majority of their habitat away from ponds (Baker J. M. R, 1999)) were firstly assessed for their potential to contain a GCN. This was achieved by use of the Habitat Suitability Index (HSI) published by Oldham et al. (2000). The HSI scoring system provides a means of evaluating habitat quality, and an indication of the likelihood of a breeding population of GCNs being present at any given location. The HSI is a numerical index (between 0 and 1), 0 indicates unsuitable habitat, 1 represents optimal habitat and incorporates ten suitability indices (SI), all of which are factors thought to affect great crested newt (Oldham *et al.* 2000).

HSI scores were grouped into 5 categories (following the approach used in the National Amphibian and Reptile Survey – NARRS) to give an indication of the suitability of each pond to support great crested newts. These categories were:

- <0.5 - poor
- 0.5 – 0.59 - below average
- 0.6 – 0.69 - average
- 0.7 – 0.79 - good

- > 0.8 - excellent

A threshold HSI value was set at a value greater than 0.50 to target ponds for survey which were more likely to support GCNs. However, in order to employ best practice (English Nature, 2001), this survey aimed to include all ponds within the scheme redline boundary, including those that achieved scores lower than 0.50.

The threshold was lowered from 0.60 which was used in the 2010 survey.

### 2.2.2 Presence/Absence Survey

Where potentially suitable ponds were found, presence/absence surveys were undertaken in accordance with the methodologies given by JNCC (2003) and English Nature (2001). Each pond was surveyed on at least four separate occasions, when GCNs were found the period of trapping was extended by an additional two visits in order to provide population estimates. Any newts recorded were identified, where possible, by species, sex and age class.

The surveys were carried out from March to June 2013; optimal months to survey for great crested newt (English Nature 2001, JNCC 2003). Overall, surveys were completed under suitable weather conditions and led by experienced surveyors who hold Natural England Science and Education survey licences for great crested newt. The field surveys were completed using four main search methods:

- searches by torchlight (using a torch with 1 million candle power);
- egg searches;
- bottle trapping; and
- netting.

Refugia searches were also carried out around the ponds where possible or as an alternative survey method when those above proved difficult to carry out effectively. Surveys for great crested newt larvae presence were also undertaken in later checks. These methods are detailed below.

**Table 2.1 – Summary of great crested newt pond survey methods used after English Nature (2001).**

Survey method	Description
Torching	Searching a pond for the presence of great crested newt by shining a high powered torch (1 million candle power) at night around the margins of a waterbody and counting the individual animals observed below the water's surface. The pond margin is slowly walked once, as far as is possible and numbers/species recorded. This method was always undertaken during suitable weather conditions (air temperature >5°C, little or no wind and no rain).

Survey method	Description
Bottle Trapping	Setting traps made from plastic drinks bottles at 2 metre intervals around the accessible pond margin. Traps are set before dusk and checked the following morning shortly after dawn for animals. Bottle trapping can be used to catch adults during the breeding season and larvae during summer.
Egg Searching	Searching aquatic and marginal vegetation within the pond (both living and dead) for GCN eggs. Egg searching is particularly powerful at detecting presence of GCNs and also shows the pond is used for breeding. Surveyors search riparian vegetation around the pond's margin for great crested newt eggs, stopping when one is found to avoid damage to any remaining eggs.
Netting	Sweeping the pond with a fine meshed net. Any newts caught in the net are then identified to species, aged, and then released. The sweeping of the net can be standardised to give an approximate population figure, i.e. a two minute sweep per 1m <sup>2</sup> . This technique is more effective in recording free swimming newt larvae rather than adults, and as such care must be taken not to damage the delicate gills of any immature animals caught.

### 2.2.3 Population Size Class Assessment

For all ponds where the presence of great crested newt was confirmed, a further two visits were carried to determine population size class. GCN population sizes classes were estimated using the approach set out in English Nature's Great Crested Newt Mitigation Guidelines (EN, 2001). The maximum count of adult great crested newt recorded on a single visit and using a single method were used to assign small (counts <10), medium (counts between 11 and 100), or large (counts >100) population size classes to each of the ponds where this species was present. For the purposes of this assessment a pond which contains, for example, a medium population, according to the 2010 survey data, and a small population in the current survey will be classed as having a medium population for the purposes of mitigation recommendations.

## 2.3 Limitations

### 2.3.1 Access to pond margins

Whereas effort was made to place bottle traps in every part of the margin of ponds, and lamp/egg search the whole pond, thick scrub/bramble and other vegetation, along with deep sediment that presented a health and safety risk prevented this in some of the ponds.

Every accessible margin of each pond was bottle trapped, lamped and searched GCN eggs. It is therefore possible some evidence of the presence of GCNs may have been missed. However the level of survey effort employed has allowed interpretation of the results with a high degree of confidence. Thus access to pond margins is not considered to be a significant limitation of the survey.

### 2.3.2 *Lack of access to ponds*

Seven ponds could not be accessed for field survey. However, this represents a small proportion of the ponds surveyed and together with survey data from 2010 this lack of access to ponds is not considered to be a significant limitation of the survey. A full discussion of ponds that could not be surveyed is included within the results.

### 2.3.3 *Temperature and conditions*

Weather during surveys was generally calm with little wind or precipitation. Several dates saw some rain which did not hamper survey effort and is not seen as a limitation to the survey findings.

Early survey visits experienced average overnight temperatures which fell below the 5°C and approached 1°C the spring of 2013 is widely recognised as one of the coldest in recent decades and these temperatures likely affected the early survey results GCNs may have remained in hibernation longer than normal. However, these visits were not repeated despite being sub-optimal due to the scale of the survey; a decision was taken to accept these results and interpret them with the weather conditions in mind.

When assessing great crested newt populations, a combination of previous survey data and current survey data, along with consideration for weather conditions and possible lower/negative results which may have resulted has been used. This overall approach, although constrained by the low spring temperatures, delivers a robust assessment of great crested newt distribution and abundance.

## 2.4 **Assessment Methodology: Determining Biodiversity Value**

The Institute of Ecology and Environmental Management (IEEM) Guidelines (2006) provide a framework criteria for determining the value and importance of each potential ecological receptor found within the survey area. Various characteristics can be used to identify important biodiversity features (sites, habitats, or species) that are likely to represent potentially significant constraints to the development project. These include a feature's:

- rarity at various geographical scales;
- threat status and vulnerability at various geographical scales;
- diversity and/or its synergistic associations;
- population size; and
- location in relation to its known geographical distribution and range at various geographical scales.

The characteristics listed above help define a features' conservation status which can then be used to help determine its biodiversity value. IEEM (2006) provides further information on how the relative value and importance of a receptor can be determined, and states that its *biodiversity value* should be measured against published selection criteria where available.

It is also useful to distinguish between the *biodiversity value* of a receptor and its *legal status*. Features of high *biodiversity value* may not necessarily attract *legal protection* and vice versa. For example, a viable area of ancient woodland is likely to be considered of high biodiversity value even if it does not receive any formal statutory designations.

In the evaluation of biodiversity value, reference is also made to UK and Local BAPs, inclusion on national or county Red Data Books, and to conservation status (such as nationally notable/scarce, etc). However, the inclusion within a BAP reflects the fact that the population of the species/habitat concerned is in a sub-optimal state (and hence that conservation action is required) and does not necessarily imply any specific level of value. Despite this, priority BAP species/habitats may represent a significant ecological constraint if their presence triggers planning guidance implications (as outlined above).

In accordance with IEEM (2006), each biodiversity feature should be assessed as valuable, or potentially valuable, based on the following geographic frame of reference (some examples of ecological receptors that may be potentially valuable at each geographical scale are provided below):

- international e.g. biodiversity feature that warrant designation of an area as a SPA, SAC, or Ramsar site;
- national (i.e. UK), e.g. biodiversity feature that warrants designation of an area as a SSSI;
- regional, e.g. biodiversity features valuable at a regional level e.g. East of England;
- county, e.g. biodiversity features valuable at a county level;
- district, e.g. biodiversity features of value at the district level;
- local, e.g. biodiversity features of value in a local context;
- biodiversity features of value within and immediately surrounding the field survey area.

Therefore, the population estimates, species' ranges and conservation status of great crested newt on site have been evaluated taking into consideration the IEEM guidelines and consequently, the importance of any great crested newt found on site has been attributed a value according to a geographical scale.

## 3 Results

### 3.1 Desk Study

The National Biodiversity Network (NBN) Gateway ([www.nbn.org.uk](http://www.nbn.org.uk)) was used to collate historical records of great crested newt within the study area and the 10 km grid squares SJ88 and SJ98.

Seventeen records of great crested newt were located within the 10km grid square SJ98 from the last ten years, the most recent of which was from 2008. In addition a further seventy records were highlighted within the 10km grid square SJ88, the most recent record is from 2008.

Table 3.1 below summarises great crested newt records from the Greater Manchester Ecology Unit (GMEU).

**Table 3.1 - Records of great crested newt within 1km of the survey area.**

Record location (O.S. Grid Ref.)	Approximate distance from scheme boundary
SJ 833 862	750m
SJ 836 850	70m
SJ 841 848	0m
SJ 843 848	0m
SJ 843 844	100m
SJ 844 844	80m
SJ 844 841	225m
SJ 845 840	250m
SJ 844 843	135m
SJ 845 844	0m
SJ 847 844	50m
SJ 840 840	250m
SJ 842 841	600m
SJ 840 840	700m
SJ 842 839	650m
SJ 843 840	600m
SJ 846 839	520m
SJ 847 840	520m
SJ 846 839	500m
SJ 848 841	300m
SJ 853 842	130m
SJ 853 847	280m
SJ 863 850	460m
SJ 426 849	360m

SJ 862 848	300m
SJ 867 848	160m
SJ 867 847	40m
SJ 866 847	60m
SJ 878 836	265m
SJ 880 833	500m
SJ 888 831	500m
SJ 887 827	1000m
SJ 887 828	800m
SJ 894 835	100m
SJ 898 835	130m
SJ 899 832	400m
SJ 901 838	0m
SJ 903 843	215m
SJ 904 847	420m
SJ 909 839	420m
SJ 910 839	430m
SJ 910 842	126m
SJ 912 843	0m
SJ 913 844	50m
SJ 934 861	130m
SJ 933 860	65m

### 3.2 Field Survey 2010

The following section contains a summary of the full great crested newt survey data from 2010 which has been adapted from the previous Great Crested Newt Report (Mouchel, 2012). Previous pond identification numbers have been transcribed to match the pond identification numbers used in the current assessment.

**Table 3.2 – Results of 2010 survey expressed as peak counts**

Pond number	HSI Score	Overall Peak Counts	Eggs Found	Population Size Class
18	0.60	0	No	Absent
44	0.81	16	Yes	Medium
55	0.77	5	No	Small
57	0.81	22	No	Medium
60	0.62	5	No	Small
65	0.86	16	No	Medium
66	0.70	2	No	Small
67	0.70	3	No	Small



Pond number	HSI Score	Overall Peak Counts	Eggs Found	Population Size Class
68	0.83	24	Yes	Medium
73	0.68	20	No	Medium
78	0.59	1	No	Small
79	0.75	3	No	Small
81	0.78	6	No	Small
90	0.62	0	No	Absent
91	0.63	4	No	Small
93	0.66	0	No	Absent
109	0.74	0	No	Absent
110	0.70	0	No	Absent
121	0.68	0	No	Absent
133	0.43	0	No	Absent
135	0.67	0	No	Absent
140	0.73	0	No	Absent
144	0.79	0	No	Absent
149	0.66	0	No	Absent
151	0.76	0	No	Absent
157	0.69	0	No	Absent
159	0.60	0	No	Absent
160	0.72	0	No	Absent
167	0.60	0	No	Absent
168	0.63	0	No	Absent
172	0.78	0	No	Absent
175	0.68	0	No	Absent
182	0.64	1	No	Small
190	0.69	0	No	Absent
194	0.66	0	No	Absent
196	0.73	0	No	Absent
197	0.66	6	No	Small
198	0.77	4	Yes	Small
203	0.83	9	No	Small
205	0.79	6	No	Small
206	0.67	3	Yes	Small
208	0.65	0	No	Absent
217	0.60	1	No	Small

Pond number	HSI Score	Overall Peak Counts	Eggs Found	Population Size Class
222	0.68	0	No	Absent
233	0.91	11	No	Medium
234	0.94	13	No	Medium
235	0.88	4	No	Small
236	0.90	7	No	Small
240	0.80	1	No	Small

**Table 3.3 - Summary of 2010 survey results by population size class**

Population Size Class	Number of Ponds
Absent	25
Small	19
Medium	7
Large	0
Unknown (denied access for survey)	2
<b>Total</b>	<b>49</b>

### 3.3 Field Survey 2013

#### 3.3.1 Habitat Suitability Assessment

Habitat Suitability Indices were recorded during 2013 for water bodies throughout the survey area. This data is located in Table 7.1 in Annex B.

A total of 254 waterbodies were identified within 500m of the scheme using maps, previous data and other sources, however, when visited, 58 of these ponds no longer existed and the locations were scoped out immediately. A further 35 were scoped out of further assessment as they were either; unsuitable for GCNs (fast flowing watercourses, large lakes), were disconnected from the scheme by unsuitable habitat or barriers to dispersal (road, rail, fast flowing watercourses, large areas of hardstanding), or were unable to be accessed due to landowner consent refusal. This left 147 ponds which were all subject to an HSI study. Nine of these ponds were surveyed from publicly accessible land, due to lack of landowner access consent, and therefore the effectiveness of the assessment for these Nine ponds may have been limited by lack of surveyor visibility.

Of the 147 ponds which were subject to an HSI, 101 scored 0.50 and above or were found within the redline boundary and were therefore subjected to surveys for great crested newt presence. Remaining ponds were excluded from the survey as they were either outside of the scheme zone of influence or landowner access was not provided.

### 3.3.2 Presence/Absence and Population Size Class Assessment

Peak counts of GCNs, results of egg searching and population size class calculation are displayed in Table 3.4 below. The maximum adult GCN count from a pond in one night (taken as the highest single count from six visits), can be used to estimate the population size class present (English Nature 2001). The maximum adult counts for each pond per night are presented in Table 3.3 below. This count has been determined within this study from bottle trapping or torching as these were the methods that produced the highest counts.

Assessment of population size determines the population class size present as either small, medium or large, as outlined in English Nature (2001) as follows:

- Small – maximum counts of up to 10 adults;
- Medium – maximum counts between 11 and 100 adults;
- Large – maximum counts of over 100 adults.

The results for the population class sizes are presented in Table 3.6 below. The basis for the use of these estimates is derived from historical knowledge of the absolute numbers of newts regularly present in areas and the returns of historical surveys of them, given that the level of survey effort specified within the guidelines were applied.

**Table 3.4 - Results of 2013 survey expressed as peak counts**

Pond number	HSI Score	Overall Peak Counts	Eggs Found	Population Size Class
29	0.55	7	Yes	Small
30	0.58	2	Yes	Small
31	0.65	1	Yes	Small
34	0.65	0	No	Absent
39	0.7	0	No	Absent
40	0.59	7	Yes	Small
42	0.56	6	Yes	Small
44	0.52	2	No	Small
47	0.47	0	No	Dried out during survey
48	0.73	7	Yes	Small
49	0.83	0	No	Absent
52	0.8	11	Yes	Medium
55	0.59	0	No	Absent
57	0.7	25	Yes	Medium
58	0.78	0	No	Absent
59	0.73	0	No	Absent

Pond number	HSI Score	Overall Peak Counts	Eggs Found	Population Size Class
60	0.54	1	No	Small
62	0.78	10	Yes	Small
63	0.54	0	No	Dried out during survey
64	0.57	0	No	Dried out during survey
65	0.67	1	No	Small
66	0.29	0	No	Absent
67	0.55	0	No	Absent
68	0.68	30	Yes	Medium
69	0.75	54	No	Medium
72	0.7	0	No	Absent
73	0.38	0	No	Absent
76	0.6	N/A	N/A	No Access
77	0.66	0	No	Dried out during survey
78	0.44	0	No	Absent
79	0.5	0	No	Absent
80	0.62	0	No	Absent
81	0.73	3	No	Small
83	0.63	0	No	Absent
84	0.71	0	No	Dried out during survey
85	0.51	0	No	Dried out during survey
87	0.67	0	No	Absent
88	0.52	0	No	Dried out during survey
89	0.29	0	No	Absent
90	0.31	0	No	Absent
91	0.44	0	No	Absent
92	0.62	0	No	Dried out during survey
94	0.31	0	No	Absent
101	0.45	0	No	Absent
103	0.59	0	No	Absent
105	0.78	3	No	Small
108	0.88	1	No	Small
110	0.45	N/A	N/A	No Access
111	0.8	2	No	Small
147	0.6	0	No	Absent
148	0.71	0	No	Absent

Pond number	HSI Score	Overall Peak Counts	Eggs Found	Population Size Class
149	0.76	0	No	Absent
150	0.33	N/A	N/A	No Access
152	0.76	0	No	Absent
153	0.39	N/A	N/A	No Access
157	0.68	1	No	Small
159	0.60	0	No	Absent
160	0.73	0	No	Absent
163	0.59	N/A	N/A	No Access
166	0.59	0	No	Absent
167	0.60	0	No	Absent
168	0.63	0	No	Absent
169	0.66	N/A	N/A	No Access
171	0.5	0	No	Absent
172	0.71	0	No	Absent
174	0.7	0	No	Absent
175	0.67	0	No	Absent
176	0.51	5	Yes	Small
180	0.8	1	No	Small
185	0.63	0	No	Absent
188	0.66	0	No	Absent
189	0.79	0	No	Absent
190	0.45	0	No	Absent
194	0.59	0	No	Absent
195	0.65	0	No	Absent
196	0.59	0	No	Absent
197	0.68	0	No	Absent
198	0.62	0	No	Absent
201	0.52	0	No	Absent
205	0.43	3	No	Small
206	0.43	0	No	Absent
208	0.58	0	No	Absent
214	0.58	0	No	Absent
215	0.54	0	No	Dried out during survey
216	0.75	0	No	Absent
217	0.61	0	No	Absent

Pond number	HSI Score	Overall Peak Counts	Eggs Found	Population Size Class
219	0.69	0	No	Absent
222	0.59	0	No	Absent
223	0.8	0	No	Absent
231	0.62	0	No	Absent
232	0.64	0	No	Dried out during survey
233	0.71	5	No	Small
234	0.82	5	No	Small
235	0.79	7	No	Small
236	0.73	6	Yes	Small
238	0.62	23	Yes	Medium
239	0.7	N/A	N/A	No Access
240	0.66	0	No	Absent
241	0.81	6	Yes	Small
259	0.8	12	No	Medium
260	0.61	0	No	Absent

**Table 3.5 - Summary of 2013 survey results by population size class.**

Population Size Class	Number of Ponds
Absent	55
Small	23
Medium	6
Large	0
Access denied for field surveys	7
Dried out during survey	10
<b>Total</b>	<b>101</b>

## 4 Discussion

### 4.1 Overview of findings

GCNs inhabit ponds along the length of the proposed scheme, with the ponds mainly located in two clusters; one in and around Styal golf club and the other in and around The Bramhall golf club. A comparison between the 2013 data and the data collected in 2010 indicates that great crested newt pond presence/absence and population abundance varies between ponds within the relevant metapopulation. Of the 29 occupied ponds, populations of newts were mainly classed as small (23 ponds) with some medium (6 ponds) and no ponds supporting high populations were recorded.

There is likely to be significant exchange of animals between clusters of ponds, as GCN function as metapopulations and maintenance of habitat connectivity, and the ability of animals to migrate, is a priority for the scheme's mitigation.

### 4.2 Potential impacts

Several ponds along the proposed route will be lost during construction. However, ponds also occur close to the scheme, and may be damaged if suitable protection measures are not put in place (e.g. by indiscriminate movements of plant, dumping of rubbish, construction pollution and run-off).

The major impacts of the scheme are likely to be direct damage to ponds and terrestrial habitat, including loss of foraging areas (grasslands, scrub/woodland) and migration corridors (hedgerows, other linear features). Also, the scheme itself will present a barrier to the migration of animals during construction, effectively isolating populations north of the working corridor from the south and vice versa. Works are likely to take place during the GCN's active season (February-October), and therefore the risk of significant impacts is high.

Individual GCNs could be killed or injured during clearance of ponds and terrestrial habitat for construction, and the removal of breeding ponds is likely to be a direct impact on the populations of these animals, and therefore likely to be considered an offence under the Conservation (Natural Habitats, &c) Regulations 1994 (as amended). In addition, the severance of migration corridors in proximity to ponds supporting breeding populations could also be considered an offence. Loss of terrestrial habitat in both these scenarios is likely to have significant effects on breeding GCNs. Because of the large scale of the development (~14km long), these impacts could affect GCNs at a county scale. Impacts are likely to be both temporary and permanent, and without mitigation are likely to be significant over the timescale of the development, with residual impacts.

Mitigation should focus on the creation of both aquatic and terrestrial habitats within the scheme boundary and should include protection of ponds close to the proposed scheme's development footprint, measures to protect GCNs in terrestrial habitats, and maintenance of the ability of GCNs to disperse from breeding ponds.

It is also recommended that habitats are allowed to regenerate naturally after construction has been completed, and that gaps in likely migration routes such as hedgerows should be repaired.

#### **4.3 Natural England Licensing**

Ponds are to be lost during construction, and several ponds are close to the works and also may be damaged or disturbed, and terrestrial habitat used by newts will be permanently affected. Therefore a European Protected Species (EPS) licence for the development will need to be obtained before any work can begin. This licence will cover work in areas of suitable terrestrial within 250m of ponds in which GCNs are present (English Nature, 2001). This distance represents the majority of habitat used by these animals away from ponds (Baker J.M. R. 1999).



## 5 Recommendations

### 5.1 Compensatory Ponds

Where ponds supporting great crested newt are to be lost, they should be replaced at a ratio of 2:1 within the scheme boundary. Prior to great crested newt translocation compensation ponds must be suitable for GCNs to inhabit. Compensation ponds should therefore be designed to appeal to great crested newt. Generally GCNs prefer ponds with the following characteristics:

- Surface area between 100m<sup>2</sup> and 300m<sup>2</sup>;
- Depth may vary; both deep (up to around 4m) and shallow ponds may be used;
- Occasional drying out is not a problem, even if this means a total loss of that year's larvae; the pond should hold water throughout at least one summer in every 3 years;
- Substantial cover of submerged and marginal vegetation;
- Open areas to facilitate courtship behaviour;
- Good populations of invertebrates and other amphibians, for prey;
- Ponds in clusters, rather than in isolation;
- Absence of shading on the south side,;
- Absence of fish; and
- Absence or low density of waterfowl.

The compensatory ponds should be located as close as possible to the ponds lost. The great crested newt populations of the compensatory ponds should be monitored for a minimum of 4 years to assess whether the population has responded favourably to the mitigation, and to inform on-going habitat management.

### 5.2 Wildlife tunnels

The scheme, when operational, may prevent a barrier to newt migration. To mitigate this impact wildlife tunnels will be constructed to encourage newt movement from one side of the scheme to the other. Fencing and vegetation should be used to channel newt towards the tunnels.

### 5.3 Protection of ponds

Where ponds supporting GCNs fall close to the working corridor (i.e. up to ~25 metres, or where a significant risk has been identified) and may receive impacts, they should be protected. An ecological clerk of works should be present with the power to stop work if activities likely to impact a pond are identified. If necessary, ponds could be protected from damage by machinery by suitable fencing.

Pollution of ponds with rubbish, sediment and other agents should be prevented also. Pollution Prevention Guidance (PPG) 5 “Works and maintenance in or near water” (issued by the Environment Agency; [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)) should be followed to prevent this, with potentially damaging activities monitored by an ecological clerk of works.

## **5.4 Terrestrial habitat**

### **5.4.1 Capture and exclusion**

Suitable terrestrial habitat within the works corridor, and within 250m of ponds (English Nature, 2001) known to support GCNs should be subjected to a programme of capture and exclusion to remove animals. This should be carried out under a Natural England EPS development licence and before construction begins, but during the active season for great crested newt (February-October).

Areas that may support animals including grasslands, scrub, woodland and hedgerows should be fenced with herpetile fencing to enclose them and pitfall traps/artificial refugia placed on the inside edge to capture them. Sections of “drift fencing” (fencing placed to intercept newts moving through the middle of a parcel of land rather than at its edge) should be erected within the enclosed areas to increase the ability of the scheme to capture animals.

Pitfall traps should be placed at densities between 50 and 80 traps per hectare (for small and medium populations respectively as found during survey), with refugia in the form of carpet tiles or 2m x 1m sections of roofing felt placed where appropriate throughout the land parcel to increase the rate of capture. Capture should proceed for 30 suitable nights (as defined in by English Nature 2001) where small populations are affected and 60 suitable nights where medium populations are affected. Pitfall traps should be fitted with mammal ladders to prevent non-target species from becoming trapped.

Animals should be released into suitable terrestrial habitat bordering the scheme where written consent for this has been obtained, and where this habitat will remain in place in the long-term.

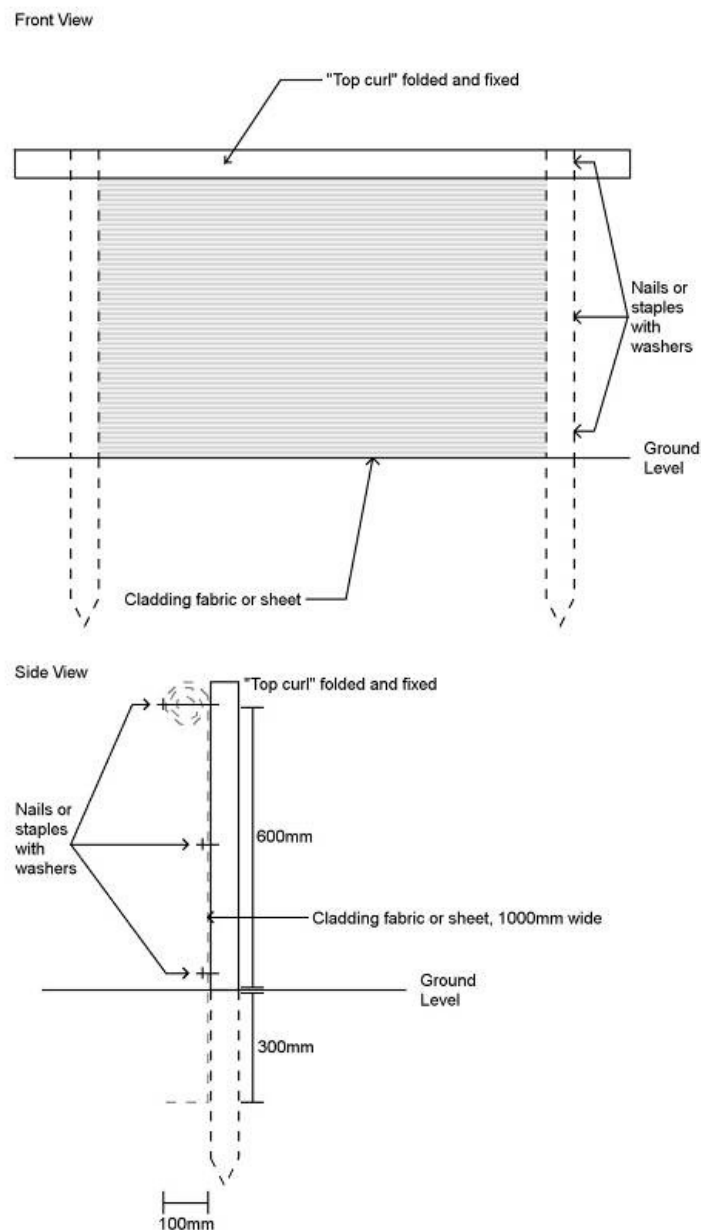
Once clear of animals, areas should be cleared of vegetation to bare earth under supervision of an ecologist to make sure GCNs do not return if damage to fencing occurs. Also, any rabbit or other mammal burrows should be dug up by hand to reveal any newts within these refuges.

### **5.4.2 Fencing design**

This should be based on the use of a polythene membrane that is partially buried, the exposed part being supported by timber stakes (

Figure **5.4.1**). The membrane should be of a UV stabilised material to extend its life (usually to a maximum of two years). This should be buried in the ground to a depth of 200mm minimum, with a 100mm right angle return along the base of the trench to minimise the possibility of animals finding their way under the fence through unconsolidated material. This 'underlap' should be running away from the area that is to be cleared and into the habitat area, so as to prevent animals from coming into the site to be excluded.

Figure 5.4.1 - Indicative fencing design based on Wildlife Fencing Design Guide, CIRIA (2006).



The trench should be backfilled and where applicable, the turfs placed upside down to inhibit vegetation growth. All backfill material should be well compacted to ensure that no voids are left into which animals may climb. This may allow for their passage under the fence, or provide them with useful habitat in which to hide during dry or cold spells, so making the exclusion process more difficult.

Timber stakes, usually 37x37 or 50x50mm and from 1000 to 1200mm in length are driven into the ground along the inside line of the fence i.e. that side from which newts are being excluded. Spacing on the stakes is usually 1500mm. The stakes may be tanalised or not depending upon the time due to be spent in the ground. The polythene membrane should be attached to the stakes using screws, nails or staples through a plastic washer of approx. 20-25mm in diameter. There should be a minimum of three fixings per post. Along the top edge

of the membrane, the plastic should be rolled over two or three times to create a 'tube' along the top of the membrane. The top fixing should be through this roll. This provides a very secure fixing point to the top of the membrane as well as creating an overlap to prevent animals climbing over the fence. Every effort should be made to ensure that the membrane is as taut as possible to reduce the number of creases in it, and so minimise points of weakness that may be exploited by animals or the elements.

Fencing should be maintained for the duration of construction works (see below), if necessary fitting gates to allow entry/exit of personnel and machinery. Any gaps in the fence that may occur due to damage or general wear and tear should be fixed immediately.

### **5.5 Migration routes**

GCNs are likely to migrate towards the working area in an attempt to reach ponds or terrestrial habitat. A large part of the working corridor will be fenced through construction, effectively preventing migration from one side to the other, and therefore a programme of translocation is proposed to facilitate movement of these animals and allow proper metapopulation function.

Pitfall traps should be installed at 10 metre intervals on the external edge of the fenced areas to capture great crested newt. These will then be moved daily by an ecologist holding a great crested newt survey licence (and under a Natural England EPS development licence) from one side of the scheme to the other to simulate migration (Natural England, 2001).

### **5.6 Compensatory terrestrial habitat**

Grassland and other terrestrial habitat should be compensated for by recreating the correct soil profile (i.e. not mixing sub-soil and top-soil) and leaving it to naturally regenerate from the retained seed bank. This will ensure any natural diversity within the area is maintained. Any permanent loss of terrestrial habitat should be replaced with areas of terrestrial habitat of the same size. This should be established before newts are allowed to re-enter the site.

Hedgerows should be replanted and replaced with the dominant species that currently forms them. Other areas where vegetation has been cleared, such as on riparian margins, should be replanted under advice from the EA or Natural England.

In addition to the above, artificial refugia in the form log and brash piles should be placed within the scheme boundary habitat compensation areas to encourage newts to use these areas.

### **5.7 Pond creation**

The proposed scheme mitigation strategy includes the creation of several new ponds within the scheme boundary. While these are not designed specifically GCNs to breed in they may provide opportunities for migrating newts as well as other amphibians.

## 6 References

- IEEM (2006). Guidelines for ecological impact assessment in the United Kingdom. Institute of Ecology and Environmental Management, Winchester.
- English Nature (2001). Great crested newt mitigation guidelines. English Nature, Peterborough.

## 7 Annexes

## Annex A – 2013 Survey Results

Please see Figures 11C.1 to 11C.8



## Annex B – 2013 HSI Results

Table 7.1 - Summary of results of habitat suitability index study

Pond Number 2013	X Coordinate	Y Coordinate	Separated from scheme by barrier to dispersal?	HSI Score	Pond suitability category for GCN presence	Presence Absence Survey Required
1	381693	385844	Yes	0	Does not exist	No
2	381894	386231	Yes	0	Outside of zone of influence of scheme. No earthworks in this area.	No
3	381900	385679	Yes	0	Does not exist	No
4	382071	385773	Yes	0	Does not exist	No
5	382135	385922	Yes	0	Outside of zone of influence of scheme. No earthworks in this area.	No
6	382146	385665	Yes	0	Fast flowing water. Not considered further.	No
7	382174	385813	Yes	0	Does not exist	No
8	382245	385714	Yes	0	Outside of zone of influence of scheme. No earthworks in this area.	No
9	383170	385085	Yes	0	Does not exist	No
10	383330	384809	Yes	0	Could not access for HSI. Pond is on opposite side of railway line from scheme. Not considered further.	No
11	383456	385020	Yes	0	Could not access for HSI. Pond is on opposite side of railway line from scheme. Not considered further.	No
13	383536	384135	Yes	0	Could not access for HSI. Pond is on opposite side of railway line from scheme. Not considered further.	No
14	383548	384104	Yes	0	Could not access for HSI. Pond is on opposite side of railway line from scheme. Not considered further.	No

Pond Number 2013	X Coordinate	Y Coordinate	Separated from scheme by barrier to dispersal?	HSI Score	Pond suitability category for GCN presence	Presence Absence Survey Required
15	383585	385096	Yes	0	Does not exist.	No
16	383666	383653	Yes	0	Pond is on opposite side of railway line from scheme. Not considered further.	No
17	383682	385033	Yes	0	Does not exist	No
18	383689	385161	No	0.52	Below Average - in area isolated with no other newt ponds	No
19	383732	384966	Yes	0	Does not exist	No
20	383736	385134	Yes	0	Does not exist.	No
21	383756	384024	Yes	0	Pond is on opposite side of railway line from scheme. Not considered further.	No
22	383756	385257	No	0.41	Poor - in area isolated with no other newt ponds	No
23	383794	383265	Yes	0	Pond is on opposite side of railway line from scheme. Not considered further.	No
24	383805	383778	Yes	0	Pond is on opposite side of railway line from scheme. Not considered further.	No
25	383865	384515	Yes	0	Pond is on opposite side of railway line from scheme. Not considered further.	No
26	383914	383683	Yes	0	Pond is on opposite side of railway line from scheme. Not considered further.	No
27	383921	383820	Yes	0	Pond is on opposite side of railway line from scheme. Not considered further.	No
28	384017	384151	No	0.27	Poor. Not suitable for GCN. Not considered further.	No
29	384098	383891	No	0.55	Below Average	Yes
30	384098	383839	No	0.58	Below Average	Yes
31	384157	383683	No	0.65	Average	Yes
32	384160	383006	Yes	0	Pond is on opposite side of railway line from scheme. Not considered further.	No
33	384171	384532	No	0	Does not exist	No
34	384172	384831	No	0.65	Average	Yes

Pond Number 2013	X Coordinate	Y Coordinate	Separated from scheme by barrier to dispersal?	HSI Score	Pond suitability category for GCN presence	Presence Absence Survey Required
35	384175	384269	No	0	Does not exist	No
36	384178	384109	No	0	Does not exist	No
37	384181	384406	No	0	Does not exist	No
38	384194	384819	No	0	Does not exist	No
39	384196	384433	No	0.7	Good	Yes
40	384214	383787	No	0.59	Below Average	Yes
41	384217	384418	No	0	Does not exist	No
42	384249	383988	No	0.56	Below Average	Yes
			Yes		Pond is on opposite side of road from scheme. Not considered further.	
43	384254	383464		0		No
44	384254	384124	No	0.52	Below Average	Yes
			Yes		Pond is on opposite side of railway line from scheme. Not considered further.	
45	384266	385653		0		No
46	384273	385364	No	0	Does not exist.	No
47	384289	384524	No	0.47	Poor	Yes
48	384294	383634	No	0.73	Good	Yes
49	384297	383780	No	0.83	Excellent	Yes
			Yes		Pond is on opposite side of road from scheme. Not considered further.	
50	384309	383280		0		No
51	384320	384848	No	0	Does not exist.	No
52	384324	384426	No	0.8	Excellent	Yes
			Yes		Could not access for HSI. Pond is on opposite side of railway line from scheme. Not considered further.	
53	384330	383027		0		No
54	384351	384819	No	0	Does not exist.	No
55	384354	384037	No	0.59	Below Average	Yes
56	384391	384857	No	0	Does not exist.	No
57	384409	384348	No	0.7	Good	Yes
58	384420	384456	No	0.78	Good	Yes
59	384422	383863	No	0.73	Good	Yes
60	384457	384346	No	0.54	Below Average	Yes
61	384462	384641	No	0	Does not exist	No
62	384467	383792	No	0.78	Good	Yes
63	384467	384689	No	0.54	Below Average	Yes
64	384467	384667	No	0.57	Below Average	Yes
65	384493	384139	No	0.67	Average	Yes
66	384507	384085	No	0.29	Poor	Yes
67	384526	384470	No	0.55	Below Average	Yes

Pond Number 2013	X Coordinate	Y Coordinate	Separated from scheme by barrier to dispersal?	HSI Score	Pond suitability category for GCN presence	Presence Absence Survey Required
68	384550	384439	No	0.68	Average	Yes
69	384575	383603	No	0.75	Good	Yes
70	384580	383499	Yes	0	Pond is on opposite side of road from scheme. Not considered further.	No
71	384601	383247	Yes	0	Pond is on opposite side of road from scheme. Not considered further.	No
72	384609	384209	No	0.7	Good	Yes
73	384617	383996	No	0.38	Poor	Yes
74	384630	384220	No	0	Does not exist	No
75	384632	383580	Yes	0	Pond is on opposite side of road from scheme. Not considered further.	No
76	384686	383754	No	0.6	Average	Yes
77	384691	383934	No	0.66	Average	Yes
78	384700	384400	No	0.44	Poor	Yes
79	384731	384011	No	0.5	Below Average	Yes
80	384789	384398	No	0.62	Average	Yes
81	384815	384137	No	0.73	Good	Yes
82	384832	383504	Yes	0	Pond is on opposite side of railway line from scheme. Not considered further.	No
83	384876	384322	No	0.63	Average	Yes
84	384952	384389	No	0.71	Good	Yes
85	385009	384293	No	0.51	Below Average	Yes
86	385016	384546	No	0	Does not exist	No
87	385074	384242	No	0.67	Average	Yes
88	385176	384757	No	0.52	Below Average	Yes
89	385207	384246	No	0.29	Poor	Yes
90	385252	384583	No	0.31	Poor	Yes
91	385300	384400	No	0.44	Poor	Yes
92	385307	384794	No	0.62	Average	Yes
93	385391	384754	No	0.44	Poor	Yes
94	385391	384707	No	0.31	Poor	Yes
95	385602	384620	Yes	0	Isolated pond in poor habitat	No
96	386121	384925	No	0	No access	No
97	386140	384750	No	0	Does not exist	No
98	386194	384886	No	0	No access	No
99	386196	384407	Yes	0	Isolated in poor habitat. Not within scheme zone of influence.	No

Pond Number 2013	X Coordinate	Y Coordinate	Separated from scheme by barrier to dispersal?	HSI Score	Pond suitability category for GCN presence	Presence Absence Survey Required
100	386198	384830	No	0	No access	No
101	386213	385073	No	0.45	Poor	Yes
102	386378	385008	No	0	Does not exist.	No
103	386676	384789	No	0.59	Below Average	Yes
105	386732	384899	No	0.78	Good	Yes
108	386745	384775	No	0.88	Excellent	Yes
110	386757	385022	No	0.45	Poor	Yes
111	386768	384804	No	0.8	Excellent	Yes
114	386976	384327	No	0	Does not exist	No
115	386981	384600	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
116	387135	384350	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
117	387139	384518	No	0	Does not exist	No
118	387306	383883	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
119	387320	383815	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
120	387544	383446	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
121	387572	384000	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
122	387615	383794	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
123	387743	383396	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
124	387772	383569	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
125	387856	383635	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No

Pond Number 2013	X Coordinate	Y Coordinate	Separated from scheme by barrier to dispersal?	HSI Score	Pond suitability category for GCN presence	Presence Absence Survey Required
127	388021	383805	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
128	388069	383398	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
129	388071	383680	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
130	388072	383500	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
131	388139	383581	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
132	388172	383389	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
133	388231	383761	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
134	388285	383433	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
135	388293	383672	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
136	388294	384085	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
137	388425	383253	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
138	388428	383543	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
139	388459	384013	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No

Pond Number 2013	X Coordinate	Y Coordinate	Separated from scheme by barrier to dispersal?	HSI Score	Pond suitability category for GCN presence	Presence Absence Survey Required
140	388519	383370	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
141	388672	383844	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
142	388693	383304	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
143	388723	383883	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
144	388854	383185	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
145	389147	383197	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
146	389243	383146	No	0	Outside of zone of influence of scheme. No earthworks in this area.	No
147	389441	383598	No	0.6	Average	Yes
148	389452	383559	No	0.71	Good	Yes
149	389643	383459	No	0.76	Good	Yes
150	389662	383227	No	0.33	Poor	Yes
151	389715	383669	No	0	Does not exist	No
152	389754	383324	No	0.76	Good	Yes
153	389811	383579	No	0.39	Poor	Yes
154	389849	383780	No	0	Does not exist	No
155	389872	383000	No	0.42	Poor	Yes
156	389917	383533	No	0	Does not exist	No
157	389919	383706	No	0.68	Average	Yes
158	389941	382891	No	0	Does not exist	No
159	389943	383069	No	0.6	Average	Yes
160	389954	383206	No	0.73	Good	Yes
161	390050	384083	No	0.43	Poor	Yes
162	390052	384126	No	0.43	Poor	Yes
163	390074	384019	No	0.59	Below Average	Yes
164	390105	382983	No	0	Does not exist	No
165	390114	384213	No	0	Does not exist	No
166	390124	383224	No	0.59	Below Average	Yes
167	390143	383159	No	0.6	Average	Yes

Pond Number 2013	X Coordinate	Y Coordinate	Separated from scheme by barrier to dispersal?	HSI Score	Pond suitability category for GCN presence	Presence Absence Survey Required
168	390178	383074	No	0.63	Average	Yes
169	390181	383854	No	0.66	Average	Yes
170	390201	383194	No	0	Does not exist	No
171	390204	383191	No	0.5	Below Average	Yes
172	390231	383294	No	0.71	Good	Yes
173	390235	383006	No	0.38	No Access	No
174	390248	384424	No	0.7	Good	Yes
175	390278	383306	No	0.67	Average	Yes
176	390343	384378	No	0.51	Below Average	Yes
177	390355	384049	No	0	Does not exist	No
178	390505	384815	No	0	Does not exist	No
179	390531	384912	No	0.32	No Access	No
180	390541	384461	No	0.8	Excellent	Yes
181	390548	384666	No	0	Does not exist.	No
182	390589	384619	No	0	Does not exist	No
183	390596	384664	No	0	Does not exist.	No
184	390603	384708	No	0	Does not exist.	No
185	390644	384228	No	0.63	Average	Yes
186	390665	384227	No	0	Does not exist	No
187	390731	384483	No	0	Fast flowing water. Not considered further.	No
188	390731	384511	No	0.66	Average	Yes
189	390756	384491	No	0.79	Good	Yes
190	390763	384107	No	0.45	Poor	Yes
191	390793	384919	No	0	Does not exist	No
192	390817	384992	No	0	Does not exist	No
193	390888	384508	No	0	Does not exist.	No
194	390959	383948	No	0.59	Below Average	Yes
195	390969	384107	No	0.65	Average	Yes
196	391000	384227	No	0.59	Below Average	Yes
197	391022	383965	No	0.68	Average	Yes
198	391067	384083	No	0.62	Average	Yes
199	391104	384133	No	0	Does not exist	No
200	391105	383839	No	0.49	Poor	Yes
201	391108	385044	No	0.52	Below Average	Yes
202	391114	384546	No	0	Does not exist	No
203	391156	384156	No	0	Does not exist	No
204	391178	384273	No	0	Does not exist	No
205	391189	384260	No	0.43	Poor	Yes
206	391241	384402	No	0.43	Poor	Yes
207	391243	384794	No	0.38	No Access	No
208	391383	384486	No	0.58	Below Average	Yes
209	391406	384875	No	0.4	No Access	No
210	391423	384473	No	0	Does not exist	No
211	391424	384832	No	0.42	No Access	No



Pond Number 2013	X Coordinate	Y Coordinate	Separated from scheme by barrier to dispersal?	HSI Score	Pond suitability category for GCN presence	Presence Absence Survey Required
212	391465	385111	No	0	Does not exist	No
213	391500	384800	No	0.48	No Access	No
214	391597	385016	No	0.58	Below Average	Yes
215	391627	384978	No	0.54	Below Average	Yes
216	391696	385646	No	0.75	Good	Yes
217	391722	384733	No	0.61	Average	Yes
218	391794	384560	No	0	Does not exist	No
219	391825	384589	No	0.69	Average	Yes
220	391964	384666	No	0	Does not exist.	No
221	391966	384701	No	0	Does not exist.	No
222	392202	385427	No	0.59	Below Average	Yes
223	392252	385438	No	0.8	Excellent	Yes
224	392339	384735	No	0	Large lake not suitable to support newts	No
225	392352	385450	No	0	Does not exist	No
226	392419	384784	No	0.76	No Access	No
227	392548	385135	No	0.47	No Access	No
228	392604	384786	No	0.84	No Access	No
229	392965	385202	No	0	Fast flowing water. Not considered further.	No
230	393015	385010	No	0	Does not exist.	No
231	393413	385984	No	0.62	Average	Yes
232	393533	385997	No	0.64	Average	Yes
233	393575	386052	No	0.71	Good	Yes
234	393587	385978	No	0.82	Excellent	Yes
235	393668	386063	No	0.79	Good	Yes
236	393700	386000	No	0.73	Good	Yes
237	393840	385823	No	0	Does not exist	No
238	393981	386300	No	0.62	Average	Yes
239	394092	385896	No	0.7	Good	Yes
240	394297	385586	No	0.66	Average	Yes
241	394439	385308	No	0.81	Excellent	Yes
242	392965	385202	Yes	0	Other side of railway line	No
243	393015	385010	No	0	Does not exist	No
244	393413	385984	No	0	Does not exist	No
245	393533	385997	Yes	0	Isolated from scheme by road.	No
248	393668	386063	No	0.46	Poor	No
249	393700	386000	Yes	0	Isolated from scheme.	No
250	393840	385823	No	0	Does not exist	No
251	393981	386300	No	0	Fast flowing water. Not considered further.	No

Pond Number 2013	X Coordinate	Y Coordinate	Separated from scheme by barrier to dispersal?	HSI Score	Pond suitability category for GCN presence	Presence Absence Survey Required
252	394092	385896	No	0.23	Pond is on opposite side of railway line from scheme. Not considered further.	No
253	394297	385586	No	0.3	Outside of zone of influence of scheme.	No
254	394439	385308	No	0.33	Outside of zone of influence of scheme.	No
255	386140	385099	No	0.43	Outside of zone of influence of scheme.	No
256	386237	385105	No	0.37	Outside of zone of influence of scheme.	No
257	386506	385049	No	0.53	Outside of zone of influence of scheme.	No
258	390490	384752	No	0.76	Outside of zone of influence of scheme.	No
259	389783	383809	No	0.8	Excellent	Yes
260	384687	384687	No	0.61	Average	Yes

## Annex C – Legislation, Planning Policy and Guidance

### Legislation

The following pieces of national legislation are considered of relevance to the current scheme:

- Conservation of Habitats and Species Regulations 2010;
- Wildlife and Countryside Act 1981 (as amended);
- Countryside and Rights of Way (CROW) Act 2000;
- Natural Environment and Rural Communities (NERC) Act 2006.

Great crested newt are fully protected under the Conservation of Habitats and Species Regulations 2010 through designation as a European Protected Species (EPS).

This legislation makes it an offence to deliberately capture, kill or disturb great crested newt. Disturbance is defined as that likely to: i) impair the ability for any wild animals of a EPS species to survive, to breed or reproduce, or to rear or nurture their young, and in the case of animals of a hibernating or migratory species, to hibernate or migrate; and, ii) any disturbance to wild animals of a EPS species which is likely to affect significantly the local distribution or abundance of the species to which they belong. Both of these disturbance definitions relate to individuals of an EPS species. It is also an offence under these Regulations to damage or destroy and/or obstruct access to a breeding site or resting place of this species. This legislation applies to all life stages of great crested newt, including eggs.

Many actions connected with development which would otherwise be an offence under this legislation can be carried out under a licence from Natural England. The decision to grant a licence is discretionary upon that body and will often involve adherence to certain conditions on working methods and timing.

It may be possible to apply for a licence from Natural England to allow activities that would otherwise be an offence under these Regulations. However, it is then an offence to breach a condition of that licence.

The great crested newt also receives some protection through inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This legislation protects a great crested newt from intentional or reckless disturbance when using places or structures that are used for protection or shelter and also protects the animals from being obstructed from entering such places.

Great crested newt are also included on Annex II of the EC Habitats Directive (1992) and so should be considered with respect to Part II of the Conservation of Habitats and Species Regulations 2010. While this does not confer any direct legal protection, locations supporting

significant populations of great crested newt can be designated as Special Areas of Conservation (SAC).

### **Planning policies and guidance**

#### *PPS 9; Biodiversity and Geological Conservation.*

National Planning Policy on the protection of biodiversity and geological conservation is set out in Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9) (ODPM 2005). National Planning Policy requires projects to achieve biodiversity benefits, not simply to avoid negative impacts.

Paragraph 1(i) of PPS9 states that '*... planning decisions should be based upon up-to-date information about the environmental characteristics of their areas. These characteristics should include relevant biodiversity and geological resources of the area. In reviewing environmental characteristics local authorities should assess the potential to sustain and enhance those resources*'.

Paragraph 1(ii) of PPS9 states that '*Planning policies and planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests. In taking decisions, local authorities should ensure that appropriate weight is attached to designated sites of international, national and local importance; protected species; and to biodiversity and geological interests within the wider environment*'

Paragraph 1 (vi) of PPS 9 states that, '*The aim of planning decisions should be to prevent harm to biodiversity.... Where a planning decision would result in significant harm to biodiversity and geological interest that can not be adequately mitigated against, appropriate compensation measures should be sought. If significant harm cannot be prevented, adequately mitigated against, or compensated for, than planning permission should be refused*'.

Paragraphs 6-12 of PPS 9 outline guidance on the protection, conservation and enhancement of sites of 'biodiversity conservation value' including international sites such as SACs and SPAs in Paragraph 6, national sites, such as Sites of SSSIs, in Paragraphs 7 and 8, and local sites, such as LNRs, in Paragraph 9. Paragraph 9 also makes reference to non-statutory designated local wildlife sites. Paragraph 10 and 11 offer guidance to competent authorities consider and conserve areas of ancient woodland, veteran trees and habitat types listed as being of principal conservation importance<sup>2</sup> when determining a planning application.

Paragraph 14 of PPS9 states that, '*Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments.*'

Paragraph 15 of PPS9 acknowledges the statutory protection of many individual wildlife species and Paragraph 16 states that, '*Planning authorities should also ensure that other species [those of principal importance for conversation of biodiversity in England) are also*

*protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result, unless the need for, and benefits of, the development clearly outweigh that harm’.*

### **Conservation Status**

The EC Habitats Directive (Article 1, sections (e) and (i)) offers a definition of conservation status for species:

‘the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area’.

The definition implies that two factors are paramount when assessing the conservation status of a species: (1) threat (a decline in abundance and/or distribution/range) and (2) rarity (limited abundance and/or distribution/range).

The great crested newt is thought to be declining in the UK and throughout Europe due to extensive habitat loss, isolation and degradation (English Nature 2001; JNCC 2003).

Consequently, the great crested newt is listed as a UK and Greater London Biodiversity Action Plan (BAP) priority species. The BAPs aim to maintain the current range, distribution and viability of existing populations of great crested newt throughout the country (UK BAP).

BAP priority species are those that the UK Central and Local Governments have a particular responsibility to conserve for the good of international biodiversity conservation, as agreed at the 1992 Rio Conference on Biological Diversity. Such species lists do not necessarily overlap completely with rarity or threat lists.

Within England, the great crested newt is not considered a nationally rare or threatened species (it is listed as being of Least Concern i.e. a widespread and abundant taxa - see [www.jncc.gov.uk](http://www.jncc.gov.uk)). The JNCC (2006) state that, “the total UK population is relatively large and is distributed over sites that vary greatly in their ecological character. One estimate has put the national population at around 400,000 animals in 18,000 sites”. Furthermore, the species is still relatively common and widespread in the south of England.

## Appendix 11D: Otter Survey

# A6 to Manchester Airport Relief Road: Otter survey report

27 January 2012

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## Executive Summary

Scheme description and location	A6 to Manchester Airport relief road, part of the south-east Manchester multi-modal strategy, or SEMMMS. The proposed scheme passes through the Stockport area south of Manchester, and links the A6 near Poynton to Manchester International Airport via the A555 Manchester International Airport Eastern Link road.
Previous studies and background	Ecological surveys were undertaken by Penny Anderson Associates in 2007 to support a previous planning application for the proposed scheme. The current surveys have been undertaken to support a new planning application for the scheme under a revised layout.
Current study	Otter survey, comprising a desk study and detailed field survey. The value of the survey area to otters was assessed, and likely ecological and/or legal constraints posed by otters and their resting sites identified. Recommendations for further work to discharge these constraints have been made.
Results and discussion	<p>Field signs of otters were absent from the study area, however a single potential resting site was located on the Lady Brook. It is uncertain whether this site, a hollow under a tree which could be an otter holt (underground resting site), is currently in use, and therefore whether it poses a constraint to development.</p> <p>Other water courses, including the Norbury Brook, showed no evidence of otters or their resting sites.</p>
Conclusions and recommendations	<p>It is unclear whether the site identified during survey is used by otters and therefore whether it currently constitutes a resting site. Further work in the form of a camera trapping study has been recommended to remove this uncertainty.</p> <p>An evaluation based on current knowledge is given.</p>

# 1 Introduction

## 1.1 Background

Stockport Metropolitan Borough Council (SMBC), Manchester City Council (MCC) and Cheshire East Council (CEC) are working as a consortium to promote the construction of a strategic relief road from the A6 to Manchester International Airport. The proposed scheme is part of the south-east Manchester multi-modal strategy, or SEMMMS, and involves the introduction of a 14 km dual carriageway between the A6 and the airport. 10 kilometres of the relief road would comprise new sections of dual carriageway. A central 4km section of the relief road would comprise the previously constructed A555 Manchester International Airport Eastern Link road (MAELR) south of Bramhall.

This report details the results of otter surveys undertaken in 2011 to support the proposed scheme's Environmental Impact Assessment (EIA), in preparation for a submission for planning permission.

## 1.2 Study area

The study area comprised rivers and streams crossing the proposed scheme's proposed construction boundary from the A6 in the east (grid reference SJ 934859) to Manchester International Airport in the west (grid reference SJ 817857). The main features included within the survey were the Norbury Brook close to the A6, and the Lady Brook which crosses the scheme at Poynton Lake. A number of smaller drains and water courses were also included within the study area.

## 1.3 Study aims and objectives

The aim of the study was to determine the value of the study area for otters, in order to inform an assessment of ecological impacts upon this species. This aim is achieved through an analysis of readily available records of otters and sites designated for their protection, and data obtained from field surveys. The study's objectives set to achieve its aim are:

- review otter records from readily available online sources and locations of sites designated for the protection of otters;
- undertake field surveys to determine whether otters are present within the study area and where key sites for their ecology (e.g. resting sites) are;
- analyse data from both sources to provide an estimate of the value of the study area for otters.

The conclusions of the study have resulted in the production of recommendations for compliance with nature conservation legislation and planning policy. Where it has been determined further data is required to ensure compliance, additional work has been recommended.

## 2 Methodology

### 2.1 Desk study

A desk study was undertaken to identify designated sites of importance to otters, including statutory and non-statutory sites relevant, within the study. In addition, biological records were consulted to determine whether the species occurs in the area. The following web-based sources were used:

- Multi-Agency Geographic Information for the Countryside (MAGIC) website ([www.magic.defra.gov.uk](http://www.magic.defra.gov.uk)) – information provided here covered the location of any European protected or nationally protected sites; and
- National Biodiversity Network (NBN) (<http://data.nbn.org.uk>) – information provided here covered localised species records.

### 2.2 Field survey

Rivers, streams and other watercourses (field drains, ditches, reedbeds etc) within the study area were subject to walkover surveys to determine the presence/likely absence of otters. Two rivers, Lady Brook and Norbury Brook, were identified as suitable for supporting otters and were the focus of survey efforts. Other watercourses within the study area were also checked. Surveyors walked 200m upstream and downstream from the location of the proposed scheme, searching for evidence of otters or their resting places on and adjacent to the banks of the rivers.

A wide range of field signs are left by otters, and the following signs were searched for as the best evidence of otter presence:

- **Spraints** (piles of faecal matter which serve as a territorial marker) - these have a characteristic texture, colour and smell and are placed in highly visible positions by otters to mark their territories;
- **paw prints** – in soft mud or sand on river banks or at meanders;
- **feeding remains** – fish scales, bones etc;
- **resting places** – holts (underground burrows used by otters) and couches (vegetation flattened into a characteristic structure for sleeping on);
- **commuting routes** - paths within the vegetation, slides etc; and
- **direct sightings of otters themselves.**

The otter is a highly territorial mammal and will maintain large territories in which to feed, rest and breed. Spraints are deposited in prominent and visible positions within territories such as on rocks in the middle of water courses or on fallen trees near the edges of rivers. Otters use holts; holes and tunnels in the ground, couches; open spaces under the cover of vegetation

and natal dens; spaces which provide females with space to give birth and raise young as their places of rest and as breeding sites. Such sites can be located directly in the banks of rivers, within the roots of trees near to river banks or even under cover of vegetation some distance from any water course, and are usually accompanied by paths through the vegetation from a nearby watercourse. Resting places can be difficult to identify as belonging to otter, but this can be confirmed by the presence of large numbers of spraint sites in the vicinity.

The field survey was repeated four times to take into account changes in use by otters than may occur over time. Visits were spaced between February and May 2011, and days following recent rain were avoided as this could wash away spraint sites and footprints, thus under recording otter evidence.

### 2.3 Evaluation

The Institute of Ecology and Environmental Management evaluation system proposed in IEEM (2006) was used to determine the value of the study area for otters. (The system is based on Ratcliffe's SSSI Nature Conservation Review (Ratcliffe 1977) which is a standard work on the evaluation of ecological resources in the UK.) Specific criteria against which the site's value for otters has tested include:

- Habitat size, shape, diversity (e.g. mosaics, mono-cultures) and connectivity;
- Physical conditions (e.g. natural, semi-natural, buildings/hard standing);
- Rarity and typicalness; and
- Potential and intrinsic value, ease of re-creation.

Values were categorised in the following geographical context, in accordance with the guidelines:

- international;
- UK;
- national (i.e. England in this case);
- regional;
- County (Kent/Surrey in this case);
- district (borough-level);
- local or Parish; and
- within zone of influence only (i.e. the project site and its immediate surroundings)

## 3 Results

### 3.1 Desk study

Records of otter presence from within the last ten years were found in the vicinity of the proposed scheme, the most recent of which were recorded in 2009 within the 10km<sup>2</sup> national grid square SJ98. This hectad contains both the Lady and Norbury Brooks. Thus desk study data indicated that otters could be present within the study area.

The MAGIC website identified no designated sites which are known to support otter within 2km of the proposed scheme.

### 3.2 Field survey

Surveys of both the Norbury Brook and Lady Brook revealed no signs of otters using the these rivers. Spraint sites were absent, as were paw prints and other evidence of current usage.

A single site within the study area was identified which appeared to be a resting site for otters; a burrow which may form a holt under the roots of a tree adjacent to the Lady Brook (Figure 11D.1). This site contained dried grass and leaves that had clearly been dragged in, and the likely function of this material was as bedding for the animal occupying the area. Paths lead to and from the site to the Lady Brook.

*Figure 3.1 – Otter resting site identified within the study area at the Lady Brook.*





The location of the resting site is shown in Figure 11D.1.

Although otters use different types of resting places (just some include their own holts dug into banks, rabbit warrens they have taken over and converted to holts or spaces between boulders and in exposed rock), holts under exposed tree roots are often found with evidence of otter use. This site has large “otter sized” paths leading towards the tree and the burrow underneath that could have been created by an otter. However, no spraint sites were found close-by; this suggests the site could be disused.

## 4 Discussion and recommendations

### 4.1 Evidence of otters within the watercourses

Surveys found little evidence of otter presence from within the survey area. However, a single potential otter holt, a burrow formed of a small tunnel and chamber underneath the roots of a tree, was found on the banks of Lady Brook. The site is adjacent to the proposed scheme redline boundary.

Whether this site is used by otters currently, or is abandoned is unknown however. No spraints or paw prints which would confirm use of the feature were located in or around the hole, and thus indicate that it is not in current use. It is important to distinguish between holts and other resting sites that are in use, and abandoned sites no longer used in this way. Legislative protection is only afforded to active resting places of otters and not sites that are suitable, but are not used. It is possible that any field signs indicating use, namely spraint sites, could have been washed away by heavy rain. This is considered unlikely given the dry weather conditions experienced in the weeks before surveys took place. Also, female otters do not deposit spraint around breeding sites to prevent attracting male otters or other predators which could kill their young, and this could be the case here.

It is not possible to determine whether this resting site, although exhibiting the classic, physical structure of a holt, is in use. Otters are known to inhabit territories exceeding 40km in length and contain many holts and couches, so resting places can remain unused for prolonged periods and thus present no evidence of recent use.

### 4.2 Recommendations for further work

Prior to construction, a further study should be undertaken to determine whether the burrow could be used as a resting site by otters. The lack of spraint sites and other signs of otter presence during field surveys suggests it is not currently used. However recent records of otters in the local area exist suggesting that the study area could be used in the future, or may be used by a breeding female not indicating her presence. Further work should be undertaken to confirm the status of otters on the Lady Brook and whether the burrow identified as a potential holt is used.

A camera trapping study would provide strong evidence of otter presence/likely absence and determine whether a holt has been discovered. Camera traps should be placed facing the entrance of the resting site as well as upstream and downstream from the entrance. They then automatically capture images when movement is detected in front of the camera sensors, so if otters or any other animal are using the hole as a place of rest, or if no animals are using it at all, then the camera traps will be able to confirm this during the period of their deployment. Following the results of such surveys it will be possible to determine if mitigation, such as construction of a replacement holt, is required.

If in active use the burrow is likely to be considered a resting site under current wildlife legislation (Annex 1), and thus protected. A Natural England licence would therefore be required if the site was to be destroyed by development. Licences are issued when supported

by a proposed scheme of mitigation that would ensure the conservation status otters in the area, and would be informed by the results of this survey and camera trapping work. However it is likely that a replacement resting site would be required to offset the loss of the original.

### **4.3 Evaluation**

Although uncertainty exists as to the site on the Lady Brook, as a whole it is apparent that the brook is likely to be used by otters commuting through the area. Desk study data indicates their presence, however the lack of spraint sites or other field signs located in surveys possibly indicates a low level of usage of the area. A single potential resting site which is yet to be confirmed as in use by otters was found, and further evidence from camera trapping findings is required.

However, on the balance of available evidence, it is likely otters are present in the study area although it is unclear how the habitat is used. It is most probable that these animals commute through the area and use it as a foraging area on occasion, although this cannot be confirmed. Due to their rarity and size of territories, otters are thought to be of district value within the study area. The Lady Brook constitutes a valuable commuting route, foraging area and possibly location of resting sites. Many such areas likely exist within the Greater Manchester/Cheshire/Wirral area and thus prevent a higher level of value being assigned.

## 5 References

- IEEM (2006). Guidelines for ecological impact assessment in the United Kingdom. Institute of Ecology and Environmental Management, Winchester.
- Ratcliffe D. (1977). A nature conservation review vol. 1. Cambridge University Press, Cambridge.

## Annex 1 – Legislative Context

### Overview

The following pieces of national legislation are of relevance to the conservation of otters:

- Conservation of Habitats and Species Regulations 2010;
- Wildlife and Countryside Act 1981 (as amended);
- Natural Environment and Rural Communities (NERC) Act 2006.

### Conservation of Habitats and Species Regulations 2010

Otters are “European Protected Species” (EPS), that is they are listed in Annex IV(a) of the EU Habitats Directive, and require protection in all EU member states. The Conservation of Habitats and Species Regulations 2010 brings such protection into UK law, and thus it is an offence to deliberately capture, kill or disturb an EPS. For the purposes of this legislation, disturbance has been defined by the European Commission (EC) and Natural England as that likely to i) impair the ability for any wild animals of a EPS species to survive, to breed or reproduce, or to rear or nurture their young, and in the case of animals of a hibernating or migratory species, to hibernate or migrate; and, ii) any disturbance to wild animals of a EPS species which is likely to affect significantly the local distribution or abundance of the species to which they belong. Both of these disturbance definitions relate to individuals of an EPS species.

It is also an offence under the Conservation of Habitats and Species Regulations 2010 to damage or destroy and/or obstruct access to a breeding site or resting place of these species; please note the former is a strict liability offence (therefore actions may be prosecuted without intention). This legislation applies to all life stages of a EPS, including eggs.

### Wildlife protection/control under other national legislation

The primary legislative protection for otters is through designation as an EPS (see above). However, they are also partially protected in England and Wales through their inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally or recklessly disturb an otter whilst it is using a place of rest or shelter. This applies to individuals, but is subject to a number of defences including if the disturbance was the ‘*incidental result of a lawful operation that could not reasonably have been avoided*’. The legislation applies to all life stages.

### Species of principal importance to nature conservation & Biodiversity Action Plan (BAP) Species

In 1992 the United Kingdom became a signatory of the Convention on Biological Diversity which commits nations to halting the loss of biological diversity within their borders. In response the UK government collated and published a list of habitats and species considered of principal importance for the conservation of biological diversity in the UK, prepared by the

Secretary of State as a requirement of Section 74 (2) of the Countryside and Rights of Way (CRoW) Act 2000. This responsibility was transferred to the Natural Environment and Rural Communities (NERC) Act Section 40(1) when it was enacted in 2006, with Natural England named in a supervisory role. Otters are listed both as a species of principal importance to nature conservation, and are also Biodiversity Action Plan Priority species. These designations place a responsibility on the planning system, and the UK government, to work to achieve conservation goals for otters through their decision making processes.

**Planning policies and guidance - PPS 9; Biodiversity and Geological Conservation.**

National Planning Policy on the protection of biodiversity and geological conservation is set out in *Planning Policy Statement 9: Biodiversity and Geological Conservation* (PPS9) (ODPM 2005). Under this guidance, responsibility for the protection of species of principal conservation concern (i.e. BAP priority habitats/species and others listed by the Secretary of State; otters are covered by both these categories) on planning authorities, making them a material consideration in planning decisions.

## Appendix 11E: Phase 1 Habitat Survey

# A6 to Manchester Airport Relief Road: Phase 1 Habitat Survey Report

12 July 2013

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# 1 Introduction

## 1.1 Background

Stockport Metropolitan Borough Council, Manchester City Council and Cheshire East Council are working as a consortium to promote the construction of a strategic relief road from the A6 to Manchester International Airport. The scheme is part of the south-east Manchester multi-modal strategy, or SEMMMS, and involves the introduction of a 14 km dual carriageway between the A6 and the airport. Ten kilometres of the relief road would comprise new sections of dual carriageway. A central 4 km section of the relief road would comprise the previously constructed A555 Manchester International Airport Eastern Link road (MAELR) south of Bramhall.

In 2007 Penny Anderson Associates carried out an extended phase 1 habitat survey of the scheme, which included recommendations for further species surveys. Subsequently, a suite of species surveys have been undertaken to support the scheme Environmental Impact Assessment (EIA). Due to the inherent potential for habitat changes in the period from the initial surveys to the present time, the phase 1 habitat survey has been repeated.

This report details the results of the phase 1 habitat survey undertaken in 2011.

## 1.2 Study area

The study area comprised all habitats within the scheme's proposed construction boundary; which runs from the A6 in the east (grid reference SJ 934 859) to Manchester International Airport in the west (grid reference SJ 817 857).

## 1.3 Study Objectives

The aim of the study was to reasonably appraise the ecological value of the study area. To achieve this, the following objectives were set:

- to undertake a basic desk study of the study area to gather information related to legally protected/ecologically important sites and habitats;
- to map all general habitat types within the survey area and provide a baseline assessment of the ecological value of the habitat, based on IEEM (2006) "Guidelines for Ecological Impact Assessment in the United Kingdom";
- to identify the dominant species of vascular plants present within each mapped habitat type; and
- to identify hedgerows within the survey area considered 'important' in ecological terms, under the Hedgerow Regulations Act (1997).

## 2 Relevant Legislation and Guidance

### 2.1 Overview

Legislation relevant to species and protected sites present, or potentially present within the study area are summarised in this chapter.

### 2.2 Statutory Protected Sites and Features

Sites afforded statutory protections within the UK are designated as such under the terms of national legislation (which may be derived from European and/or international Directives and/or Conventions).

#### 2.2.1 *Local Nature Reserves*

Local Nature Reserves (LNRs) present within the study area are the only designated sites afforded protection under national statute; receiving protection from damaging operations under local bylaws.

#### 2.2.2 *Classified Watercourses*

Certain riverine habitats present within the study area receive protection through their classification under the Water Framework Directive (2000/60/EC), which is transposed into national legislation through The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. Although this legislation does not provide any direct legal protection, it identifies the classified waterbodies as being of significant importance and sets water quality objectives. Pollution incidents to these watercourses would still be prosecuted under the Water Resources Act 1991.

### 2.3 Non-Statutory Designated Sites

#### 2.3.1 *Sites of Biological Importance (SBI)*

Sites of Biological Importance (SBI) are one of the non-statutory designations used by the Greater Manchester, Cheshire and Staffordshire County Councils to protect locally valued sites of biological diversity. These sites are described generally as Local Wildlife Sites. While receiving no legal protection, their locally significant conservation status is recognised by their inclusion within Local Development Plans. The local Wildlife Trusts are responsible for identifying suitable sites and they receive a measure of non-statutory protection from local planning policies.

#### 2.3.2 *Wildlife Corridors*

Wildlife Corridors such as rivers, canals, railways, motorway verges, hedgerow networks etc. are areas identified by local Wildlife Trusts as important biodiversity linkage features within the landscape. Wildlife Corridors receive no legal protection although their inclusion in Local Development Plans and conservation strategies highlight their locally significant conservation status. These areas therefore receive a measure of non-statutory protection from local planning policies.

#### 2.3.3 *National and Local Biodiversity Action Plans (UK/LBAP)*

In addition to those species and habitats protected under the legislation previously discussed, many more are listed as UKBAP Priority Species and Habitats. Whilst inclusion in these lists

does not confer any direct protection upon the features concerned, government agencies and local authorities are legally obliged to have regard to those features of *principal conservation importance*, analogous with UKBAP lists, in exercising its functions. Conservation of BAP species is considered a material consideration for national and local planning policy (including the granting of planning permission) after the introduction of the Countryside and Rights of Way (CROW) Act 2000 and Natural Environment and Rural Communities (NERC) Act 2006 (both as amended). Government agencies and local authorities are also obliged under Section 74 (3) of the CROW Act 2000 to undertake steps to further the conservation interest of such species and under Section 40 of the NERC Act, 2006 to restore or enhance a population or habitat of such species.

The UKBAP Priority Species lists include a large number of organisms whose conservation is thought to require promotion. These lists were updated in September 2007, with recent additions including the common toad *Bufo bufo* and the western European hedgehog *Erinaceus europaeus*, in addition to many others (including numerous bird and invertebrate species which may be of relevance to the proposed scheme).

#### 2.3.4 *Other Conservation Designations*

Conservation designations exist that have no status within national law, but should be considered when assessing a species biodiversity value. Birds may appear on the Birds of Conservation Concern (BoCC) green, amber or red lists indicating a threat level based upon various factors (see [www.bto.org.uk](http://www.bto.org.uk) for further details). International, National and County Red Data Books contain lists of many species of animal and plant, describing their scarcity or threat status at the appropriate geographic scale.

## 3 Methodologies

### 3.1 Desk study

Information about the locations of any statutory protected nature conservation sites (e.g. Natura 2000 sites and Sites of Special Scientific Interest - SSSI) and non-statutory nature conservation sites (e.g. county wildlife sites including Sites of Nature Conservation Importance - SINCs) within the study area were sought from the following sources

- Multi Agency Geographic Information Centre website ([www.magic.gov.uk](http://www.magic.gov.uk));
- Environment Agency's environmental maps database 'What's in your backyard?' ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk));
- Greater Manchester Ecology Unit Records;
- Natural England's habitat website ([www.natureonthemap.org.uk](http://www.natureonthemap.org.uk)); and
- Ordnance Survey Maps.

#### 3.1.1 Desk study limitations

The combination of data obtained was felt to be sufficient meet the aims and objectives of this report.

### 3.2 Field survey

A phase 1 habitat survey of the survey area was undertaken during June 2011. Habitats were identified using standard phase 1 habitat survey methodology (Joint Nature Conservation Committee, 2003) with target notes made to describe features of interest. The survey area and phase 1 habitat maps are illustrated in Figures 11E.1 to 11E.8.

#### 3.2.1 Field survey limitations

Restrictions associated with undertaking survey alongside the extant A555 prevented detailed assessments of dominant vascular plant species. Despite this limitation the survey objectives can be effectively satisfied.

### 3.3 Assessment methodology

#### 3.3.1 Determining baseline value

The method of evaluation used follows that published by the Institute of Ecology and Environmental Management (IEEM). Consequently, IEEM (2006) "Guidelines for Ecological Impact Assessment in the United Kingdom" formed the basis for the system used to evaluate the importance of ecological receptors. Ecological receptors have been evaluated based on specific criteria, which include;

- Habitat size, shape, diversity (e.g. mosaics, mono-cultures) and connectivity;
- Physical conditions (e.g. natural, semi-natural, buildings/hard standing);

- Biodiversity, including species richness, range and populations of plant and animals communities;
- Rarity and typicalness of plant and animal communities;
- Stage/stability of ecological succession and habitat development trajectory;
- Typicalness of the physical environment;
- Position in an ecological or geographical unit; and
- Potential and intrinsic value, ease of re-creation.

In reasonable accordance with IEEM (2006) each site should be assessed as valuable, or potentially valuable, based on the following geographic frame of reference:

- International e.g. a site or population warranting designation as a Special Area of Conservation (SAC) and/or of significant conservation status for Europe;
- National (i.e. UK) e.g. a site or population warranting designation as a Site of Special Scientific Interest (SSSI) and/or of significant conservation status for England;
- Regional e.g. a site or population valuable at a regional level and/or of significant conservation status for the North West;
- County e.g. a population warranting designation as a County Wildlife Site and/or of significant conservation status for Cheshire;
- District e.g. a population of significant conservation status for the local district i.e. Stockport Borough Council and Cheshire East District Council;
- Local e.g. a population of significant conservation status within a local context (i.e. within approximately 5 km of the proposed scheme);
- Within the immediate survey area only i.e. a population of significance for the immediate survey site only.

The characteristics listed above help define a feature's conservation status, which can then be used to help determine its biodiversity value. IEEM (2006) provides further information on how the relative value and importance of a receptor can be determined and states that its biodiversity value should be measured against published selection criteria where available. It is also useful to distinguish between the biodiversity value of a receptor and its legal status. Features of high biodiversity value may not necessarily attract legal protection and vice versa. For example, a viable area of ancient woodland is likely to be considered of high biodiversity value even if it does not receive any formal statutory designations.

In the evaluation of biodiversity value, reference is also made to UK and LBAPs, inclusion on national or county Red Data Books, and to conservation status (such as nationally



notable/scarce species, etc). However, the inclusion within a BAP reflects the fact that the population of the habitat concerned is in a sub-optimal state (and hence that conservation action is required) and does not necessarily imply any specific level of value. Despite this, priority BAP species/habitats may represent a material planning consideration.

## 4 Baseline Conditions and Evaluation

### 4.1 Desk Study Results

#### 4.1.1 Statutory protected sites and features

The scheme does not impact on any statutory protected sites or features.

#### 4.1.2 Non-Statutory designated sites

A section of the scheme will pass through Norbury Brook and Middlewood SBI. The SBI is considered to be of intrinsic **district biodiversity value**. Whilst this designation has no legal protection the presence of this habitat may be of material consideration in planning decisions.

The desk study also revealed the presence of one area of ancient semi-natural woodland within the study area. Carr Wood, an area of ancient semi-natural woodland approximately 2.3 hectares in size. Approximately 0.1 hectares will be impacted as a result of the scheme.

Semi-natural ancient woodland is a rare and declining habitat which, although does not receive any formal legal protection, is highlighted as of importance for planning authorities by PPS9 which states that planning authorities should “*identify any areas of ancient woodland in their areas that do not have statutory protection*” and normally “*not grant planning permission for any development which would result in its loss or deterioration.*” By definition it is irreplaceable and is associated with a wide variety of native flora and fauna. The network of national semi-natural ancient woodland is therefore of national importance. However due to the scale of the impact the area of woodland affected is considered to be of intrinsic **biodiversity value at the district scale**. The woodland is also likely to support ecologically important and/or legally protected species. The presence of these habitats may also be of material consideration in planning decisions.

There is one UKBAP Priority Habitat located within the vicinity of the scheme. An area of designated wet woodland is adjacent to a section of the Norbury Brook (SJ 932 855). Approximately 0.1 hectares will be impacted as a result of the scheme.

As a nationally designated habitat UKBAP Priority Habitats are nationally important. However due to the scale of the impact the area of woodland affected is considered to be of intrinsic **biodiversity value at the county scale**. The woodland is also likely to support ecologically important and/or legally protected species. The presence of these habitats may also be of material consideration in planning decisions.

#### 4.1.3 Classified watercourses

There are two watercourses within the study area which have been classified under the Water Framework Directive; Norbury Brook and Lady Brook.

Norbury Brook and Lady Brook are lowland calcareous rivers that are designated as heavily modified. The Environment Agency has identified both watercourses as being at risk of failing to achieve their water quality objectives.

These riverine habitats are considered to be of **district biodiversity value**, and are likely to support ecologically important and/or legally protected species. The presence of these habitats may also be of material consideration in planning decisions.

## 4.2 Field survey results

### 4.2.1 Habitats

The results of the phase 1 habitat survey undertaken in June 2011 and are presented in text, below, and provided in Figures 11E.1 to 11E.8 including target notes. In summary, eleven general habitat types were noted within the survey area with relevant values detailed below:

#### *Semi-natural broad-leaved woodland*

This category covers all broad-leaved woodland stands which do not obviously originate from planting. Such habitat is a BAP broad habitat type.

Tree composition consisted of typical lowland broadleaf species; ash *Fraxinus excelsior*, beech *Fagus sylvatica*, silver birch *Betula pendula*, pedunculate oak *Quercus robur* and sycamore *Acer pseudoplatanus* were generally most common, although field maple *Acer campestre*, horse chestnut *Aesculus hippocastanum*, wild cherry *Prunus avium*, lime *Tilia x europaea*, and rowan *Sorbus aucuparia* were also identified. The understorey was frequently dominated by bramble *Rubus fruticosus* agg., elder *Sambucus nigra*, holly *Ilex aquifolium* and hawthorn *Crataegus monogyna* with occasional hazel *Corylus avellana*.

Broad-leaved woodland is a relatively un-common habitat within the Greater Manchester area comprising approximately 2.5% of the available land coverage. These habitats comprise predominantly common, planted species with a relatively low diversity in terms of age and structure species composition.

Therefore, this habitat type has been assessed as being of **district biodiversity value**. The habitat has *potential supporting value* for protected species including common nesting birds. The presence of these habitats may also be of material consideration in planning decisions.

#### *Semi-improved grassland*

This habitat consists of grasslands which have been subjected to modification through artificial fertilisers, slurry, grazing, herbicides or drainage. Such habitat does not generally constitute a BAP priority habitat but are of conservation value due to the variety of species these areas attract.

The grassland within the survey area consisted of a mix of grasses, often intermixed with tall ruderals, scattered trees and scrub. The dominant grass species present was false oat grass *Arrhenatherum elatius*, with frequent patches of Yorkshire fog *Holcus lanatus*, cock's foot *Dactylis glomerata*, perennial ryegrass *Lolium perenne* and red fescue *Festuca rubra*. A small number of commonly occurring herbs typical of roadsides and neglected agricultural areas were also present, including: common ragwort *Senecio jacobaea*, smooth sow-thistle *Sonchus oleraceus*, great willowherb *Epilobium hirsutum*, rosebay willowherb *Chamaenerion angustifolium*, cow parsley *Anthriscus sylvestris*, common mallow *Malva sylvestris*, yarrow *Achillea millefolium*, ribwort plantain *Plantago lanceolata*, buttercup species *Ranunculus spp*,

teasel *Dipsacus Fullonum*, hogweed *Heracleum sphondylium* and hemlock *Conium maculatum*.

There are two areas of semi-improved neutral grasslands in the survey area. These habitats contain a reasonably diverse sward and as such, the semi-improved grassland within the survey area has been assessed as being of likely intrinsic **biodiversity value at the district scale**. Some areas of the grassland have been assessed as having potential *supporting value* for common reptiles and amphibians, especially where they occur close to areas of scrub or waterbodies.

#### *Poor semi-improved grassland*

The JNCC handbook suggests that where many semi-improved grasslands exist on one survey site it is useful to split the category in to 'semi-improved' and 'poor semi-improved' grasslands. This category covers a wide variety of grassland occurring both through colonisation and planting for landscaping purposes. It contains a sward of lesser variety than semi-improved grassland. Such habitat does not generally constitute a BAP priority habitat.

These grasslands are likely to fall into the category of MG1 (mown and ungrazed grassland) as defined by Rodwell (1992). Species-poor semi-improved grassland was the most common habitat type within the survey area.

MG1 grassland is very common and widespread across England. Given its relatively low botanical diversity and the abundance of similar habitats in the surrounding area, the species-poor semi-improved grassland within the survey area has been assessed as being of likely intrinsic **biodiversity value within the survey area only**. Nevertheless, some areas of the grassland have been assessed as having potential *supporting value* for common reptiles and amphibians, especially where they occur close to areas of scrub or waterbodies.

#### *Arable*

The scheme will impact on one area of arable land located at the very eastern extent of the survey area. Arable land will offer potential for a number of bird species for foraging as well as nesting such as Lapwing *Vanellus vanellus*. Arable areas are also often utilised by large mammals both for foraging and for commuting such as deer and badger. However, it is unlikely that such use by these species represents legal or policy constraints. The intrinsic **biodiversity value of these areas is limited to the survey area only** due to the levels of continued disturbance this habitat is subjected to.

#### *Amenity grassland*

This category covers all areas of grassland that is intensively managed and regularly mown, typical of lawns and playing fields. Amenity grassland was a frequently recorded habitat type within the survey area, situated within recreational areas such as playing fields and golf courses. It is assessed as being of likely intrinsic **biodiversity value within the survey area only**. The grassland itself has negligible *supporting value* for protected faunal species.

#### *Dense/continuous scrub*

This is defined in the JNCC handbook as a habitat where wooded species less than 5m in height dominate, although a few scattered trees may also be present. This habitat does not

generally constitute a BAP priority habitat. Within the survey area much of the scrub present is likely to have been planted for landscaping and screening purposes, and in future years may develop into plantation woodland.

Dense scrub was common and occurred in patches along the whole survey area, although the density and structure of the coverage varied. The scrub consisted mainly of bramble, hawthorn, and blackthorn *Prunus spinosa* although hazel, dogwood *Cornus sanguinea* and scattered buddleia *Buddleja davidii* were also locally common. The ground flora consisted mainly of common ruderals, forbs and grass species.

As this habitat type is common and widespread within the UK, the examples present within the survey area have been assessed as being of likely intrinsic **biodiversity value within the survey area only**. However, scrub habitat is likely to have *supporting value* for common bird species, reptiles and amphibians, badgers and hedgehogs.

#### *Tall ruderals*

This habitat comprises stands of tall perennial or biennial herbs usually more than 25cm in height. It is very common on disturbed land, and contains species with effective dispersal strategies to take advantage of such newly available areas. The habitat does not generally constitute BAP Priority Habitat.

Tall ruderals were found infrequently throughout the survey area, forming patches in places and occasionally intermixed with areas of grassland and scrub. The dominant species recorded were common nettle *Urtica dioica*, mugwort *Artemisia vulgaris*, hedge bindweed *Calystegia sepium*, hogweed, rosebay willowherb and dock species *Rumex spp.* In areas subject to more recent disturbance tall ruderals gave way to shorter stands of vegetation.

This habitat type is common and widespread throughout the UK, and therefore has been assessed as being of likely intrinsic **biodiversity value within the survey area only**. However, some areas of tall ruderal growth have been assessed as having potential *supporting value* for reptiles and amphibians (especially when adjacent to areas of scrub and grassland) invertebrates and common breeding bird species.

#### *Running water*

The scheme crosses three watercourses containing running water. River habitats are often of high ecological value, providing habitat for a large number of species and acting as a corridor to assist movement of others. Rivers are a BAP broad habitat type, and therefore have been assessed as being of likely intrinsic **biodiversity value at the local scale**.

#### *Bare ground and Buildings*

This category covers all areas where an artificial surface has been laid, including roads, playgrounds, car parks and buildings. Buildings can provide nesting and roosting opportunities for bird and bat species and can therefore be of high ecological value. However no buildings will be impacted as a result of the scheme. Within the survey area, bare ground and buildings are an uncommon habitat. Areas of bare ground and buildings within the survey area are of **negligible biodiversity value**. The habitat does not hold any potential *supporting value* for any protected species.

### *Intact species-rich hedgerows*

There are four hedgerows across the survey area which are considered species-rich; containing more than seven woody species within a 30m stretch. The hedgerows typically contained the following species; Alder *Alnus glutinosa*, Ash *Fraxinus excelsior*, silver birch *Betula pendula*, Beech *Fagus sylvatica*, Blackthorn *Prunus spinosa*, Elder *Sambucus nigra*, Elm *Ulmus species*, Hawthorn *Crataegus monogyna*, Hazel *Corylus avellana*, Holly *Ilex aquifolium*, Hornbeam *Carpinus betulus*, small-leaved lime *Tilia cordata*, field maple *Acer campestre*, pedunculate oak *Quercus robur*, willow *Salix species*.

These hedgerows are classed as 'important' under The Hedgerow Regulations (1997) and as such are a material consideration in planning decisions. Intact species-rich hedgerows are of **biodiversity value at the district scale**.

### *Intact species-poor hedgerows*

There are a number of hedgerows across the scheme, the majority of which contain only hawthorn, and were found to be species poor, having fewer than five woody native species within a 30m stretch, and were heavily managed. The hedgerows surveyed were often associated with wooden fencing and occasionally had individual trees within them. Intact species-poor hedgerows are a UKBAP priority habitat. Therefore this habitat has been assessed as being of likely intrinsic **biodiversity value within the local area only**. The hedgerows and trees were noted to have disused birds nests and so offer potential suitable habitat to support breeding birds and may be used as linear flight lines for commuting and foraging bats. Where these hedgerows lead from ponds there is potential that they may be used for foraging and hibernation by amphibians.

## 5 References

- The Institute of Ecology and Environmental Management (IEEM) (2006). *Guidelines for Ecological Impact Assessment*, IEEM.
- Joint Nature Conservancy Council (JNCC) (2003). *Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit*, Peterborough, UK.
- *Rodwell J.S. (ed.) et al. (1992). British Plant Communities. Volume 3 - Graslands and montane communities. Cambridge University Press, Cambridge.*

*We have used our reasonable endeavours to provide information that is correct and accurate and have discussed above the reasonable conclusions that can be reached on the basis of the information available.*

## 6 Annex A

Phase 1 habitat maps – Please see Figures 11E.1 to 11E.8